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# Evaluation of EndDD.org's Student Awareness Initiative: Effectiveness of a Program to Prevent Teen Distracted Driving

## Final Report
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# Background and Significance

Motor vehicle crashes (MVCs) continue to be the leading cause of death for adolescents (Centers for Disease Control and Prevention, 2013). In the U.S. in 2012, approximately 2800 teens, ages 13-19 years, were killed in MVCs (Insurance Institute for Highway Safety (IIHS), 2014). Of these deaths, over 1,000 were passengers. Furthermore, over half (54%) of these teen passenger deaths occurred when a teenager was driving (IIHS, 2014). In addition to these 551 teen passenger fatalities at the hands of a teen driver, 265 passengers, of all other ages, were killed in MVCs with a teen driver. Thus, adolescents were the drivers in 14% of all passenger deaths and also constitute 17% of all passenger deaths. These statistics paint a powerful picture of teens as dangers on the road as well as victims. On one hand, teens need to become safer drivers to protect themselves and others; on the other hand, as possible victims, teens may need to be more vocal in the car about asking for, even demanding, safe focused driving from their driver.

Knowing what causes teens to crash can directly inform the content and nature of programs developed to improve the safety of teen driving. This study, and the program examined in it, focus on one major factor contributing to crash risk: distracted driving. Crash risk for teen drivers is at its highest during the first six months of independent driving (Gregersen, Nyberg, & Berg, 2003) when they are most inexperienced, and this includes their lack of experience managing inevitable distractions (billboards, accidents, etc) as well as reducing and eliminating elective distractions (cell phone use, music, eating, etc). In 2009, 16 percent of teen drivers involved in a fatal crash were distracted when driving (National Highway Traffic Safety Administration (NHTSA), 2009). While these distractions are by no means limited to cell phone use, the existing research on this topic is compelling on the deleterious role of distractions on driving safety. Indeed, in a simulator study, those who texted while driving were significantly more likely to crash (six times the odds of drivers who do not) and drove with impaired forward and lateral control of the car, compared to those not using the cell phone. (Drews, Yazdani, Godfrey, Cooper, & Strayer, 2009) In another simulator study, new young drivers who drove and texted at the same time demonstrated significantly diminished lateral control of the car and ability to note and respond to traffic signs. When texting, they also spent as much as 400% more time with eyes off road (Hosking, S.G., Young, K.L., & Regan, 2006).

Of course, young people are not the only drivers whose driving performance is significantly impacted by distractions. The problem is far-reaching and severe. According to NHTSA, in 2012, approximately 3,328 people were killed and approximately 421,000 injured in police-reported crashes where the driver was distracted (DOT, 2013). Driver distraction was involved in 16% of all fatal crashes and 21% of all injury-causing crashes (NHTSA, 2009). Of all MVCs overall in 2008, the National Safety Council (NSC) estimates that 24% were attributable to cell

phone talking and texting (NSC, 2014). In a 2009 naturalistic study, the Federal Motor Carrier Safety Administration found that drivers texting had 23.2 times higher odds of a crash or near crash than if they were not texting (Federal Motor Carrier Safety Administration, 2009). Other findings demonstrate that one's driving is so severely impaired when distracted by cell phone use that is comparable to driving drunk (Strayer, Drews, & Crouch, 2006). In the past five years, the research on this topic has dramatically grown, and the findings generally point to the same conclusion: distracted driving equals dangerous driving.

# Methods

Creating innovative approaches to teach teens to reduce distractions while driving is essential to improve their and others' safety. Taking into account the prevailing evidence, the organization EndDD.org, led by Joel Feldman, created a program to prevent and eliminate distracted driving. This program known as the Student Awareness Initiative was targeted to high school students both before and after licensure – as drivers and passengers. The substance of the initiative was a presentation and talk delivered by trial lawyers across the country, volunteering their time; the presentation is interactive focused on teen participation including role playing, illustrative exercises by audience members (e.g. trying to count backwards from 100 distracted, by talking on the cell phone), and audience comments and question answering.

In January 2012, The Children's Hospital of Philadelphia's Center for Injury Research and Prevention including Dr. Lela Jacobsohn began to work with this initiative to assist and provide scientific guidance on the design, implementation, and evaluation. CIRP's work focused on two parts: 1) ongoing review, input, and suggested revisions from a starting draft presentation and 2) design and development of pre and post surveys for evaluation purposes, as well as advising on administration of the survey. The presentation was developed integrating health communication, behavioral science and behavior change theory, and teen-targeted persuasion principles specifically designed to avoid unanticipated boomerang effect.

As part of the presentation, the speaker discussed the role of the teen as advocate for focused (undistracted) driving to protect the safety of themselves in the car as a passenger, their driver, as well as other road users. Specifically, the content prompted the teen to speak up when their friend or parent was driving distracted and ask them to stop – at that moment and in general. This strategy is meant to empower teens rather than order them what to do.

While Joel Feldman delivered many presentations himself, EndDD.org conducted train-the-presenter sessions, preparing the volunteering trial lawyers on how to deliver these presentations. In some cases, schools requested a presentation, and EndDD.org matched the school with a speaker. In other cases, the organization or individual trial lawyer reached out in the community and/or talked with a local school to set up a presentation. All presentations and speakers were free.

In this first year of the program, more than 40,000 teens saw the EndDD.org 2012 presentation between April and June 2012, the time frame of the evaluation research discussed in this study. Beyond this study's time period, the program has become very popular. Since April 2012 to date in February 2014, more than 400 presentations have been delivered to more than 150,000 teens and adults. More than 1000 speakers - trial lawyers, driver's education instructors, health teachers,

college students and others - have signed up to volunteer to give presentations throughout the U.S. and Canada. Subsequent to the pilot program in the Spring of 2012 annual revisions to the presentation have been developed and changes made in an attempt to respond to the evaluation's findings and increase the effectiveness of the presentation. These revisions will be discussed below with reference to present findings.

Speakers invited schools to participate in evaluation research, pre and post surveys, which was completely optional and voluntary – to the school and the individual student. While some aspects of survey administration were specific to the local presenter and partnering school, the general procedure was completion of a paper and pencil pre-survey in school immediately prior to the presentation, often in the setting of the presentation e.g. auditorium or classroom. The post –survey was administered approximately six weeks later in most cases in school. Administration of the survey was under the jurisdiction of EndDD.org and the network of volunteer presenters. Presentations were delivered, and data was collected throughout the spring and early summer of 2012. Even after the research component was completed, presentations continue nationwide.

The in-school paper-based surveys use qualitative and quantitative questions. The surveys were designed to elicit data for three purposes:

1. To determine the effectiveness of the EndDD.org presentation with respect to promoting teens' consideration of adopting safer driving behaviors and/or actual safer driving behavior change, and with respect to promoting teens' speaking to parents and friends about stopping cell phone use while driving;

2. To determine how the EndDD.org presentation can be improved going forward; and

3. To contribute to the field of knowledge concerning distracted driving.

Analyses were conducted at the aggregate level comparing the means of the sample responding to the pre-survey and that of the post-survey. The terms "increase" and "decrease" should be understood with care that this is not individual-level change. Consistent with the existing body of research, while the presentation and data collected covered a wide range of driving distractions, the evaluation focused on markers of the effectiveness of the Student Awareness Initiative, based on its key goals. Therefore, the focus was on cell phone use beliefs, behavioral intentions and behaviors related to: 1) teens talking to their parents about stopping cell phone use talking and texting, while driving; 2) teens talking to their friends about stopping cell phone use talking and texting, while driving; and 3) teens' own behavior related to cell phone use talking and texting, while driving.

# Results from Analysis of 2012 EndDD.org Presentation

2,501 students completed the pre-survey. The majority of the sample was white (74%), female (57%), and received high grades (A-45% and B-36%). Some students had driving experience, while others had none. 14% held full or independent driver's license, 17% a junior or intermediate license, and 18% a learner's permit. Respondents were fairly evenly distributed among the four class years and ages (see Table 1).

**Table 1**: Respondent Age

|  | 14-15 years | 16 years | 17 years | 18-19 years |
|---|---|---|---|---|
| Pre-test | 31.6% | 25.1% | 26.2% | 17.1% |
| Post-test | 15.9% | 25.8% | 29.5% | 28.8% |

Post-survey sample was dramatically smaller given the increased logistical challenge, for both schools and presenters, of administering the survey again approximately six weeks later. 134 students completed the post-survey. The majority of respondents was white (72%), female (71%), and received high grades (A-61.9% and B-30.6%). Some students had driving experience, while others had none. 27% held full or independent driver's license, 25% a junior or intermediate license, and 24% a learner's permit. Respondents were fairly evenly distributed among the four class years and ages, with a greater proportion of 17 and 18-year-olds in the post-survey (see Table 1). In both samples, less than 10% self-identified as Hispanic or Latino (see Table 2). The post-survey sample is more licensed, greater percentage of females, older – and more advanced in school years, and has higher grades.

**Table 2:** Respondent Race/ethnicity

|  | Hispanic or Latino[1] | White | Black or African-American | Asian | American Indian or Alaska Native | Native Hawaiian or Other Pacific Islander |
|---|---|---|---|---|---|---|
| Pre-test | 8.4% | 74.1% | 11.1% | 4.3% | 1.6% | 1.3% |
| Post-test | 5.2% | 72.3% | 11.2% | 9.0% | 0.7% | 0.7% |

[1]Respondents replied yes or no to being Hispanic or Latino, and then separately reported their race.
*Total not equal to 100%; some respondents chose not to respond

Teens were also asked about the parent and the friend that drives them in a car most often. They were asked how often they observed each in the past two weeks engaging in the distracted driving behaviors of cell phone talking and texting while driving. They were also asked to report on their own behavior frequency, behavioral intention, confidence, and perceived importance related to talking to their parent and their friend about _stopping_ use of his/her cell phone while driving.

**Table 3:** Teens' reported observation of frequency of parent and friend distracted driving behaviors and teen behaviors, intentions and beliefs related to talking to their parent or friend about stopping cell phone use while driving, at pre- and post-test

| About PARENT | Pre-test mean, SD | Post-test mean, SD | p-value |
|---|---|---|---|
| Frequency of parent talking on cell phone while driving[1] | 1.58 (.99) | 1.61 (.86) | 0.35 |
| **Frequency of parent texting on cell phone while driving[1]** | 0.73 (.98) | 0.56 (.86) | **0.03*** |
| **Frequency of talking to parent about stopping cell phone use while driving[1]** | 0.75 (1.11) | 0.89 (1.17) | **0.06*** |
| **Intention to talk to parent[2]** | 1.96 (1.18) | 2.24 (1.35) | **0.004*** |
| **Importance to teen of talking to parent[2]** | 2.97 (1.53) | 3.21 (1.43) | **0.04*** |
| Confidence of teen to talk to parent[2] | 3.89 (1.32) | 3.97 (1.19) | 0.24 |
| **About FRIEND** | | | |
| Frequency of friend talking on cell phone while driving[1] | 1.1.2 (1.07) | 1.05 (1.04) | 0.23 |
| Frequency of friend texting on cell phone while driving[1] | 1.16 (1.17) | 1.09 (1.10) | 0.28 |
| Frequency of talking to friend about stopping cell phone use while driving[1] | 0.51 (1.04) | 0.44 (1.03) | 0.23 |
| Intention to talk to friend[2] | 1.95 (1.23) | 2.08 (1.23) | 0.13 |
| Importance to teen of talking to friend[2] | 2.97 (1.57) | 3.12 (1.52) | 0.17 |
| Confidence of teen to talk to friend[2] | 3.60 (1.45) | 3.63 (1.33) | 0.39 |

[1] On a scale of 0 to 4, never to always

[2] On a scale from 1 to 5

The respondent was also asked to report on his or her own behaviors in the past two weeks and behavioral intentions in the coming two weeks related to 1) talking on the cell phone while driving and 2) texting on the cell phone while driving. From the pre- to the post- test, there was no significant change on any of these four items. Related to past-two-week cell phone talking and texting while driving, the pre-test mean was already rather low, making any change in the desired direction more difficult. On a 5 point scale from never to always (0 to 4), the median and mode were "never" at pre- and post- test.

**Table 4**: Teens' self-report of own cell phone use while driving behaviors and intentions at pre- and post-test

| Frequency of behaviors in past two weeks* | Pre-test Mean, SD | Post-test Mean, SD | P-value |
|---|---|---|---|
| Cell phone talking while driving | 0.75 (.99) | 0.81 (.95) | 0.27 |
| Cell phone texting while driving | 0.79 (1.11) | 0.71 (.94) | 0.21 |
| **Behavioral Intentions**\*\* | | | |
| Cell phone talking while driving | 2.02 (1.35) | 2.17 (1.36) | 0.12 |
| Cell phone texting while driving | 1.87 (1.23) | 1.73 (1.13) | 0.13 |

*On a scale from 0 (never) to 4 (always)

**On a scale from 1 (very unlikely) to 2 (very likely)

# Discussion and Recommendations

Upon analysis of the teen respondent's own distracted driving behavior and associated constructs, results showed no significant change from pre- to post-survey. Their reported frequency of cell phone use while driving was already extremely low (between never and rarely), thus making change on these items rather difficult (because there is little room for change in a positive direction). While there was no significant change, interestingly, reported intentions were slightly higher than actual behavior. Teens may have presented a more honest look at their own behavior on this measure, or alternatively their responses may have partially reflected a perceived norm of what their peers are doing and thus what they would expect themselves to do the future. Nonetheless, the biggest challenge to finding behavioral change in the desired direction among these results is the extremely low (safe) starting point. Perhaps, those teens already engaging in the desired behaviors are also students at schools with a strong safe driving culture and norms, accordingly schools that chose to take the extra effort to administer the post-survey. In short, there is no significant behavioral or intention change in either direction on the part of the teen respondent from the 2012 EndDD.org presentation.

One strategy featured in the program was to encourage teens to intervene on their parents' distracted driving behaviors and ask, even demand, that they stop. Based on these study results, this strategy of empowering teens to be safe driving champions with their parents seems to be a promising one. There is a pattern of statistically significant results in the desired direction that support this theme. The results showed, prior to the program, this was not a behavior that teens regularly did, intended to, or even considered much, thus there was much room for positive improvement. At the post-survey, teens reported speaking to their parent about stopping cell phone use while driving more frequently than at the pre-survey. Teens also had stronger intentions to talk with their parent on this topic at the post-survey time. Respondents' perception of the importance of speaking with their parent about stopping cell phone use while driving increased significantly, from pre- to post-survey. Finally, these teen behaviors *may* have begun to have an effect given that frequency of observed parent texting while driving decreased significantly from pre- to post-test. While all of these differences are slight, they are still very meaningful particularly given the grouping of significant findings around this theme of attention to and communication about parent cell phone use while driving. Confidence to talk to parent was already very high (4 of 5) and thus more difficult to change, and also less necessary to shift. Increasing perceived importance seems to be the key target for future.

While teens may be confident to talk to their parents and essentially tell them what they are doing is wrong and what they *should* be doing, not surprisingly, teens appear to be less ready to do the same with their friends. On the same set of items with a friend driver, there were no significant differences between pre- and

post-survey.  Whereas teens may be excited about the prospect of role reversal with their parents, coaching parents on their driving, and enforcing rules parents should already know and follow, the same set of behaviors may initially feel socially threatening to teens.  Therefore, it is particularly important to create an adolescent culture in which this behavior of asking friends to stop use of their cell phones while driving – and other distractions – is normative.  The behavior ideally would be not only socially accepted but even more so socially expected.  This is no doubt a large task, but one that can be accomplished if those working in this field to promote safer driving and eliminate distracted driving can work in congruence so that the messages, themes and behaviors promoted are consistent and all developed based on current evidence and prevailing relevant theory.

The most current presentation at time of writing, EndDD.org 2013-14, has been revised based on feedback obtained from teens, teachers and speakers, as well as the results from the analyses. The 2013-14 presentation incorporates additional strategies designed to cause teens to reflect, in a group setting, on the choice of continuing to use cell phones for texting and calling versus safe non-distracted driving choices, devotes more time to teens coming up with a specific plan for safe non-distracted driving with the help and approval of their peers, and includes a bystander intervention strategy targeted to teach teens the skills to speak up and request friends to drive safer and to feel confident that their intervention will be effective.  The effectiveness of these revisions to the EndDD.org presentation will be evaluated in the future.

Sample size is a key limitation to the analysis of this data given the tremendous pre-survey sample and the comparatively small number of post-survey respondents.  A larger post-survey sample size in future research may allow for greater variation and thus richness of the pre- to post-comparison results.

Additional recommendations for the future include further pursuing the strategy of teens asking parents to end their distracted driving.  In addition, a closer exploration of the topic of teens asking friends to stop distracted driving would be fruitful; small focus groups of teens or individual interviewing may provide rich data that could inform subsequent versions of the program more targeted to this message.  Multiple exposures to persuasive public health and behavior change messages and content substantially increases the likelihood of programs creating meaningful individual behavior change.  Thereforre, follow-up exposure, particularly multiple cumulative exposure to EndDD.org presentations or subsequent content could increase the overall effectiveness of the program.  Finally, the purpose of this study was specifically and strictly to evaluate the 2012 EndDD.org  Student Awareness Initiative.  However, additional analysis of the overall dataset could share meaningful insights with the field, for example, to understand how parents' and friends' role modeling of distracted driving may related to teens' own distracted driving behavior or to understand how talking to

parents and friends about stopping distracted driving may subsequently affect teens' own distracted driving behavior.

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