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## Emotions, behaviour, and the adolescent driver: A literature review



B. Scott-Parker\*

Adolescent Risk Research Unit (ARRU), Sunshine Coast Mind and Neuroscience – Thompson Institute, Australia  
School of Social Sciences, Faculty of Arts, Business and Law, University of the Sunshine Coast, Australia  
Sustainability Research Centre (SRC), Faculty of Arts and Business, University of the Sunshine Coast, Australia

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### ABSTRACT

**Background:** The intractable global road safety problem of the overrepresentation of young drivers in road crashes, despite a plethora of intervention, suggests that innovative approaches to understanding – and thus intervening in – road crash risks is required. The current research recognises that young drivers frequently are adolescents, and that adolescence is characterised by rapid physical, psychological, cognitive, and social development, each of which interacts with, contributes to, and is impacted upon by a wealth of negative, neutral and positive moods and emotions. The literature regarding relevant to adolescent drivers and emotions between 1 January 2005 and 30 September 2015 will be synthesised, in addition to posing future research questions regarding adolescents, emotions, and driving behaviour.

**Results:** One hundred and three peer-reviewed articles were identified, and these were summarised within emotions and the adolescent (44 papers); emotions, the adolescent, and driving risks (23 papers); emotions, the adolescent, and risky driving behaviour (30 papers); and emotions, the adolescent, and road safety interventions (6 papers). The findings were synthesised within the context of the characteristics of the adolescent driver, their emotions, the driving context and their driving behaviour, including a pictorial representation of two temporal models depicting the sequence via which emotions can impact upon adolescent driving behaviour (Path A in which the adolescent driver experiences emotions after entering the car; Path B in which the adolescent experiences emotions before entering the car).

**Discussion and implications:** The relatively recent proliferation of literature pertaining to adolescents, emotions, and their driving behaviour suggests that the breadth of research questions posed in relation to the domains of the adolescent driver, their emotions, the driving context, and their driving behaviour are timely. Indeed, recent applications of systems thinking within road safety, including young driver road safety specifically, maintain that a holistic approach to the understanding of who plays what role in this system that currently contributes to crash risks, and conversely can play a role in effective and efficient intervention, is essential before the real world realisation of a safe road system. Addressing these research questions are fundamental to sustaining progress on the path to young driver road crash prevention through a safe young driver road safety system.

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\* Address: Adolescent Risk Research Unit (ARRU), Sunshine Coast Mind and Neuroscience – Thompson Institute, University of the Sunshine Coast, 12 Innovation Parkway, Birtinya, Queensland 4575, Australia.

E-mail address: [bscottpa@usc.edu.au](mailto:bscottpa@usc.edu.au)

## 1. Introduction

The persistent overrepresentation of young drivers in road crashes – and fatalities and injuries arising from those crashes – is an unrelenting global injury prevention and public health problem. Importantly for young driver road safety is the fact that young drivers – typically aged 15–24 years – are adolescents. While an adolescent is defined by the *Oxford Dictionary* (2014) as “(of a young person) *in the process of developing from a child into an adult*”, actually defining clear age-related parameters for young drivers within this developmental stage is less specific. To illustrate in the context of papers published elsewhere in this journal, ‘adolescent’ participants are aged 12–19 years (Zhou & Horrey, 2011), 13–18 years (Nabipour, Khanjani, Nakhaee, Moradlou, & Sullman, 2015), 14–17 years (Cerniglia et al., 2015), and 16–20 years (Smorti, Guarnieri, & Ingoglia, 2014), with each of these examples clearly overlapping to some extent with other papers reporting research with ‘young adults’ aged 17–25 years (e.g., Delbosc & Vella-Brodrick, 2015; Mann & Lansdown, 2009). Within the context of the statistics pertaining to driving licensure, in Queensland, Australia, ‘young drivers’ are aged 17–24 years at the state level (12.8% of the licensed population, 23.8% of all hospitalised casualties in 2013; 22.2% of year-to-date to 31 May 2016 fatalities, *Transport and Main Roads*, 2015, 2016), and 17–25 years at the national level ( $n = 114$  and 20.1% of the fatally injured drivers in Australia in the 2016 calendar year, BITRE, 2016). In contrast, Australian injury statistics categorise ‘adolescents’ as 15–17 years, and ‘young adults’ as 18–24 years ( $n = 9759$ , 18–24 year olds hospitalised for transport-related injuries in 2011–2012, Australia-wide, Pointer, 2015). The lack of clarity regarding the simple measure of defining adolescents and young drivers has been raised elsewhere as a methodological issue which impacts upon the utility and generalisability of young driver research, ultimately hampering effective intervention (e.g., Scott-Parker & Senserrick, 2013, 2017).

Not only is adolescence characterised by rapid development physically (e.g., puberty), psychologically (e.g., development of self-identity), cognitively (e.g., increased capacity in decision-making skills), and socially (e.g., increased importance of peers), with adolescents most likely positioned along a continuum of ‘developing’ within these realms rather than a dichotomous ‘undeveloped’ vs ‘developed’, adolescence is also characterised by emotional development (Headspace, 2015). Such emotional development is typically associated with the experience of turbulent emotions, defined by the *Oxford Dictionary* as “*strong feeling(s) deriving from one’s circumstances, mood, or relationship with others*”, and the experience of turbulent moods, “*temporary state(s) of mind or feeling*” (*Oxford Dictionary*, 2014). Unlike emotions, moods tend to generally be positive or negative, and can emerge from a complex blend of multiple emotions and relatively stable personality traits. Importantly, however, both moods and emotions are experienced as internal subjective states which can be externalised through behaviours in response to relatively stable personality characteristics such as trait factors (e.g., sensation seeking), less-stable state factors (e.g., depression), and/or in response to context-specific triggers (e.g., interaction with another road user, including vehicle passengers). It is noteworthy also that the influence of emotion and/or mood upon the adolescent’s driving behaviour may be positive or negative, and indeed there may be occasions in which the emotion and/or mood has a neutral effect (i.e., no influence) on the adolescent driver’s behaviour.

Moreover, much road safety research and intervention generally, and young driver road safety research and intervention specifically, ignores the ‘human’ element altogether. As attributed to Plato, *Human behaviour flows from three main sources: Desire, emotion and knowledge*. Arguably, road safety intervention does not ponder questions such as ‘What does it mean to be human?’, and ‘What does it mean to be an adolescent?’, notwithstanding that theories such as the Prototype/Willingness Model (e.g., see Gibbons & Gerrard, 1995) recognises that adolescents do not necessarily *intend* to engage in risk behaviour, rather they are *willing* to engage in risky behaviour in particular circumstances such as if their peers are present (e.g., Scott-Parker, Hyde, Watson, & King, 2013). Indeed, the proliferation of technologies which has facilitated the advent of autonomous vehicles further dissociates these questions from road safety, perhaps implicitly recognising that human emotion is indeed problematic for road safety more generally. Regarding intervention in young driver road safety specifically, graduated driver licensing (GDL) has emerged as the most effective intervention to date, and arguably GDL in Queensland addresses the influence of emotions on young driver behaviour through regulating context-specific influences such as passengers carried at night, with a maximum of 1 peer-aged passenger in the vehicle during the first independent driving licence phase (Provisional 1 licence; see Scott-Parker, Bates, Watson, King, & Hyde, 2011, for an overview of Queensland’s GDL). However it is notable that GDL does not, and may not be able to, address the purpose of driving, with research consistently finding that driving a vehicle serves many purposes for adolescents beyond efficient transport from points of departure to destinations, including emotional purposes such as driving for a sense of freedom (Scott-Parker, King, & Watson, 2015).

Earlier research by the author (e.g., Scott-Parker, Watson, King, & Hyde, 2012) elucidated two temporal sequences in which emotions can and do influence young driver behaviour, and which consider the influence of personal characteristics (well-recognised in the young driver literature, e.g., age, gender) in addition to the driving context. As illustrated in Fig. 1, the adolescent can get in their car, begin driving, and experience emotions which arise from driver-specific and/or context-specific triggers which result in changes in their driving decision-making (consciously or unconsciously) and ultimately changes in their driving behaviour (Path A). Alternatively, the adolescent driver may experience strong emotions, then get in their car (Path B), and thus their driving decision-making and driving behaviour is influenced by pre-driving emotions. In addition, Path A and Path B may co-occur, such that the adolescent driver who experiences strong emotions may get in their car (Path B) however a context-specific or relatively stable trait or state may further increase or decrease the impact of their emotions on their driving decision-making and their behaviour.

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