

Reducing road related injuries for young adolescents: An investigation of truancy as a risk factor

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Truancy is recognised as an indicator of engagement in high-risk behaviours for adolescents. Injuries from road related risk behaviours continue to be a leading cause of death and disability for early adolescents (13-14 years). The aim of this research is to determine the extent to which truancy relates to increased risk of road related injuries for early adolescents. Four hundred and twenty-seven Year 9 students (13-14 years) from five high schools in Queensland, Australia, completed a questionnaire about their perceptions of risk and recent injury experience. Self-reported injuries were assessed by the Extended Adolescent Injury Checklist (E-AIC). Injuries resulting from motorcycle use, bicycle use, vehicle use (as passenger or driver), and as a pedestrian were measured for the preceding three months. Students were also asked to indicate whether they sought medical attention for their injuries. Truancy rates were assessed from self-reported skipping class or wagging school over the same three month period. The findings explore the relationship between early adolescent truancy and road related injuries. The relationship between road related injuries and truancy was analysed separately for males and females. Results of this study revealed that road related injuries and reports of associated medical treatment are higher for young people who engage in truancy when compared with non-truant adolescents. The results of this study contribute knowledge about truancy as a risk factor for engagement in road related risks. The findings have the potential to enhance school policies and injury prevention programs if emphasis is placed on increasing school attendance as a safety measure to decrease road related injuries for young adolescents.

Keywords: Truancy; adolescent; road related injury; risk-taking behaviour

1. Introduction

Injury is the leading cause of death and disability for young people (Centers for Disease Control, CDC, 2010). A dramatic increase in the engagement of risk-taking behaviour typically occurs from 13 to 14 years of age onwards (AIHW, 2011). Consequently, adolescence is a vulnerable period of development in terms of injury. Adolescents who engage in truancy are more likely to experience negative outcomes in many facets of life, including adverse physical health (e.g. injury) and poor academic achievement, when compared with non-truant adolescents (Fantuzzo, Grim & Hazan 2005). Although there are a number of negative experiences associated with truancy, its relationship with injury has rarely been explored; particularly in regard to one of the major cause of adolescent injury, road related injuries. Whilst some research has been undertaken into how truancy and risk-taking behaviour may contribute to injury, an association has not been well explored. Furthermore, previous research has indicated that road related injury rates differ for adolescent males and females (Pickett et al., 2002a).

1.2 Adolescent risk-taking and associated injury

There is a positive relationship between increased risk-taking behaviour and increased injury rates for adolescents (Pickett et al., 2002a). Greater engagement in delinquent behaviours (e.g. being a passenger of a dangerous driver) predicts increased injury experience for young people (Buckley, Chapman & Sheehan, 2012). In addition, risk-taking behaviours are typically interrelated, preventable and can be established during adolescence (CDC, 2010). Debate exists over how much risk-taking is a normative part of adolescence. Jessor (1977) argues that delinquent behaviour is an expression of premature transition to behaviours that violate age norms; whereas Lightfoot (1997) argues that risk-taking is a transformative part of developmental growth.

Irrespective of whether it is normative or indicative of future deviancy, risk behaviours are responsible for the majority of morbidity and mortality for adolescents (AIHW, 2003b; Zweig, Duberstein-Lindberg & Alexander-McGinley, 2001). Therefore, it is of critical importance to address this prominent and negative adolescent health issue. Preventive measures aimed at reducing adolescent risk-taking and the subsequent burden requires insight into how risk factors contribute to engagement in risk-taking behaviour and associated injury. This research aims to contribute to what is known about adolescent risk-taking and associated injury by examining the relationship between the two.

1.3 Transport related injuries for adolescents

Road related injuries for young people represent a major global burden. Injuries from motor vehicle crashes are the leading cause of hospitalisation for young people in Australia and just as overall injury rates are often more common among males, this is also the case for transport related injuries (AIHW, 2011). Overall, 30% of deaths for people aged between 15 to 24 years in 2005 resulted from road related injuries (AIHW, 2008). The association between adolescent risk-taking behaviour and road related injuries is well known (Mirman, Albert, Jacobsohn & Winston, 2012). Lam (2003) investigated crash report data for underage drivers and found that of 526 road accidents (1996-2000) involving an underage driver, 83.6% resulted in the driver being killed or injured. Seventy-three percent of non-adult passengers in those accidents were also killed or injured as a result of the accident (Lam, 2003). Hence, road related injury and death for young people warrants closer examination to determine contributing risk factors.

1.4 Truancy as a risk factor

The consequences of truancy are multi-faceted and adversely effect society on personal, family and community levels. Truancy is a common adolescent delinquent behaviour that has negative outcomes for mental health, physical well-being and property (Chang, Chen & Brownson, 2003). Students with attendance rates of 85% or less (unexplained absences) are 4 times more likely to be suspended or expelled from school, 1.5 times more likely to not complete Year 10 and 3.5 times more likely to not obtain an academic grade for school leavers in the top 50% (Queensland Audit Office, 2012). Fantuzzo et al. (2005) suggest that truancy is a phenomenon in urban school environments. It is therefore concerning that truancy is well known as a predictor of recidivism and early on-set life course persistent offending behaviour (Moffitt, 1993; Zara & Farrington, 2010). As a social determinant of health for adolescents, the consequences of truancy can not be underestimated (Fantuzzo et al., 2005).

Truancy is typically a display of disengagement from school and societal convention in general (Henry, Thornberry & Huzinga, 2009). Consistent with Hirschi's Social Control Theory (1969), adolescents are more inclined to engage in anti-social behaviour when they feel freed from social constraints, such as schooling. A key premise in the promotion of truancy intervention programs is that students are more likely to engage in other risk-taking behaviours, such as alcohol use and drug use, when they are poorly bonded to their school (Henry et al., 2009). It has also been suggested that the relationship between truancy and the on-set of other delinquent behaviours is reciprocal (Henry et al., 2009). Therefore, it is reasonable to argue that a likely outcome of truancy is an increase in negative consequences such as risk-taking behaviour. Consequently, less engagement in truancy may be associated with reduced harmful consequences such as injury.

Cross-cultural research by Pickett et al. (2002b) examined associations between individual health risk behaviours and injuries for young people (N = 49, 461). Risk behaviours including truancy and alcohol use were analysed. Results indicated that increased engagement in high-risk activities (of eight behaviours, including truancy) were associated with increased injury rates for adolescents. Similarly, Peltzer (2008) explored the prevalence of various risk behaviours and occurrence of injuries for 13-15 year olds (N = 20,765) who attended school in six African countries. Truancy was identified by Peltzer as one of several risk behaviours associated with injuries. Furthermore, truancy has been associated with increased injury risk for adolescents irrespective of national context or socio-economic status (Fantuzzo, 2005; Peltzer, 2008).

The aim of this research is to examine truancy as it relates to adolescent road-related injury experiences. The findings of this study have the potential to extend on what is already known about truancy and risk-taking by investigating the relationship between truancy and road related injuries. Research has traditionally measured a broad range of adolescent risk factors, rather than examining specific road related injuries in the context of truancy. For example, Pickett et al. (2002b), provide a comprehensive analysis of risk factors ranging from 'not wearing a seatbelt' to 'perpetrator of bullying' and looked at overall injury experience, not necessarily those were associated with road behaviours. This research has the potential to provide clarity on specific road related injuries and contribute to the larger landscape of adolescent risk-taking behaviour and injury literature.

2. Method

2.1 Participants

Four hundred and twenty-seven Year 9 students (n=228 females, n=199 males), aged 13-14 years, from five public high schools in South East Queensland participated in this study. The index of Relative Socio-Economic Advantage/Disadvantage, as derived from the 2006 Census, was noted for the Statistical Local Areas or geographical area in which the five schools are located (Australian Bureau of Statistics, 2008). Attributes of the local population, such as educational attainment, income, employment and occupation are ranked on a scale from 1-10, with low values indicating disadvantage and high values indicating advantage. Three of the schools are located in relatively advantaged areas, with two schools scoring 8 on the Index and one school scoring 7. The other two schools are located in disadvantaged areas, with Index scores of 1 (Australian Bureau of Statistics, 2008).

2.2 Measures

Demographic characteristics and truancy data were obtained from student surveys. Truancy was measured by self-reports of skipping class or wagging school during the three-month

period prior to survey completion. Demographic information included gender, country of birth, ethnic background and person they reside with most of the time.

The Extended Adolescent Injury Checklist (E-AIC) (Chapman, Buckley & Sheehan, 2011) is a self-report measure of the types of injuries experienced in the past three months. Adolescent participants answer 'yes' or 'no' to whether they had experienced each of a list of injuries and then indicate whether the injury required medical treatment (visit to doctor or hospital). Included are five transport-related injuries (riding a bike, riding a motorbike, riding in a car, driving a car, as a pedestrian). A strength of the scale is that it measures minor injuries (e.g. those untreated/treated at home) as well as injuries of greater severity that require formal medical treatment.

2.3 Procedure

Ethical approval to conduct this research was initially obtained from the relevant education board and the university human research ethics committee. Permission was then sought from each Principal of the five participating high schools. Written parental consent was obtained prior to student participation.

The survey was administered in school hours, during either Year 9 assembly or health and physical education classes. Students were given a research project information sheet and asked to sign the attached consent form if they were willing to participate. Students without written parental consent and those not willing to participate completed normal school activities when the survey was administered. The survey was paper based and took approximately 35-45 minutes to complete. Verbal instructions were provided by a facilitator (member of the research team).

2.4 Statistical Analyses

All analyses were conducted separately for males and females. Chi-square tests were firstly conducted to examine differences in truancy, within each sex, by demographic variables including ethnic background and living arrangements. Additional chi-square tests were then conducted to examine differences in reports of truancy, within each sex, for experiences of any transport related injuries (riding a bike, riding a motorbike, riding in a car, driving a car, as a pedestrian).

3. Results

Gender differences in reports of transport-related injuries were initially examined by creating an 'any transport injury' category, whereby students who reported any of the five transport injuries in the past 3 months were categorised as 'yes' and students who reported none of the transport injuries were categorised as 'no'. A chi-square test revealed that males reported more transport related injuries than females (56.5% c.f. 35.9%); $\chi^2 = 20.29$; $p < .001$. As a result, all additional analyses were conducted separately by gender.

Table 1 shows demographic characteristics of truant and non-truant students, by gender. There were no statistically significant differences in truancy rates for different ethnic backgrounds or living arrangements for either males or females.

Table 1***Individual Demographic Characteristics, by Gender and Engagement in Truancy***

Demographic Characteristic	Male				Female			
	Truant		Non-truant		Truant		Non-truant	
	n	%	n	%	n	%	n	%
Ethnic background								
Aboriginal	5	9.4	4	2.2	1	1.9	10	4.9
Asian	4	7.5	15	8.1	2	3.8	26	12.7
Other	38	71.7	147	79.0	41	78.8	159	77.9
Pacific Islander	5	9.4	19	10.2	7	3.5	9	4.4
Torres Strait Islander	1	1.9	1	0.5	1	1.9	0	0
Lives with both biological parents	29	52.7	133	64.9	29	54.7	130	61.0
Lives with single parent	15	27.3	33	16.1	9	17.0	43	20.2

Overall, the proportion of students who reported being truant, that is, wagged school or skipped class, in the three months prior to survey was 18.3%. Table 2 shows the percentage and number of adolescents (by gender) who were truant and who were injured (as defined in each injury category) during the same 3 month period.

The highest specific traffic injury proportions recorded for males were from being injured riding a bike (58.8% truant; 41.4% non-truant). The highest specific injury rates recorded for females were from being injured riding in a car (29.3% truant; 8.7% non-truant) and being injured riding a bike (27.5% truant; 24.0% non-truant).

Table 2***Number and Percentage of Truant and Non-truant Adolescents Reporting each Injury Category, by Gender***

	Truant Injured		Non-truant Injured	
	n	%	n	%
Males				
Injured riding a bike	20	58.8	65	41.4
Injured riding a motorbike	12	34.3	32	20.4
Injured while riding in a car	8	23.5	18	11.5
Injured while driving a car	1	2.9	10	6.4
Injured as a pedestrian	5	14.3	3	1.9
Any transport injury *	24	70.6	78	49.7
Females				
Injured riding a bike	11	27.5	44	24.0
Injured riding a motorbike	5	12.5	18	9.8
Injured while riding in a car	12	29.3	16	8.7

Injured while driving a car	5	12.2	5	2.7
Injured as a pedestrian	3	7.3	2	1.1
Any transport injury *	22	53.7	57	31.0

* *Note.* Any injury includes any one of the following; bike, motorbike, car, passenger and pedestrian injuries.

Males who had been truant were significantly more likely to report experiencing ‘any’ transport injury (bike, motorbike, car, passenger, or pedestrian) when compared with non-truant males during the same 3 month period [$\chi^2(1, 191) = 4.90, p < .05$]. Truant males were also significantly more likely to have received medical treatment for any transport injury than non-truant males in the same 3 month period [$\chi^2(1, 199) = 4.79, p < .05$]. Injury rates for truant males approached significance when compared with non-truant males with regard to being injured riding a bike [$\chi^2(1, 191) = 3.44, p = 0.064$], being injured riding a motorbike [$\chi^2(1, 192) = 3.12, p = 0.077$], and injured riding in a car [$\chi^2(1, 191) = 3.46, p = 0.063$]. There was no statistically significant difference between truant and non-truant males for reports of driving-related injuries [$\chi^2(1, 191) = 0.605, ns$].

Truant females also experienced significantly more injuries in the ‘any’ transport injuries (bike, motorbike, car, passenger, pedestrian)’ category [$\chi^2(1, 225) = 7.57, p = 0.006$] when compared with non-truant females during the same 3 month period. Females who had waggged school or skipped class reported significantly more injuries when riding in a car [$\chi^2(1, 224) = 12.90, p < .01$], and driving a car [$\chi^2(1, 224) = 12.90, p < 0.001$] when compared with non-truant females. However there were insufficient numbers of females who were truant and reported ‘medical treatment for any transport injury’ to conduct chi square analyses. Small cell sizes for the pedestrian-related injury category also limited ability to conduct chi square analyses for either gender.

4. Discussion

The research findings suggest that road related injuries and reports of associated medical treatment are higher for young people who engage in truancy when compared with non-truant adolescents. This study extends on the work of Peltzer (2008) and Pickett et al., (2002b), who reported that increased risk behaviours, including truancy, were associated with increased injury experiences. The findings of this study however provide specific data of road related injuries rather than a global measure of any injury. Therefore, the findings provide a more detailed analysis of individual road related injuries for young people (truant and non-truant). Examination of differences in road related injury types and rates of medical treatment for truant and non-truant adolescents contributes knowledge that has not previously been explored in general terms.

Consistent with previous research of road related injury for adolescents (AIHW, 2003; Gulliver & Begg, 2012; Lam, 2003), males reported higher transport-related injury rates than females. This suggests that adolescent males are more likely than adolescent females to be injured, irrespective of whether they have been truant or not. The findings support research by Tilleczek (2012) who hypothesised that young people (male and female) involved in road related incidents take more risks, have poorer decision making skills and display poorer judgement when compared with their counterparts. This argument aligns well with the assertion that multiple risk behaviours are consistently found to co-occur for young people (Pickett et al, 2002a; Pickett et al, 2002b).

The current research indicated that engagement in truancy is associated with an increase in reported road related injury. Findings suggest that truancy is a delinquent behaviour that typically co-occurs with other common problem behaviours for adolescents, as reported in

previous studies (Buckley et al. 2012; Pickett et al., 2002a). Similarly Pickett et al.'s (2002b) study of young people found an association between increased risk of injury and engagement in multiple risk behaviours. Findings suggest that proneness to engage in road related risky behaviour may be increased if an adolescent has a history of truancy. If more can be learnt about how truancy associates with engagement in risk-taking behaviours, measures can be taken to prevent or mitigate the potential for harm. Further, truancy itself maybe a simpler indication of potential harm and indicator that intervention may be appropriate.

The reliance on self-reporting of injuries and truancy rates are limitations of this study. While self-reported injury may allow collation of greater breadth of injury experience, the only indication of injury severity is provided with adolescents' indicating whether medical treatment was sought or not. The degree of harm is thus not captured through objective means. Participant recall or inaccuracy may have influenced the accuracy of self-reporting. However, research involving self reported car crashes for young people by Begg, Langley and Williams (1999) indicated that self reports can be a valid source for data of this nature. Official records, such as hospital records, could provide supporting data to complement this research and contextualise the difference in reporting rates of truant and non truant adolescents. Further, the small sample size is a limitation of this study and more robust findings may be found with a larger sample.

5. Conclusion

Truancy is specifically related to school students. Therefore, it is not surprising that as a risk factor, truancy is typically considered in terms of school environment, academic achievement and engagement in delinquent behaviours (Fantuzzo et al., 2005). Whilst much research has been undertaken into the road related behaviour of young people (Begg et al. 1999; Lam, 2003), road related risk factors and injury rates have not been extensively examined in conjunction with truancy. This study provides an initial step in examining the associations between risky road behaviour, truancy and road related injuries for young people.

Additional research into when road related injuries occur for truant adolescents is recommended. Lam's (2003) research found that slightly less than half (48.7%) of car crashes for underage drivers occurred on Fridays and weekends. Little is known about whether truant adolescents are more likely to be injured from road related injuries during school hours or non-school hours. Similarly, gaps exist in what is known about the nature of the direction of road related injuries and truancy. Questions about whether road related injuries occur because an adolescent is truant or whether other risk factors, for example, sensation seeking, are responsible should be explored. It would be of value to ascertain the proportion of crashes that occur when adolescents are actually engaged in truancy. Analyses of adolescent road related injury data during school hours may provide insight about the proneness of truants to undertake risky road behaviour

Research of adolescent risk-taking behaviour has traditionally examined risk factors collectively (Pickett et al., 2002a). Herein, an opportunity exists to understand more about how individual risk factors inter-relate and contribute to adolescent road related injuries. There is an increasing amount of literature that recognises the co-occurrence of risk factors for adolescents. It would be beneficial to investigate the association between truancy, adolescence, risk-taking behaviour and associated road related injury in conjunction to shed more light on the relationship between truancy and potential associated outcomes.

The link between truancy and road related injuries for adolescents is a developing area of research. Additional research is required before truancy can be considered causal, or a predictor, of engagement in high-risk road related activity. However, the findings reflect

recent research into adolescent risk-taking behaviour which suggests that the relationship between road related injuries, and truancy is worthy of further investigation.

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References

Australian Bureau of Statistics (2008) *Socio-economic index for areas (SEIFA), Australia*. Canberra: ABS

Australian Institute of Health & Welfare (2003a) *The burden of disease and injury in Australia 2003*. Cat.No. PHE 82. Canberra

Australian Institute of Health & Welfare (2003b) *Australia's young people: Their health and well-being 2003*. Canberra: AIHW

Australian Institute of Health & Welfare (2008) *Australia's Health 2008*. Cat. No. AUS 99. Canberra

Australian Institute of Health & Welfare (2011) *Young Australians: Their health and wellbeing 2011*. Cat. No. PHE 140. Canberra

Begg, D. J, Langlely, J. D & Williams, M (1999) Validity of self reported crashes and injuries in a longitudinal study of young adults. *Injury Prevention*, 5, 142-144

Buckley, L, Chapman, R, Sheehan, M (2012) Adolescent involvement in anti-social and delinquent behaviours: Predicting future injury risk. *Accident Analysis and Prevention*, 48, 518-522

Centers for Disease Control, CDC (2010) Youth Risk Behavior Surveillance-United States, 2009, *MMWR* 59 (SS-5), 1-142

Chang, J. J, Chen, J. J, & Brownson, R. C (2003) The role of repeat victimization in adolescent delinquent behaviors and recidivism. *Journal of Adolescent Health*, 32, 272-280

Fantuzzo, J, Grim, S, & Hazan, H (2005) Project Start: An evaluation of a community-wide school-based intervention to reduce truancy. *Psychology in the Schools*, 42, 657-667

Gulliver. P, & Begg, D (2007) Personality factors as predictors of persistent risky driving behaviour and crash involvement among young adults. *Injury Prevention*, 13, 376-381

Henry, K. L, Thornberry, T. P, & Huizinga, D. H (2009) A discrete-time survival analysis of the relationship between truancy and the onset of marijuana use. *Journal of Studies on Alcohol and Drugs*, 70, 5-15

Hirschi, T (1969) *Causes of Delinquency*. Berkeley, CA: University of California Press

Jelalian, E, Spirito, A, Raile, D, Vinnick, L, Rohrbeck, C, & Arrigan, M (1997) Risk taking, reported injury, and perception of future injury among adolescents. *Journal of Pediatric Psychology*, 22(4), 513-531

- Jessor, R (1977) *Problem behaviour and psychosocial development: A longitudinal study of youth*. New York: Academic Press
- Jessor, R (1987) Problem-behaviour theory, psychosocial development and adolescent problem drinking. *British Journal of Addiction*, 82, 331-342
- Lam, L. T (2003) A neglected risky behaviour among children and adolescents: Underage driving and injury in New South Wales, Australia. *Journal of Safety Research*, 34,315-320
- Mirman, J. H, Albert, D, Jacobsohn, L. S, & Winston, F. K (2012) Factors associated with adolescents' propensity to drive with multiple passengers and to engage in risky driving behaviors. *Journal of Adolescent Health*, 50, 634-649
- Moffitt, T. E (1993) Adolescence-limited and life-course-persistent anti-social behaviour: A developmental taxonomy. *Psychological Review*, 4, 674-701
- Peltzer, K (2008) Injury and social determinants among in-school adolescents in six African countries. *Injury Prevention*, 14, 381-388
- Pickett, W, Garner, M. J, Boyce, W. F, & King, M. A (2002a) Gradients in risk of youth injury associated with multiple-risk behaviours: A study of 11,329 Canadian adolescents. *Social Science & Medicine*, 55, 1055-1068
- Pickett, W, Schmid, H, Boyce, Simpson, K, Scheidt, P. C, Mazur, J, Molcho, King, M.A, Godeau, E, Overpeck, M, Aszmann, A, & Harel, Y (2002b) Multiple risk behaviour and injury. *Archive of Pediatric Adolescent Medicine*, 156, 786-793
- Queensland Audit Office (2012) *Improving school attendance*. Brisbane: QAO
- Sussman, S, Skara, S & Weiner, M. D (2004) Prediction of violence perpetration among high-risk youth. *American Journal of Health Behaviour*, 28, 134-144
- Tilleczek, K. C (2007) The Illogic of youth driving culture. *Journal of Youth Studies*,7, 473-498
- Zara, G, & Farrington, D. P (2010) A longitudinal analysis of early risk factors for adult-onset offending: What predicts a delayed criminal career? *Criminal Behaviour and Mental Health*, 20, 257-273
- Zweig, M, Duberstein-Lindberg, L, & Alexander-McGinley, K (2001) Adolescent risk profiles: The co-occurrence of health risks among females and males. *Journal of Youth and Adolescence*, 30, 707-728