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Extending the theory of planned behavior: The role of behavioral options and additional factors in predicting speed behavior

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ABSTRACT

The theory of planned behavior (TPB) has been successfully predicting behavior with a small number of factors. Nonetheless, to increase its predictive power we introduced several behavioral options and additional factors in the same prediction model about drivers' self-reported speed behavior on a road with a speed limit of 90 km/h. We investigated the TPB factors as well as descriptive norms, perceived similarity with/description of the prototypical driver, and past behavior with respect to three speed options ($\leqslant$90 km/h; [91 – 110 km/h]; +110 km/h). We also added self-description as a driver, comparative judgments about speeding risks, frequency of passengers, driving-related sensation seeking, and driving anger. Thus, 1192 French young drivers filled in an extended TPB questionnaire about speed behavior and driving history. Participants reported driving at 101.85 km/h on a road with a speed limit of 90 km/h. The three options added 13% in the explained variance of speed behavior. A total of 60% of the variance in speed behavior was accounted for, with intentions to three options and perceived similarity with the driver complying and driving over 110 km/h as the best predictors. The implications of the results were discussed.

1. Introduction

The theory of planned behavior (TPB) (Ajzen, 1985) has been widely used to predict a variety of behaviors from a small number of factors (Armitage & Conner, 2001; Conner & Sparks, 1996). According to the TPB, behavioral intention represents one of the most important predictors for behavior and has been frequently investigated in empirical studies (Abraham, Sheeran, & Johnston, 1998). Attitudes, social norms, and perceived behavioral control moderate the relationship between intention and behavior (Ajzen & Madden, 1986; Sheeran, Trafimow, & Armitage, 2003).

However, to increase the predictive power of the TPB, two lines of research have been developed taking into account: (a) *additional factors* such as behavioral expectations (Sheppard, Hartwick, & Warshaw, 1988), anticipated regret (Connor, Smith, & McMillan, 2003; Evans & Norman, 2003; Conner, Lawton, Parker, Chorlton, Manstead, & Stradling, 2007), personal identity (Sparks & Guthrie, 1998), moral norms (e.g., Elliot & Thompson, 2010), past behavior (e.g., Lewis, Watson, & White, 2008; Sommer, 2011), descriptive norm (Forward, 2009) and (b) *behavioral options* (Ajzen & Fishbein, 1969; Bamberg, Ajzen, & Schmidt, 2003; Bamberg & Ludemann, 1996; Fishbein & Ajzen, 1981; Fishbein, Ajzen, & Hinkle, 1980; Letirand & Delhomme,

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2003). Few studies have considered both additional factors and behavioral options in the same prediction model (Bamberg, Ajzen & Schmidt, 2003; Cruickshank & Francis, 2006; Letirand & Delhomme, 2003, 2005).

The present study was focused on the prediction of young drivers' speed behavior in a new speed enforcement context. Despite the introduction of an Automatic Speed Enforcement system (ASE) in France starting late in 2002, speeding remained one of the main factors for road crashes and fatalities, especially, among young drivers who constituted 23% of the road fatalities and 22% of the injuries in 2005 in France (ONISR, 2006). Between late 2002 and the end of 2005, 1000 fix and 500 mobile speed cameras have been installed. As a consequence, a drop of 7.3 km/h in the average speed was observed, from 89.5 km/h in 2002 to 82.2 km/h in 2006, and the number of tickets for speed violations increased from 1.4 million 2002 to 7.2 million in 2006 (ONISR, 2008). An overall 30% drop in road fatalities from 2002 to 2005 was recorded (ONISR, 2006) and authorities believed that ASE system was responsible for 75% of this reduction. Moreover, for young drivers, fatalities went from 1281 in 2002 to 790 in 2005 (−38.3%).

Extended TPB empirical studies have mainly been focused on predicting one behavioral option which, most of the times, refers to transgression behaviors (Parker & Manstead, 1996; for review, Elliott, Armitage, & Baughan, 2005 for exceptions). Even though TPB facilitates the comprehension and prediction of behavior, it does not offer support in explaining how people choose between several behavioral options, for example, between complying and transgressing speed limits. Given the new speed enforcement context, we believed that the evaluation of several speed options and additional TPB factors could contribute to increasing the explanation and prediction of young drivers' speed behavior.

In the following, we will present the contribution of several additional factors and behavioral options to explain and predict speed behavior.

1.1. Additional factors

1.1.1. Descriptive norms

Kallgren, Reno, and Cialdini (2000) distinguished between injunctive and descriptive norms as two different sources of social influence. Descriptive norms refer to people's beliefs about the actual behavior adopted by significant others and may strongly influence young drivers' behavior in the sense of driving faster (Connor et al., 2003; Forward, 2009) or slower (Delhomme & Delgery, 2005). Empirical studies reported strong correlations between descriptive norms and behavioral intention (Sheeran & Orbell, 1999). However, conclusions have been contradictory when descriptive norm has been simultaneously entered in the prediction model alongside attitudes, injunctive norms, and perceived behavioral control (Rivis & Sheeran, 2003). Thus, Conner, Martin, Silverdale, and Grogan (1996) found that injunctive norms predict better people's intention to diet while Grube, Morgan, and McGee (1986) as well as Morgan and Grube (1991) found that descriptive norms predict better teenagers' intention to consume drugs.

1.1.2. Frequency of passengers

Young drivers are more likely to speed when traveling with a passenger (Delhomme, 1994; McKenna, Waylen, & Burkes, 1998; Simons-Morton, Lerner, & Singer, 2005) than older ones. In addition, they take more risk when accompanied by a peer (Rolls & Ingham, 1992) rather than a child or a parent (Arnett, Offer, & Fine, 1997; Fleiter, Lennon, & Watson, 2010).

1.1.3. The prototype/willingness model

The model developed by Gibbons and Gerrard (1995) states that risky behaviors represent social activities and reactions to risk-conducive circumstances rather than planned behaviors. Thus, young drivers may engage in risky behaviors, if the opportunity arises and if the social image of the prototypical speeding driver is evaluated as acceptable for them (Blanton, Gibbons, Gerrard, Conger, & Smith, 1997; Gibbons, Gerrard, & Boney-McCoy, 1995). Gerrard, Gibbons, Benthin, and Hessling (1996) showed that risk images of deviant drivers may predict reckless driving in young people.

1.1.4. Past behavior

Past behavior is one of the strongest predictors of intention and behavior, most often explaining variance above the one accounted by the TPB factors (Conner & Armitage, 1998). Different approaches tried to find explanations of past behavior's influence on behavioral intention and behavior. One of the most frequent explanations relies on the connection between behavior and automatic processes underlying habits (Aarts & Dijksterhuis, 2000; Aarts, Verplanken, & Van Knippenberg, 1998; Verplanken & Aarts, 1999).

1.1.5. Comparative judgments about speeding risks

Young people perceive themselves as more competent drivers (Harré, Foster, & O'Neill, 2005) and less vulnerable than their peers (Causse, Delhomme, & Kouabenan, 2005; Finn & Bragg, 1986). As a consequence, they adopt more frequently risky behaviors such as excessive speed (Delhomme, 1991, 2000, 2001; Delhomme, Verlhiac, & Martha, 2009).

1.1.6. Driving-related sensation seeking

Driving-related sensation seeking is positively correlated with risky behaviors (Cestac, Paran, & Delhomme, 2011; Greaves & Ellison, 2011; Jonah, Thiessen, & Au-Yeung, 2001).