# Cell Phone Conversation While Driving

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## ABSTRACT

This chapter presents a review of studies on the conversational aspect of cell-phone use while operating a motor vehicle. Research has indicated that talking on a cell phone while driving poses a safety threat to people both in the vehicle and on the road. This is because cell phone conversations take considerable cognitive, visual, and physical demands on the person involved in this task. However, research has also shown that people engage in risky driving behavior, even after being cognizant of the dangers associated with it. Therefore, policies need to be implemented to thwart the use of cell phones while operating a motor vehicle, to educate people about the risks that this behavior poses, and in so doing, to make the road safer for drivers and pedestrians.

## INTRODUCTION

This chapter presents an in-depth review of studies on the conversational aspect of cell-phone use while operating a motor vehicle. Here, a cell phone refers to any mobile device used to answer and initiate calls as well as to send and receive texts, which includes smartphones (e.g., iPhone, Blackberry). Conversation denotes any length of talking on a cell phone. Driving indicates operating any type of motor vehicle on the road, including stopping at a red light.

Engaging in a cell phone conversation while operating a vehicle has become a public safety concern and a social problem. Research has indicated that talking on a cell phone while operating a vehicle produces a four-fold increase in the risk of involvement in a collision compared to when not talking on a cell phone (McEvoy et al., 2005). Studies report that the risks

of using hands-free cell phones can be as great as using hand-held ones, because regardless of the phone type cell-phone use while driving decreases people's driving performance and increases the likelihood of involvement in an accident (Amado & Ulupinar, 2005; Caird, Willness, Steel, & Scialfa, 2008; Collet, Guillot, & Petit, 2010a, 2010b; Dragutinovic & Twisk 2005; Hendrick & Switzer, 2007; Ishigami & Klein, 2009; McEvoy et al., 2005; Törnros & Bolling, 2005; Zhao et al., 2013). This means that using either a hands-free or a hand-held cell phone can cause drivers failing to notice pedestrians or other vehicles in their vicinity, or missing traffic signals and lanes, resulting in traffic collisions (Nurullah, Thomas, & Vakilian, 2013).

## OVERVIEW

While cell phones have been around for the last several decades, the mass adoption and usage of this device is particularly evident in the last two decades. In 1987, Dr. Anthony C. Stein of Safety Research Associates, Inc., and Zareh Parseghian and Richard Wade Allen of Systems Technology, Inc. conducted one of the earliest studies on the safety implications of hand-held cell phones using a driving simulator (Stein, Parseghian, & Allen, 1987). During the early 1990s, several studies were conducted showing that talking on a cell phone poses safety risks in driving situations compared to when not using a cell phone (Alm & Nilsson, 1994; Brookhuis De Vries, & De Waard, 1991; Fairclough, Ashby, Ross, & Parkes, 1991; McKnight & McKnight, 1993). Epidemiological studies on the effects of cell phone use on traffic collisions and injuries started to emerge during the latter half of the 1990s. Violanti and Marshall (1996), for instance, found that talking on cell phones while driving for more than 50 minutes per month was associated with 5.59 times greater risk of a traffic accident. One of the most cited studies in this genre is Redelmeier and Tibshirani's (1997) study, which I have discussed in detail in a subsequent paragraph. From the early 2000s, research on cell-phone use while driving has skyrocketed with studies by scholars such as Dr. David L. Strayer and colleagues at the University of Utah (e.g., Strayer & Johnston, 2001; Strayer, Drews, & Johnston, 2003).

Research has indicated that talking on a cell phone while driving poses a safety threat to people both in the vehicle and on the road. This is because cell phone conversations take considerable cognitive, visual, and physical demands on the person involved in this task. The use of cell phones takes one's attention away from the road and creates deterioration in driving performance, even in hands-free mode (Just, Keller, & Cynkar, 2008). However, studies have also shown that people engage in risky driving behavior, even after being cognizant of the

dangers associated with using cell phones in driving conditions (Ivers et al., 2009; Nelson, Atchley, & Little, 2009; Nurullah et al., 2013; White, Hyde, Walsh, & Watson, 2010).

## CURRENT SCIENTIFIC KNOWLEDGE IN CELL PHONE USE WHILE DRIVING

In this chapter, I identify five leading researchers who, together with their colleagues, conduct empirical investigations on the effects of talking on a cell phone while operating a vehicle. These researchers are: Dr. Anne T. McCartt at the Insurance Institute for Highway Safety, Dr. Katherine M. White at the Queensland University of Technology, Dr. David L. Strayer at the University of Utah, Dr. Anne Bolling at the Swedish National Road and Transport Research Institute, and Dr. Paul Atchley at the University of Kansas. Their representative research areas are outlined below.

Anne T. McCartt (McCartt, Kidd, & Teoh, 2014; McCartt et al., 2010; McCartt & Hellinga, 2007; McCartt, Hellinga, & Bratiman, 2006) conducts research in the areas of distracted driving, alcohol-impaired driving, driver safety, young drivers, airbag effectiveness, and occupant restraints. Katherine M. White (White et al., 2010; Nemme & White, 2010; Walsh & White, 2007; Walsh & White, 2006; Walsh et al., 2008; Walsh et al., 2007) investigates road safety, speeding, driver distraction, road-user behavior, and risk factors for cell-phone use while driving. David L. Strayer (Strayer, Drews, & Crouch, 2006; Strayer, Drews, & Johnston, 2003; Strayer & Johnston, 2001; Drews, Pasupathi, & Strayer, 2008) often uses driving simulator in a laboratory setting and examines cell-phone induced driver distraction, the effect of multi-tasking on driving performance, and attitudes of young drivers towards cell-phone use. Anne Bolling's (Törnros & Bolling, 2006; Törnros & Bolling, 2005) research is in the area of road safety, driver performance in a simulator, effects of cell-phone conversation on mental workload, and hand-held versus hands-free phones. Finally, Paul Atchley (Atchley, Atwood, & Boulton, 2011; Dressel & Atchley, 2008; Nelson et al., 2009) conducts studies on distracted driving, texting among young drivers, and perception of risk in answering and initiating a cell-phone call while driving. In the following, I discuss the findings from existing literature classified into six thematic areas.

### The dangers associated with cell phone use while driving

Researchers agree that the use of cell phones while operating a motor vehicle can potentially result in traffic collisions (Collet et al., 2010a, 2010b; McCartt et al., 2006; Zhao et al., 2013). Both experimental and naturalistic studies found that talking on a cell phone increases the risk of

collision by more than 30 percent (Wilson & Stimpson, 2010). Redelmeier and Tibshirani (1997) studied 699 drivers in Toronto who had cell phones and who were involved in traffic accidents to determine if they were using their phones at the time of collisions. By analyzing drivers' detailed billing records during the past week and cell-phone calls made on the day of the collision, Redelmeier and Tibshirani (1997) discovered that a driver had 4.3 times higher risks of involvement in a collision while using a cell phone than when not using a cell phone. McEvoy et al. (2005) followed similar methodology used in Redelmeier and Tibshirani's (1997) study with a sample of 456 drivers in Australia. McEvoy et al. (2005) found that drivers who used a cell phone up to 10 minutes before the collision had 4.1 times greater likelihood of an accident from cell phone usage, which is similar to that of Redelmeier and Tibshirani's (1997) findings.

Furthermore, Strayer et al. (2006) found that the impairments of using a cell phone while driving could be as severe as the deficiencies associated with driving drunk. The driver is engaged both physically and cognitively while talking on a cell phone, and therefore, the driver's visual scanning of peripheral sources of information, such as side and rearview mirrors and the speedometer is reduced, whereas more glances are made to the road center, which may lead to a collision (Recarte & Nunes, 2003). In a naturalistic study, it was found that the removal of the hands from the steering wheel was more likely to occur while talking on a cell phone, either dialing or answering (Stutts et al., 2005). Studies have found deficits of driving performance, such as changes in speed, changes in acceleration, and delayed reaction times when drivers are engaged in a cell phone conversation (see Drews, Pasupathi, & Strayer, 2008).

## Risk perception

Although many drivers think that cell phone use while driving is a very serious road safety problem (Vanlaar et al., 2006), this risk perception may not always drive their actual behavior. In their study, White and colleagues (2010) found that although drivers were aware of the risks, they did not consider the dangers associated with using a hands-free cell phone, but rather continued to use their cell phone while driving. In addition, users of cell phones reported a lower risk of collision or being caught and fined by police when using their phone while driving (White et al., 2010). Research suggests that the perceived practical, social, and psychological benefits of using cell phones while operating a vehicle potentially outweigh the perceived risks (Atchley, Atwood, & Boulton, 2011; Nelson, Atchley, & Little, 2009; Walsh & White, 2006; White, Eiser, & Harris, 2004; White et al., 2007). For instance, Hafetz et al. (2010) found that drivers' stronger

convictions about the disadvantages of refraining from cell phone use while driving (e.g., "I would not be able to tell people where I am or when I will arrive") were associated with more frequent use of cell phones while driving.

In a cohort of young drivers in Australia, Ivers and colleagues (2009) found that males were more likely than females to drive while talking on a cell phone, and also considered the practice 'always' or 'mostly' safe. In addition, they showed that males were more likely than females to report frequently engaging in several risky driving behaviors and having reduced risk perceptions. Studies also showed that both drivers who used a cell phone and those who did not use a cell phone considered talking and texting on a cell phone while driving as dangerous (Nemme & White, 2010; Nurullah et al., 2013; Reed & Robbins, 2008; Zhou, Wu, Rau, & Zhang, 2009). Both non-users and users of cell phones also agreed that cell phone use while driving can be as dangerous as driving under the influence of drugs or alcohol, and that using a cell phone creates more risks of collisions (Drews et al., 2008; McCartt et al., 2006; McEvoy et al., 2005; Nurullah et al., 2013; Redelmeier & Tibshirani, 1997; Strayer et al., 2006; White et al., 2010; Wilson & Stimpson, 2010).

## Hand-held and hands-free devices

Caird et al. (2008) reported that drivers with hand held phones reduced their speed slightly more than did those with hands-free phones, perhaps because drivers were more aware of the potential safety threats imposed by hand-held phones. Nurullah et al. (2013) found that a majority (76.7 percent) of those who used a cell phone agreed (either 'strongly' or 'somewhat') that hands-free devices are safer while operating a vehicle. However, research consistently suggests that the use of hands-free and hand-held cell phones while driving produce analogous collision risks and similar driver reaction time decrements (Amado & Ulupinar, 2005; Caird et al., 2008; Hendrick & Switzer, 2007; Ishigami & Klein, 2009; McEvoy et al., 2005; Törnros & Bolling, 2005). White et al. (2010) suggested that compared to hand-held cell phone users, hands-free cell phone users reported a higher frequency of answering and making calls while driving.

## Intentions behind cell phone use while driving

In an Australian study, Walsh and colleagues (2008) found that drivers showed stronger intentions to use their cell phone for calling rather than sending texts while driving. Surprisingly,

drivers who were more aware of the risk of being apprehended by police reported more intention to send text messages while driving (Walsh et al., 2008). Studies have found that normative beliefs were the most significant predictor of the frequency of hands-free cell phone use while driving, whereas control beliefs were the most important predictor of the frequency of a hand-held cell phone use (White et al., 2010; Zhou et al., 2009). In addition, subjective norms predicted intentions to use a cell phone while driving, such that perceived social approval from close others (e.g., friends, family) influenced drivers' decisions to use their phone while driving (Nemme & White, 2010; Walsh et al., 2008). In a sample of Kuwaiti drivers, Riquelme, Al-Sammak, and Rios (2010) reported that explicit verbal, behavioral, and social norms (e.g., perceiving cell phone use while driving as antisocial) predicted the intention to not use the cell phone while driving.

Nemme and White (2010) found that past behavior, intentions, and moral norms significantly predicted the behavior of sending and reading text messages while driving. White and colleagues (2012) found that greater efficacy to refuse a call, more perceived disadvantages, and extensive barriers were associated with lower rates of using a cell phone while driving. In a sample of 796 adult drivers in Australia, White and colleagues (2010) found that 77 percent of drivers reported using their cell phones for any purpose while driving (e.g., to answer or make a call, send or receive text messages), and that regardless of the device type (i.e., hands-free or hand-held), 43 percent of drivers reported answering calls while driving on a daily basis, followed by making calls (36%), reading text messages (27%), and sending text messages (18%). In addition, the purpose of use (e.g., business communications) predicted the intentions behind using a cell phone while driving (Walsh, White, Hyde, & Watson, 2008).

## Young drivers

Studies have consistently found that younger drivers are more likely to use their cell phones, more likely to report sending text messages while driving, and more likely to be socially influenced to use their cell phones while driving compared to older drivers (Harrison, 2011; Hosking, Young, & Regan, 2009; Walsh et al., 2008; Zhou et al., 2009). Existing literature also indicates that younger individuals generally use cell phones more frequently in both contexts of driving and daily life compared to older persons (Brusque & Alauzet, 2008; Pöysti, Rajalin, & Summala, 2005). Furthermore, research suggests that young drivers are at a higher risk of collisions and severe injuries when they use a cell phone while driving (Neyens & Boyle, 2008). A recent study has shown that young drivers' (17–28 years) attachment towards their cell phones

was associated with their use of cell phones while driving and their self-reported distracted driving behaviors, such as social media use (e.g., Facebook, Twitter) (Weller, Shackleford, Dieckmann, & Slovic, 2013). It is critically important to ensure that policy interventions focus upon younger drivers in order to reduce their distracted driving habits.

### Effectiveness of current legislation

Researchers debate whether existing laws are effective in preventing the use of cell phones while operating vehicles. Studies have shown mixed results when comparing results of studies on hand-held versus hands-free phones, young versus old drivers, talking versus texting behavior, and short-term versus long-term reductions in use (Jacobson, King, Ryan, & Robbins, 2012; McCartt, Kidd, & Teoh, 2014; Nikolaev, Robbins, & Jacobson, 2010). Regarding the effectiveness of the restrictions on cell phone use while driving, McCartt and Hellinga (2007) found that enforcement of hand-held cell phone bans produced long-term reductions in use. McCartt and colleagues (2010) found in a 2009 U.S. national telephone survey that 56% of drivers in states that banned hand-held phones reported using any type of phone when driving compared with 69% in states without such laws. Nikolaev et al. (2010) analyzed the effect of a hand-held cell phone ban on the rate of fatal vehicle collisions per 100,000 licensed drivers and personal injury collisions per 1,000 licensed drivers per year. The authors found that the ban had a significant effect in reducing both fatal vehicle and personal injury accident rates.

However, research also found no reductions in collision claim rates associated with hand-held cell-phone bans in four states in the United States (Trempel, Kyrychenko, & Moore, 2011). Lim and Chi (2013) found that a ban on hand-held cell phones significantly reduced the fatal collision rates among drivers aged between 18 and 34 years, but not in older age cohorts. Clearly, proper regulation and enforcement of current legislation are required to achieve desirable changes in the use of cell phones while driving.

## STRATEGIES TO REDUCE CELL PHONE USE WHILE DRIVING

In my view, there are several ways to reduce the use of cell phones while operating a motor vehicle. One approach to curb this behavior is through the social pressure method. Friends and family members should internalize the notion that it is not appropriate to drive while using a cell

phone, and should not expect others to respond to their calls when driving. Passengers in vehicles should exert pressure on the fellow drivers to refrain from using cell phones while driving, and to answer the phone only after pulling over at the side of the road when it is safe. In addition, the driver can allow a passenger to receive or place calls on his or her behalf. If there is no passenger in the vehicle or if the call is too private to share, then it can go to the driver's voice mail or the driver can pull over at a safe place to answer. Employers at the workplace should insist the responsible use of cell phones for their employees. As for policy, it is perhaps a suitable idea to introduce the accumulation of demerit points for the use of cell phones while driving. Countries such as Australia and New Zealand have already introduced demerit points for drivers who use their cell phones while driving.[1]

Technological innovations can also be geared towards reducing the use of cell phones in driving situations in a smart way. For instance, car companies can develop technologies programmed to turn off the mobile device's cell reception automatically (i.e., the device will receive no signal from the cell tower) as soon as a driver starts the engine of a vehicle. In this way, drivers would not be able to answer or make cell phone calls as long as the engine is running. At the same time, we need public education designed to make people aware of the dangers associated with using a cell phone while driving, both for themselves and for risking the lives of others. This could be done through driving schools (e.g., including cell-phone related curriculum, or showing videos of collisions involving the use of cell phones while driving) or by government initiatives in the form of spreading targeted messages in the media. Another approach is to make it mandatory for new drivers to attend a special session on the dangers of cell phone use or on how to use cell phones responsibly while driving. For existing drivers, this can be done at times when they renew their driving licenses. In both cases, the state should sponsor the lessons (i.e., these specific lessons should be free of costs) so that drivers do not think of this as a burden.

[1] In Australia, drivers holding Learner's Permits and Provisional Licenses are fined with 4 demerit points for using cell phones while driving. While in New Zealand, a driver is fined with 20 demerit points for using their cell phones in driving situations. It should be noted that Australian drivers' threshold is 14 demerit points, while New Zealand drivers' threshold is 100 demerit points before the suspension of their licenses. Consult the following links for detailed explanations of demerit points in these two countries:
http://www.nrmasaferdriving.com.au/licence-penalties-fines.htm
http://www.rms.nsw.gov.au/usingroads/downloads/demerit_points_brochure_18024413.pdf
http://www.nzta.govt.nz/licence/offences-penalties/demerit.html#mobile

## FUTURE RESEARCH DIRECTIONS

Despite the risks, drivers continue to use their cell phones while driving (Hafetz et al., 2010; Vanlaar et al., 2006; White et al., 2010). The precise reasons for people's use of cell phones while driving even after being aware of the perceived risks remain unclear. Psychological needs, practical necessities, and social expectations to return calls immediately are the likely factors that influence talking on a cell phone while operating a motor vehicle (Atchley et al., 2011; Hafetz et al., 2010; Nelson et al., 2009). Further research should investigate this phenomenon. A study has shown that emotionally intense conversation on a cell phone while driving is significantly more dangerous than no call and mundane calls (Dula, Martin, Fox, & Leonard, 2011). Future research in this area should also focus on the effects of specific conversational contexts (e.g., talking with a friend, business exchange, emotionally heated argument, romantic conversation) on people's driving performance.

Previous research suggested that effective enforcement of the ban on hand-held cell phone use produces long-term reductions in the use of cell phones while driving (McCartt & Hellinga, 2007). A recent study affirms that laws banning the use of cell phones while driving should be regarded as one of the crucial factors in reducing cell-phone related collisions (Kwon, Yoon, & Jang, 2014). However, it is challenging to properly enforce regulations restricting the use of cell phones in driving situations. Indeed, further research is needed to examine the short-term as well as long-term reductions in the use of cell phones while driving following the implementation of distracted driving laws. Furthermore, studies should explore mechanisms for effective enforcement of legislation to weed out the use of cell phones while operating a vehicle.

## REFERENCES

Alm, H., & Nilsson, L. (1994). Changes in driver behaviour as a function of handsfree mobile phones: A simulator study. *Accident Analysis and Prevention*, *26*(4), 441–451.

Amado, S., & Ulupinar, P. (2005). The effects of conversation on attention and peripheral detection: Is talking with a passenger and talking on the cell phone different? *Transportation Research Part F: Traffic Psychology and Behaviour, 8*, 383–395.

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*(1), 134–142.

Brookhuis, K.A., De Vries, G., & De Waard, D. (1991). The effects of mobile telephoning on driving performance. *Accident Analysis and Prevention, 23*(4), 309–316.

Brusque, C., & Alauzet, A. (2008). Analysis of the individual factors affecting mobile phone use while driving in France: Socio-demographic characteristics, car and phone use in professional and private contexts. *Accident Analysis and Prevention, 40*(1), 35–44.

Caird, J. K., Willness, C. R., Steel, P., & Scialfa, C. (2008). A meta-analysis of the effects of cell phones on driver performance. *Accident Analysis and Prevention, 40*(4), 1282–1293.

Collet C., Guillot A., & Petit C. (2010a). Phoning while driving I: A review of epidemiological, psychological, behavioural and physiological studies. *Ergonomics, 53*(5), 589-601.

Collet C., Guillot A., & Petit C. (2010b). Phoning while driving II: A review of general driving conditions. *Ergonomics, 53*(5), 602-616.

Dragutinovic, N., & Twisk, D. (2005) *Use of mobile phones while driving effects on road safety: A literature review*. Leidschendam, the Netherlands: SWOV, Institute for Road Safety Research.

Dressel, J., & Atchley, P. (2008). Cellular phone use while driving: A methodological checklist for investigating dual-task costs. *Transportation Research Part F: Traffic Psychology and Behavior, 11*, 347-361.

Drews, F. A., Pasupathi, M., & Strayer, D. L. (2008). Passenger and cell phone conversations during simulated driving. *Journal of Experimental Psychology: Applied, 14*(4), 392-400.

Dula, C. S., Martin, B. A., Fox, R. T., & Leonard, R. L. (2011). Differing types of cellular phone conversations and dangerous driving. *Accident; Analysis and Prevention, 43*(1), 187–193.

Fairclough, S. H., Ashby, M. C., Ross, T., & Parkes, A. M. (1991). Effects of handsfree telephone use on driving behaviour. In *Proceedings of the 24th ISATA International Symposium on Automotive Technology and Automation* (pp. 403–409). Florence, Italy.

Hafetz, J.S., Jacobsohn, L.S., Garcia-Espana, J.F., Curry, A.E., & Winston, F.K. (2010). Adolescent drivers' perceptions of the advantages and disadvantages of abstention from in-vehicle cell phone use. *Accident Analysis and Prevention, 42*(6), 1570–1576.

Harrison, M. A. (2011). College students' prevalence and perceptions of text messaging while driving. *Accident Analysis and Prevention, 43*(4), 1516–1520.

Hendrick, J. L., & Switzer, J. R. (2007). Hands-free versus hand-held cell phone conversation on a braking response by young drivers. *Perceptual and Motor Skills, 105*(2), 514–522.

Hosking, S., Young, K., & Regan, M. (2009). The effects of text messaging on young drivers. *Human Factors, 51*(4), 582–592.

Ishigami, Y., & Klein, R. M. (2009). Is a hands-free phone safer than a handheld phone? *Journal of Safety Research, 40*(2), 157-164.

Ivers, R., Senserrick, T., Boufous, S., Stevenson, M., Chen, H., Woodward, M., et al. (2009). Novice drivers' risky driving behavior, risk perception, and crash risk: Findings from the DRIVE study. *American Journal of Public Health, 99*(9), 1638-1644.

Jacobson, S. H., King, D. M., Ryan, K. C., & Robbins, M. J. (2012). Assessing the long term benefit of banning the use of hand-held wireless devices while driving. *Transportation Research Part A: Policy and Practice, 46*(10), 1586–1593.

Just, M. A., Keller, T. A., & Cynkar, J. (2008). A decrease in brain activation associated with driving when listening to someone speak. *Brain Research, 1205*, 70–80.

Kwon, O. H., Yoon, Y., & Jang, K. (2014). Evaluating the effectiveness of the law banning handheld cellphone use while driving. *Safety Science, 70*, 50–57.

Lim, S. H., & Chi, J. (2013). Cellphone bans and fatal motor vehicle crash rates in the United States. *Journal of Public Health Policy, 34*(2), 197–212.

McCartt, A. T., Kidd, D. G., & Teoh, E. R. (2014). Driver cellphone and texting bans in the United States: evidence of effectiveness. *Annals of Advances in Automotive Medicine, 58*, 99–114.

McCartt, A. T., Hellinga, L. A., Strouse, L. M., & Farmer, C. M. (2010). Long-term effects of handheld cell phone laws on driver handheld cell phone use. *Traffic Injury Prevention, 11*(2), 133–41.

McCartt, A. T., & Hellinga, L. A. (2007). Longer term effects of Washington DC, law on drivers' hand-held phones. *Traffic Injury and Prevention, 8*(2), 199–204.

McCartt, A. T., Hellinga, L. A., & Bratiman, K. A. (2006). Cell phones and driving: Review of research. *Traffic Injury Prevention, 7*(2), 89-106.

McEvoy, S. P., Stevenson, M. R., McCartt, A. T., Woodward, M., Haworth, C., Palamara, P., & Cercarelli, R. (2005). Role of mobile phones in motor vehicle crashes resulting in hospital attendance: A case-crossover study. *British Medical Journal, 331*(7514), 428-432.

McKnight, A., & McKnight, A. (1993). The effect of cellular phone use upon driver attention. *Accident Analysis and Prevention, 25*(3), 259–265.

Nelson, E., Atchley, P., & Little, T. D. (2009). The effects of perception and risk of answering and initiating a cellular phone call while driving. *Accident Analysis and Prevention, 41*(3), 438–444.

Nemme, H., & White, K. M. (2010). Texting while driving: Psychosocial influences on young people's texting intentions and behavior. *Accident Analysis and Prevention, 42*(4), 1257-1265.

Neyens, D. M., & Boyle, L. N. (2008). The influence of driver distraction on the severity of injuries sustained by teenage drivers and their passengers. *Accident Analysis and Prevention, 40*(1), 254–259.

Nikolaev, A. G., Robbins, M. J., & Jacobson, S. H. (2010). Evaluating the impact of legislation prohibiting hand-held cell phone use while driving. *Transportation Research Part A: Policy and Practice, 44*(3), 182–193.

Nurullah, A. S., Thomas, J., & Vakilian, F. (2013). The prevalence of cell phone use while driving in a Canadian province. *Transportation Research Part F: Traffic Psychology and Behaviour, 19*, 52–62.

Pöysti, L., Rajalin, S., & Summala, H. (2005). Factors influencing the use of cellular (mobile) phone during driving and hazards while using it. *Accident Analysis and Prevention, 37*(1), 47–51.

Recarte, M. A., & Nunes, L. M. (2003). Mental workload while driving: Effects on visual search, discrimination, and decision making. *Journal of Experimental Psychology: Applied, 9*(2), 119–137.

Redelmeier, D. A., & Tibshirani, R. J. (1997). Association between cellular-telephone calls and motor vehicle collisions. *New England Journal of Medicine, 336*(7), 453-458.

Riquelme, H. E., Al-Sammak, F. S., & Rios, R. E. (2010). Social influences among young drivers on talking on the mobile phone while driving. *Traffic Injury Prevention, 11*(2), 127–132.

Stein, A. C., Parseghian, Z., & Allen, R. W. (1987). A simulator study of the safety implications of cellular mobile phone use. In *Proceedings of the 31st Annual Conference of the American Association for Automotive Medicine* (pp. 181–200). Des Plains, IL.

Strayer, D. L., Drews, F. A., & Crouch, D. J. (2006). A comparison of the cell phone driver and the drunk driver. *Human Factors, 48*(2), 381-391.

Strayer, D. L., Drews, F. A., & Johnston, W. A. (2003). Cell phone induced failures of visual attention during simulated driving. *Journal of Experimental Psychology: Applied, 9*, 23–32.

Strayer, D. L., & Johnston, W. A. (2001). Driven to distraction: Dual-task studies of simulated driving and conversing on a cellular phone. *Psychological Science, 12*(6), 462–466.

Stutts, J., Feaganes, J., Reinfurt, D., Rodgman, E., Hamlett, C., Gish, K., et al. (2005). Driver's exposure to distractions in their natural driving environment. *Accident Analysis and Prevention, 37*, 1093–1101.

Törnros, J., & Bolling, A. K. (2006). Mobile phone use – effects of conversation on mental workload and driving speed in rural and urban environments. *Transportation Research Part F: Traffic Psychology and Behaviour, 9*(4), 298–306.

Törnros, J., & Bolling, A. K. (2005). Mobile phone use — effects of handheld and handsfree phones on driving performance. *Accident Analysis and Prevention, 37*(5), 902–909.

Trempel, R. E., Kyrychenko, S. Y., & Moore, M. J. (2011). Does Banning Hand-held Cell Phone Use while Driving Reduce Collisions? *Chance, 34*, 6–11.

Vanlaar, W., Simpson, H. M., Mayhew, D., & Robertson, R. (2006). *The road safety monitor: Distracted driving*. Ottawa: Traffic Injury Research Foundation.

Violanti, J. M., & Marshall, J. R. (1996). Cellular phones and traffic accidents: An epidemiological approach. *Accident Analysis and Prevention, 28*(2), 265–270.

Walsh, S. P., White, K. M., Hyde, K. M., & Watson, B. (2008). Dialing and driving: Factors influence intentions to use a mobile phone while driving. *Accident Analysis and Prevention, 40*(6), 1893–1900.

Walsh, S. P., White, K. M., Watson, B., & Hyde, M. K. (2007). *Psychosocial factors influencing mobile phone use while driving*. Brisbane: Queensland University of Technology.

Walsh, S. P., & White, K. M. (2007). Me, my mobile and I: The role of self and prototypical identity influences in the prediction of mobile phone behavior. *Journal of Applied Social Psychology, 37,* 2405-2434.

Walsh, S. P., & White, K. M. (2006). Ring, ring, why did I make that call? Beliefs underlying Australian university students' mobile phone use. *Youth Studies Australia, 25*(3), 49-57.

Weller, J. A., Shackleford, C., Dieckmann, N., & Slovic, P. (2013). Possession attachment predicts cell phone use while driving. *Health Psychology, 32*(4), 379–387.

White, K. M., Walsh, S. P., Hyde, M. K., & Watson, B. (2012). Connection without caution? The role of mobile phone involvement in predicting young people's intentions to use a mobile phone while driving. *Journal of the Australasian College of Road Safety, 23*(1), 16-21.

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 handheld mobile phone use. *Transportation Research Part F: Traffic Psychology and Behaviour, 13*(1), 9-20.

White, M. P., Eiser, J. R., Harris, P. R., & Pahl, S. (2007). Who reaps the benefits, who bears the risks? Comparative optimism, comparative utility, and regulatory preferences for mobile phone technology. *Risk Analysis, 27*, 741–753.

White, M. P., Eiser, J. R., & Harris, P. R. (2004). Risk perceptions of mobile phone use while driving. *Risk Analysis, 24*, 323–334.

Wilson, F., & Stimpson, J. (2010). Trends in fatalities from distracted driving in the United States, 1999 to 2008. *American Journal of Public Health, 100*(11), 2213-2219.

Zhao, N., Reimer, B., Mehler, B., D'Ambrosio, L. A., & Coughlin, J. F. (2013). Self-reported and observed risky driving behaviors among frequent and infrequent cell phone users. *Accident Analysis and Prevention, 61*, 71–77.

Zhou, R., Wu, C., Rau, P.-L. P, & Zhang, W. (2009). Young driving learners' intention to use a handheld or hands-free mobile phone while driving. *Transportation Research Part F: Traffic Psychology and Behaviour, 12*, 208–217.

## RECOMMANDED READINGS

Amado, S., & Ulupinar, P. (2005). The effects of conversation on attention and peripheral detection: Is talking with a passenger and talking on the cell phone different? *Transportation Research Part F: Traffic Psychology and Behaviour, 8*, 383–395.

Caird, J. K., Willness, C. R., Steel, P., & Scialfa, C. (2008). A meta-analysis of the effects of cell phones on driver performance. *Accident Analysis and Prevention, 40*(4), 1282–1293.

Collet C., Guillot A., & Petit C. (2010a). Phoning while driving I: A review of epidemiological, psychological, behavioural and physiological studies. *Ergonomics, 53*(5), 589-601.

Collet C., Guillot A., & Petit C. (2010b). Phoning while driving II: A review of general driving conditions. *Ergonomics, 53*(5), 602-616.

Hafetz, J.S., Jacobsohn, L.S., Garcia-Espana, J.F., Curry, A.E., & Winston, F.K. (2010). Adolescent drivers' perceptions of the advantages and disadvantages of abstention from in-vehicle cell phone use. *Accident Analysis and Prevention, 42*(6), 1570–1576.

Ishigami, Y., & Klein, R. M. (2009). Is a hands-free phone safer than a handheld phone? *Journal of Safety Research, 40*(2), 157-164.

Ivers, R., Senserrick, T., Boufous, S., Stevenson, M., Chen, H., Woodward, M., et al. (2009). Novice drivers' risky driving behavior, risk perception, and crash risk: Findings from the DRIVE study. *American Journal of Public Health, 99*(9), 1638-1644.

McCartt, A. T., Hellinga, L. A., Strouse, L. M., & Farmer, C. M. (2010). Long-term effects of handheld cell phone laws on driver handheld cell phone use. *Traffic Injury Prevention, 11*(2), 133–41.

McCartt, A. T., Hellinga, L. A., & Bratiman, K. A. (2006). Cell phones and driving: Review of research. *Traffic Injury Prevention, 7*(2), 89-106.

Nelson, E., Atchley, P., & Little, T. D. (2009). The effects of perception and risk of answering and initiating a cellular phone call while driving. *Accident Analysis and Prevention, 41*(3), 438–444.

Pöysti, L., Rajalin, S., & Summala, H. (2005). Factors influencing the use of cellular (mobile) phone during driving and hazards while using it. *Accident Analysis and Prevention, 37*(1), 47–51.

Redelmeier, D. A., & Tibshirani, R. J. (1997). Association between cellular-telephone calls and motor vehicle collisions. *New England Journal of Medicine, 336*(7), 453-458.

Strayer, D. L., Drews, F. A., & Crouch, D. J. (2006). A comparison of the cell phone driver and the drunk driver. *Human Factors, 48*(2), 381-391.

Törnros, J. E. B., & Bolling, A. K. (2005). Mobile phone use — effects of handheld and handsfree phones on driving performance. *Accident Analysis and Prevention, 37*(5), 902–909.

Walsh, S.P., White, K.M., Hyde, K.M., & Watson, B. (2008). Dialing and driving: Factors influence intentions to use a mobile phone while driving. *Accident Analysis and Prevention, 40*(6), 1893–1900.

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 handheld mobile phone use. *Transportation Research Part F: Traffic Psychology and Behaviour, 13*(1), 9-20.

## KEY TERMS

**Cell-phone use**: The use of any mobile device (including smartphones, e.g., iPhone, Blackberry) to answer and initiate calls as well as to send and receive texts.

**Conversation**: Any length of talking on a cell phone.

**Driving**: Operating any type of motor vehicle on the road, including stopping at a red light.

**Safety**: Protection from collisions and injuries.

**Collision**: Hitting or being hit by another vehicle or colliding with a person or property, regardless of whether it results in injuries or not.

**Injury**: Physical harm caused by a collision; can be minor or severe.

**Hand-held**: The use and controlling of a mobile device by hand.

**Hands-free**: The use and controlling of a mobile device without holding it by hand; typically done using voice commands through Bluetooth or wireless technology.