

“My mother would freak out”: Understanding the influence of parents on the risky behaviour of their young novice drivers

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Abstract

Parents can influence the driving behaviour of their young novice drivers in a variety of ways. Research was undertaken to explore and identify the nature and mechanisms of parental influence upon novice drivers (16-25 years) to inform the design of more effective young driver countermeasures. The mechanisms and nature of parental influence on young novice drivers were explored in small group interviews ($n = 21$) and three surveys ($n1 = 761$, $n2 = 1170$, $n3 = 390$) in a larger Queensland-wide study. Surveys two and three were part of a six-month longitudinal study. Parental influence appeared to occur across the pre-Licence, Learner, and Provisional (intermediate) periods. The most risky novice drivers (in terms of pre-Licence driving, unsupervised driving while a Learner, and risky driving behaviours such as speeding) reported that their parents were less likely to punish risky driving, and that their parents – who they were more likely to imitate – were also risky drivers (indicated by crashes and offences). Parents appear influential in the risky behaviour of young novice drivers. Interventions enhancing their positive influence may improve road safety outcomes not only for young novice drivers, but for all persons who share the road with them. Among the interventions warranting further development and evaluation are programs to encourage the modelling of safe driving behaviour by parents; continued parental monitoring of driving during the pre-Licence, Learner and Provisional periods (e.g., Checkpoints program); and sharing the family vehicle during the first six months of independent licensure.

Introduction

Young drivers are overrepresented in road crashes in motorised jurisdictions around the world. To illustrate in the Queensland context, young drivers aged 16-24 years contributed 22.0% of the previous year's road toll, and 28.4% of the Queensland's road toll arose from crashes involving a young driver (DTMR, 2013). Young drivers continue to be overrepresented in road crashes, despite a plethora of interventions ranging from education to engineering, enforcement to enhanced licensing programs. In July 2007, Queensland enhanced the state graduated driver licensing (GDL) program. Changes to the Learner licence phase include incorporating the requirements of 100 hours of logbook driving practice (with a minimum requirement of 10 hours night driving), a minimum 12-month duration, and a minimum Learner licensing age of 16 years. Changes to the Provisional licence phase include demarcation into Provisional 1 (P1, 1 year duration) and Provisional 2 (P2, 2 years duration) phases with a hazard perception test required to progress from P1 to P2; and high-powered vehicle restrictions during both Provisional licence phases. Audible mobile telephone use by passengers is prohibited during Learner and P1 phases, and novice plates are required to be worn during each GDL phase (Queensland Transport, 2007).

Young driver road crash statistics have resulted in a plethora of research trying to identify factors which are influential in their driving behaviour and in their *risky* driving behaviour – such as speeding and no wearing seatbelts – in particular. A search of Scopus (May 2013) revealed over 1,000 young (or ‘teen’) driver papers published from 1977 to 2013. Sources of influence identified

in the literature predominantly pertain to characteristics of the young driver themselves (e.g., age, Bingham & Ehsani, 2012; gender, Lee et al., 2011); the journey (e.g., travelling speed, Raftery et al., 2013); passengers (e.g., number of passengers and age of passengers, Lam et al., 2003); and the vehicle (e.g., ownership, Scott-Parker et al., 2011a). Social influences upon young driver behaviour have also been identified, and the social influence of parents in particular (e.g., Taubman-Ben-Ari & Katz-Ben-Ami, 2013). Consistent with social learning principles (e.g., Akers' social learning theory, Akers et al., 1979), children are raised within a social environment in which their parents can and do act as models of driving behaviour and attitudes for their children from the earliest ages through the P1 period and beyond.

Mounting research evidence suggests that the young drivers' risky behaviour is associated with their parents' risky driving (e.g., Brookland et al., 2009; Catchpole & Styles, 2005; Chen et al., 2008; Ferguson et al., 2001; Fleiter et al., 2010; Prato et al., 2009, 2010; Wilson et al., 2006), and the driving behaviour of same-sex parents in particular (e.g., Miller & Taubman-Ben-Ari, 2010; Taubman-Ben-Ari et al., 2005; Taubman-Ben-Ari & Katz-Ben-Ami, 2012). Furthermore, parents are the most common driving supervisor of their young novice child in many countries, including Australia (e.g., Mulvihill et al., 2005; Scott-Parker et al., 2011b) and New Zealand (e.g., Brookland & Begg, 2011); therefore in addition to acting as models for their novice child, they are commonly the primary instructor in safe vehicle and road use. Consistent with social learning principles, by virtue of their role as driving supervisor during the Learner licence phase, parents can regulate the compliance of their child with general road rules and with GDL-specific conditions and restrictions in particular through the administration of rewards and punishments. Rewards are motivating and reinforcing, acting as incentives to gain expected outcomes, whilst punishments serve to prevent, curtail, or extinguish learned behaviours (Beck, 1990). As such, parents are pivotal in the driving careers of their children.

Study aims

Research was undertaken to explore and identify the nature and mechanisms of parental influence upon young driver behaviour and attitudes during the pre-Licence, Learner and P1 licence phases in Queensland. The paper reports new research findings with appropriate referencing to findings which have been published elsewhere throughout the larger, 4-year, research project. It is also noteworthy that whilst some of the broader influences of parents *and peers* upon young driver behaviour during the P1 licence phase has been examined within an application of Akers' social learning theory (Scott-Parker et al., 2013a), the current paper examines the specific influence of parents throughout the pre-Licence, Learner and P1 licence phases.

Method

Participants

Qualitative research

Young drivers ($n = 21$, 9 males) aged 16-25 years with a Learner or P1 licence volunteered to participate in the qualitative research.

Quantitative research

Young drivers ($n = 761$, 238 males) aged 17-25 years with a P1 licence attending a tertiary education institution volunteered to participate in the first Queensland-wide survey, Survey One. Young drivers ($n = 1170$, 461 males) aged 17-25 years who progressed from a Learner to a P1 licence during the period 1 April 2010 to 30 June 2010 volunteered to participate in the second

Queensland-wide survey, Survey Two. Young drivers ($n = 390$, 113 males) aged 17-26 years who had held their P1 licence for six months and were participants in Survey Two volunteered to participate in the third Queensland-wide survey, Survey Three.

Design, Method and Procedure

Qualitative research

Young persons in the food court of a major regional shopping centre during the summer school holidays were approached and asked whether they had a driver's licence. If they responded 'yes', they were invited to participate in individual interviews (if shopping alone) or small group interviews (if shopping with friends who were also licensed to drive on the road) of approximately 20 minutes duration. Participants were offered \$20 to thank them for their efforts, and the thematic content analysis results were used to guide the quantitative component of the larger research project.

Quantitative research

Young drivers attending a Queensland tertiary institution in Semester 2, 2009, were invited to participate in Survey One via an email containing the online survey hyperlink which was forwarded to them via the relevant institution's registrar. All young drivers in Queensland who progressed from a Learner to a P1 driver's licence between 1 April 2010 and 30 June 2010 were invited to participate in the online Survey Two (with paper option available), via a flyer issued by the government licensing authority (DTMR) and a reminder letter issued by DTMR one month later. Six months later, an email was sent to the participants of Survey Two asking them to complete their second online survey (Survey Three), with a reminder letter issued by DTMR one month later. Participants in the three online surveys were offered the chance to win petrol vouchers, Coles Myer vouchers, and movie tickets. Each survey contained the Behaviour of Young Novice Drivers Scale (BYNDS, Scott-Parker et al., 2010) which explores self-reported risky driving behaviours such as speeding, not wearing seatbelts, and driving at night. Surveys also contained items exploring novice driving experiences (e.g., crash, offence, unsupervised Learner driving), and attitudes and perceptions regarding peers.

Statistical analyses

Statistical analyses reported in this paper include comparison of means by methods including analysis of variance and chi-square tests, and multiple regression analyses to examine the predictive relationships amongst variables of interest. All surveys were administered via KeySurvey Online Survey Software, and all analyses were undertaken in Statistical Package for the Social Sciences (SPSS), version 20.

Results

Parent influence during the Learner licence phase

Parents as driving supervisors

Young drivers reported that parents were the most common Learner supervisors, with mothers reported as the most common supervisor by 50% of Learners (53% of females, 46% of males), and fathers reported as the most common supervisor by 34% of Learners (28% of females, 43% of males). Learners reported remaining on their licence for an average of 18 months (males $M = 16.6$ months, females $M = 19.0$ months, $p < .001$), whilst Learners aged 18-19 years held their Learner

licence for an average of 25 months compared to Learners aged 16-17 years (who are more likely to live at home with ready access to parents than the older Learners) who held their licence an average of 15 months, $p < .001$ (Scott-Parker et al., in press). Accurate logbooks were reported by 83% of Learners, whilst 4% of Learners included extra hours in their logbooks. The role of parents in this illegal behaviour requires further examination.

Parents are likely to have played a role in two risky driving behaviours: pre-Licence driving, and unsupervised learner driving. Thirteen percent of young drivers in Survey Two reported driving on the road before they had a valid Learner licence (13% of females, 13% of males, ns), with 97.5% stating they did so 10 or fewer times. Thirteen percent of young drivers in Survey Two also reported driving unsupervised as a Learner (11% of females, 16% of males, $p < .05$), with 98.1% stating they did so 10 or fewer times. Inadequate parental supervision is likely to have contributed to these behaviours, and parental complicity in these risky driving behaviours also requires further investigation. In addition, some Learners reported risky behaviours such as driving in considerable excess of speed limits. However the nature of the supervision during these drives was not able to be determined, therefore the characteristics of the risky supervisor are unknown at this time.

Parents as models to imitate or ignore

During the qualitative component of the research, the young drivers reported diverse experiences in the imitation or ignoring of the driving-related behaviours and attitudes of their parents (see Scott-Parker et al., 2012a). This was explored further in the quantitative research. Twenty-two percent of the Learners in Survey Two agreed/strongly agreed that “*seeing my parents bend some road rules influenced me to bend some road rules*” (20% of females, 25% of males, ns), and 8% agreed/strongly agreed that “*when I drove in a risky way, such as following a little too close, I did so because I remembered my parents did it too*” (9% of females, 12% of males, ns). Most parents were good role models of driving attitudes, with 4% of Learners reporting that their “*parents think it is fine to bend the road rules*” (3% of females, 6% of males, $p < .01$). In contrast, parents were not always a good role model of driving behaviours for their young driver children, with 28% of Learners reporting that their “*parents did not follow all the road rules all the time*” (27% of females, 30% of males, ns).

A considerable proportion of Learners reported that they knew that their parents previously had been detected for a driving-related offence: 42% reported their mother had an offence (range 1-12) (43% of females, 40% of males, ns), and 53% reported that their father had an offence (range 1-12) (53% of females, 53% of males, ns). A handful of Learners reported that they knew that their parents had talked themselves out of a ticket at the time an offence had been detected: 5% of mothers (range 1-2) (4.5% of females, 5.6% of males, ns), and 6% of fathers (range 1-2) (4.6% of females, 6.9% of males, ns). Most Learners reported that they based their driving on their mother’s driving (52% of Learners) or their father’s driving (50% of Learners). Learners also reported the crash history of their parents, with 28% of Learners reporting their mothers had been in a crash (range 1-3 crashes during the Learner period) (28% of females, 28% of males, ns), and 25% of fathers had been in a crash (range 1-3 crashes during the Learner period) (23% of females, 28% of males, ns).

A small proportion of Learners reported they had crashed ($n = 43$, 3.8% of sample) or been detected committing a driving offence ($n = 32$, 2.8% of sample). Interestingly, even though the driving behaviour of the young Learner is likely to be highly moderated due to the presence of a driving supervisor, the Learners who reported their *mothers* were risky drivers as evidenced by a driving history of a(n) offence(s) also reported more risky driving (no offence BYNDS $M = 69.4$, offence BYNDS $M = 76.6$, $p < .01$).

Parents as sources of punishments and rewards

In the small group interviews, young drivers reported parents were a source of punishment and rewards for their driving behaviour, including risky driving. The reactions of parents were believed to depend to a large extent upon the outcome of the behaviour, such that ‘no bad outcome’ (e.g., no crash, no offence) was not expected to result in any punitive consequences, with parental reactions like “*saying nothing*”, telling the young driver that it was “*up to them to drive the way you want to*”, and “*been angry with you*” reported by some young drivers. In comparison, a ‘bad outcome’ (e.g., a crash, an offence) was expected to result in further punitive consequences, such as taking the keys away from the young driver, other punishment such as suspending mobile phone privileges, and being “*told off with a massive speech*” reported by some young drivers (Scott-Parker et al., 2012a) (see Table One for expected parents’ reactions). Consistent with these expectations, 75% of Learners reported that their parents would have told them off with a massive speech if there was a bad outcome (80% of females, 72% of males, $p < .01$), compared to 60% of Learners if there was no bad outcome (64% of females, 55% of males, $p < .001$). As can also be seen, a significantly smaller proportion of males than females expected punishment for driving outcome of either severity.

Interestingly 46% of Learners agreed/strongly agreed that “*I would have lost the respect of my friends and family if they knew I had bent the road rules*” (50% of females, 41% of males, $p < .01$). Most Learners believed that their parents wanted them to be safe drivers, with 70% reporting that their “*parents would have been concerned if they found out I had bent the road rules*” (72% of females, 68% of males, $p < .01$). As can be seen, in general, males reported riskier expectations regarding their parents.

Parents actively engaged in punishment avoidance for their children (see Scott-Parker et al., 2012b), with 9 Learners (0.8%, 5 males) reporting that their parents took the fine and/or demerit points for a detected offence. This behaviour is problematic as young drivers perceive this as a reward, and rather than the expectation that a punishment would curb risky driving behaviour, more risky driving behaviour is likely (also see Scott-Parker et al., 2012a).

Parents during the Provisional 1 licence phase

Parents as models to imitate or ignore

Young drivers with a P1 licence also reported that their parents were models to imitate or ignore (see Scott-Parker et al., 2012a). Generally similar proportions of P1 drivers as Learners reported imitating their parents in Survey Two: 23% of P1 drivers agreed/strongly agreed that “*seeing my parents bend some road rules influenced me to bend some road rules*” (20% of females, 29% of males, ns), and 13% agreed/strongly agreed that “*when I drove in a risky way, such as following a little too close, I did so because I remembered my parents did it too*” (10% of females, 15% of males, ns). Most P1 parents were good role models of driving attitudes, with 6% of P1 drivers reporting that their “*parents think it is fine to bend the road rules*” (4% of females, 9% of males, $p < .05$). Similar to the Learner experience, parents were not always a good role model of driving behaviours for their young driver children, with 26% of Learners reporting that their “*parents did not follow all the road rules all the time*” (22% of females, 33% of males, $p < .05$). Notwithstanding this, 77.4% of P1 drivers reported they felt pressure from their parents to follow the road rules (76.0% of males, 78.0% of females, ns), with 36.8% of P1 drivers (32.8% of males, 38.5% of females, ns) basing their driving on their mother’s driving, and 38.1% of P1 drivers basing their driving on their father’s driving (44.1% of males, 35.1% of females, $p < .05$).

Some P1 drivers reported that they knew that their parents had been detected for a driving-related offence during the past six months: 21 P1 drivers (5.6%) reported their mother had an offence, and 31 P1 drivers (8.2%) reported that their father had an offence. A handful of P1 drivers reported that their mother had crashed in the last six months ($n = 10$, 2.6%) or that their father had crashed in the last six months ($n = 11$, 2.9%). Few crashes ($n = 36$, 9.6% of P1 drivers, 10.7% of males, 9.1% of females) and offences ($n = 44$, 11.6% of P1 drivers, 17.7% of males, 9.1% of females) were reported. Consistent with the findings during the Learner licence phase, the P1 drivers who reported their parents were risky drivers as evidenced by driving histories of road crash(es) and/or offence(s) also reported more risky driving. To illustrate, significantly more risky driving as measured by the BYNDS was reported by P1 drivers for whom mothers had crashed (no crash BYNDS $M = 75.4$, crash BYNDS $M = 94.8$, $p < .05$); fathers had crashed (no crash BYNDS $M = 75.6$, crash BYNDS $M = 90.3$, $p < .01$); mothers had been detected for an offence (no offence BYNDS $M = 74.8$, offence BYNDS $M = 83.9$, $p < .01$); and fathers had been detected for an offence (no offence BYNDS $M = 74.5$, offence BYNDS $M = 83.1$, $p < .001$).

Parents as sources of punishments and rewards

Young drivers with a P1 licence also reported that parents were a source of punishment and rewards for their driving behaviour, including risky driving (see Scott-Parker et al., 2012a). Consistent with Learner expectations, 82% of P1 reported that their parents would have told them off with a massive speech if there was a bad outcome (81% of females, 83% of males, $p < .05$), compared to 58% of P1 if there was no bad outcome (60% of females, 52% of males, $p < .05$). Also consistent with the Learner experience, a significantly smaller proportion of males than females expected punishment for driving outcome of either severity. Slightly more P1 drivers (59%) than Learners (46%) agreed/strongly agreed that “*I would have lost the respect of my friends and family if they knew I had bent the road rules*” (51% of females, 40% of males, ns), whilst similar proportions of P1 drivers as Learners (70%) believing that their parents wanted them to be safe drivers, with 74% reporting that their “*parents would have been concerned if they found out I had bent the road rules*” (76% of females, 70% of males, $p < .05$). As can be seen, and consistent with the Learner experience, in general, males reported riskier expectations regarding their parents.

Similar to the Learner phase, parents actively engaged in punishment avoidance for their children (see Scott-Parker et al., 2012b), however a considerably larger proportion of P1 drivers ($n = 9$, 2.4%, 8 males) reported that their parents took the fine and/or demerit points for a detected offence. Again, this behaviour is problematic as young drivers perceive this as a reward, and rather than the expectation that a punishment would curb risky driving behaviour, more risky driving behaviour is likely (also see Scott-Parker et al., 2012a).

Parental influence upon self-reported risky driving behaviour

The influence of parental attitudes and behaviours upon the self-reported risky driving behaviour of the P1 driver with 6 months driving experience was explored via multiple regression (MR) analysis of Survey Three results. As can be seen from Table 1, self-reported risky driving behaviour, as measured by the BYNDS, was predicted by the perceived attitudes and expected reactions of parents, such that the expectation that the P1 driver would lose the respect of friends and family if they knew that the young driver had bent the road rules reported less risky driving behaviour, whilst the expectation that parents would tell the young driver it was up to them to drive the way they wanted to, and parents who would embarrass the young driver by telling other people that they know what they had done, reported more risky driving behaviour ($F(14, 363) = 7.52$, $p < .001$).

1
2**Table 1 Multiple regression results for parent predictors of self-reported risky driving during the first six months of P1 driving**

Variables	B	p	sr²	R²	Adj R²	Δ R²
Gender	.00	.96				
My parents think it is fine to bend the road rules	.09	.13				
My parents follow all the road rules all the time	-.07	.22				
My parents wouldn't have been concerned if they found out I had bent the road rules	.07	.14				
I would have lost the respect of my friends and family if they knew I had bent the road rules	-.20	< .001	.03			
When I drove in a risky way, I did so because I remembered my parents did it too	.07	.30				
Seeing my parents bend some road rules influenced me to bend some road rules	.06	.34				
Bad outcome, parents said nothing	.07	.13				
Bad outcome, parents told you it was up to you to drive the way you want to	.21	< .001	.04			
Bad outcome, punished you in some way such as taking your mobile phone off you	-.05	.43				
Bad outcome, told you off with a massive speech	-.01	.93				
Bad outcome, been angry with you	.02	.81				
Bad outcome, taken the keys off you	.04	.54				
Bad outcome, embarrassed you by telling other people you know what you had done	.13	< .01	.01			
				.225***	.195	.225

3

*** $p < .001$.

4

Given the differences apparent between the genders identified earlier, MR analyses were conducted separately for each gender (not shown). The significant predictors varied between the genders. For males, less self-reported risky driving behaviour, as measured by the BYNDS, was predicted by parents who were expected to punish the P1 driver in some way, such as taking their mobile phone off them ($\beta = -.29, p = .018$) ($Adj R^2 = .216, p < .01$). For females, more self-reported risky driving behaviour, as measured by the BYNDS, was predicted by seeing their parents bend the road rules ($\beta = .15, p = .04$), and the expectations that their parents would tell them it was up to them to drive how they want ($\beta = .20, p = .001$) and that they would embarrass the P1 driver ($\beta = .15, p = .016$); whilst less self-reported risky driving behaviour was predicted by the P1 driver believing they would have lost the respect of their friends and family ($\beta = -.25, p < .001$) ($Adj R^2 = .214, p < .001$).

Discussion

Contrary to parents' beliefs (e.g., Guttman, 2012), parents appear influential in the risky behaviour of young novice drivers, not only during the Learner period but also during the pre-Licence and the earliest stages of independent driving. Whilst parental involvement, awareness, and complicity in pre-Licence driving and unsupervised Learner driving require further investigation, it is likely that a lack of parental supervision played a key part in this risky behaviour. Parents therefore are encouraged to monitor the behaviour of their pre-Licence adolescent, and to monitor the car use by their Learner specifically. Moreover, whilst inadequate parental supervision was identified during the qualitative research component (see Scott-Parker et al., 2012a), it is unclear at this time exactly who was supervising in instances of speeding and other risky behaviours reported by Learners in the Queensland-wide survey. Irrespective of this, it appears that parents require additional support during the Learner period in particular, including guidance regarding the need for varied driving experiences (e.g., Mulvihill et al., 2005), and the development of hazard perception and situational awareness skills (e.g., Gregersen et al., 2003).

In addition to providing most of the driving supervision during the Learner licence phase, the driving behaviours, attitudes, and expected reactions of parents was influential during both the Learner licence and the P1 licence phase when the young driver is independently on the road. Interestingly the offence history of mothers in particular was influential, and given that mothers were reported to be the most common supervisor of the Learner, targeted intervention efforts appear warranted. Imitating the risky driving behaviour of parents corresponded to more risky driving by the P1 driver, therefore broader interventions targeting noncompliance by all drivers also appear warranted. Further, the finding that parents have 'taken the punishment' for their young driver child requires further investigation, particularly as the young driver perceives this punishment avoidance as rewarding, thereby increasing the likelihood of risky driving rather than decreasing risky driving (see also Scott-Parker et al., 2012a).

Interventions encouraging parents to impose consequences for risky driving, i.e., 'parental punishments', during the P1 period merit further consideration. The nature of these punishments also requires further consideration, particularly in light of the counter-intuitive findings. During the qualitative research, an effective punishment to curb risky driving suggested by the young drivers was embarrassment-by-parents. Interestingly, the larger quantitative survey of young drivers' expectations found that for young drivers who anticipated that their parents would embarrass them for a bad driving outcome (such as a crash or an offence), an *increase* in the young drivers' self-reported risky driving behaviour was likely. Whilst this finding requires further examination, it may reflect perceived parent-child dynamics and family climate (e.g., Taubman-Ben-Ari & Katz-Ben-Ami, 2013), such as broader parenting styles and the interactions between characteristic parenting behaviours (e.g., greater 'demandingness' characteristic of authoritative parents was associated with more risky driving attitudes of their children, Taubman-Ben-Ari, 2011). In contrast and perhaps

unsurprisingly, young drivers who expected that their parents would say that how they drove was up to them – effectively *no* punishment – reported more risky driving. Anticipated parental punishment such as taking the keys off the young driver was effective in reducing the risky behaviour of young drivers. Furthermore, the finding that less risky driving was associated with the perception that the young driver would lose the respect of friends and family, notwithstanding the inclusion of the influence of friends within this item, also suggests that parents continue to influence the driving behaviour of their independently-licensed young driver. It is also noteworthy that a second conference paper examines the influence of peers on the risky behaviour of young drivers (see Scott-Parker et al., 2013b).

Whilst in some instances parents were found to be a negative influence upon the risky driving behaviour of their young novice, parents were also found to have the capacity to be a positive influence upon the driving behaviour of their young novice. Therefore given that parents are influential during the pre-Licence, Learner and the P1 driving periods, through the (non) administration of punishments, inadvertent and intended rewards, and the modelling and subsequent imitation of driving behaviours and attitudes, interventions which enhance their *positive* influence may improve road safety outcomes not only for young novice drivers, but for all persons who share the road with them. A number of research needs have been identified thus far. In addition to these knowledge deficits, much remains unknown about the exact nature of parental modelling, driving instruction by parents during the Learner period, intended (and unintended) rewards and punishments during the Learner and P1 period, and parental involvement during the P1 period. This information is crucial to inform the development, application and evaluation of interventions such as programs to encourage the modelling of safe driving behaviour by parents; continued parental monitoring of driving during the pre-Licence, Learner and Provisional periods (e.g., Checkpoints program, Simons-Morton et al., 2006; Zakrajsek et al., 2013; In-Vehicle Data Recorders and parental guidance, Farah et al., 2013); and sharing the family vehicle during the first six months of independent licensure (which is associated with less risky driving, Scott-Parker et al., 2011a). Young drivers' negative attitudes towards GDL programs has also been found to increase the likelihood of risky driving and crashes (e.g., Brookland & Begg, 2011), and the role of parents in the development, maintenance and extinguishment of such attitudes merits further investigation.

Consistent with qualitative methodology, recruitment to the qualitative research ceased upon saturation of participant responses. Despite numerous attempts to recruit more participants for the second Queensland-wide survey, including the offering of incentives such as petrol vouchers, low response rates were achieved. In addition, numerous attempts were made to retain more participants in the longitudinal research of Survey Three, however extreme weather including cyclones and flooding which affected electricity supplies across much of the state during the follow-up period of the online survey appears to have contributed to the high attrition rate (AAP, 2011). Notwithstanding the low initial response rate and high attrition over the study period, the participants represented the state geographically, with Learner and P1 driver samples reflecting the geographic distribution of the state of Queensland's population (61.8% of the Learner and 62.9% of the P1 participants residing in inner city areas which contain 60.0% of the state's population, and 2.2% of the Learner and 1.7% of the P1 participants residing in remote areas which contain 2.0% of the state's population, (Commonwealth Department of Health and Aged Care, 2010). The survey samples contained more females than males, and where appropriate separate gender results were reported. Anonymity afforded by the online survey which did not collect any personally-identifying information and which was completed at a time and location convenient for each participant, is likely to have minimised any biases in the self-reported data, and access to the novice driver's perceptions and behaviours could not be collected via any other means.

Conclusion

Three quantitative surveys and small group and individual interviews were undertaken to explore young drivers' perceptions regarding the nature and mechanisms of the influence of their parents on their driving behaviour. Despite parents' belief that they are not influential identified in earlier research, parents were found to be influential not only during the pre-Licence and Learner licence phases, but during the independent, P1 driving phase. Young drivers who believed that their parents were unlikely to punish them for risky behaviour, and who imitated the risky behaviour and attitudes of their parents, were the riskiest drivers. In contrast, young drivers who did not want to lose the respect of their friends and family reported less risky driving. Interventions need to be multi-fold: interventions should encourage parents to be safe models of driving behaviour and attitudes throughout their young driver's childhood and driving career; and should encourage parents to be active in the driving careers of their children, with sustained monitoring and regulation of their Learner and P1 driver's behaviour.

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