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# Trafficking in cognition: applying cognitive psychology to driving

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## Abstract

This paper summarises a Presidential Address to the Division of Traffic and Transportation Psychology at the 2002 International Congress of Applied Psychology. It considers whether traffic psychology is a distinct area of psychology, and concludes that the range of psychological approaches that understanding drivers and traffic requires is too pervasive for it to be so. The difficulties and shortcomings of various attempts to apply cognitive psychology to driving and traffic are explored, with respect to perceptual, motor and skilled aspects of the driving task. Examples are given of how ‘understanding driving’ poses theoretical challenges to mainstream cognitive psychology that have yet to be satisfactorily resolved.

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*Keywords:* Traffic psychology; Driving; Applied cognitive psychology; Automaticity; Motor control; Time-to-collision; Skill acquisition

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## 1. Introduction

It is a great honour to have been President of the Traffic and Transportation Psychology Division of the International Association of Applied Psychology for the past four years, and to have been a member of the Division’s Executive Committee since its founding in 1994. I want to use the opportunity of my Presidential Address to reflect upon the relationship between ‘traffic’ and ‘psychology’.

### 1.1. Background

The establishment of a Division within the International Association of Applied Psychology (IAAP) was a significant recognition of the substantial international research effort, and practical

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application of psychological theory, in this area. Many cross-national activities and national associations of psychology had already acknowledged the importance of psychological studies of transport and its users. However, the formation of an IAAP division has provided the only truly independent international scientific forum for researchers and practitioners, one that places us alongside rather than separates us from other academics and professionals. The formation of this division has also been crucial to the creation of what is the only scientific peer-reviewed journal dedicated to the publication of psychological research in this area (i.e. *Transportation Research: Traffic Psychology and Behaviour*, 1998). Since the last International Congress of Applied Psychology (San Francisco, 1998), we have seen the setting up and demise of another journal (*Transportation Human Factors*, 1999–2000) and an organisation of traffic psychologists (Europsyt). It is very reassuring to see both our Division and Journal going from strength to strength over the same period.

Both the Division and Journal have come into being and been sustained by the vision and energy of Talib Rothengatter. However, our success also arises from the fact that both the division and journal have deliberately sought to place our chosen area of work and study in the context of more traditional and enduring approaches to psychology and transport. The Division is part of a larger organisation of psychologists—IAAP—that has divisions for Clinical and Community Psychology, Work and Organisational Psychology, Psychological Assessment and Evaluation, among others.

The journal is part of Elsevier's *Transportation Research* journal series, which has titles that reflect more established 'mainstream' approaches to the study of traffic and transportation (i.e. policy and practice, methodological, emerging technologies, transport and environment, logistics and transportation). Both the journal and division have marked a scientific coming of age of research and practice in this area, and I do not in any way wish to undermine either. However, I do want to consider in the remainder of this paper, whether 'traffic psychology' actually exists and if it does, what it is, and what it might be for.

### *1.2. Traffic psychology?*

In a little over a century the science and practice of psychology has expanded to encompass the investigation of, and application to, almost all areas of human endeavour. In part because of its success, it is now commonplace to distinguish between different theoretical and methodological approaches to psychology, and between different areas of psychological practice and application. Thus we may approach the scientific study of human behaviour from the perspective of cognitive psychology—which stresses the individual's processing of information, or from a social perspective—which concentrates more on the constraints and influences that shared beliefs and behaviour place on individuals. We may decide to investigate psychological issues using highly quantitative methodologies such as dual-tasks, computational modelling or brain imaging, or using more interpretative methodologies which rely on individuals' reportage of their goals, thoughts, reasons for action and so forth. We might choose to devote our efforts to ameliorating human suffering by using psychotherapeutic counselling to overcome the anxiety and depression that may follow the death of a loved one. Or we may use our psychometric expertise to determine whether an individual might benefit from a particular type of educational support, or whether they are likely to perform proficiently as employees in a particular domain.

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