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## Anger, aggression, and risky behavior: a comparison of high and low anger drivers<sup>☆</sup>

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### Abstract

This research tested hypotheses from state-trait anger theory applied to anger while driving. High and low anger drivers drove equally often and as many miles, but high anger drivers reported more frequent and intense anger and more aggression and risky behavior in daily driving, greater anger in frequently occurring situations, more frequent close calls and moving violations, and greater use of hostile/aggressive and less adaptive/constructive ways of expressing anger. In low impedance simulations, groups did not differ on state anger or aggression; however, high anger drivers reported greater state anger and verbal and physical aggression in high impedance simulations. High anger drivers drove at higher speeds in low impedance simulations and had shorter times and distances to collision and were twice as likely to crash in high impedance simulations. Additionally, high anger drivers were more generally angry. Hypotheses were generally supported, and few gender differences were noted for anger and aggression.

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## 1. Introduction

Anger and aggression on our highways have received considerable media attention in the past decade. For example, ‘road rage,’ the most violent cases involving assault or attempted assault, appeared to increase approximately 7% a year from 1990 through 1995 in the US, resulting in an estimated 200 deaths and another 12 000 injuries (American Automobile Association, 1997). Drivers who have altercations with other drivers also experience greater numbers of traffic violations and accidents (Hemenway & Solnick, 1993). However, for every physical assault or anger-related injury, there are thousands if not tens of thousands of angry drivers. Their experience is marked by intense emotional and physiological arousal. Some angry drivers behave aggressively (e.g. hostile gestures, loud epithets and denigrating comments, cutting a person off or tailgating in anger), whereas others are angry, but do not aggress (e.g. only mumble to self or think hostile thoughts).

Social and environmental factors such type of situations encountered, anonymity, and presence of hostile messages and bumper stickers influence anger and aggression while driving (Doob & Gross, 1968; Ellison-Potter, Bell, & Deffenbacher, 2001; Kenrick & MacFarlane, 1986; Lajunen & Parker, 2001; Shinar, 1998). Personality and emotional disposition also appear to contribute. For example, drivers who engage in risky and illegal driving and/or who have the highest crash rates are high in general anger, aggressiveness, risk taking, impulsiveness, social irresponsibility, and sensation seeking (Arnett, Offer, & Fine, 1997; Donovan, Queisser, Salzberg, & Umlauf, 1985; Mayer & Treat, 1987; McMillen, Pan, Wells-Parker, & Anderson, 1992; Underwood, Chapman, Wright, & Crundall, 1999). Traits like these are associated with risky driving, but transitory states also appear important. For example, in field studies, state anger correlated strongly with increased levels of aggression and risky behavior (Deffenbacher, Lynch, Oetting, & Yingling, 2001b). Anger was the only mood state associated with speeding in adolescents (Arnett et al., 1997), and reckless driving was associated with elevated state anger in college students (Morris, Deffenbacher, Lynch, & Oetting, 1996). Findings such as these suggest that the state-trait model of anger (Spielberger, 1988, 1999) might be adapted to anger while driving (Arnett et al., 1997; Deffenbacher, Oetting, & Lynch, 1994). Applied to anger when driving, trait driving anger refers to a person’s general propensity to become angered frequently and intensely when driving (i.e. trait driving anger reflects a context-specific tendency to become angry when driving). State driving anger describes angry emotional and physiological arousal stemming from a specific driving event.

Deffenbacher et al. (1994) developed a measure of trait driving anger, and initial studies showed that state anger increased with driving-related frustration and provocation, and that trait driving anger correlated positively with risky driving-related attitudes and behaviors, the frequency and intensity of state driving anger, frequency of risky and aggressive behavior on the road, and some crash-related events such as close calls, (Deffenbacher et al., 2001a,b). In studies of British drivers, elements of trait driving anger correlated positively with traffic violations generally (Underwood et al., 1999) and with violations involving both aggression and non-aggression incidents (Lajunen, Parker, & Stradling, 1998). Two recent studies (Deffenbacher, Huff, Lynch, Oetting, & Salvatore, 2000a; Deffenbacher, Lynch, Filetti, Dahlen, & Oetting, 2002a) compared a group of angry drivers who identified driving anger as a personal problem for which they sought counseling to a group of low anger drivers who indicated they did not have personal problem with anger when driving. Groups did not differ on the frequency of driving, but high anger drivers reported more intense

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