The Role of Arousal in Time Perception: Implications for Emotional Driving

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Abstract : Emotional stress is an important risk factor in the rate and severity of traffic accidents. Moreover, incorrect time perception is implicated in the increase of traffic violations, such as running red lights or collisions. While the role of emotional arousal on perceived time is well-established, the role of physiological arousal in time perception remains unexamined. Specific emotions can be, however, associated with distinct physiological responses. In the current research, two studies examined the role of physiological arousal in time perception measured throughout the experiment, 41 participants engaged in a cold pressor task and had their time perception measured throughout the experiment. In the second study, 138 participants engaged in either isometric or deep breathing exercises. These activities were designed to simulate the sympathetic and parasympathetic nervous systems, respectively. Participants completed a bisection task to measure time perception in both studies, as well as a physiological response via an Electrocardiography (ECG). Results found that activation of the parasympathetic nervous system is associated with greater time perception. These findings are discussed with reference to models of time perception, as well as implications for emotional driving and misperceptions of speed. It is important to consider the role of physiology in the misperception of time, as these factors can lead to increases in driving accidents.

1

Keywords : emotions, nervous system, physiology, time perception

Conference Title : ICTPDDB 2018 : International Conference on Traffic Psychology and Driver Behavior

Conference Location : Paris, France

Conference Dates : September 20-21, 2018