



Modeling motivation and habit in driving behavior under lifetime driver's license revocation

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ABSTRACT

The purpose of the present study was to verify the motivational factors underlying the theory of planned behavior (TPB) predicting the driving behavior of lifetime driving license revoked offenders. Of a total of 639 drivers whose licenses had been permanently revoked, 544 offenders completed a questionnaire constructed to measure attitudes toward behaviors, subjective norms, perceived behavioral control, behavioral intentions (the key constructs of the TPB), and previous driving habit strength. The finding of the study revealed that an offenders' driving behavior after a lifetime license revocation was significantly correlated to behavioral intention ($R=0.60$, $p<0.01$), perceived behavioral control ($R=0.61$, $p<0.01$), previous driving habit ($R=0.44$, $p<0.01$), and attitude ($R=0.41$, $p<0.01$). There was no evidence that subjective norms including road regulation, society ethics, and people important to offenders had an influence on driving behavior ($R=0.03$). Low driving habit strength offenders are motivated to drive because of behavioral intention, whereas strong driving habit strength offenders are motivated to drive because of perceived behavioral control. Previous driving habit strength is a moderator in the intention–behavior relationship. The model appeared successful when previous habits were weak, but less successful when previous habits were strong.

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1. Introduction

Many drivers given a sentence of license suspension/revocation (S/R) continue to drive, but at reduced levels (Hagen et al., 1980; Ross and Gonzales, 1988). Ingraham and Waller (1971) found at least 30% of drivers given S/R for drunk-driving continued to operate a vehicle in spite of the licensing action. Williams et al. (1984) concluded that 65% of drivers admitted to operating a vehicle after a license S/R. Ross and Gonzales (1988) reported that 66% of the drivers whose licensing were suspended were still driving. DeYoung (1999) estimated that as many as 75% of S/R licensed drivers continue to drive, although they apparently drove less often and more carefully. Malenfant et al. (2002) showed the percentage of motorists driving while suspended was 57% of the expected value, relative to their representation among all drivers. Chang et al. (2006) found that 86% of offenders continued to drive, but with significantly reduced driving activities and mileage. The general approach of S/R, a driver-based sanction, was intended

to keep offenders off the road during their restriction periods. In the case of short term S/R, although many S/R drivers violate driving restriction and continue to drive, most prior research has focused on the effectiveness of S/R and supported the view that this is a positive step in reducing subsequent alcohol-involved driving by offenders (Zador et al., 1989; Henderson and Kedjijjian, 1992; Lund, 1993; Sweedler and Stewart, 1993; NHTSA, 1993). However, few studies have explored motivational factors causing offenders to drive while under license S/R. Furthermore, as S/R is usually awarded for no more than a few years, few studies have explored S/R over a longer period of time (Siskind, 1996). Thus, it seems that no study has explored the motivational factors underlying the behavior of driving under a long-term S/R. In the case of administrative lifetime license revocation (ALLR) in Taiwan, the basic goal is to maintain road safety by keeping such disqualified drivers off the road allowing them no opportunity for rehabilitation in the licensing system design. Chang et al. (2006) explored the effectiveness of ALLR; however, no study has explored the motivational factors of driving while under a lifetime license revocation. Therefore, the motivational or suppressive factors leading to drive under ALLR remain unclear.

Car use is important for many household activities in western developed societies as well as developing countries such as Taiwan. Households use cars for traveling to various activities (Eriksson et al., 2008). In the last three decades, considerable progress has

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been made in explaining and predicting the initiation of human behaviors as revealed by currently popular attitude-behavior models (e.g. Fishbein and Ajzen, 1975; Ajzen, 1991). Support for the efficacy of the theory of planned behavior (TPB) has been successfully found in the context of common driving behaviors relating to road safety such as seat belt use (Jonah and Dawson, 1982; Budd et al., 1984; Thuen and Rise, 1994; Şimşekoğlu and Lajunen, 2008), the use of a car child restraint device (Godin and Kok, 1996), pedestrian road crossing behavior (Evans and Norman, 1998; Moyano Díaz, 2002), speeding (Parker et al., 1992a; Forward, 1997; Elliott et al., 2003; Letirand and Delhomme, 2005; De Pelsmacker and Janssens, 2007; Warner and Åberg, 2008), drunk-driving (Parker et al., 1992a; Åberg, 1993; Parker et al., 1996; Sheehan et al., 1996; Gordon and Hunt, 1998; Marcil et al., 2001; Armitage et al., 2002), aggressive driving (Parker et al., 1995, 1998; Miles and Johnson, 2003), and driving violations (Parker et al., 1992b,c, 1995; Forward, 2006). TPB has been found to be a useful model for organizing and understanding potential factors that influence intention to engage in safe driving behavior and law compliance (Yagil, 1998; Gordon and Hunt, 1998; Poulter et al., 2008). An extended TPB seems a valuable framework for understanding and changing people's safety related actions in traffic (Victoir et al., 2005).

According to TPB, travel mode choice is determined by attitude, subjective norm, perceived behavioral control, and behavioral intention (Ajzen, 1991; Bamberg and Schmidt, 2001, 2003). Although these research efforts have explained more of the reason-based and deliberate nature of behavior, one important aspect has been overlooked in research, namely, the fact that many of the aforementioned behaviors are executed on a daily, repetitive basis, and therefore may become routine or habitual. Life consists largely of daily routines (Huff and Hanson, 1986; Pas, 1988; Eagly and Chaiken, 1993), and travel mode choice may also be determined by habits (Bamberg and Schmidt, 2003; Verplanken and Orbel, 2003). Therefore, it is proposed that when behavior is performed repeatedly and becomes habitual, that behavior is guided by an automated cognitive process, rather than being preceded by an elaborate decision making process (i.e. a decision based on attitudes and intentions) (Aarts et al., 1998). Habit has been perceived as an automatic link between a goal and a specific behavior (Verplanken and Aarts, 1999; Aarts and Dijksterhuis, 2000), or as a behavioral script stored in memory (Schank and Abelson, 1977; Abelson, 1981; Schank, 1982; Gärling et al., 2001; Fujii and Gärling, 2003). Habitual behavior, in contrast to more deliberately controlled behavior, demands only a small amount of attention, and the individual's control over behavioral intention as well as the behavior itself is minor (Bargh, 1994). Habitual car use has been demonstrated in several studies (Verplanken et al., 1994, 1998; Eriksson et al., 2008; Heath and Gifford, 2002; Klöckner et al., 2003). A strong habit to use a particular travel mode is, in comparison with a weak habit, characterized by seeking less information and a less elaborate choice of travel mode (Aarts et al., 1997). Verplanken et al. (1998) found that both habit and intention were significant predictors of car use among drivers who were encouraged to deliberately think about travel mode choice. In accordance with TPB, researchers expected that attitudes towards choosing to use one's car, together with subjective norm and perceived behavioral control, would predict behavioral intentions, which in turn were expected to predict future behavior.

The present study is concerned with the motivational factors of driving behavior using components of TPB as well as the previous habitual nature of drivers driving activity under ALLR as an example of a repetitive behavior. ALLR may be an example of a repetitive behavior that is motivated by behavioral intention and previous driving habit. This study has two goals. The first is to investigate the motivational factors that correlate to actual driving incidence while under ALLR. The second is to ponder the role of habit in

attitude-behavior models. For these goals, the researchers focused on the relationships between behavior and reason-based antecedents (i.e. as defined by TPB) on one hand and behavior and habit strength on the other hand. The present study aimed to examine the psychological factors predicting the actual driving behavior of offenders who had been punished by ALLR. For the first goal, we adopt the TPB model, which include attitude, subjective norm, perceived behavior control, behavioral intention, previous driving habit and behavior. For the second goal, the researchers explored the TPB model's ability to predict behavior under different driving habit strength (i.e. strong habit, moderate habit, and weak habit). It is expected that offenders with strong habit will report higher driving behavior while under ALLR. It is also expected that the TPB model perform more predict ability for weak habit than strong habit participants.

2. Method

2.1. Outline of the planned behavior model and previous habit

The TPB, or adaptations of it, is the most often used theoretical framework of models explaining traffic safety behavior. In present study, the conceptual model is represented in Fig. 1. The TPB contends that behavioral intentions to engage in a behavior is the main predictor of actual driving behavior, and that behavioral intentions are influenced by attitudes towards that behavior, subjective norms (i.e., whether important others would approve or disapprove of the behavior) and perceived behavioral control (Ajzen, 1991). Attitudes are generally defined as consisting of cognitive and affective components or antecedents. In present study, offenders may rationally understand that driving under ALLR is not good or unsafe, but at the same time they may like to drive, because it gives them a good feeling or they feel deserved to drive. Subjective norm is part of the TPB, and reflects the offenders' perceived social pressure (what individuals believe other people think they should do). According to the TPB, the perceived opinion of significant others (subjective norm) can influence intentions and behavior. Perceived behavioral control represents an effect on intention to perform a behavior that is not mediated by attitude or subjective norm (Ajzen, 1988; Ajzen and Madden, 1986). While some researchers have suggested that car use may be habitual (e.g. Verplanken et al., 1994; Bamberg and Schmidt, 2003), the present study hypothesis that habit formation leads to 'automatic' that may deliberately lead to actual driving behavior. Therefore, habit may act as a moderator of the intention-behavior relationship. And intentions and behavior are also determined by perceived behavioral control and by habit formation.

2.2. Data and participants

Data were collected from a previous ALLR study (Chang et al., 2006) conducted in July 2003, and a follow-up questionnaires survey conducted three months after the first responses. The previous ALLR study investigated a sample of 768 volunteer ALLR offenders who had been involved in either a hit-and-run offence causing death/or injury, or a drunk driving offence causing death/or serious injury from 1993 to 2002 in Taiwan. Only 16.8% of ALLR offenders gave up driving entirely after the ALLR was imposed. The sample population of the present study focused on the 83.2% of ALLR offenders continuing to drive. Since these ALLR offenders were expelled from the Department of Motor Vehicles, objective records of driving behaviors are not available. The follow-up questionnaires were directly mailed to these 639 still driving ALLR offenders and their self-report data were collected. After a two-wave trialed telephone to these volunteered offenders, 563 offenders returned their

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