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A mixed-methods study of driver education informed by the Goals for Driver Education: Do young drivers and educators agree on what was taught?

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ABSTRACT

Evaluation research suggests that professional driver education and training has little effect on reducing the crash involvements of young drivers. Driver education and training programs have been criticised as being unsystematically designed and lacking an empirical or theoretical basis. The Goals for Driver Education (GDE) is a theoretical framework developed to address these criticisms. The GDE defines four hierarchical levels of driving behaviours and influences on driving and three individualised Person-specific factors that should be considered in driver education and training programs. The aim of this study was to compare and contrast, in a methodologically rigorous manner, the perceptions that young drivers ($n = 22$; $M_{age} = 17.80$ years, $SD = 6.54$ months) and driver educators ($n = 10$; $M_{age} = 54.5$ years, $SD = 9.21$ years) have of a professional driver education and training course they participated in or facilitated. Eight semi-structured focus groups were conducted and the GDE was used to direct the collection and analysis of the data. Young drivers mainly discussed basic driving skills located on the lower levels of the GDE rather than higher level abstract factors that increase risk for young drivers. Driver educators tended to group particular GDE levels and Person-specific factors together when discussing the driving course and paid limited attention to Goals and contexts of driving. Results suggest that driver educators should provide direct instruction regarding the more abstract social and contextual factors that influence driving to potentially increase the efficacy of driver education and training as a safety countermeasure.

1. Introduction

Road traffic injuries are the leading cause of death of individuals aged 15–29 years (World Health Organisation, 2016). In 2015, in high income countries such as the United States and Australia, approximately 28% of deaths of 15–19 year olds and 24% of 20–24 year olds were caused by road injury (Institute for Health Metrics and Evaluation, 2015). Graduated Driver Licensing (GDL) programs, which regulate the type, time and contexts of driving for young people, have been adopted as the dominant governmental response to the issue of young driver crashes in North America and Australasia (Bates et al., 2014b; Langley et al., 1996; Senserrick and Williams, 2015). Evaluations of GDL consistently demonstrate statistically significant, and often sizeable, reductions in young driver crash rates (Shope, 2007; Vanlaar et al., 2009). However, crash rates of young drivers remain high in comparison to experienced drivers even in jurisdictions with a GDL system (Bradshaw et al., 2015). As such, further research and additional interventions are needed. This paper describes a mixed-methods study focused on professional driver education and training as a safety countermeasure for young drivers. The introduction is divided into three parts. First, an overview of young driver education and training research is provided. This is followed by a detailed explanation of a major theoretical framework about driver education and training, the Goals for Driver Education (GDE; Hatakka et al., 2002; Peraaho et al., 2003). Lastly, the aim of the study is presented.

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1.1. Driver education and training

Driver *education* refers to the delivery of knowledge about driving and road safety and may not necessarily be conducted in a vehicle while driver *training* usually refers to the development of proficiency in specific skills (e.g. braking) (Beanland et al., 2013). A wide variety of approaches to both driver education and driver training have been developed (Raftery and Wundersitz, 2011) and often elements of both driver education and driver training are presented within a single program (Groeger, 2011). In practice, it can be difficult to differentiate between driver education and driver training and research often conflates these terms (Raftery and Wundersitz, 2011; Royal Automobile Club of Victoria, 2016).

Formalised driver education and training with professional instructors has a high level of face-validity (Lonero, 2008). It is likely that many organisations providing these courses, and the parents of attendees, have the expectation that these courses will increase young drivers' skills and, in doing so, reduce the chance that they will experience a motor vehicle crash (Mayhew et al., 2002). Despite this, most evaluation research indicates that participation in professional driver education and training has not lead to significant reductions in crashes of young drivers (Christie, 2001; Elvik et al., 2009; Glendon et al., 2014; Haworth et al., 2000; Ker et al., 2005; Lonero and Mayhew, 2010; Lund et al., 1986; Mayhew et al., 2002, 1998; Roberts and Kwan, 2001; Thomas et al., 2012). Moreover, studies that have specifically examined skid training indicate that it does not reduce young driver crashes or violations and may actually increase risky driving behaviour and young driver crashes (Farmer and Wells, 2015; Gregersen, 1996).

Researchers have sought to determine inter-individual differences that are most characteristic of young drivers involved in crashes (Engstrom et al., 2003; Shope and Bingham, 2008). These characteristics may include core attributes and modifiable attributes of the person, other higher-order cognitive skill levels, as well as the type of driving in which young people engage (Bates et al., 2014c). Core attributes may include differences in age and gender (Monárrez-Espino et al., 2006), personality (Constantinou et al., 2011), and experience of clinical disorders, such as Attention Deficit Hyperactivity Disorder (Merkel et al., 2013). Modifiable attributes may include driving experience (McCartt et al., 2009) and the type and amount of driver education and training that an individual has received (Tronsmoen, 2008, 2010). Higher-order cognitive skills may include executive functions such as response inhibition (Mäntylä et al., 2009) and hazard perception abilities (Borowsky et al., 2010). Research such as this implies that driver education and training efforts aimed at reducing young driver crashes should specifically incorporate elements that account for these important individualised influences on driving as well as procedural driving skills.

One prominent reason that professional training has not led to expected safety benefits for young drivers may be that traditional training has targeted less relevant skills or those that are not the most important causal contributors to young driver crashes (Mayhew et al., 2002). A second reason is that driver education and training programs have often been devised in an ad hoc manner without a scientific basis (Beanland et al., 2013; Hoeschen et al., 2001; Peck, 2011). The GDE, also known as the GADGET matrix, was designed to broaden the scope of driver education and training and address these concerns (Hatakka et al., 2002).

1.2. The Goals for driver education

The GDE is an organising framework for information about driver behaviour, training and skills development, and other areas of relevance for driver education and training practitioners (Berg, 2006). It aims to identify the driving skills and abilities that need to be acquired in order to become a safe driver and the factors that influence the learning process in attaining these skills and abilities (Hatakka et al., 2002). The GDE groups driving behaviours and influences into four hierarchical levels which range from concrete and driving-specific to abstract and general (Peraaho et al., 2003). The first level focuses on vehicle manoeuvring and is concerned with training requirements for the physical operation of the motor vehicle. Level two refers to mastering traffic situations and is concerned with an individual's ability to adapt to circumstances while driving. The third level is more abstract and centres on a person's motivations, goals and contexts of driving. The fourth level is very abstract and considers how driving fits within a person's life and is influenced by their personal development and other macro-contextual factors.

For the sake of categorisation within the GDE, the trip purpose (e.g. driving as a part of employment compared to driving to a place of employment), for example, would be included at level three while more global personality traits, media influence or macro-economic factors would be included at level four. However, items at each hierarchical level may have an influence on items at other levels either directly or indirectly (Peraaho et al., 2003) and, while all aspects of the GDE are important, Hatakka et al. (2002) suggest that targeting influences from the more abstract hierarchical levels may be of the greatest importance overall. Supporting this, young drivers obtain physical driving skills quickly (Hall and West, 1996) and once automatized may be less likely to be the critical factor leading to young driver crash involvement compared to higher level influences such as decision-making errors (Curry et al., 2011) or intentional risk taking (Voogt et al., 2014).

The GDE includes a mechanism that accounts for the training needs of individuals (Peraaho et al., 2003). Three Person-specific factors are included in the framework which must be considered at each level of the hierarchy: Knowledge and skills; Risk-increasing factors; and Self-evaluation and awareness skills (Hatakka et al., 2002). Knowledge and skills describes the informational content of each level and the methods with which that information is put into practice. Risk-increasing factors refer to individual attributes and other aspects that may increase an individual's risk of crashing. Finally, Self-evaluation and awareness skills refer to the level of insight an individual has about themselves, the environments and contexts in which they engage, and their skills. As a consequence of this structure, the hierarchical levels and Person-specific factors can be combined to form a matrix of twelve unique target areas. Table 1, adapted from Peraaho et al. (2003), depicts the connection between each GDE level and Person-specific factor. An

Table 1
The twelve aspects of focus for driver education and training within the Goals for Driver Education with examples. Adapted from Peraaho et al. (2003).

	Knowledge and skills	Risk-increasing factors	Self-evaluation and awareness skills
Goals for life and skills for living (Level Four)	Knowledge of personal tendencies that effect driving	Non-acceptance of social norms regarding drug use	Ability to recognise and control impulses
Goals and contexts for driving (Level Three)	Ability to plan trips	Risks associated with driver condition	Insight about time-management skills
Mastery of traffic situations (Level Two)	Safety margins	Driving skill in relation to weather conditions	Awareness of personal driving style
Vehicle manoeuvring (Level One)	Non-declarative knowledge of how to operate car	Insufficient automatization of psychomotor skills for operating the vehicle	Realistic self-evaluation of ability to reverse park

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