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Short communication

The validity of self-reported seatbelt use in a country where levels of use are low

Türker Özkan[a,*], Prasanthi Puvanachandra[b], Timo Lajunen[a], Connie Hoe[b], Adnan Hyder[b]

[a] Department of Psychology, Middle East Technical University, Turkey
[b] Johns Hopkins Bloomberg School of Public Health, United States

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ABSTRACT

The validity of self-reported seatbelt use among low belt use populations in low belt use countries has not been evaluated directly. Nine hundred and ninety drivers were recruited from shopping centers, car parks, and other suitable locations located in Afyon and Ankara cities of Turkey in order to compare the self-reported and observed seatbelt usage rates. Data sets were collected simultaneously from the participants not being aware of having their seatbelt use observed. Participants interviewed in Afyon ($n = 301$) and Ankara ($n = 658$) reported seatbelt usage ("always using a seatbelt") rates of 39% and 45%, respectively. When observed, however, only 47% in Afyon and 70% in Ankara of these drivers actually fasten their seat-belts. It seems that the drivers in both cities exaggerated their use seat belts considerably.

1. Introduction

Many studies have demonstrated the effectiveness of seat belts in reducing injury severity. Elvik and Vaa (2004), for example, estimated that use of seat belts reduces the probability of being killed by 40–50% for drivers and front seat passengers and by about 25% for the passengers sitting in back seats. World Health Organization (WHO, 2004) reported that injury reduction effects of seat belts in different types of car crashes varied from struck side with 27%, non-struck side with 39%, frontal with 43%, rear with 49%, and roll-over with 77%. These figures clearly underline the importance of seat belt usage for decreasing the number of injuries and fatalities everywhere. However, there are considerable differences among countries in seat belt usage rates.

Compared to the countries with high seat belt use rates such Western and Northern European countries and the U.S., for instance, seat belt use rates are considerably low in Turkey. In one observation study conducted by General Directorate of Police, 16% of the car drivers and 18% of the front seat passengers were using a seat belt on city roads in Ankara while the usage rate was much higher (71%) among car drivers on intercity roads (T.C. Emniyet Genel Müdürlüğü, 1999).

In general, national and local estimates of safety belt use are typically based on one of the following two assessment strategies: direct observations of seat belt use or self-report surveys. As compared to self-report surveys, it is well-known that direct observation provides a valid index of seat belt use rate. The observations can, on the other hand, be mostly conducted during day light hours (at least in bad lighting conditions outside urban areas); second, the observation of seat belt use among rear seat passengers is difficult; third, the vehicle type and weather conditions (rain, fog or snow) influences the measurement error in observations; and fourth, subjective assessment of driver's age and gender is prone to random and systematic errors.

Waller and Barry (1969) were the first ones who compared self-reported seat belt use with observed seat belt use among same participants. It was found that only 77% of drivers, who reported 'always' wearing seatbelts when driving in town, actually used a seatbelt when their behavior was observed. In other words, drivers over reported seatbelt use by 23 percent point. Fhaner and Hane (1973) examined the relationship between observed and self-reported seatbelt use in a sample of 105 Swedish drivers. Respondents, who reported using seat belts 60–100% of the time, over reported their seat belt use only by 14%. Stulginskas et al. (1985) assessed the validity of self reported seatbelt use in a sample of 106 Canadian car occupants and found over-reporting rate of 24% among the respondents. Streff and Wagenaar (1989) conducted one of the most comprehensive validity studies about seat belt observation and self reports. Roadside interviews were conducted among 42% ($n = 1869$) of the observed sample. Over reporting rate of the seat belt use was only 6% among participants who said they 'always' wore seatbelts. It should be noted, however, that in Streff and Wagenaar's (1989) study the participants knew that they had been observed.

Later, Dee (1998) reported a mismatch of 10% between observed use rates and self-reported use rates while Robertson (1992)

* Corresponding author. Tel.: +90 312 210 5118; fax: +90 312 210 7975.
E-mail address: ozturker@metu.edu.tr (T. Özkan).

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reported a mismatch as high as 24% between observed use rates and self-reported use rates. Parada et al. (2001) found that Hispanic ($n = 338$) and white/non-Hispanic ($n = 126$) drivers over reported seat belt use by 27% and 21%, respectively. However, the correspondence between self-report and observation measures of seat belt use has remained mainly unexplored in the most parts of the world and in particularly in low belt use countries (e.g., Turkey). As low belt use countries are more likely to be targets of seatbelt use interventions, the validity of the self-report data is important for assessing the efficacy of large scale interventions among low belt use road users groups in low belt use countries.

The aim of the present study is, therefore, to compare the self-reported and observed seatbelt use in samples of drivers who were recruited from populations of two cities (Ankara and Afyon) with differently low rates of seat belt use in a low belt use country (Turkey).

2. Method

2.1. Participants

Nine hundred and ninety drivers were randomly recruited from shopping centers, car parks, and suitable locations located in Afyon ($n = 301$) and Ankara ($n = 658$) cities of Turkey. Participants were part of a larger international study investigating factors influencing seatbelt and child seat usage and speeding (Middle East Technical University, Johns Hopkins International Injury Research Unit, Road Safety 10). Ninety percent of sample was male. Drivers from Afyon were older (mean = 38.4, SD = 11.8) than drivers from Ankara (mean = 36, SD = 11.4) ($F(1,975) = 8.75$, $p < .01$). Drivers from Ankara reported higher annual mileage (mean = 37,439, SD = 77,653), higher number of active (mean = 0.48, SD = 0.98) and passive accidents (mean = 0.66, SD = 1.07) than drivers from Afyon (mean = 20,735, SD = 39,349), (mean = 0.21, SD = 0.75), and (mean = 0.37, SD = 0.93) with ($F(1,962) = 11.86$, $p < .001$), ($F(1,886) = 16.62$, $p < .001$), and ($F(1,892) = 14.86$, $p < .001$), respectively.

2.2. Measures

2.2.1. Self-report seat belt use

Participants completed a twenty-two item face-to-face roadside interview designed to assess drivers' opinions and behaviors on seat belt and child seat use of Ankara or Afyon roadways. Embedded within the interview was a single item assessing seat belt use ("Do you (as driver) always wear a seatbelt?"). The present study focuses on the respondents who gave a "yes" answer to this seat belt question.

2.2.2. Observed seat belt use

Drivers were observed from shopping centers, car parks, and suitable locations in Afyon and Ankara. Observers were in locations in which they could observe seat belt use unobtrusively at the parking lots of each site, where they recorded the belt use of each participant before the interview. Drivers appeared not to be aware of their seatbelt use having been recorded.

2.2.3. Procedure

Trained observers (one per observation point) used standardized observation protocols and observation sheets to record seat-belt and child restraint use in the selected sites. All observers simultaneously conducted their observations over several segments during daylight (08.00–17.00).

3. Results

Participants from Afyon ($n = 301$) and Ankara ($n = 658$) reported 39% ($n = 117$) and 45% ($n = 306$) of 'always' seat-belt usage rate, respectively. No significant differences in the self-reported usage rate were found between drivers from Afyon and Ankara (39 vs. 45%, $\chi^2 = 2.87$, $p = $ NS). However, a significant difference in the observed usage rate was found between Afyon and Ankara (19 vs. 32%, $\chi^2 = 14.23$, $p < .01$). Only 47% in Afyon and 70% in Ankara of those, who reported using 'always' a seat-belt, actually fasten their seat-belts.

4. Discussion

The results of the present study revealed that response bias within low belt use populations in low belt use countries may be much greater than suggested by observational data and data from high belt use countries. Over reporting was found between 53 and 30 percent change in two cities of a low belt use country. These rates are clearly higher than the over reporting figures ranging from 6 to 27 percent change in Western countries. The results are in line with Parada et al.'s (2001) suggestion that "over reporting may be greater in populations with low belt use" (p. 142). The present study also affirmed that the lack of validity of self-reported seat belt use has been beyond dispute for many years. It should also be noted that 90% of the sample was male and, in general, it is found that males tend to use seat belts less often than female drivers in literature.

The present study contributes to this debate in several ways. First, it has been the first study conducted in one of a relatively low belt use countries. Second, self-report and observational data were collected almost successively within a single sample of participants. Third, observational data were unobtrusively and anonymously collected thus minimize the likelihood of impression management, deception, and response bias. Furthermore, the present study also indicated that drivers from a small city (i.e., Afyon) reported higher rates of seat belt use (as compared to observed rate) than did drivers from Ankara. The findings might reflect not only actual differences in seat belt use but perhaps also socio-cultural differences in response bias. It should be noted that, however, further studies are needed for understanding why the differences between self-reported and observed usage rates are smaller in high-seat belt use countries than low-use ones and big cities than small ones. Also, the role of possible factors (e.g., infrastructure, road safety education, level of enforcement, laws) should be investigated (see McCarthy, 1986; Rosenbloom et al., 2009). Besides, it is likely that this study may still underestimate the mis-reporting. In general, the results indicated that the evaluation of interventions should not be based upon self-report including phone interviews seat-belt measures in low belt use countries. In addition to previous studies, the present study also showed that observation studies provide more realistic and valid usage rates as compared to self-reported usage rates.

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