



The road user behaviour of school students in Belgium

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ABSTRACT

The present study aimed to investigate both the on road behaviour of Belgian school students and the validity of the Adolescent Road User Behaviour Questionnaire (ARBQ) in a sample of students attending school in Belgium. In total, 294 adolescents completed the ARBQ along with measures of their self-reported accident involvement and sensation seeking behaviour. Confirmatory Factor Analysis supported the original factor structure of: “unsafe road crossing”, “playing on the road” and “planned protective behaviour” for the 21-item version of the questionnaire, but not for the full scale. Males were found to engage more often in unsafe crossing behaviour and playing on the roads. There were also age differences, with unsafe road crossing increasing with age and engagement in planned protective behaviours improving with age. Those who reported being involved in an accident also reported more frequent engagement in unsafe crossing, playing on the roads, thrill seeking behaviour and lower levels of behaviour inhibition. Therefore, this study confirms that the ARBQ is a useful tool for investigating safety-related behaviours that contribute to accident involvement.

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1. Introduction

Unintentional injury is the principal cause of death amongst children and adolescents in all of the developed nations (UNICEF, 2001). This is also the case in Belgium, which has one of the less enviable child safety records in Western Europe. In 2007, out of the 18 EU countries that participated in the Child Safety Action Plan, Belgium had the sixth highest death rate for males under 19 years old and the ninth highest for females (European Child Safety Alliance, 2007). As is the case in most other developed countries, road traffic accidents in Belgium account for the single largest proportion of deaths. For young males, there are almost eight times as many deaths due to traffic accidents than for any other cause. Furthermore, traffic accidents are also by far the largest cause of accidental death among young females (European Child Safety Alliance, 2007). One important first step in improving the safety of Belgium adolescents is to understand the behaviours that may put them at an increased risk of being killed or injured on the road.

Unlike the area of risky driving behaviour, there is currently no agreed framework for investigating the pedestrian behaviour of children or adolescents. However, one recently developed framework for investigating the on-road behaviour of adolescents, in relation to accident involvement, is the Adolescent Road-user

Behaviour Questionnaire (ARBQ) (Elliott and Baughan, 2004). The ARBQ was developed by Elliott and Baughan (2004) and is based upon information collected from focus groups and police descriptions of pedestrian accidents involving adolescents. The questionnaire measures the on-road behaviour of adolescents as pedestrians, while also including a small number of other important behaviours, such as cycling, skateboarding and rollerblading on the road. Elliott and Baughan (2004) studied 2433 English students aged between 11 and 16 years old using the 43-item ARBQ and found that the data produced three reliable factors. These were labelled: “unsafe crossing behaviour” (e.g. getting part way across the road and having to turn back to avoid traffic); “dangerous playing in the road” (e.g. playing football on the road); and “planned protective behaviour” (e.g. using lights when riding a bike). In addition, this research also developed a 21-item version of the scale, which also had good internal reliability.

The three ARBQ factors were also largely supported by a follow-up study conducted in New Zealand (Sullman and Mann, 2009). Sullman and Mann obtained data from 944 New Zealand school students and largely reproduced the three-way distinction, using exploratory factor analysis, for both the long and short versions of the scale. However, as both the United Kingdom and New Zealand are English speaking countries with relatively similar cultures, Sullman and Mann (2009) recommended that research should be conducted in a more culturally different, non-English speaking country. This was attempted in a recent study using students from Spain, where over 2000 Spanish school students completed the

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ARBQ (Sullman et al., 2011). Confirmatory Factor Analysis found that although the long version of the scale did not adequately describe the data, the short version provided an adequate fit for the three-factor model. Therefore, the factor structure of the ARBQ has reasonable support and the three factors have been shown to be replicable across three different countries and cultures.

Although there are considerable differences between New Zealand, England and Spain regarding the road traffic surroundings (for example, the population density, climate, geography and ethnic composition), there were also many similarities in the findings using the ARBQ. For example, in all three studies males reported playing on the road significantly more than females (Elliott and Baughan, 2004; Sullman and Mann, 2009; Sullman et al., 2011). Furthermore, in two of the three studies males reported engaging in more unsafe crossing behaviours than females. No gender differences were found in the planned protective behaviour factor in any of the three studies (Elliott and Baughan, 2004; Sullman and Mann, 2009; Sullman et al., 2011).

The relationship the three ARBQ factors had with age have also shown reasonable consistency, particularly between the UK and Spanish studies. In both the Spanish and UK studies age differences were found for all three factors, with unsafe road crossing increasing with age, while playing on the roads and planned protective behaviours both decreased with age. Unfortunately the NZ study did not include any students in the 11–12 age group, making a comparison with the other two studies problematic.

In addition to gender and age there is some support for there being ethnic differences in the on-road behaviour of school students. For example, in Sullman and Mann's (2009) research it was reported that those who were even part Maori (native people of NZ) were found to be more likely to put themselves at risk by playing on the road and engaged more frequently in unsafe road crossing behaviours. These findings were not supported by Elliott and Baughan (2004), which can be put down to differences in the ethnic composition of the three samples. Unfortunately in the Spanish study ethnicity was not measured, as the students were almost exclusively Spanish Europeans (Sullman et al., 2011).

Another area where there have been inconsistent findings is the relationship the ARBQ factors have with the students' place of residence. Elliott and Baughan (2004) found that adolescents from rural areas reported engaging less frequently in dangerous crossing behaviours and more frequently in planned protective behaviours, than their urban counterparts. However, surprisingly, rural adolescents reported more playing on the roads than those from urban areas. Perhaps the reason for this finding is that in urban areas in England it may simply not be possible to play on the roads. Unfortunately, in the Spanish study, the adolescents were all from one urban area and rural adolescents were not included, while the NZ research did not replicate the English findings. Perhaps the reason for this is that NZ is a much less densely populated country, meaning that what constitutes a rural or urban area may be different from those in Europe. Indeed, using the criteria used by Elliott and Baughan (2004) to describe a small urban area (less than 125,000 inhabitants), NZ has only three cities that fall outside this criterion.

Interestingly, although the ARBQ measures risky behaviours that are thought to be related to accident involvement, none of the three previous studies actually measured accident involvement. This is particularly surprising as these studies were all investigating types of behaviours believed to increase or decrease involvement in accidents. Another important gap is the psychological precursors that lead school children to behave in a risky manner on the road. Although it is important to understand the behaviours that are related to accident and injury involvement, it is also useful to understand the psychological mechanisms underpinning these behaviours. This in turn, may help understand how best to influence road user behaviour. Although there are many

personality variables that may be related to risky behaviour on the road, one which has been found to be very important in the safety field is sensation seeking (e.g. Zuckerman, 1994). Adults and adolescents high in sensation seeking have been found to engage in greater physical and health-related risk behaviours (Arnett et al., 1997; Zuckerman, 1994). However, although the relationship between sensation seeking and risk taking is well established in adults and adolescents, very little research has been conducted with children (Morrongiello and Lasenby, 2006). In one of the few studies to investigate sensation seeking in children, Morrongiello and Lasenby found sensation seeking to be significantly related to a number of indices of risk taking behaviour. Therefore, investigating the relationship sensation seeking behaviour has with school students' on-road behaviour would appear to be warranted.

The present study therefore investigated the relationship sensation seeking behaviour has with the ARBQ factors, along with the ARBQ's ability to describe the on-road behaviour of adolescents attending school in Belgium. The study also attempted to confirm the three-way distinction in both the long and short versions of the scale and to test for differences by age, sex, ethnicity and place of residence. Finally, the present study investigated whether any of the ARBQ factors were related to self-reported accident involvement on the road.

2. Method

2.1. Participants

This survey was undertaken in two schools in the town of Waterloo, Belgium. The first school was a private International English-speaking school for children between the ages of 11 and 17. There were a total of 39 nationalities attending this school. The second school was a public French-speaking school with children aged 15–19 years. The children at this school completed the questionnaire in English during English class.

In total, 280 students were asked to complete the questionnaire from the international school, although 265 students actually completed it producing a response rate of 94.6%. A total of 60 students from the French-speaking school were requested to fill in the questionnaire, with only 29 students completing it (a response rate of 48.3%). This resulted in 294 students from both schools completing the questionnaire, out of a possible 340 (an overall response rate of 86.5%). In total there were 148 males and 146 females with a mean age of 13.55 (SD = 2.09) and a range of 11–19 years (Table 1).

Most of the students (251) stated that they did not possess a driving license, sixteen students stated that they had a provisional license, one student possessed a restricted license and seven students possessed a full driving licence (19 participants did not report their licence status). Most students (204) reported living in a small town, 59 participants stated they lived in a city, and 30 participants lived in a small village (one student did not report their residence).

The most common nationality was American (19.4%), followed by Belgian (16.7%), British (9.2%) and Swedish (5.7%). The remaining 49.2% were either combinations of different nationalities (e.g. Belgian/Spanish) or small numbers from other countries (e.g. Australia, Ethiopia, Korea, India). Participants were also asked whether they had been involved in an accident on the road; 53 students reported that they had been involved in an accident on the road. Some of the examples included; "I have been hit by a car outside school, and I also crashed into a truck"; "I was on my bike when it was icy. I fell near a round-a-bout but there was no big injury, just a bruise". The remaining 239 students stated that they had not been involved in an accident on the road.

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