MOUNTAIN-PLAINS CONSORTIUM

MPC 17-323 | D. Sanbonmatsu, D. Strayer, A. Behrends, N. Medeiros-Ward, and J. Watson

Why Drivers Use Cell Phones and Support Legislation to Restrict This Practice

MOUNTAIN-PLAINS CONSORTIUM REGION 8

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April 2017

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ABSTRACT

A study was conducted to investigate why people talk on a cell phone while driving and why they also support legislation to restrict this practice. Participants completed a survey about their driving attitudes, abilities, and behaviors, and performed the OSPAN task. They reported using cell phones for benefits such as connecting with friends and getting work done. They generally acknowledged the risks of using a cell phone while operating a motor vehicle but downplayed them relative to drinking and driving. Regression analyses suggest that people talk on a cell phone, in part, because they believe they are personally capable of driving safely while doing so. However, there was little relation between participants' self-assessments of their ability to drive safely and their actual multitasking ability as measured by the OSPAN task. Participants saw others' usage of cell phones while driving as much riskier than their own. Support for laws to restrict cellular communication was strongly predicted by the perceived threat to public safety presented by others' cell phone usage. In addition, as the perceived benefits of cell phone use decreased, support for legislation increased.

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1. INTRODUCTION

Estimates based upon the 2011 National Occupant Protection Use Survey suggest that at any typical daylight moment, approximately 1.2 million motorists were using their cell phone while driving (Pickrell & Ye, 2013). This is a major public safety issue because of the number of accidents that are attributable to distracted driving (e.g., National Safety Council, 2011) and the substantial body of empirical evidence showing the impairments from talking on a cell phone. Studies of the processes underlying these driving deficits indicate that conversation disrupts scanning and change detection in complex visual scenes (McCarley, et al., 2004), delays the reaction time to imperative events (Caird, Willness, Steel, & Scialfa, 2008; Horrey & Wickens, 2006; Strayer & Johnston, 2001; Strayer, Drews, & Johnston, 2003), and may cause a form of inattention blindness whereby observers often fail to notice information that falls directly in their line of gaze (Strayer & Drews, 2007). In fact, epidemiological studies have reported that the crash risk may rise to the level associated with alcohol's legal limit (Redelmeier & Tibshirani, 1997; McEvoy et al., 2005; see also Strayer, Drews, & Crouch, 2006); however, other methods have reported much lower estimates of crash risk associated with cell phone use (Klauer et al., 2014; Dingus et al., 2006) so the precise crash risk associated with cell phone use is far from settled. Although a great deal is known about the detrimental effects of cellular communication on driving, relatively little research has examined *why* people engage in this hazardous behavior. One of the aims of the reported study was to investigate the motivations underlying the usage of cell phones while driving.

The ubiquity of cell phone use while driving is perplexing because drivers are often cognizant of the risks of this behavior. For example, the vast majority of those surveyed reported that driving while using a cell phone as a very serious (57.7%) or serious (30.9%) threat to their personal safety (AAA Foundation for Traffic Safety, 2013). Moreover, there is an abundance of public service advertisements communicating the dangers of driving and cellular communication (e.g., Zero Fatalities, 2011). In fact, 37 states in the United States restrict cell phone usage for novice drivers, and 14 states and the District of Columbia ban the use of hand-held phones by all motorists (GHSA, 2014). Finally, surveys have shown that an average of 70% of respondents strongly or somewhat strongly support laws restricting hand-held cell phone use by drivers, and approximately 45% of respondents strongly or somewhat strongly support a total ban on cell phone use while driving (AAA Foundation for Traffic Safety, 2013).

The broad support for legislation to limit cellular use while driving is somewhat surprising, because the majority of people engage in the very behavior they would outlaw or restrict (AAA Foundation for Traffic Safety, 2013). The data suggest a "do as I say, not as I do" attitude in which a large percentage of drivers are hypocritical in that they use cell phones during the operation of a motor vehicle while opposing similar behavior by the public. A second major aim of our study was to understand motorists' support for legislation to restrict cell phone use behind the wheel and to explain the inconsistency between what many drivers do versus what they advocate.

2. A STUDY OF DRIVING ATTITUDES, BEHAVIORS, AND ABILITIES

A survey was administered to assess the motivations underlying cell phone use while driving, and the attitudes and beliefs contributing to support for legislation to restrict this practice. Participants were asked to report the risks and benefits of their cell phone use as well as the risks and benefits of others' cell phone use while driving. They also assessed their abilities and other drivers' abilities to drive safely while distracted. Finally, they completed the Operation Span task, which has been used previously to measure multitasking ability (Sanbonmatsu, Strayer, Medeiros-Ward, &Watson, 2013). We assumed that the decision to use a cell phone during the operation of a motor vehicle, like other choices, would be strongly predicted by the perceived costs and benefits of the behavior (e.g, Ajzen & Fishbein, 1980; Einhorn & Hogarth, 1981). We also assumed that support for laws to restrict this practice would be predicted by the perceived consequences of others' usage of cell phones.

Participants were expected to report specific benefits from talking on a cell phone, such as getting work done or connecting with friends, that would be predictive of their self-reported cell phone usage while driving. In contrast, we anticipated they would report benefiting little from other drivers' usage of cell phones. We also expected that drivers would generally be aware of the dangers of talking on a cell phone and that their risk assessments would be negatively correlated with self-reported cellular communication behind the wheel. It was further predicted that participants would see others' usage of cell phones as a much greater threat to public safety than their own usage, and that this would be major contributor to their support for legislation to restrict this behavior.

We hypothesized that disparities between motorists' perceptions of the risks of their talking versus the risks of others talking on a cell phone while driving would stem, in part, from delusions they harbor about their driving abilities. Participants in the study were asked to assess their ability and others' ability to drive safely while distracted. A substantial body of research on self-assessment has shown that people commonly overestimate the favorableness of their abilities, skills, and traits (e.g., Alicke & Govorun, 2005; Dunning, Heath, & Suls, 2004; for limitations, see Moore, 2007) and that, in regard to driving, most individuals perceive themselves to be far better drivers than others (Svenson, 1981). We anticipated that most motorists believe they are capable of driving safely while talking on a cell phone and that this overconfidence contributes to a greater willingness to use cell phones behind the wheel. We further hypothesized that as motorists' confidence increases, their estimations of the risks of cellular communication while driving decrease.

Finally, the study investigated the veracity of peoples' self-assessments of their ability to drive safely while talking on a cell phone by measuring their general multitasking ability. Prior research (Sanbonmatsu et al., 2013) has measured multitasking ability using the Operation Span (OSPAN) task (Engle, 2002), which assesses peoples' ability to perform simultaneously two distinct tasks (memory and math) that compete for limited capacity attention. The two concurrently performed tasks are independent in that they have distinct stimuli (letters and numbers), require different mental transformations (memorization and arithmetic), have different response outputs (memory recall accuracy and math verification accuracy), and are scored separately (i.e., there are independent scores of memory performance and math performance). Following our own previous work (Sanbonmatsu et al., 2013) and prior demonstrations of the tenuous relation between self-assessments and performance (for a review, see Dunning, Heath, & Suls, 2004), we anticipated there would be little correspondence between participants' subjective beliefs about their ability to drive safely while distracted and a more objective index of their ability to multitask as measured by the OSPAN task.

3. METHOD

3.1 Participants

Two hundred and forty-nine University of Utah undergraduates (141 female and 108 male) participated in the IRB approved study for extra course credit. The undergraduates ranged in age from 18 to 44, with an average age of 22. Inclusion in the study was limited to students who owned a cell phone and who drive at least occasionally (i.e., who did not respond "0" when asked "how many minutes per day do you spend driving?"). The undergraduates participated individually in a laboratory setting.

3.2 Procedure

Participants began the "study of driving and driving attitudes" by answering questions on a computer about their driving attitudes and behavior.

Cell phone use while driving. The first set of measures assessed cellular use while driving. Participants indicated "how often do you use your cell phone while driving?" on a 5-point scale anchored by *never/rarely when I drive* and *every time I drive*. They also reported the percentage of the time they are on the phone while driving, if they use their cell phone while driving.

Perceived ability to drive safely while talking on a cell phone. The next set of measures assessed participants' beliefs about their ability and others' ability to drive safely while talking on a cell phone. Participants answered the questions "To what extent are you capable of driving safely while engaging in another task such as talking on the cell phone?" and "To what extent are adults in the general population capable of driving safely while engaging in another task such as talking on the cell phone" on 7-point scales anchored by "1" = *not at all capable* and "7" = *highly capable*. They ranked their ability to drive safely while talking on a cell phone relative to that of other college students on a percentage scale on which 0 indicated *I'm at the very bottom*, 50 indicated *I'm exactly average*, and 100 indicated *I'm at the very top*. They also ranked their abilities relative to other adults in the general population on the same percentage scale.

Support for legislation restricting cell phone use while driving. Participants indicated their agreement with the statements, "Talking on a cell phone is a matter of public safety; laws should be passed to restrict the usage of cell phones and driving" and "I oppose laws that limit the use of cell phones while driving" on a scale containing four possible responses: *strongly disagree*, *disagree, agree*, and *strongly agree*. This 4-point scale was presented on all of the measures of agreement or disagreement.

General attitudes toward talking on a cell phone while driving. Participants indicated their attitudes toward their usage of cell phones while driving and their attitudes toward others' usage of cell phones while driving. Specifically, they reported their agreement with the statements "I like to talk on a cell phone when I am driving," "I feel positively about talking on a cell phone while I drive," "I feel positively about other people talking on a cell phone while they drive," and "I like other people to talk on a cell phone when they are driving."

Perceived benefits of talking on a cell phone while driving. Participants indicated their agreement with the statement "I benefit from talking on a cell phone while I drive." They also conveyed their perceptions of the specific benefits of their cell phone usage while driving by indicating their agreement with the statements, "Talking on a cell phone when I am driving makes driving less boring for me," "Talking on a cell phone when I am driving enables me to connect with friends and family," and "Talking on a cell phone when I am driving enables me to get work or other things done." Finally, they conveyed the

perceived general benefits of others' usage of cell phones while driving by indicating their agreement with the statement, "I benefit from other people talking on a cell phone while they drive."

Perceived risks of talking on a cell phone while driving. Participants reported the perceived costs of their talking on a cell phone while driving by indicating their agreement with the statements, "Talking on a cell phone when I am driving could diminish my standing in my community and my standing among my peers," "Talking on a cell phone when I am driving could have severe negative legal and financial consequences for me," "Talking on a cell phone when I am driving threatens the safety and well-being of other people," and "Talking on a cell phone when I am driving threatens my personal safety and well-being." They also conveyed the perceived risks of others talking on a cell phone while driving by indicating their agreement with the statements, "People talking on a cell phone while driving threatens the safety and well-being of others" and "People talking on a cell phone while driving threatens my personal safety and well-being safety." Finally, participants conveyed their agreement with the statement, "Talking on a cell phone while driving is a socially accepted practice in our country."

Perceived costs of drinking and driving. Participants indicated their agreement with the statements, "Driving when I am intoxicated could have severe negative legal and financial consequences for me," "Driving when I am intoxicated could diminish my standing in my community and my standing amongst my peers," "Driving when I am intoxicated threatens the safety and well-being of other people," and "Driving when I am intoxicated threatens my personal safety and well-being." Additionally, they conveyed their agreement with the statement, "Drinking and driving is a socially accepted practice in our country."

Operation Span task (OSPAN). After completing the questionnaires, participants performed an automated version of the Operation Span (OSPAN) task (Unsworth et al., 2005). Participants were asked to remember a series of three to seven letters that were interspersed with 12 math problems in which an equation and possible solution were presented for verification. They indicated whether the solutions to the math problems were true or false and recalled the letters in the order they were presented. For example, in one sequence, participants were presented with "is (3 / 1) - 1 = 2?" followed by "f" followed by "is (2 * 2) + 1 = 4?" followed by "k" followed by a recall probe. Participants should have answered "true" and "false" to the math problems when they were presented and recalled "f" and "k" in the order they were presented when probed. Trials were pseudorandomized such that participants were unable to predict the set size of upcoming equation–letter pairs. Participants were given points equal to the set size when all of the letters in that set were recalled correctly in serial order (i.e., an absolute span score). Math accuracy was also tracked, and feedback was provided to participants during the task. This feedback was intended to keep problem-solving accuracy above 85% and to encourage participants' compliance with the dual-task math/memory instructions of the OSPAN task.

4. RESULTS

In the measures of agreement and disagreement, a response of *strongly disagree* was coded as a 1, *disagree* was coded as a 2, *agree* was coded as a 3, and *strongly agree* was coded as a 4. Hence, a mean below the midpoint of 2.5 reflected a tendency for participants in the sample to disagree with a statement while a mean above the midpoint 2.5 reflected a tendency for participants to agree with a statement. The mean levels of agreement with the various statements about cell phone use and driving across the sample are presented in Tables 2 and 3.

4.1 Frequency of Participants Using Cell Phones and Supporting Legislation

Participants were asked, "How often do you use your cell phone while driving?" Only 22.5% of participants responded *never or rarely*. The majority (51%) responded *occasionally* while the remaining participants reported using a cell phone *often* (17%), *almost always* (5%), or *always* (4%). The mean reported frequency of cell phone use while driving on the 5-point scale was 2.17 with a standard deviation of .97. Participants also estimated the percentage of time they were on a cell phone while driving (if they were inclined to use their cell phone while driving). They reported being on their phone 15% percent of the time with a standard deviation of 17.9%. The reported frequency of cell phone use while driving was strongly correlated with the reported percentage of the time on the phone while driving, $r(247) = .61$, $p < .001$.[1] Because the estimated percentage of time on the cell phone while driving was limited to participants who used their cell phone while driving, the first and more inclusive question (the reported frequency) was used in the primary analyses.

Participants were categorized dichotomously as either using a cell phone while driving (*occasionally*, *often*, *almost always*, or *always*) or as *never or rarely* using a cell phone while driving. A chi-square analysis indicated that the proportion of participants using a cell phone while driving at least occasionally was significantly greater than the proportion who *never or rarely* did, X^2 (1, $N = 249$) = 75.39, $p < .001$ (see Table 4.1). The proportion of participants using a cell phone vs. not using a cell phone while driving was not found to differ as a function of gender $X^2(1, N = 249) = .01$, $p = .93$.

Participants tended to agree with the statement, "Talking on a cell phone is a matter of public safety; laws should be passed to restrict the usage of cell phones and driving" ($M = 2.79$), and disagree significantly with the statement, "I oppose laws that limit the use of cell phones while driving" ($M = 2.16$). Agreement with the two statements was highly negatively correlated, $r(247) = -.73$, $p < .001$. Consequently, the latter was reverse coded and the two items were averaged to create a general index of support for legislation to restrict cell phone use while driving. Participants were then categorized dichotomously as either supporting ($M > 2.5$) or not supporting legislation ($M <$ or $= 2.5$) to restrict the usage of cell phones while driving. A chi square analysis indicated that there was a higher proportion of participants supporting legislation than not supporting legislation, X^2 (1, $N = 249$) = 13.98, $p < .001$ (see Table 4.1). The support for legislation to impose restrictions did not vary as a function of gender, $x^2(1, N = 249) = 1.59$.

[1] Following Cohen (1988, see also Rosenthal, 1996), we interpret a correlation of .1 as a small/weak effect, a correlation of .3 as a medium/modest effect, a correlation of .5 as a large/strong effect, and a correlation 0.7 or larger as a very large effect.

Table 4.1 Number of participants using a cell phone while driving and supporting legislation restricting cell phone use while driving

		Use cell phone while driving?		
		No	Yes	Total
Support legislation restricting cell phone use?	No	12	83	95
	Yes	44	110	154
Total		56	193	249

From Table 4.1 it is apparent that the largest category of participants reported using cell phones behind the wheel while simultaneously supporting legislation to restrict usage of cell phones. Thus, the largest proportion were "hypocrites" of sorts who advocated driving laws and policies that were inconsistent with their actual driving practices.

The frequency of cell phone use while driving was negatively correlated with support for legislation to restrict the usage of cell phones, $r(247) = -.33$, $p < .001$. Thus, users of cell phones while driving tended to be less supportive of legislation than non-users.

4.2 General Attitudes Toward Cell Phone Use While Driving

Participants tended to disagree with the statements, "I like to talk on a cell phone when I am driving" ($M = 2.27$) and "I feel positively about talking on a cell phone while I drive" ($M = 2.27$). Their responding to the two statements was highly correlated, $r(247) = .69$, $p<.001$. Consequently, the responses were averaged to create a composite measure of attitudes toward self-usage of cell phones while driving. Participants generally disagreed strongly with the statements, "I like other people to talk on a cell phone when they are driving" ($M =1.67$) and "I feel positively about other people talking on a cell phone while they drive" ($M = 1.76$), indicating that their attitudes toward others' usage of cell phones was decidedly negative. Because responses to the two statements were highly correlated, $r(247) = .70$, $p < .001$, they were averaged to create a composite measure of attitudes toward others' usage of cell phones while driving.

A t-test comparison between general attitudes toward self-usage of cell phones versus attitudes toward others' usage of cell phones indicated that participants felt much more negatively about others talking on cell phones than their own talking on cell phones while driving, $t(248) = 14.92$, $p <.001$. Nevertheless, attitudes toward personal usage of cell phones and attitudes towards others' usage were highly positively correlated, $r(247) = .56$, $p < .001$. Thus, when participants felt positively about their own use of cell phones behind the wheel, they tended to feel positively about others' use of cell phones.

4.3 Perceived and Actual Ability to Drive Safely While Using a Cell Phone

Participants ranked their ability to drive safety while distracted relative to adults and relative to other college students on a percentile scale on which 0% indicated *I'm at the bottom* and 100% indicated *I'm at the very top.* Their percentile ranking of their distracted driving ability relative to that of other

college students (M = 63.84) was highly correlated with their percentile ranking relative to adults in the general population (M = 62.38), $r(247) = .93$, $p < .001$. Consequently, the two percentage estimates were averaged to create a general percentile self-ranking of distracted driving ability. The mean percentage estimate across all participants was 63.0 (SD = 20.08). A score of 50 on the measure was *exactly average*. A comparison of the mean percentage estimate with 50 indicated that participants generally estimated their ability to drive safely while distracted to be significantly higher than average, $t(248) = 10.3$, $p < .001$. Of the 249 total participants, 35 estimated that their ability was below average, 54 estimated that they were exactly average, and 160 estimated that they were above average. A binomial test indicated that significantly more participants judged their distracted driving ability was better than average than would be expected by chance, $p < .001$. Thus, participants in our study substantially overestimated their ability to drive safely while distracted.

Participants also judged, "To what extent are you capable of driving safely while engaging in another task such as talking on the cell phone?" and "To what extent are adults in the general population capable of driving safely while engaging in another task such as talking on the cell phone" on a 7-point scale anchored by *not at all capable* and *highly capable*. Comparisons with the midpoint on the scale (4) revealed that participants tended to believe they were capable of driving safely while using a cell phone, $M = 4.88$, $t(248) = 10.46$, $p < .001$, but others were not capable of driving safely while using a cell phone, $M = 3.70$, $t(248) = 3.88$, $p < .001$. A t-test indicated that participants perceived they were significantly more capable of driving safely while engaging in another task than others, $t(248) = 15.19$, $p < .001$. Nevertheless, participants' judgments of their own ability to drive safely while distracted and their judgments of others were highly correlated, $r(248) = .54$, $p < .001$. When participants perceived themselves to be capable of driving safely while talking on a cell phone, they tended to also see others as being similarly capable.

Participants' judgments of their ability to drive safely on the 7-point scale were highly correlated with their mean percentile ranking of their distracted driving ability, $r(247) = .66$, $p < .001$. Thus, there was a high degree of convergence between the two different self-assessments of the ability to drive safely while distracted. Because the 7-point scale measure of the ability to drive distracted was a companion measure to the perceived capacity of others to drive distracted (which was expected to be an important predictor of support for legislation), it was featured in the subsequent analyses.

The OSPAN task served as our measure of multitasking ability. Following Unsworth et al. (2005), 61 participants who failed to correctly verify at least 80% of the math problems were excluded from the analysis (final N=249; 108 males and 141 females). The number of memory words recalled in the correct order was summed to determine the absolute OSPAN task score. This is the measure most commonly used in the literature (Unsworth et al., 2005) and the measure used in the primary analyses. The absolute score was highly correlated with the total score, $r(247) = .88$, $p < .001$, which sums all of the letters correctly recalled in serial order. The mean absolute score was 44 with a standard deviation of 16, and the mean total score was 59 with a standard deviation of 13. Participants' actual multitasking ability, as measured by the OSPAN, was not significantly correlated with their perceptions of their ability to drive safely

while distracted, $r(248) = -.08$, or their perceptions of others' ability to drive safely while distracted. $r(247) = -08$. Note that, if anything, the correlations were slightly negative.

4.4 Perceived Benefits and Costs of Cell Phone Use While Driving

Participants tended to disagree slightly with the statement, "I benefit from talking on a cell phone while I drive," and disagree strongly with the statement, "I benefit from other people talking on a cell phone while they drive" (see Table 4.2). A comparison of their agreement with the two statements revealed that participants perceived that they benefitted more from their talking on a cell phone than from others talking on a cell phone, $t(248) = 9.37$, $p < .001$. Participants tended to disagree with the statement, "Talking on a cell phone when I am driving makes driving less boring for me." However, they were inclined to agree with the statements, "Talking on a cell phone when I am driving enables me to connect with friends and family" and "Talking on a cell phone when I am driving enables me to get work or other things done."

Table 4.2 Perceived benefits of talking on a cell phone while driving

	Mean	SD	Comparison with midpoint (*t*)
I benefit from talking on a cell phone while I drive	2.22	.76	5.86***
I benefit from other people talking on a cell phone while they drive	1.74	.70	17.06***
Talking on a cell phone when I am driving makes driving less boring for me	2.32	.81	3.57***
Talking on a cell phone when I am driving enables me to connect with friends and family	2.70	.74	4.32***
Talking on a cell phone when I am driving enables me to get work or other things done	2.60	.83	2.11*

Notes: N = 249

*Significant at $p < .05$ level ***Significant at $p < .001$ level

Participants generally recognized that using a cell phone while operating a motor vehicle is risky (see Table 4.3). They tended to agree with the statements, "Talking on a cell phone when I am driving could have severe negative legal and financial consequences for me," "Talking on a cell phone when I am driving threatens the safety and well-being of other people," and "Talking on a cell phone when I am driving threatens my personal safety and well-being." However, they tended to disagree with the statement, "Talking on a cell phone when I am driving could diminish my standing in my community and my standing among my peers."

Participants perceived even greater risk in others' usage of cell phones while driving. For example, they conveyed significant agreement with the statement, "People talking on a cell phone while driving threatens my personal safety and well-being safety," which exceeded their agreement with the statement, "Talking on a cell phone when I am driving threatens my personal safety and well-being," $t(248) = 3.68$, $p < .001$. Thus, participants generally perceived that others' usage of cell phones while driving was a threat to the safety of the public and themselves, and that this was a much greater safety threat than their own personal usage of cell phones.

Although participants perceived others' usage of cellular communications while driving to be a substantially greater threat to safety than their own usage, the two beliefs were highly correlated. For example, participants who believed that others' usage of cell phones was a threat to public safety also believed that their personal usage of cell phones was a threat to the safety of others, $r(247) = .64$, $p < .0001$.

Table 4.3 Perceived risks of talking on a cell phone while driving versus driving while intoxicated

	Mean	SD	Comparison with midpoint (*t*)
Risks of talking on a phone while driving			
Talking on a cell phone when I am driving could diminish my standing in my community and my standing among my peers	2.12	.70	8.64***
Talking on a cell phone when I am driving could have severe negative legal and financial consequences for me	2.96	.76	9.42***
Talking on a cell phone when I am driving threatens the safety and well-being of others	3.13	.70	14.19***
Talking on a cell phone when I am driving threatens my personal safety and well-being	3.06	.73	12.07***
People talking on a cell phone while driving threatens the safety and well-being of others	3.23	.60	19.31***
People talking on a cell phone while driving threatens my personal safety and well-being	3.19	.62	17.32***
Talking on a cell phone while driving is a socially accepted practice in our country	2.90	.69	9.20***
Risks of drinking and driving			
Driving when I am intoxicated could have severe negative legal and financial consequences for me	3.85	.44	48.73***
Driving when I am intoxicated could diminish my standing in my community and my standing amongst my peers	3.62	.64	27.42***
Driving when I am intoxicated threatens the safety and well-being of other people	3.85	.40	53.43***
Driving when I am intoxicated threatens my personal safety and well-being	3.86	.40	54.74***
Drinking and driving is a socially accepted practice in our country	1.66	.74	17.87***

Notes: N = 249

***Significant at $p < .001$ level

Participants were well aware of the risks of drinking and driving. They agreed strongly with the statements, "Driving when I am intoxicated could have severe negative legal and financial consequences for me," "Driving when I am intoxicated could diminish my standing in my community and my standing amongst my peers," "Driving when I am intoxicated threatens the safety and well-being of other people," and "Driving when I am intoxicated threatens my personal safety and well-being." Unlike cell phone usage while driving, drinking and driving was not perceived to be "a socially accepted practice in our country."

Comparisons with the perceived risks of using a cell phone while driving revealed that drinking and driving was believed to be a greater threat to the safety and well-being of others, $t(248) = 16.42$, $p < .001$, a greater threat to participants' personal safety and well-being, $t(248) = 17.69$, $p < .001$, more likely to entail negative legal and financial consequences, $t(248) = 17.52$, $p < .001$, and more likely to diminish standing in the community, $t(248) = 26.51$, $p < .001$. Not surprisingly, driving while intoxicated was also perceived to be much less socially acceptable than using a cell phone and driving, $t(248) = 21.79$, $p < .001$.

4.5 Predictors of Self-Reported Use of Cell Phones While Driving

A series of correlational analyses examined the important predictors of cell phone use and attitudes toward cell phone use while driving. These correlations were accompanied by a set of companion analyses comparing participants who reported using cell phones vs. participants who reported never or rarely using cell phones while driving. These analyses and means are presented in Table 4.4.

Not surprisingly, participants' attitudes toward their usage of cell phones while driving and their self-reported usage of cell phones while driving were highly correlated, $r(247) = .61$, $p < .001$. Because these two variables were strongly statistically and theoretically related, they were similarly predicted by the exact same set of variables. The predictors of cell phone use that are described below also predicted general attitudes toward cell phone use and driving.

Talking on a cell phone while driving was strongly predicted by the perceived benefits of cell phone use. Participants who talk on a cell phone while driving were much more likely than those who do not talk on a cell phone to report benefiting from both their personal use of cell phones and others' use of cell phones. Moreover, they were much more apt to believe that talking on a cell phone makes driving less boring, connects them with friends and family, and enables them to get more done.

Cell phone use while driving was negatively correlated with the perceptions of the risks of cell phone usage. Participants who use cell phones while driving were less likely than non-users to see their personal use of a cell phone as a threat to their safety and the safety of others. They were also less likely to see others' use of a cell phone as a threat to their safety and others' safety. Moreover, they were less apt to believe that their use of phones while driving could diminish their standing in their communities and among their peers, and more likely to believe that talking on a cell phone while driving is a socially acceptable practice, though the latter dichotomous comparison between users and non-users of cell phones was not significant.

Table 4.4 Correlations of attitudes toward and frequency of cell phone use while driving, and comparison of mean beliefs of participants who use or do not use cell phones while driving

	Attitudes toward self-usage of cell phone while driving (correlations)	Frequency of cell phone usage while driving (correlations)	Beliefs of participants who use cell phones while driving (means)	Beliefs of participants who do not use cell phones while driving (means)	Comparison users vs. non-users (*t*)
Ability to drive safely while using a phone					
Perceived ability to drive safely while distracted	.44**	.43**	5.15	3.95	6.45***
Perceived ability of others to drive safely while distracted	.22**	.16*	3.86	3.14	3.97***
Multitasking ability (OSPAN performance)	-.20**	-.16*	43.38	44.41	0.41
Benefits of talking on phone while driving					
I benefit from talking on a cell phone while I drive	.41**	.37**	2.36	1.73	5.74***
I benefit from other people talking on a cell phone while they drive	.33**	.25**	1.83	1.43	3.93***
Talking on a cell phone when I am driving makes driving less boring for me	.47**	.29**	2.44	1.89	4.65***
Talking on a cell phone when I am driving enables me to connect with friends and family	.50**	.36**	2.84	2.23	5.74***
Talking on a cell phone when I am driving enables me to get work or other things done	.51**	.50**	2.80	1.96	7.32***

Table 4.4 (continued)

	Attitudes toward self-usage of cell phone while driving (correlations)	Frequency of cell phone usage while driving (correlations)	Beliefs of participants who use cell phones while driving (means)	Beliefs of participants who do not use cell phones while driving (means)	Comparison users vs. non-users (*t*)
Costs of talking on phone while driving					
Talking on a cell phone when I am driving could diminish my standing in my community and my standing among my peers	-.16*	-.20**	2.07	2.29	2.07*
Talking on a cell phone when I am driving could have severe negative legal and financial consequences for me	-.12	-.06	2.90	3.00	0.49
Talking on a cell phone when I am driving threatens the safety and well-being of others	-.34**	-.25**	3.03	3.49	4.38***
Talking on a cell phone when I am driving threatens my personal safety and well-being	-.36**	-.20**	2.96	3.39	4.05***
People talking on a cell phone while driving threatens the safety and well-being of others	-.29**	-.16*	3.19	3.38	2.10*
People talking on a cell phone while driving threatens my personal safety and well-being	-.29**	-.17**	3.15	3.38	2.47*
Talking on a cell phone while driving is a socially accepted practice in our country	.21**	.17**	2.91	2.88	0.31

Notes: N = 249 *Significant at $p < .05$ level, **Significant at $p < .01$ level, ***Significant at $p < .001$ level

Cell phone use while driving was positively correlated with the *perceived* ability to drive safely when distracted. Participants who talk on cell phones behind the wheel were much more likely to believe they could drive safely while distracted than participants who do not use cell phones. They were also more likely to believe that others could drive safely while distracted.

Cell phone use while driving was negatively correlated with the actual ability to multitask as measured by the OSPAN task.[2] Cell phone use increased as the actual ability to multitask decreased, though the dichotomous comparison between frequent and non-frequent cell phone users was not significant. Thus, the usage of cell phones appears to be motivated more by people's self-conceptions of their ability to drive safely when distracted than by their actual multitasking ability.

4.6 Predictors of Support for Legislation to Restrict the Use of Cell Phones While Driving

Table 4.5 presents the predictors of participants' attitudes toward others' use of cell phones and their support for legislation restricting the use of cell phone use while driving. A companion analysis compared participants who support legislation and who do not support legislation to restrict cell phone usage.

Attitudes toward others' usage of cell phones while driving were negatively correlated with their support for legislation to restrict the use of cell phones while driving, $r(247) = -.45$, $p < .001$. As the favorableness of participants' evaluations of others using a cell phone decreased, their support for legislation increased. Participants' attitudes toward their own usage of cell phones were also highly negatively correlated with their support for legislation to restrict the use of cell phones while driving, $r(247) = -.46$, $p < .001$. Hence, when participants felt negatively about talking on a cell phone while driving, they were more supportive of legislation to restrict cell phone usage. Both attitudes toward others' usage of cell phone and attitudes toward their own usage of cell phones were similarly predictive because they were strongly correlated with one another $r(247) = .56$, $p < .001$; if participants personally favored using cell phones behind the wheel, they favored others' usage of cell phones behind the wheel.

The support for legislation restricting the usage of cell phones was moderately related to the perceived risks and benefits of others' usage of cell phone behind the wheel. Supporters of legislation were much more likely to see others' use of cell phones as a threat to their safety and the safety of others. They were also more likely to see their own use of a cell phone as a threat to their safety and others' safety. In addition, they were more apt to believe that their use of phones while driving could diminish their standing, and have negative legal and financial consequences.

The perceived ability to drive safely while distracted was strongly predictive of support for legislation to restrict cell phone usage. Participants who supported legislation were much less likely than non-supporters to perceive that they and others were capable of driving safely while distracted. The support for laws to restrict the use of cell phones was not significantly correlated with the actual ability to multitask as measured by the OSPAN.

[2] This facet of the data was previously discussed by Sanbonmatsu et al. (2013).

Table 4.5 Correlations of attitudes toward others' use of cell phones and support for legislation restricting cell phone use, and comparison of mean beliefs of participants who support or do not support legislation restricting the use of cell phones while driving

	Attitudes toward others' phone usage while driving (correlations)	Support for laws restricting phone usage while driving (correlations)	Beliefs of participants who support legislation restricting cell phone use (means)	Beliefs of participants who do not support legislation restricting cell phone use (means)	Comparison supporters vs. non-supporters (*t*)
Ability to drive safely while using a phone					
Perceived ability to drive safely while distracted	.26**	-.38**	4.51	5.48	6.04***
Perceived ability of others to drive safely while distracted	.34**	-.28**	3.45	4.11	4.25***
Multitasking ability (OSPAN performance)	-.13*	.12	44.42	42.31	0.98
Benefits of talking on phone while driving					
I benefit from talking on a cell phone while I drive	.30**	-.42**	2.01	2.55	5.71***
I benefit from other people talking on a cell phone while they drive	.48**	-.45**	1.55	2.05	5.84***
Talking on a cell phone when I am driving makes driving less boring for me	.35**	-.28**	2.16	2.57	3.97***
Talking on a cell phone when I am driving enables me to connect with friends and family	.35**	-.36**	2.54	2.97	4.62***
Talking on a cell phone when I am driving enables me to get work or other things done	.40**	-.28**	2.50	2.79	2.72**

Table 4.5 (continued)

	Attitudes toward others' phone usage while driving (correlations)	Support for laws restricting phone usage while driving (correlations)	Beliefs of participants who support legislation restricting cell phone use (means)	Beliefs of participants who do not support legislation restricting cell phone use (means)	Comparison supporters vs. non-supporters (*t*)
Costs of talking on phone while driving					
Talking on a cell phone when I am driving could diminish my standing in my community and my standing among my peers	-.07	.20**	2.21	1.97	2.65**
Talking on a cell phone when I am driving could have severe negative legal and financial consequences for me	-.09	.27**	3.10	2.72	4.01***
Talking on a cell phone when I am driving threatens the safety and well-being of others	-.33**	.47**	3.36	2.76	8.04***
Talking on a cell phone when I am driving threatens my personal safety and well-being	-.28**	.47**	3.30	2.66	7.63***
People talking on a cell phone while driving threatens the safety and well-being of others	-.33**	.54**	3.44	2.88	7.26***
People talking on a cell phone while driving threatens my personal safety and well-being	-.53**	.51**	3.41	2.85	7.39***
Talking on a cell phone while driving is a socially accepted practice in our country	.09	-.13*	2.85	2.98	1.44

Notes: N = 249 *Significant at $p < .05$ level, **Significant at $p < .01$ level, ***Significant at $p < .001$ level

Finally, support for legislation was strongly predicted by the perceived benefits of cell phone use while driving. Supporters of legislation were much more likely than non-supporters to believe that the benefits of others' usage of cell phones while driving are low. They were also less likely to believe that they generally benefited from their personal usage of cell phones, and that talking on a cell phone has specific benefits such as facilitating work.

4.7 The Relation Between the Perceived Ability to Drive Safely and the Perceived Risks of Distracted Driving

We anticipated that the perceived risks of talking on a cell phone would be dependent on the perceived ability to drive safely while distracted. As expected, self-assessments of the ability to drive safely while distracted were negatively correlated with the beliefs that talking on a cell phone were a threat to the safety and well-being of self, $r(249) = -.36$, $p < .001$, and others, $r(249) = -.38$, $p < .001$. Perceived ability was also significantly negatively correlated with the beliefs that talking on a cell phone could have severe legal and financial consequences, $r(249) = -.18$, $p = .004$, and diminish standing, $r(249) = -.18$, $p = .004$. Perceptions of others' ability to drive safely while distracted were similarly negatively correlated with the beliefs that others talking on a cell phone were a threat to the safety and well-being of self, $r(249) = -.26$, $p < .001$, and others $r(249) = -.25$, $p < .001$. In contrast, the objective ability to multitask as measured by the OSPAN was not significantly correlated with the belief that talking on a cell phone was a threat to the safety and well-being of self, $r(249) = -.03$, $p = .43$, or others, $r(249) = -.05$, $p = .64$.

4.8 Multiple Regression Analyses

In the final set of analyses, multiple linear regression was used to determine the unique contributors to cell phone use while driving. Based upon the univariate analyses reported above, cell phone use while driving was regressed on the perceived ability of both self and others to drive safely while distracted, multitasking ability (OSPAN), the various perceived costs to both self and others of using a cell phone while driving, and the perceived benefits of using a cell phone while driving. General attitudes toward cell phone use while driving were not included in the analysis because attitudes were found to be a broad construct that was closely linked to cell phone use while driving that was predicted by the same set of variables. The standardized beta coefficients for the regression analysis are provided in Table 4.6. The overall regression model was highly significant, $F(15, 233) = 10.00$, $p < .001$, $R = 0.62$, $SE = 0.78$; over 39% of the variance in self-reported cell phone use while driving was accounted for by the predictors. An examination of the beta coefficients indicates that one of the strongest independent predictors of cell phone use while driving was participants' assessments of their ability to drive safely while distracted. As individuals' confidence in their ability to drive safely increases, their willingness to talk on a cell phone increases. Cell phone use while driving was also independently predicted by the perceived benefits of cell phone use. One of the strongest of these predictors was participants' belief that they could get work and other things done by talking on a cell phone while driving.

Table 4.6 Linear regression standardized beta coefficients and corresponding t-scores of the significant independent predictors of frequency of cell phone use while driving

	Beta	t-score
Perceived ability to drive safely while distracted	.296	4.30***
Multitasking ability (OSPAN performance)	-.129	2.40*
I benefit from talking on a cell phone while I drive	.146	2.13*
Talking on a cell phone when I am driving enables me to get work or other things done	.289	4.21***
Talking on a cell phone when I am driving could diminish my standing in my community and my standing among my peers	-.147	2.50*

Note: Beta refers to the standardized coefficients

*Significant at $p < .05$ level, **Significant at $p < .01$ level, ***Significant at $p < .001$ level

A similar regression analysis examined the contributors to support for legislation restricting the usage of cell phones while driving. All of the factors that were significantly correlated with this variable in the previous univariate analyses were included in the model. General attitudes toward usage of cell phones while driving were not included in the analysis because they were closely linked to legislative support and predicted by the same set of variables. As expected, the regression equation was highly significant, $F(15, 233) = 14.23$, $p < .001$, $R = 0.68$, $SE = 0.51$, as the predictors accounted for 46% of the variance. Examination of the beta coefficients (see Table 4.7) indicates that one of the strongest independent predictors of support for legislation was the belief that other drivers' usage of cell phones is a threat to public safety. The extent to which participants perceived they personally benefited from others' cellular communications while driving also independently and negatively predicted support for legislation to restrict the use of cell phones behind the wheel. Finally, participants' belief in their ability to drive safely while distracted, and beliefs that they benefited personally from talking on a cell phone while driving, also independently predicted support for the passage of laws to restrict cell phone use.

Table 4.7 Linear regression standardized beta coefficients and corresponding t-scores of the significant independent predictors of support for laws restricting cell phone use while driving

	Beta	t-score
Perceived ability to drive safely while distracted	-.185	2.88**
I benefit from talking on a cell phone while I drive	-.162	2.52*
I benefit from other people talking on a cell phone while they drive	-.191	3.18**
Talking on a cell phone when I am driving enables me to connect with friends and family	-.159	2.45*
Talking on a cell phone when I am driving enables me to get work or other things done	.128	1.98*
People talking on a cell phone while driving threatens the safety and well-being of others	.320	2.74**

Note: Beta refers to the standardized coefficients

*Significant at $p < .05$ level, **Significant at $p < .01$ level

As we indicated above, perceptions of others' ability to drive safely while distracted were negatively correlated with the belief that others' usage of cell phones is a threat to the safety and well-being of others. Moreover, both perceptions of others' ability to drive safely while distracted and the belief that others' usage of cell phones is a threat to the safety and well-being of others were predictive of support for legislation to restrict cell phone use while driving. A bootstrapping analysis (Preacher & Hayes, 2004) was performed to test whether the belief that others' usage of cell phones is a threat to the safety and well-being of others mediated the relation between perceptions of others' ability to drive safely while distracted and support for legislation. We used 10,000 resamples to create confidence limits for mediated effects. Consistent with partial mediation, the bias corrected bootstrap illustrated in Figure 4.1 indicated that the indirect effect of the belief that others' usage is a threat to safety and well-being on the link between perceptions of others' ability to drive safely while distracted and support for legislation was significant (indirect effect= -.08, 95% CI: -.14 to -.02).

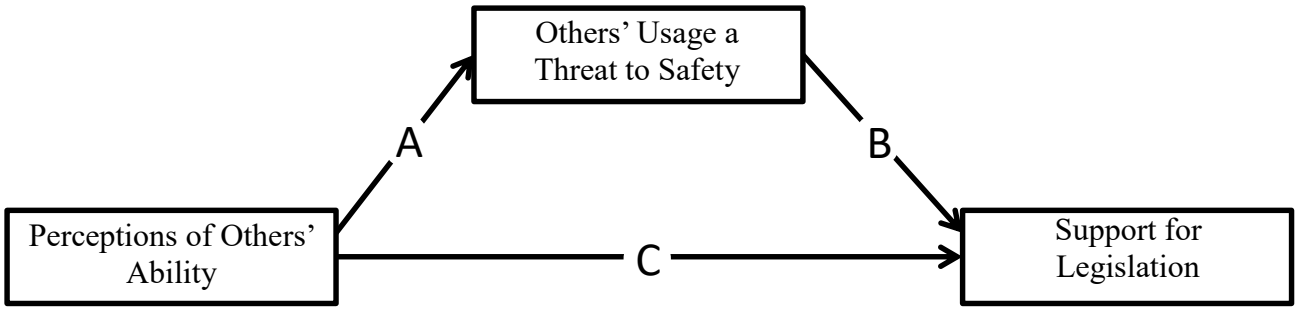

Figure 4.1 Illustration of the mediation model where the belief that others' usage is perceived as a threat mediates the relationship between the perceptions of others' ability to driving safely while distracted and the support for legislation regulating the use of cell phones.

5. DISCUSSION

Our study of driving attitudes and beliefs helps to explain why people talk on a cell phone at least occasionally while driving (78% in our sample) and why people support legislation to restrict this practice (62% in our sample). The measures of the perceived benefits and risks of cell phone use while driving and perceived and actual multitasking ability together accounted for almost 40% of the variance of self-reported cellular communication while driving and about 45% of the variance of support for laws to restrict cell phone use. Thus, a broad and important set of contributors were identified and reported in the results. The discussion will attempt to summarize the central patterns of driving attitudes, abilities, and beliefs predicting cell phone use while driving and support for legislation to limit this practice.

The findings suggest that drivers are motivated to use cell phones by a variety of perceived benefits. Drivers commonly talk on cell phones to connect with family and friends, alleviate boredom, and get work done. The regression analyses indicate that the ability to get work and other things done was one of the strongest independent predictors of cell phone use while driving. Drivers generally recognize the risks of cellular communication during the operation of a motor vehicle. Even participants who reported using a cell phone while driving tended to acknowledge that their behavior is not safe. Moreover, participants often believed that talking on a cell phone could have negative legal and financial consequences. Most of these perceived risks were significantly negatively correlated with self-reported cell phone usage while driving. However, many motorists appear to downplay the risks of their personal use of cellular communications. They believe that cell phone use is not nearly as dangerous as drinking and driving. Moreover, drivers saw others' usage of cell phones as much riskier than their own.

Most participants believe they can drive safely while using a cell phone and overestimate their ability to do so relative to others. The more participants' self-assessments were inflated, the more likely they were to report using a cell phone while driving. As expected, these self-assessments were negatively correlated with estimations of the risks and positively correlated with estimations of the benefits of cellular communication while driving. However, our findings suggest there is little relation between individuals' conceptions of their ability to drive safely while distracted and their actual ability to multitask as measured by the OSPAN task. Even more alarmingly, multitasking ability was negatively correlated with participants' self-reported usage of cell phones while driving. The regression analysis indicated that participants' confidence in their ability to drive safely while distracted was one of the strongest independent predictors of their usage of cell phones. Thus, cell phone usage appears to be motivated more by people's misconceptions about their ability to drive safely when distracted than by their actual multitasking ability.

Support for legislation to restrict cellular communication while driving was heavily driven by the perceived risks and benefits of others' usage of cell phones. Although motorists are confident in their personal driving abilities, they do not believe that other people are generally capable of driving safely while talking on a cell phone. This belief about others' inability to drive safely while distracted was highly positively correlated with estimations of the risks and negatively correlated with perceptions of the benefits of others' usage of cellular communications while operating a motor vehicle. The belief that others' use of cell phones while driving is a threat to

the safety and well-being of others was one of the strongest independent predictors of support for laws to restrict cell phone use. Most participants also reported that they did not benefit from other people's usage of cell phones while driving. As the perceived benefits of personal and others' usage of cellular communications decreased, support for legislation to restrict cell phone use while driving increased.

The study provides an initial account for why people use cell phones while driving and why they generally support legislation to restrict this behavior. However, caution should be exercised in drawing conclusions about the causality of the predictors because the data were entirely correlational. The causal relations between some of the predictor variables and our measures of cell phone usage and support for legislation are actually likely to be bidirectional. For example, the negative correlation between cell phone usage and perceived risk may stem, in part, from the effort of drivers to rationalize their cell phone behavior. A second limitation with our study is the reliance on self-reports. We assumed that participants faithfully reported their cell phone use and their driving attitudes and beliefs, and that they were aware of the benefits and costs shaping their behavior. Our concerns about this methodological problem are somewhat diminished by the likelihood that the social desirability pressures that commonly bias more socially sensitive surveys are less apt to have operated in the self-reporting of driving behaviors and attitudes. Although our study was characterized by these methodological shortcomings, the alternatives to the correlational, self-report approach that was taken are somewhat limited. Manipulation of the dangers and benefits of cell phone use on our roadways in an experiment was not very feasible and unlikely to have generated an enthusiastic institutional review board response. Moreover, an experimental design would have severely restricted the scope of the benefits and costs that could have been investigated.

Another potential limitation of the current research is that participants were drawn from a pool of undergraduates from the University of Utah between the ages of 18 and 40. One way to determine the degree to which the data obtained in our study are representative of the population at large is to compare similar items on our survey with those from the Safety Culture Survey (SCS) conducted by AAA (AAA Foundation for Traffic Safety, 2013). The SCS used a nationally representative sample of 3,303 U.S. resident drivers between the ages of 16 and 75. When asked, "In the past 30 days, how often have you talked on a cell phone while you were driving," 69% of those surveyed in the SCS answered in the affirmative, whereas our survey queried, "How often do you use your cell phone while driving," and found that 78% answered "occasionally," "often," "almost always," or "always." Our higher usage rates may be due to the younger cohort in our sample. The SCS also asked respondents, "How strongly do you support or oppose having a law against using a hand-held cell phone while driving for all drivers regardless of age," with 66.5% indicating some level of support and 49% supporting a total ban on cell phone use while driving. In our survey, we found that 62% endorsed the statement that "Talking on a cell phone is a matter of public safety; laws should be passed to restrict the usage of cell phones and driving." Finally, in our survey, the item, "People talking on a cell phone while driving threatens my personal safety and well-being," had a mean of 3.19 with a standard deviation of 0.62. By contrast, the SCS item, "How much of a threat to your personal safety are drivers talking on a cell phone," had a rating of 3.44, a difference that is within one-half standard deviation of the rating on our survey. Thus, there is reasonably good agreement between the

ratings on similar items on the nationally representative SCS and the questions used in our survey.

Research is beginning to provide a more complete picture of why and when people multitask. Our previous work (Sanbonmatsu et al., 2013) suggests that people often get involved in multiple tasks because of the self-regulatory challenges of focusing on one activity at a time and inhibiting secondary task involvement (see also Ophir, Nass, & Wagner, 2009). In addition, people are often motivated by the stimulation or sensation of performing multiple tasks simultaneously. The present research indicates that the likelihood of multitasking is heavily determined by the perceived costs and benefits of taking on many tasks simultaneously. Individuals are especially likely to engage in multiple tasks, such as talking on a cell phone and driving, when the benefits are perceived to be high and the risks are underestimated. The findings suggest that overconfidence in the ability to perform multiple tasks increases the willingness to multitask.

The findings help to explain the apparent inconsistency between peoples' usage of cell phones and their support for legislation to restrict this practice. Although most persons are confident about their own ability to drive safely while distracted, they believe that others' cellular usage is a serious threat to public safety. Moreover, people report benefiting in many specific ways from their talking on cell phones but do not believe they benefit from others talking on cell phones while driving. The general support for legislation suggests that most people are willing to give up their own usage of cell phones if the threat to public safety presented by others' usage of cell phones is diminished.

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