



## The effect of social desirability on self reported and recorded road traffic accidents

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### ABSTRACT

The use of lie scales has a fairly long history in psychometrics, with the intention of identifying and correcting for socially desirable answers. This represents one type of common method variance (bias introduced when both predictors and predicted variables are gathered from the same source), which may lead to spurious associations in self-reports. Within traffic safety research, where self-report methods are used abundantly, it is uncommon to control for social desirability artifacts, or reporting associations between lie scales, crashes and driver behaviour scales. In the present study, it was shown that self-reports of traffic accidents were negatively associated with a lie scale for driving, while recorded ones were not, as could be expected if the scale was valid and a self-report bias existed. We conclude that whenever self-reported crashes are used as an outcome variable and predicted by other self-report measures, a lie scale should be included and used for correcting the associations. However, the only existing lie scale for traffic safety is not likely to catch all socially desirable responding, because traffic safety may not be desirable for all demographic groups. New lie scales should be developed specifically for driver behaviour questionnaires, to counter potential bias and artifactual results. Alternatively, the use of a single source of data should be discontinued.

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### 1. Introduction

Methodology using self-report data in psychology has been popular for a long time in most sub-areas of the discipline. The advantages of such an approach include the ability to ask any type of question, economy, and (apparent) simplicity of use. However, it has also been recognized that self-reports may be susceptible to what is called common method variance, i.e. biases of the (single) data source which influence several variables and create, increase or decrease associations between variables. If such biases exist, artefactual effects will result.

Social desirability (i.e. a tendency to report in a way that make the respondent look good) (Edwards, 1957; Nunnally & Bernstein, 1994) is one instance of a group of social/cognitive biases which can create common method variance (CMV) in self-reports (Campbell & Fiske, 1959). To counter this tendency, so-called lie scales were developed and introduced into psychometric tests (e.g. Crowne & Marlowe, 1960). These were thought to be able to detect faked replies. This was accomplished by measuring replies to items with a fairly obvious socially desirable content, such as 'I have never stolen a thing in my life, not even a hairpin'. People who endorsed such items could be suspected of not really telling the truth, with or without their own knowledge. Using this basic logic, several different scales for socially desirable responding have been

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developed and validated. However, the standard type of validation is to test whether differences are found between so-called 'Fake good' and 'Standard' conditions (e.g. Blake, Valdiserri, Neuendorf, & Nemeth, 2006), i.e. respondents are told to fake or not. Such a test does not yield any information about whether there are individual differences in lying in an actual response situation, and whether this influences other self reports. Despite this shortcoming of the validity testing, when the influence of socially desirable responding on other individual differences variables is tested, the validity of the lie scale would often seem to be taken for granted (e.g. Ferrando, 2008; Hancock & Flowers, 2001; Mersman & Shultz, 1998; Reynolds, 1982).

Effects of socially desirable responding have been found in several research areas, e.g. organizational research (Moorman & Podsakoff, 1992), goal orientation (Tan & Hall, 2005), tax evasion (Hessing, Elffers, & Weigel, 1988) and personality (Ferrando, 2008). However, the main problem is not socially desirable responding as such, but the use of a common method and source for gathering both dependent and independent variables. If data sources differ between these variables, the problem may be small (Kurtz, Tarquini, & Iobst, 2008; Pauls & Stemmler, 2003).

Within traffic psychology, the use of self-reports (for both independent and dependent variables) has also been popular, and is becoming ever more so. As driving and traffic safety in most cultures would seem to have some sort of social meaning, the risk of common method variance due to social desirability could be great.

Despite this, lie scales have rarely been a part of this research (the exceptions include Donovan, Quisser, Salzberg, and Umlauf (1985), Dula and Ballard (2003), Fernandes, Job, and Hatfield (2007), Lajunen, Corry, Summala, and Hartley (1998), Williams, Henderson, and Mills (1974), Dorn and Gandolfi (2008) and Wickens, Toplak, and Wiesenthal (2008)), even though many of the attitudes and behaviours studied in traffic safety research have very clear social implications, in terms of being negatively or positively valued by other drivers. Although several authors have acknowledged the possible influence of social desirability on self-reports of behaviours and attitudes, few would seem to have thought that it would affect reports of crashes and other dependent variables (for a review and discussion, see af Wählberg, 2009), which is necessary for CMV effects to result.

The only lie scale developed especially for driver behaviour that could be located is the Driver Social Desirability Scale (DSDS) by Lajunen, Corry, Summala, and Hartley (1997) and contains two sub-scales, Driver Impression Management (DIM) and Driver Self-Deception (DSD). The first scale focuses upon faking about your driving behaviours and the other on overly positive beliefs about one's driving. The items are similar in content to those used in other lie scales, with rather improbable descriptions of behaviour, or lack thereof (for example never having wanted to drive fast). However, although it is, of course, a positive development that some recognition of the social desirable responding phenomenon has belatedly come to traffic psychology, the DSDS has received little attention (the exceptions include Caird & Kline, 2004; Dorn & Gandolfi, 2008; Lajunen & Summala, 2003; Sundström, 2008). Given the prodigious number of studies published within traffic safety each year based solely on self-reported data, a validated lie scale for this type of reporting is needed.

However, validating a lie scale is not simple, especially if the standard method of 'fake good' is not accepted as valid. If the behaviour of interest is not expected to correlate with the behaviours described in the scale measuring social desirability, but does have some sort of social implication, a lie scale can be tested against self-reports of this behaviour, and any association would constitute evidence in favour of the validity of the scale.

However, for the DSDS, the situation is somewhat more complicated, because the items used in it are actually desirable from a safety point of view (always keeping sufficient distance to other vehicles, for example). Drivers who claim to behave in these ways may therefore be responding honestly, and the low numbers of crashes they also report are a logical consequence of these safe behaviours. Therefore, a negative correlation between the DSDS and self-reported crashes does not on its own constitute evidence in favour of the validity of the scale and/or a bias in accident reporting.

Lajunen et al. (1997) reported correlations of about 0.20 between the DSDS scales and self-reported accidents where the driver was to blame. For non blameworthy accidents, the effects were much weaker. In another study by the same authors (1998), the effect of the DIM scale in a hierarchical multiple regression was not significant. These results might be seen as indications of a bias in reporting, but needs further corroboration.

The method for the present study is to test recorded as well as self-reported crashes against the DSDS scale. If self-reported accidents correlates negatively with the DSDS scale, but recorded ones do not (or positively), the hypothesis that social desirability contaminates self-reported collision data would be supported, and the DSDS scale validated, as this finding would rule out the competing hypothesis that drivers who respond on the socially desirable end of the scale are in reality better drivers.

In summary, this study was intended to investigate the association of socially desirable responding, as measured by the DSDS, with self-reported and recorded number of traffic accidents. The aim was to validate the DSDS and investigating whether a systematic bias in self-reports of road traffic accidents exists. If corroborated, this would imply that CMV effects might have been present in many studies using self-report measures of driver attitude and behaviour to predict self-reported crashes.

## 2. Method

### 2.1. General

Three sources of data were available for the present study, covering many different driver groups from two countries. DriverMetrics at Cranfield University (UK) has developed several online driver risk assessment instruments for

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