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The impact of Primacy/Recency Effects and Hazard Monitoring on attributions of other drivers

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ABSTRACT

The present study examined the impact of Primacy/Recency Effects and Hazard Monitoring on driver attributions. Participants viewed a simulated near collision from the perspective of a trailing motorist. The amount of error free driving prior to the near collision varied between two groups, where the near incident occurred either early or later in their viewing experience. They were then given the opportunity to provide judgments of the offending driver based on how safe, dangerous, risky, and skilled the driver was in general, and to evaluate their overall performance. Results showed a Primacy Effect dominance in that judgments of the driver were most negative in the early group, but this was moderated by high Hazard Monitoring for ratings of "dangerous" and "safe". This suggests that judgments of other drivers are likely to be quick and based on early information, but are impacted by personal factors such as a tendency to monitor for hazards.

1. Introduction

The study of attributions has a long and rich history in the social sciences, yet has received relatively little attention in traffic research. This is an important omission given that attributions are a crucial component to the thoughts and feelings that are constructed about others in terms of who they are as a driver and the underlying causes of their actions, and can subsequently alter behavior towards those individuals. As in any social setting, drivers routinely make evaluations of themselves, traffic events, and other drivers, and negative judgments can lead to dangerous and conflictual behavior in the traffic environment. However, the traffic context is unique in many respects compared to other environments, largely due to the transitory nature of driving interactions (high speeds, combined with visual isolation and anonymity among drivers) and the elevated potential for personal danger. These factors, combined with the limited amount of information available when attributions are formed, may impact the speed, focus, impetus, process, and ultimately outcome when judging other drivers.

The few studies that have examined driver attributions have typically focused on the causal attribution approach (see Malle, 2011) which attempts to identify underlying cause and distinguish responsibility for negative driving behaviors/outcomes, particularly aggressive driving and collisions (e.g. Davies & Patel, 2005; Groeger & Grande, 1996; Kouabenan, 1998). Most have provided support for Weiner's (1986) attribution theory in which judgments of the responsibility of driving actions are concentrated on their locus (internal/external influences), stability (consistency/variability of behavior over time), and controllability (actions due to skill or to luck/fate). Typically drivers are perceived to be responsible for their

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negative activities and outcomes more frequently when said behavior is judged as internal, stable, and controllable (see Lennon, Watson, Arlidge, & Fraine, 2011; Lustman, Wiesenthal, & Flett, 2010). Further, these attributions have been found to impact subsequent negative thoughts, feelings, and actions towards other drivers. For example, Wickens, Wiesenthal, Flora, and Flett (2011) found greater anger directed towards drivers viewed as responsible for offensive behavior. Similarly, aggression, retaliation and punishment towards other drivers are often reported as more appropriate and acceptable when the perpetrator is viewed as personally responsible for the instigating actions (Baldwin & Kleinke, 1994; Feather & Deverson, 2000), when those actions are viewed as typical of that driver (Britt & Garrity, 2006) and when they are perceived to be intentional (Lennon & Watson, 2011).

In contrast, the current study was focused more on the inferential approach to attributions (see Malle, 2011), which has not been widely studied in the traffic context, where qualities or traits are allocated to other drivers based on their driving behavior/outcomes. In this perspective, observers attempt to determine the reason for a state action by assigning trait qualities to an actor that would define its underlying motive. The emphasis in the present study was to potentially evaluate factors that might increase the assignment of negative driving characteristics (e.g. risky, dangerous) to other drivers after witnessing their commission of an undesirable driving event (e.g. a lane violation and near collision). Specifically, these factors included cognitive bias due to timing of available information (Primacy/Recency Effects) and the tendency towards Hazard Monitoring.

Cognitive biases have long been known to alter the nature of attributions, often at the expense of accuracy. Roseborough, Wiesenthal, Flett, and Cribbie (2011) argued that Just World Beliefs (the biased view that an individual's actions will justly lead to fair and deserving consequences) impact judgments of other drivers (i.e. "bad" things happen to "bad" drivers) and subsequent anger and aggression. Walton and Bathurst (1998) found evidence of a downward comparison bias (a form of social comparison in which others are perceived more negatively to inflate relative self evaluations) where participants judged other drivers as less safe than themselves in typical speed. The Defensive Attributions Theory (a tendency to assign greater blame to others for negative events/outcomes in order to protect impressions/evaluations of the self) has been used to explain the increased propensity to blame victims of collisions when they are more severe (Walster, 1966) and for drivers to blame others more often for their own severe collisions (Stewart, 2005). Finally, several studies have found support for the Fundamental Attribution Error in the traffic environment (assigning dispositional reasons to others and situational causes to the self more frequently for the same actions/outcomes), such as when rating skill in handling various driving scenarios (Lennon et al., 2011), for general risky driving tendencies (Harré, Brandt, & Houkamau, 2004), in committing traffic violations (Baxter, Macrae, Manstead, Stradling, & Parker, 1990), and in assigning fault for simulated near collisions (Hennessy, Jakubowski, & Benedetti, 2005).

Another cognitive bias that might potentially impact the attribution process in the driving environment, but has yet to receive appropriate research attention, is the Serial Position Effect which holds that the first (Primacy Effect) and last (Recency Effect) bits of information are recalled more effectively than those in the middle of a larger continuous string of information (Robinson & Brown, 1926). While the dominance of either primacy or recency undoubtedly depend on a number of factors, it has been proposed that unique memory processes account for each independently. The Primacy Effect is likely due to greater rehearsal of information experienced early in a string (Baddeley, 1986) which would take advantage of deeper processing and potential links to previous experiences or events in episodic memory. Such information would then become more distinct and stand out during processing of subsequent information (Dolenc, Bon, & Repovš, 2013). In contrast, the Recency Effect often occurs due to working memory processes (Capitani, della Sala, Logie, & Spinnler, 1992) where new information competes with and displaces older primary information, making it easier to retrieve the most current details.

It should be noted that a great deal of the research evidence for the serial position effect relies on recall of strings of words, syllables, or numbers, which are important in understanding errors in language and mathematical recall. However, Primacy and Recency Effects also occur in applied and social contexts, such as in making judgments and assigning characteristics to others. Copeland, Radvansky, and Goodwin (2009) argued that the natural process of forming first impressions of others may very well be grounded in the Primacy Effect. According to Asch (1946), impressions of the personal qualities of others is often formed quickly based on limited observable traits. However, given that individuals regularly display multiple qualities simultaneously, perceivers assign meaning and value to certain traits over others, where some come to stand out as more central. The centrality of these traits is determined by the context and personal meaning or relevance (see Nauts, Langner, Huijsmans, Vonk, & Wigboldus, 2014). Primacy in this view is not necessarily temporal but rather more functional, where succeeding traits are interpreted in relation to the central trait. According to Copeland et al. (2009) the first bits of information in such situations may actually aid in the comprehension of later information. So in the traffic environment, when early contact with another driver is negative (such as seeing a lane violation and near collision), this should come to represent a central "negative" trait and other information would be understood and interpreted in relation to that personal quality (i.e. subsequent negative driving should be seen as less positive). In contrast, the reverse should be true when early contact is positive. Thus it was expected in the present study that Primacy Effect would show a dominance over Recency Effect in attributions of other drivers, where primary information would come to dominate the qualities/characteristics assigned to another driver.

There is also precedence to suggest that personal factors can alter the outcomes of attributions. In fact, Weiner (1972) argued that individual differences can lead to "disparities in perceptions of causality". For example, with respect to the driving context, judgments of intentionality of offending driving behavior have been linked to narcissism (Lustman et al., 2010) and justice sensitivity (Roseborough, 2014) among observers. As a perceptual process, judgments of others are undoubtedly