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## PSYCHOPHYSIOLOGICAL INVESTIGATION OF THE IMPACT OF STIMULATING AND RELAXING SCENTS ON AROUSAL, RELAXATION AND DRIVING BEHAVIOR IN CAR DRIVERS

Wolfram Boucsein<sup>1</sup>, Ralf Stürmer<sup>2</sup>, & Michèle Moessinger<sup>3</sup>

<sup>1</sup>University of Wuppertal, Germany, <sup>2</sup>Psyrecon Research and Consulting GmbH,  
Wuppertal, Germany, <sup>3</sup>Psychology and Neurophysiology, Renault, Guyancourt, France

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Psychophysiological methods have been frequently used for investigating driving behavior. An intriguing new research area examines whether administering either stimulating or relaxing scents influences the driver's arousal level or relaxation and how they act on driving behavior. Applying psychophysiological methodology from our laboratory for cosmetic product evaluation, we determined the psychophysiological response patterns in a study with 60 participants for nine scents that were presented for 2 minutes in a stationary car. EDA, ECG, facial EMG and EEG were continuously recorded and subjected to the same kind of discriminant analysis as used in our past research, together with nine-point Likert scale rated adjectives. Based on the discrimination between centroids, three scents were selected for a study with another 60 participants using the same measures while driving 20 minutes on rural roads in real traffic situations. The same procedure was repeated in two consecutive studies with additional 60 respectively 45 participants for another nine scents. Each of the four studies revealed consistent arousal- and relaxation-related physiological response patterns: Arousing scents increased the SCL; relaxing scents increased EEG alpha activity. Our psychophysiological approach was not only capable of differentiating among scents but could also identify objectively the drivers' preference for scents. Analyzing recordings from the car's Controller Area Network bus revealed that changes in arousal and relaxation induced by the scents had no adverse influence on driving behavior.