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Similarities and differences in the precursors of risky driving, crash involvement and speeding violations



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Following the description of group differences at different stages of development, the similarities and differences in the correlates and precursors of risky driving, crash involvement and speeding violations are now examined to determine whether a particular profile may be identified for different types of problematic young drivers. This discussion draws on data already presented in Tables 10-13, 17-18, and 22-25. To aid description of group trends, differences between the risky driving, crash involvement and speeding violation groups are presented pictorially on selected characteristics. Figures 16 through 27 present the mean standardised scores (z-scores³⁶ or adjusted z-scores³⁷) for each of the groups on specific characteristics measured over time.

Group differences in domains relating to individual attributes will be discussed first, followed by domains relating to environmental factors, family characteristics and current life circumstances.

When examining these findings, it is important to remember that risk factors, by themselves, may not be powerfully predictive of problematic outcomes. It is the cumulative impact of multiple risk factors that is often important, and research suggests that the likelihood of an individual exhibiting an adverse outcome increases with the number of risk factors he or she is exposed to (Bond et al. 2000; Loeber and Farrington 2000). However, for those who are interested in determining the relative importance of different attributes or characteristics in predicting problem driving outcomes, the effect sizes provided in the earlier Tables may be used as a guide, with larger effect sizes indicating more powerful predictors.

Individual attributes

Temperament style

Task orientation/persistence difficulties appeared to be characteristic of all types of problem drivers, but particularly those who engaged in high levels of risky driving and/or had been apprehended for speeding on multiple occasions. These difficulties generally first emerged during *mid and late childhood* and persisted into adolescence (Figures 16 and 17), and group differences on this characteristic were moderate in strength.

While individuals who reported having been involved in multiple crashes also tended to be less persistent than those in the single and no crash groups, significant differences on this characteristic did not emerge until adolescence and were within the small effect size range.

36 The z-score transformation makes variables comparable, as it creates new variables which all have a mean of 0 and a standard deviation of 1.

36 The scores presented for the speeding violation and crash involvement groups are adjusted to control for amount of driving exposure.

Figure 16. Teacher-reported differences in task orientation between the risky driving groups over time

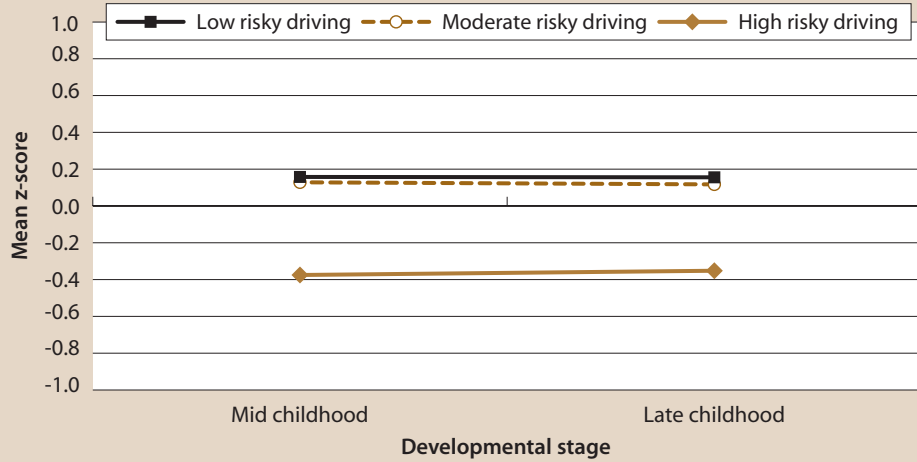
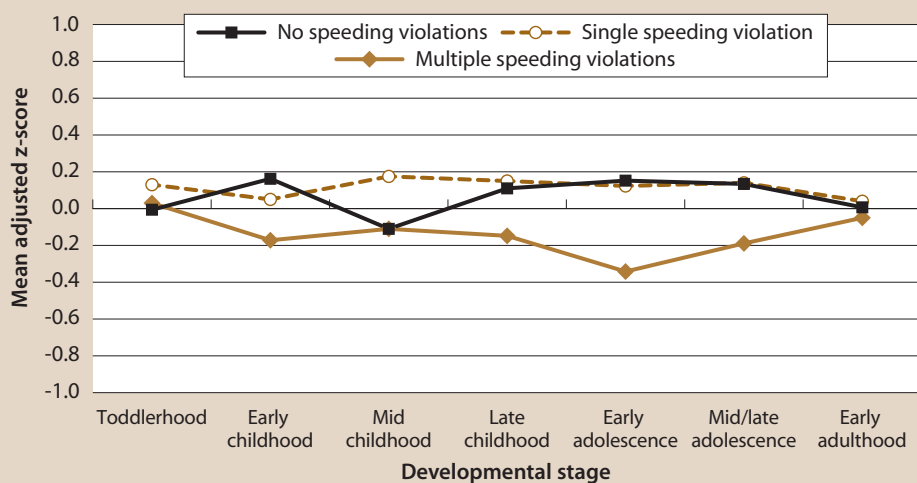


Figure 17. Parent-reported differences in persistence between the speeding violation groups over time



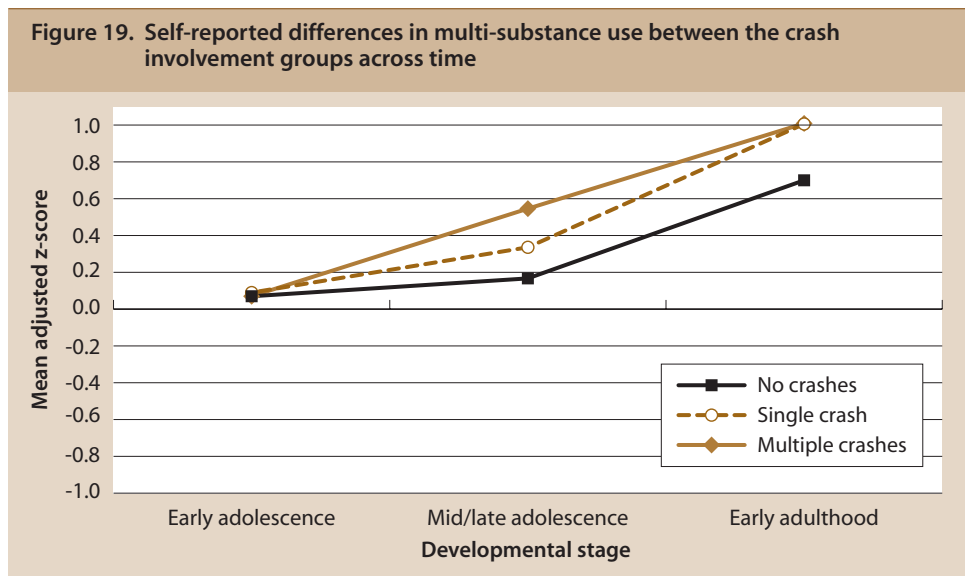
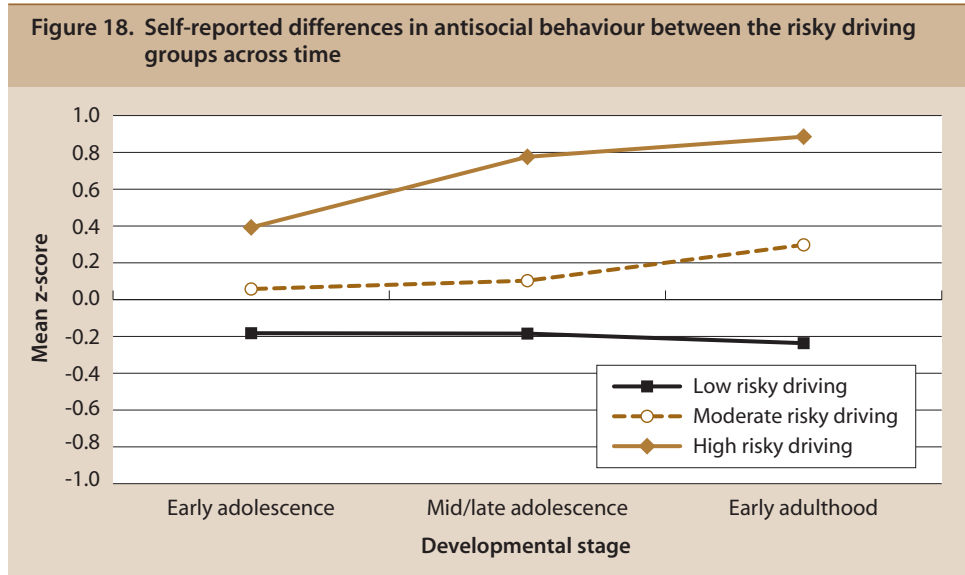
There were also some temperament characteristics that were uniquely associated with particular problem driving outcomes. For example, individuals who had been apprehended for speeding were more likely to be characterised by a sociable temperament style (during *mid/late adolescence*) than other drivers, while those who had been involved in a crash were more reactive (moody, volatile) in *early adulthood* than those who had not. Group differences on sociability were moderate in strength, while those on reactivity were small.

Sensation-seeking and risk-taking

Young adults who engaged in high levels of risky driving behaviour, had been involved in multiple crashes, and/or had been apprehended for speeding on multiple occasions, were not found to be more sensation seeking or attracted to risk taking during adolescence than less problematic drivers.

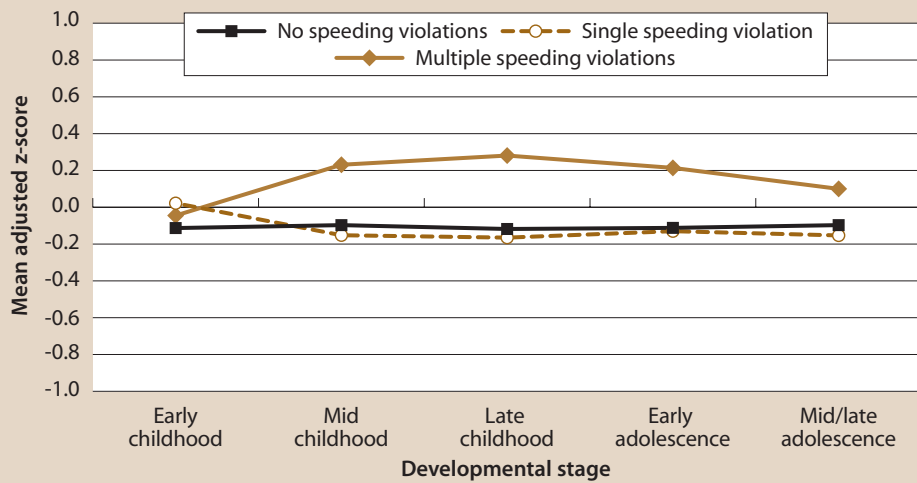
Behavioural and emotional problems

Rates of externalising (“acting out”) behaviour problems were higher across all types of problem drivers. Thus, the high risky driving group, the multiple crash group and the multiple speeding violation group were all consistently more aggressive and more frequently engaged in antisocial behaviour and multi-substance use than other driver groups (see Figures 18 to 19 for examples). In addition, the moderate risky driving, single crash and single violation groups also exhibited elevated levels of many of these externalising behaviour problems during adolescence and early adulthood, although they were generally less problematic than the high problem driving groups.



High risky drivers and those with multiple speeding violations were typically more hyperactive during childhood (see Figure 20 for an example). However, hyperactivity problems were not associated with crash involvement at any developmental stage, suggesting hyperactivity was an important precursor only for risky driving or speeding violations.

Figure 20. Parent-reported differences in hyperactivity between the speeding violation groups over time



The developmental stages at which group differences on behavioural problems first emerged differed greatly for the three problem driving outcomes. Furthermore, group differences were generally most powerful among the risky driving groups. Group differences ranged in strength from small to large effect sizes, with the strongest differences found on antisocial behaviour.

In general, problem drivers did not differ from other drivers in their levels of internalising behaviour problems (depression, anxiety). However, the moderate risky driving group displayed lower anxiety levels during *early adulthood*, while the multiple violation group was found to be less depressed and less anxious than other drivers at this same developmental stage, perhaps suggesting a more “outgoing” style. Group differences were generally small.

Criminal justice contacts and attitudes

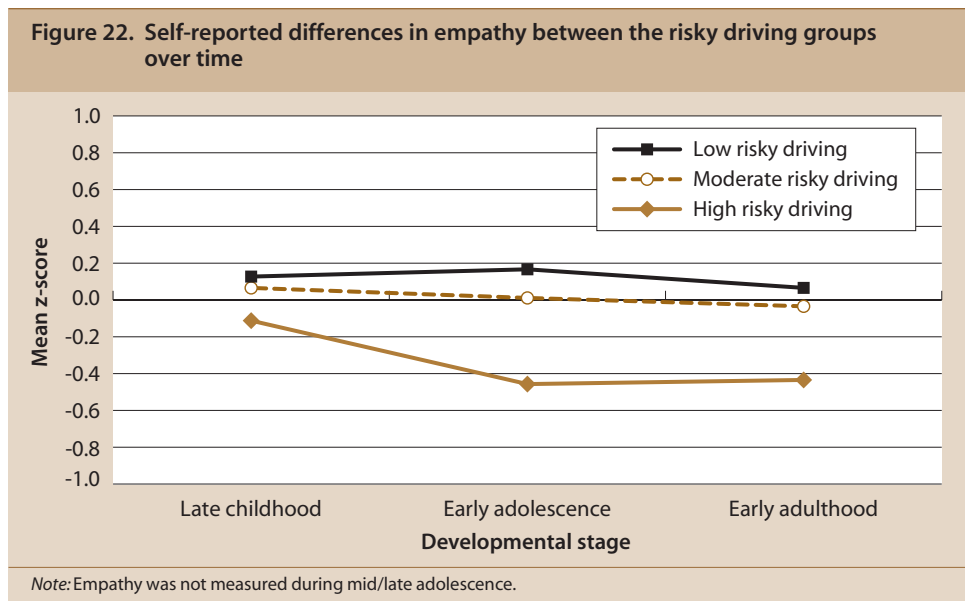
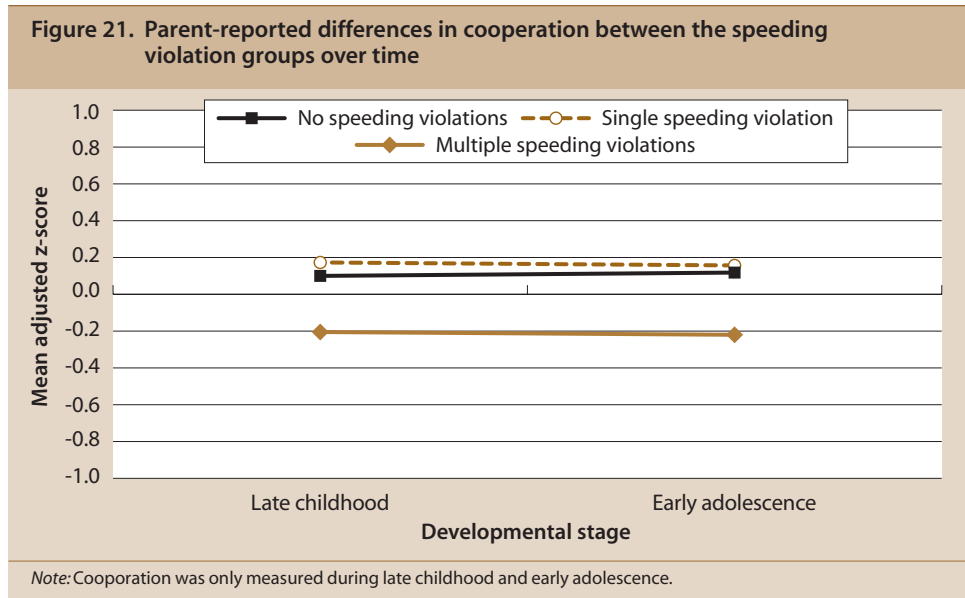
Not surprisingly, higher rates of police contact for driving offences were associated with all types of problem driving outcomes. For each outcome, the most problematic group (the high risky driving, multiple crash and multiple speeding violation groups) reported the highest rate of driving offences during *early adulthood*, while the least problematic groups (the low risky driving, no crash, and no speeding violation groups) reported the lowest number of offences. Group differences on this characteristic were moderate to large in strength.

Additionally, individuals who had been apprehended for speeding were more likely than those who had not to have had contact with criminal justice agencies for offences other than driving (as assessed in *early adulthood*). Group differences on this characteristic were small.

Social competence

Both the high risky driving and multiple speeding violation groups appeared to have less well developed social skills than other drivers. However, these deficiencies were more widespread and more consistently evident among high risky drivers than those with multiple speeding offences. For example, while both groups were consistently less cooperative during *late childhood* and *early adolescence* (see example in Figure 21), the high risky driving group was also consistently less responsible and less empathic across adolescence and early adulthood than less risky drivers (see Figure 22).

Occasional differences were found between the risky driving and speeding violation groups on other aspects of social competence (self-control, assertiveness among the risky driving groups; self-control and empathy among the speeding violation groups). Group differences were generally small to moderate in size. No aspects of social competence consistently differentiated the crash involvement groups.



Coping strategies

During *mid/late adolescence*, young adults were asked to indicate how frequently they used certain coping strategies when faced with a problem. Young people who engaged in moderate or high levels of risky driving were more likely to use less adaptive acting out, strategies to cope with problems (for example, using drugs or reacting explosively) than other drivers who were less risky. Similar differences were found between the crash involvement groups. Group differences were within the small to medium effect size range. However, problem drivers did not differ from other drivers in their propensity to use less adaptive coping strategies

that were internally focused (such as wishful thinking or self blame) or more adaptive strategies (for example, seeking support from others, using humour to cope). The speeding violation groups did not differ on this characteristic.

Emotional control

There were no significant differences on this aspect when measured in adolescence and early adulthood.

Civic engagement

Lower levels of civic engagement were associated with risky driving, but not crash involvement or speeding violations. In comparison to low risky drivers, the high risky driving group reported being less involved in their community – they were less likely to attend a public meeting, undertake voluntary or charitable work, sign a petition, or take part in a demonstration) during *early adulthood*. This difference was small in magnitude.

Future aspirations

Problem drivers did not differ significantly from other drivers in their hopes and desires for the future, when this aspect was assessed in *mid/late adolescence*.

Summary of individual precursors

Table 26 provides a summary of the precursors of each of the three problem driving outcomes. As a guide to interpreting this table, a “tick” (✓) indicates that a particular

Table 26. Summary of individual attributes associated with different problem driving outcomes			
Aspect	High risky driving	Multiple crashes	Multiple speeding violations
Temperament style			
Less task persistent	✓	✓	✓
More negatively reactive	✗	✓	✗
More sociable	✗	✗	✓
Behavioural problems			
More aggressive	✓	✓	✓
More hyperactive	✓	✗	✓
More antisocial behaviour	✓	✓	✓
More multi-substance use	✓	✓	✓
Emotional problems			
Less anxious	✗	✗	✓
Less depressed	✗	✗	✓
Social competence			
Less cooperative	✓	✗	✓
Less responsible	✓	✗	✗
Less empathic	✓	✗	✓
Less self-controlled	✓	✗	✓
Coping strategies			
More acting out, less adaptive coping	✓	✓	✗
Criminal justice contacts			
More driving offences	✓	✓	✓
More offences (general)	✗	✗	✓
Civic engagement			
Lower civic engagement	✓	✗	✗

individual characteristic (for example, lower task persistence) was found to be associated with a particular driving outcome (for example, risky driving) at a minimum of one developmental stage, while a cross (✖) indicates that this characteristic was not associated with a particular outcome at any time at which it was assessed.

As Table 26 shows, a greater number of individual attributes were associated with high risky driving and multiple speeding violations, than multiple crash involvement. Furthermore, there were more shared risk factors between the high risky driving and multiple speeding violation groups than between the multiple crash group and the other two groups. While the timing at which these aspects were associated with the different outcomes is not shown, as previously noted, group differences tended to emerge earlier and be more consistent among the risky driving and speeding violation groups than the crash involvement groups.

Social and environmental factors

School adjustment and achievement

Young drivers who engaged in high levels of risky driving and/or had multiple speeding violations were more likely to report experiencing school adjustment difficulties than other drivers. That is, when they were at school, these groups were found to experience more difficulties adhering to school rules and routines, understanding school work, completing assigned work on time and getting along with teachers and classmates, than other students (see Figures 23 and 24). In contrast, school adjustment difficulties did not significantly differentiate young people who reported different levels of crash involvement. School adjustment difficulties emerged earlier among the high risky driving group (*mid childhood*) than the multiple speeding violation group (*early adolescence*), but group differences for both outcomes were equally strong (that is, moderate in strength).

Despite these adjustment difficulties, problem drivers did not significantly differ from other drivers in their actual levels of school achievement (for example, reading ability, overall level of academic competence) when this aspect was assessed in *mid* and *late childhood*.

In addition, a lower level of completed secondary education was uniquely characteristic of those in the multiple speeding violation group. Group differences on this characteristic were moderately strong.

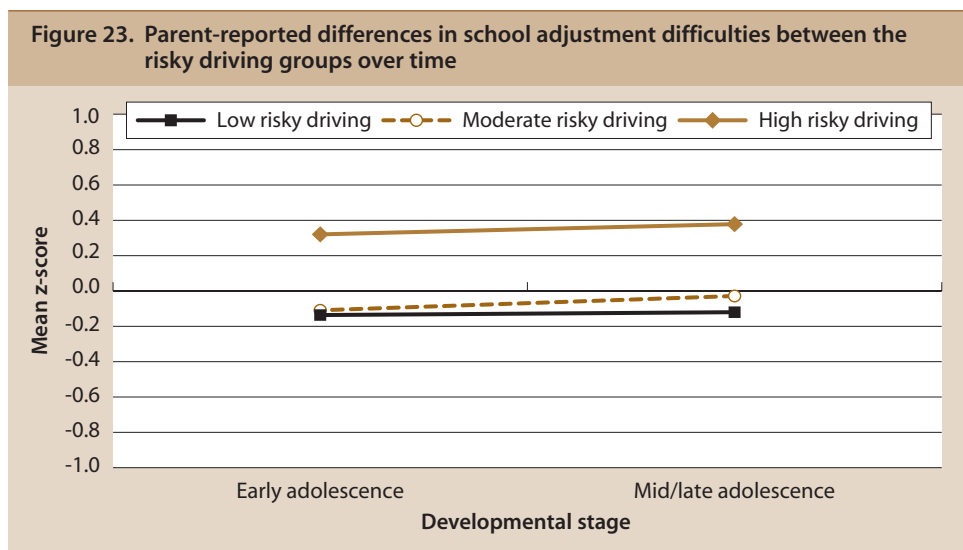
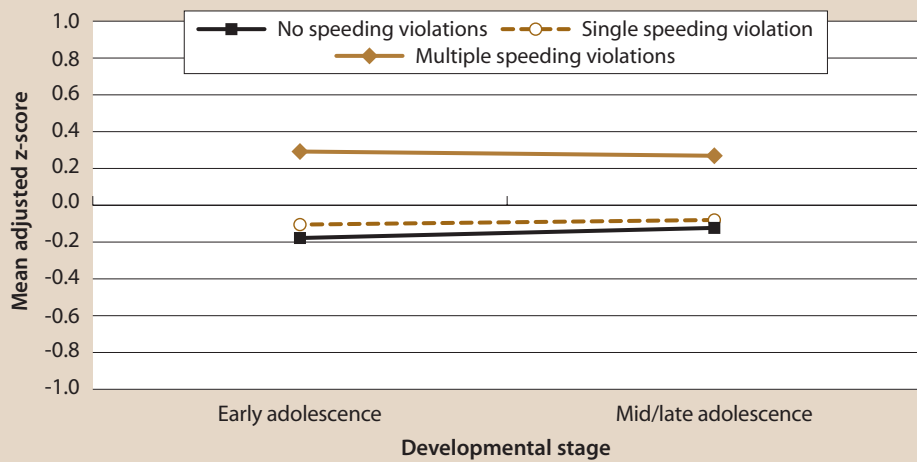


Figure 24. Parent-reported differences in school adjustment difficulties between the speeding violation groups over time



Peer relationships

A tendency to affiliate with peers who were antisocial and/or engaged in substance use was characteristic of all problem drivers, but particularly those who engaged in high levels of risky driving behaviour (see Figures 25 to 27). These friendships were generally evident during adolescence and early adulthood, and group differences ranged in strength from small to large effect sizes.

In terms of other peer-relationship characteristics, poorer quality peer relationships (during early adolescence) were uniquely associated with high risky driving, while high levels of peer communication (during mid/late adolescence) characterised the friendships of the single crash group. Group differences on these characteristics ranged from small (peer communication) to moderate (friendship quality) effect sizes.

Problem drivers did not significantly differ from other drivers in their overall levels of peer attachment, trust, or participation in structured group activities (for example, community clubs, sporting groups).

Figure 25. Self-reported differences in association with antisocial peers between the risky driving groups over time

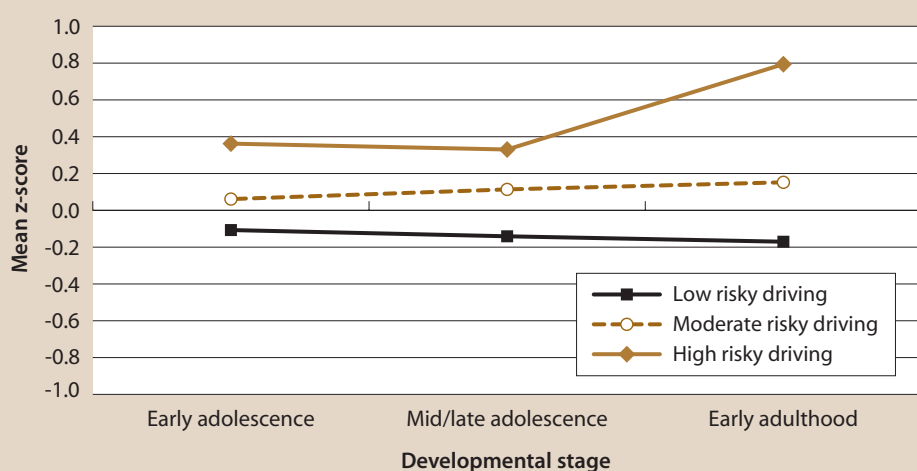


Figure 26. Self-reported differences in association with antisocial peers between the speeding violation groups over time

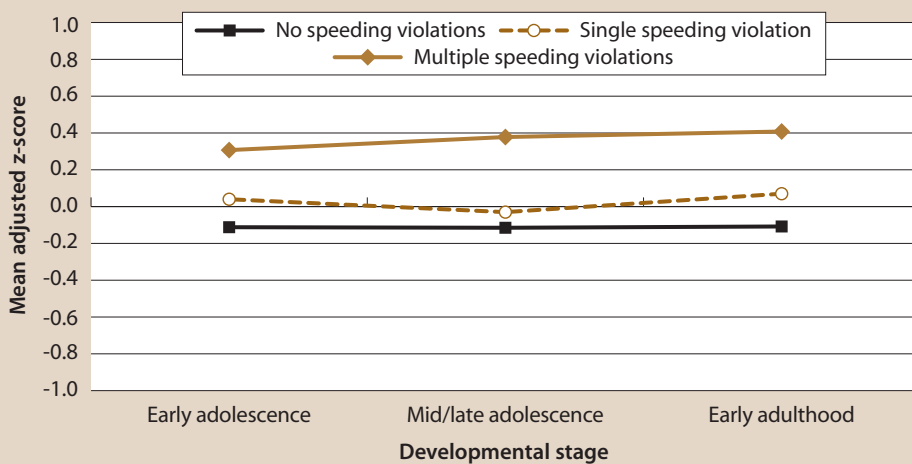
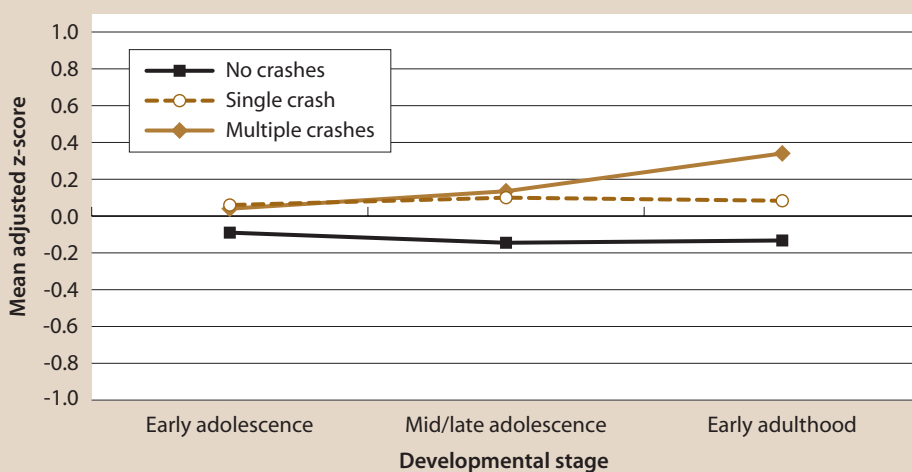


Figure 27. Self-reported differences in association with antisocial peers between the crash involvement groups over time



Parenting practices

Problem drivers did not significantly differ from other drivers in the type of parenting they received during adolescence.

Parental substance use

Levels of parental cigarette and alcohol use did not significantly differentiate problem drivers from other drivers.

Parent-child relationship

Difficulties in relationships between parents and children were characteristic of risky drivers and those who had been involved in multiple crashes. For example, individuals who engaged in high or moderate levels of risky driving reported more difficulties in their relationship with their parents than the low risky driving group during *early adolescence*, while higher levels of conflict between parents and young people were evident among the multiple crash group than the no

crash group during *early adulthood*. All group differences were in the small to medium effect size range.

In addition, the high risky driving group also reported experiencing less warmth in their relationship with their parents (during *mid/late adolescence*), although group differences on this aspect were quite small.

The speeding violation groups did not significantly differ on any characteristics associated with their relationship with their parents at any developmental stage.

Learner driver experiences and current driving behaviour

In terms of learner driver experiences, high levels of stress or conflict when practicing driving (with parents or others) were associated with later crash involvement, but not risky driving behaviour or apprehension for speeding. Group differences on this aspect were within the small effect size range. However, problem drivers did not differ from other drivers in the amount of driving practice they received.

In relation to current driving behaviour, higher driving exposure (more time spent driving) was characteristic of young adults who engaged in high or moderate levels of risky driving, although group differences on this aspect were quite small. As time spent driving was used to control for the effects of exposure on speeding violations and crash involvement, group differences on this variable were not examined as part of the longitudinal analyses. However, it can be reported that the speeding violation groups and crash involvement groups also differed in their amount of driving, with those who had been involved in a crash or been apprehended for speeding reporting that they drove significantly more than other young adults, underscoring the importance of controlling for this variable in analyses.³⁸

Current circumstances

Current family situation

Problem drivers did not significantly differ from other drivers in terms of family socio-economic status (parents' occupational and educational levels); parental unemployment; financial strain; family structure (family size, parental separation/divorce/death, parental marital status); family residential location – urban, regional or rural; family stress; or parental characteristics (parental age and ethnic background).

Current life circumstances

Current employment status and educational status was associated with apprehension for speeding, but not risky driving behaviour or crash involvement. For example, those in the multiple speeding violation group were more likely to be in paid employment than other young adults (59 per cent multiple violation group compared with 33 per cent of single violation group and 27 per cent of no violation group) and were less likely than other young adults to be studying (37 per cent of the multiple speeding violation group compared with 63 per cent of the single violation group and 68 per cent of the no violation group). These group differences were moderate in strength.

³⁸ One-way ANOVAs revealed that those in the multiple and single speeding violation groups drove significantly more each week than those in the no crash group ($F(2, 997) = 17.87, p < .001$), while those in the single and multiple crash groups spent more hours driving than the no crash group ($F(2, 1005) = 14.90, p < .001$).

However, young adults who engaged in illegal or unsafe driving behaviour did not differ from other drivers in their work histories (constant employment/some unemployment); their current living arrangements (with parents, away from parents), or their current involvement in a romantic relationship.

Summary of social and environmental precursors

Table 27 provides a summary of the precursors of each of the three problem driving outcomes. A tick (✓) indicates that a particular social and environmental characteristic or current life circumstance was found to be associated with a particular driving outcome at a minimum of one timepoint, while a cross (✗) indicates that this characteristic was not associated with a particular outcome at any developmental stage.

As this Table shows, there was considerable variability in the type of environmental characteristics and aspects of young adults' current lives that predicted the different driving outcomes. For example, while aspects relating to school experiences predicted both risky driving and apprehension for speeding, characteristics associated with interpersonal relationships (with parents and peers) were mainly associated with crash involvement and risky driving. Furthermore, there were some characteristics that uniquely predicted the different problem driving outcomes (for example, high stress during driving practice predicted later crash involvement, while a tendency to be in paid employment, and not to be undertaking tertiary study, was associated only with speeding violations).

Aspect	High risky driving	Multiple crashes	Multiple speeding violations
School adjustment and achievement			
More school adjustment problems	✓	✗	✓
Lower level of completed secondary education	✗	✗	✓
Peer relationships			
Higher antisocial peer affiliations	✓	✓	✓
Poorer quality peer relationships	✓	✗	✗
Parent-child relationships			
Poorer quality parent-child relationship	✓	✗	✗
Higher conflict in parent-child relationship	✗	✓	✗
Less warmth in parent-child relationship	✓	✗	✗
Learner driver experiences & current driving behaviour			
Higher stress experienced when practising driving	✗	✓	✗
More time spent driving	✓	NA	NA
Current circumstances			
More likely to be in paid employment	✗	✗	✓
Less likely to be studying	✗	✗	✓
Note: NA = not applicable. As time spent driving was used to control for the effects of exposure on speeding violations and crash involvement, group differences on this variable were not examined.			

Summary

Young adults in the *high risky driving*, *multiple crash*, and/or *multiple speeding violations* groups differed from other drivers on a wide range of domains. For example, in comparison to other drivers they were generally found to:

- be more aggressive and antisocial;
- have a less persistent temperament style;
- use more licit and illicit substances;
- have more friendships with antisocial peers; and
- have higher rates of police contact for driving offences.

In addition, those in the *high risky driving* and *multiple speeding violations* group tended to:

- be more hyperactive;
- be less cooperative; and
- experience more school adjustment difficulties, than other drivers.

Both the *high risky driving* and *multiple crash groups* also tended to:

- use less adaptive, acting out coping strategies; and
- experience more parent–child relationship difficulties than others.

While there was a considerable overlap between the predictors and correlates of risky driving, crash involvement and speeding violations, the strength of these predictors varied between outcomes, as did the timing in which group differences emerged. Group differences tended to be more powerful, more consistent, and emerge earlier among the risky driving groups and the speeding violation groups than the crash involvement groups.

There were also some individual attributes and environmental characteristics that uniquely predicted particular problem driving outcomes. For example, *high risky drivers* also tended to be characterised by poorer quality peer relationships and lower levels of responsibility, empathy, and civic engagement, while those with who had been involved in *multiple crashes* were generally more reactive (moody, volatile) and reported experiencing more stress and conflict when learning to drive than other drivers. Those with *multiple speeding violations*, on the other hand, were generally characterised by higher levels of sociability, lower anxiety and depression, higher rates of contact with the criminal justice system, higher rates of paid employment and lower levels of current and past education.

These implications of these findings will be discussed later in Section 7.

Overlap in membership of the three most problematic driving groups

As there were similarities between the correlates and precursors of the three problem driving outcomes (high risky driving, multiple crash and multiple violation), the degree of overlap in these groups was examined to determine whether an overlap in group composition might have influenced these findings. If the same individuals were found in the high risky driving, multiple violation and multiple crash groups, then the similarity evident between the predictors of these three outcomes would not be surprising.

This examination found that the majority of problem drivers were from one problem driving group only. Thus, 70 per cent of the multiple crash group had not engaged in high levels of risky driving or been apprehended for speeding on multiple occasions; 62 per cent of the speeding violation group reported high levels of this type of unsafe behaviour only; and 54 per cent of the high risky driving group engaged only in high levels of risky driving. However, as Table 28 shows, there was some overlap between high risky driving and other problem driving outcomes. For example, a little under half (46 per cent) of the young drivers in the high risky driving group reported that they had been involved in multiple crashes and/or been apprehended on multiple occasions for speeding. Group overlap was also found for the multiple crash and multiple speeding violation groups, although the clear majority of participants in both groups did not report other unsafe driving behaviours. Only a small number (n=6) belonged to all three problematic driving groups.

Combinations of outcomes	High risky driving		Multiple crashes		Multiple speeding violations	
	n	%	n	%	n	%
High on this outcome only	37	54.4	94	70.7	69	62.2
High risky driving & multiple speeding violations	14	20.6	--	--	14	12.6
High risky driving & multiple crashes	11	16.2	11	8.3	--	--
Multiple speeding violations & multiple crashes	--	--	22	16.5	22	19.8
High on all	6	8.8	6	4.5	6	5.4

These findings offer a partial explanation for the similarity of the profiles of the high risky driving, multiple crash and multiple speeding violation groups, as they suggest that, to a certain extent, the findings resulted from having some of the same young adults in each of the groups. However, it should be noted that the majority in the high risky driving, multiple crash and multiple speeding violation groups did not exhibit other problem behaviours. Hence it is likely that other factors, in addition to a possible common factor which the problem driving groups shared, are primarily responsible for these findings.