Implicit evaluations about driving skills predicting driving performance

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A B S T R A C T
Self-reported measures of driving skills have the potential shortcomings of the general self-report methodology such as social responding and self-enhancement biases. In the present study, the Implicit Association Test (IAT) procedure was adapted to measure the implicit evaluations of driving skills. The performance of IAT and an explicit, self-report measure of driving skills were compared in predicting driver behaviors and performance. Ninety-one Turkish male drivers participated in the study. The results showed that the implicit test and the self-reported driving skills scale showed different patterns of relationships with the outcome measures in the regression analyses. In addition, the implicit measure of driving skills moderated the relationship between self-reported driving skills and some of the outcome measures used in the current study. These results support the need to use the implicit measures in addition to self-report measures to better understand drivers evaluations of their driving skills, which has the potential to influence their risky driving.

A R T I C L E   A B S T R A C T

1. Introduction

Drivers’ evaluations of their driving skills are important for determining how they drive, and how they violate safety regulations (McKenna, Stainer, & Lewis, 1991). Practice and exposure to different traffic conditions and environments would lead to improvements in driving skills, in addition to increased sense of control in driving, which in turn, could lead to decreased interest in safety (Lajunen & Summala, 1995; Sümer, Özkan, & Lajunen, 2006), and development of risky driving habits by using narrower safety margins (Näätänen & Summala, 1976; Spolander, 1983; Summala, 1985). Supporting this, Duncan, Williams, and Brown (1991) reported that experienced drivers performed worse than novice drivers in tasks involving anticipation, scanning patterns (i.e., mirror checking) and safety margins. More important than that, it has been consistently reported that drivers in general evaluate their driving skills (e.g., Glendon, Dorn, Davies, Matthews, & Taylor, 1996; McKenna et al., 1991), reflexes involved in driving (e.g., Delhomme, 1991; Mathews & Moran, 1986) and safety skills (Horswill, Waylen, & Tofield, 2004) as being better than others. The biased evaluation of skill level might cause a (mis)perception of control, which might lead to an underestimation of the risk in the immediate traffic environment and thereby risk taking behavior in traffic (Walton, 1999; Walton & Bathurst, 1998). Therefore, drivers’ perceived skill level in driving is vital.

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in determining safe driving. However, considering the tendency of drivers to overestimate their driving skills (McKenna et al., 1991) in addition to the issue of social desirable responding associated with self-report measures (Furnham & Henderson, 1982); using indirect, implicit measures may constitute an effective alternative to using direct, self-report measures of driving skills. Therefore, the aim of the present study is to adapt an implicit measure of the evaluation of driving skills and compare the associations of explicit (self-report) and implicit measures with driving related variables. By this way, further studies may obtain relatively more accurate measurement about the perceptions of driving and safety skills.

1.1. The implicit cognition and its measurement

The concept of implicit cognition was defined as the memory associations between objects and knowledge that are automatically accessible in the presence of the relevant cues (Fazio & Towles-Schwen, 1999). Basically, implicit cognition refers to unconscious influences including perception, memory, and learning, without any subjective phenomenal awareness. In their seminal study, Greenwald and Banaji (1995, p. 5) explained implicit cognition with the following example: in a word completion task, individuals' responses these incomplete strings basically based on their previous experiences and the completion responses are more likely to be words from a list to which subjects were previously exposed in the experiment than the words that were not presented. The word completion task provides an example of the indirect measurement of the effect of the prior experience. Measurement procedures using implicit methodology have always got attention from both laypersons and researchers. This high popularity actually comes from two main limitations of explicit assessment methods (Greenwald & Banaji, 1995). First, explicit measures could be biased by self-presentation or impression formation strategies (e.g., desirability problem). Second, explicit measures could include introspective limits. Introspective limits could be explained by dual-process models (e.g., Strack & Deutsch, 2004) as differences between a propositional and an associative system of information processing. The propositional system includes explicit reasoning processes and operates consciously and slowly. The associative system refers to spread of activation processes and operates quickly but with limited conscious accessibility. Implicit cognitions are mostly evident as actions, decisions, or judgments that are under the control of automatic evaluations and these evaluations have been thought to be out of the performer’s awareness (Greenwald & Banaji, 1995). The Implicit Association Test (IAT) is the procedure that seeks to understand implicit cognition by measuring underlying automatic evaluations.

The IAT involves assessment of the reaction time differences across the tasks of categorizing four separate series of words. These four series of words are generally comprised of words associated with two basic distinctive categories, such as 'I' and 'others'; and two basic attributes such as 'good' and 'bad'. Participants are asked to categorize words appearing one at a time on the screen to one of the two categories as fast as possible. In the most general terms, the rationale is that there is a stronger association in the participant’s mind between the word and the category that s/he more rapidly pairs. Therefore, the difference between the average reaction time of the categorization trials of the pairings of interest and that of other pairings are taken as the measure of the strength of association. Greenwald and Farnham (2000) have used the IAT as a tool for measuring self-esteem to overcome the drawbacks of self-report inventories such as biased responding. Such bias could also be expected in drivers’ evaluations of the different dimensions of their driving skills.

The IAT has been widely used in the psychology literature to explore the attitudes and evaluations that individuals have no conscious access to. Direct measures that require accurate introspection would not be adequate for measuring implicit cognitions (Greenwald & Banaji, 1995). Rather, using indirect measures which neither let the subject know what is being assessed nor require self-report are recommended to measure implicit cognitions (Greenwald & Banaji, 1995). Indirect measures would also help overcome the shortcomings of self-report instruments such as social desirable responding (Furnham & Henderson, 1982). In addition, individuals may either intentionally deny reporting some of their cognitions or they may not be aware of these cognitions if they are in conflict with their values and beliefs, or they might have become too automatized to be remembered. As a result, although individuals may be willing to recall a specific piece of information, it might not be readily available in memory (Nosek, Greenwald, & Banaji, 2007). In the context of driving skills, drivers may not always be aware of their automated behaviors while driving and therefore evaluate their skill level in those automated tasks inaccurately, along with the possibility of social desirable responding and self-enhancement biases involved in self-report measurement.

Other studies have also developed implicit tests for measuring drivers’ perceptions of their driving skill levels. Harré and Sibley (2007) used IAT to measure drivers’ implicit self-enhancement biases and found that implicit ratings of driving ability predicted crash risk optimism. In addition, Sibley and Harré (2009a) used the IAT in another study examining the effects of positively and negatively framed driving advertisements on self-enhancement biases in driving ability. They found that advertisements of neither type significantly influenced implicit self-enhancement biases, but the positively framed advertisements reduced self-reported self-enhancement biases. Sibley and Harré (2009b) also tested if gender role identification mediated the relationship between gender and driving self-enhancement by using both the explicit and implicit measures of self-enhancement bias in driving ability. Finally, Martinussen, Sømhovd, Møller, and Siebler (2015) adapted the Go/No Go Association Task to assess implicit attitudes towards safe and risky driving. They found a significant relationship between implicit attitudes and self-reported driving behaviors and skills among male drivers. However, none of these studies compared implicit and explicit measures of perceived driving skills in predicting performance on objective tests of driving related skills.

The aim of the present study is to compare the implicit and explicit measures of driving skills in predicting performance on two different computer-based tests of driving related skills. In addition, these implicit and explicit measures of driving...
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