

The role of personality in predicting hooning-related driving behaviour

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Abstract

'Hooning' constitutes a set of illegal and high-risk vehicle-related activities typically performed by males aged 17-25, a group that is over-represented in road trauma statistics. This study used an online survey of 422 participants to test the efficacy of the Five Factor Model of Personality in predicting 'loss of traction' (LOT) hooning behaviour. Drivers who engaged in LOT behaviour scored significantly lower on the factor of Agreeableness than those who did not. Regression analyses indicated that the Five Factor Model of Personality was a significant predictor of LOT behaviour over and above sex and age, although Agreeableness was the only significant personality factor in the model. The findings may be used to better understand those drivers likely to engage in LOT behaviours. Road safety advertising and educational campaigns can target less socially agreeable drivers, and aim to encourage more agreeable attitudes to driving, particularly for younger male drivers.

Keywords

Hooning, Driving, Personality, Five Factor Model of Personality, Agreeableness

Introduction

Hooning behaviour has received increasing attention as a road safety issue [1] and considerable media coverage across Australia in recent years [2, 3]. During the past decade, Australian state governments have progressively introduced legislation specifically aimed at reducing hooning activity, with the intent of minimising road fatalities and trauma. Proactive road safety countermeasures including driver education [1] and preventative campaigns aimed at influencing driver attitudes toward hooning behaviours [4] have also been regarded as important to curbing the behaviour. The current paper sought to expand the limited evidence base available to better understand those drivers likely to engage in a subset of hooning-related driving behaviours defined by 'loss of traction' (LOT) events, and to inform road safety advertising and education campaigns aimed at reducing LOT behaviours.

Defining a 'loss of traction' subset of hooning-related behaviour

The term 'hooning' generally refers to a diverse cluster of illegal and risky driving-related behaviours described in Table 1. Though often considered collectively, two different subsets of vehicle-centred hooning activities are evident [5]. One is mainly characterised by speed and racing activities, and the other by

noise and 'loss of traction' events [6]. Hooning behaviour involving speed and racing constituted 19%, and 'loss of traction' events 67% of offences committed during a 15-month period by drivers whose vehicles had been impounded at least once under the Queensland Police Powers and Responsibility Act [7]. These statistics highlight the greater frequency of 'loss of traction' events.

Additionally, there are inherent difficulties in measuring the broad range of activities that typically constitute hooning, and precise definitions of hooning behaviour are needed [8]. Therefore, this study sought to enhance internal reliability by investigating a homogenous set of behaviours characterised by 'loss of traction' events, which are defined as doing 'burn outs', 'donuts', 'skids', 'fishtailing' or any other driving manoeuvre that intentionally causes the wheels of the vehicle to lose traction with the driving surface.

Who is involved in hooning driving behaviour?

Previous studies have confirmed that the majority of drivers involved in broadly defined hooning activities are males aged 17-25. For example, it was found that a sample of drivers whose vehicles had been impounded at least once under Queensland Police Powers and Responsibility Act [7] during a 15-month period ending in October 2006 were predominantly male (97.3%) and aged 17-24 years (75%) [6]. Similarly, it was found that males aged 16-25 years were more willing to engage in hooning-related behaviour than drivers of all other sex and age cohorts [8]. It is this same group of young male drivers that is over-represented in Australian road crash statistics [9].

Potential for harm

Males and females aged 17-25 years each account for approximately 7% of the Australian population [10]. However, males in this age group accounted for 19.5% of total road deaths in Australia during the 12 months ending April 2008, compared with 5% for females in the same age group [9]. The prevalence of hooning-related behaviour and road crash deaths for males aged 17-25 years highlights the importance of continued research in the area.

Previous studies have produced useful data regarding incidence, demographics and safety implications of hooning [1], perceptions and experiences of those engaged in the hooning 'culture' [5], profiles of typical and atypical drivers who engage in hooning behaviour [6], and strong external and social influences on the prediction of hooning behaviour [8]. No previous research has captured the possibility of purely internal influences on hooning-related behaviour, for example, personality.

Table 1. Activities typically considered as hooning behaviours in Queensland

Activity	Description
Burn outs	Purposely causing the rear tyres of a vehicle to lose traction with the driving surface and spin, producing smoke from burning rubber or substances such as oil placed under tyres
Donuts	Fully locking steering on front wheels while doing a burn out, causing the rear of the car to rotate, leaving a circular pattern of tyre rubber on the road surface
Skids	Locking the wheels whilst in motion, causing the vehicle to be dragged along by its own momentum
Fishtailing	In rear-wheel vehicles, purposely causing the rear end of the vehicle to skid to one side, then turning the steering wheel in the same direction as the skid until the rear end of the vehicle skids in the opposite direction. Fishtailing is usually performed on low-friction road surfaces such as unsealed roads or in wet conditions
Lapping	Repeatedly driving vehicles slowly around a pre-determined combination of streets
Street racing	Simultaneous rapid acceleration of two or more vehicles that are beside each other on the road, in a test of comparative acceleration capacity of the vehicles
Road blockades	To enable cars travelling ahead on multi-lane roads to street race from a rolling start, vehicles travelling behind, and side by side, travel very slowly to block regular traffic from behind
Speed trial	A trial of any description that is designed to test the speed capacity of a vehicle and/or driver
Drifting	Accelerating a vehicle while cornering in such a way as to cause the rear end of the vehicle to slide on the road
Parking up	A large gathering of people who study each other's vehicles, network and plan illegal driving activities

Sources: Folkman (2005) [1]; Leal et al. (2007) [6].

Personality theory

Personality is a theoretical concept that considers the many internal mental processes that integrate to characterise what an individual is like, and how he or she behaves across different situations [11]. The Five Factor Model of Personality is a trait approach, which posits that characteristics of personality can be captured by five dimensions. Extensive factor analyses of a range of personality tests and scales, and of numerous adjectives used to describe personality, produce clusters of related characteristics, each cumulatively representing one of the five personality factors [12]. Broadly, these five factors can be described as:

1. *Neuroticism* - the degree to which a person is anxious and insecure as opposed to calm and self-confident
2. *Extroversion* - the degree to which a person is sociable, leader-like and assertive as opposed to withdrawn, quiet and reserved
3. *Openness to experience* - the degree to which a person is imaginative and curious as opposed to concrete-minded and narrow in thinking
4. *Agreeableness* - the degree to which a person is warm and cooperative as opposed to unpleasant and disagreeable
5. *Conscientiousness* - the degree to which a person is persevering, responsible and organised as opposed to lazy, irresponsible and impulsive.

The Five Factor approach has evolved to the model presently measured by the NEO Personality Inventory (NEO-PI) [13]. Scales measuring individuals' scores are interpreted on continuums according to whether each individual scores higher or lower on a particular factor [13].

Previous studies have applied the Five Factor Model of Personality to road safety issues. For example, a study that examined the mediated relationship between personality and crash risk indicated that all five factors had indirect effects on crash risk as measured by crash involvement and traffic offences [14], while a different study revealed that traffic offenders scored higher on extroversion than non-offenders [15]. Another study found a negative relationship between altruism (which is a facet of Agreeableness) and speeding behaviour for young drivers [16]. These findings support the proposal that personality may also play a role in explaining hooning-related behaviour.

Aims and hypotheses

The aim of this study was to investigate the influence of personality (as measured by the Five Factor Model) on LOT behaviour, first by testing for group differences in personality between those who do and those who do not engage in the behaviour, and second by testing the efficacy of the Five Factor Model in explaining LOT behaviour. Therefore, it was hypothesised that on average, drivers who engaged in LOT behaviour would differ from those who did not in terms of personality as measured by the Five Factor Model.

Consistent with typical characterisations of hooning behaviour [see 1, 17, 18] and the nature of each of the personality factors, it was predicted that drivers who scored higher on the continuum of Neuroticism (and thus were more insecure) and Extroversion (and thus were more assertive) would be more likely to engage in LOT behaviour. Conversely, it was predicted

that drivers who scored lower on the continuum of Openness (and thus were less imaginative), Agreeableness (and thus were less cooperative) and Conscientiousness (and thus were more impulsive) would be more likely to engage in LOT behaviour.

Effects of age and sex on generally defined hooning behaviour have been identified [e.g., 6, 8], as have differences in trait personality according to age [19] and sex [20]. As such, in order to avoid possible confounding effects of age and sex, these factors were used as controls.

Method

Participants

In total, 422 participants who had driven a car on the road in Queensland during the previous month were recruited from Queensland University of Technology (QUT) students and staff, from Technical and Further Education (TAFE) colleges in south-east and northern Queensland areas, and via social networking internet sites. The sample comprised 274 (65%) females and 145 (34%) males (three people did not indicate their gender), with ages ranging from 17 to 73 years (median = 27, standard deviation = 12.45).

Design and measures

Demographics: All participants were required to indicate relevant demographic information including age, sex, car licence type, study institution, work status and occupation.

Hooning-related behaviour: For the dependent variable, hooning-related behaviour, participants were asked to recount the number of times during the previous month that they had engaged in the subset of hooning activities described as LOT events and defined by doing burn outs, donuts, skids, fishtailing, or any other driving manoeuvre that intentionally caused the driving wheel or wheels of the vehicle to lose traction on a public road or footpath, or in a public park or car park. This information was transformed into a dichotomous variable labelled 0 (“no”) or 1 (“yes”).

Personality: The independent variable was measured by a scale of 50 items sourced from the International Personality Item Pool (IPIP) Collaboratory [21], which is freely available online. The IPIP measure used was designed to correlate highly with the five domains of Costa and McCrae’s [22] Revised NEO Personality Inventory (NEO-PI-R) [23]. The internal consistency of the IPIP measure is comparable to the NEO-PI-R, with Cronbach’s alpha coefficients from an adult community sample of .86 for the Neuroticism subscale, .86 for the Extroversion subscale, .82 for the Openness subscale, .77 for the Agreeableness subscale and .81 for the Conscientiousness subscale [23]. With correction for measurement error, correlation between the IPIP scales and the corresponding NEO-PI-R scales range from .85 to .92. [21]. Each domain is measured by five positively keyed and five negatively keyed items scored on a five-point Likert scale rated from 1 (“very inaccurate”) to 5 (“very accurate”).

Procedure

Participants were recruited by self-selection in response to a direct email invitation. An electronic checkbox was provided to indicate informed consent, and directly linked respondents to the online questionnaire. Participants from the QUT first-year participant pool could claim course credit, while other participants could enter into a draw to win one of a number of double movie passes. Questionnaire responses were automatically recorded on a Microsoft Excel spreadsheet.

Results

Data analysis

The Statistical Package for the Social Sciences version 16.0 (SPSS) was used to analyse data. Several cases contained more than 15% missing data and were retained and used only for analyses for which data was adequate. Where analytic procedure allowed, remaining cases with a random pattern of missing values representing 5% to 15% of data were excluded analysis by analysis. To avoid depletion of sample size, for items with missing values, all mean scale scores were calculated to allow for one missing value. An alpha level of $p < .05$ was used for all analyses. Table 2 displays demographic characteristics of the participants.

Table 3 displays sample and LOT behaviour group means for the five factors of personality. For the personality factor of Neuroticism, the sample mean was central on the five-point Likert scale, indicating that on average, participants were neither high nor low on this trait. For the four other personality factors, sample means ranged from 3.43 to 3.75 indicating that, on average, participants scored moderately high on these traits. Sample mean scores for all factors of personality did not show a great range of variability. Consistent with predictions, it is noted that, drivers who did engage in LOT behaviour during the previous month had marginally higher mean scores for the factors of Neuroticism and Extroversion, and marginally lower mean scores for the factors of Openness and Conscientiousness than drivers who did not engage in the behaviour.

Independent groups t-tests (one-tailed) revealed that observed differences for the factors of Neuroticism, Extroversion, Openness and Conscientiousness were not statistically significant. However, for the trait of Agreeableness, scores were significantly lower $t(368) = 5.38, p < .001$, for drivers who engaged in LOT behaviour ($Mean = 3.39, Standard Error = .07$), than for those who did not ($M = 3.81, SE = .03$). The mean between-groups difference was .42 ($SE = .08$), with a 95% confidence interval of .26 to .57, with large effect ($d = .83$).

As sex and age were related to personality factors and LOT behaviour, a sequential logistic regression analysis was performed to determine whether personality theory was a significant predictor of LOT hooning behaviour over and above sex and age. That is, sex and age were entered as controls into

block one, and were significant predictors, such that the addition of the five personality variables at block two revealed a good model fit, with personality theory significantly improving the overall model. While the overall model $\chi^2(7, 348) = 65.81$, $p < .001$ predicted LOT behaviour, a Nagelkerke R square value of .31 suggested that, after controlling for the effects of sex and age, personality theory explained an additional 5% of variance in LOT behaviour.

Table 2. Participant Demographics (N =371)

Characteristic	n	%
Age range		
17-25	156	42.0
26 and over	198	53.4
Missing	17	4.6
Car licence type		
P1 ^a	43	11.6
P2 ^b	14	3.8
Provisional ^c	33	8.9
Restricted	1	0.3
Open	272	73.3
International	8	2.2
Work status		
Employed	321	86.5
Not Employed	50	13.5
Occupation ^d		
Manager	27	7.3
Professional	131	35.3
Trade or technical	24	6.5
Community and personal services	15	4.0
Clerical or administrative	55	14.8
Sales	54	14.6
Machinery operator or driver	1	0.3
Labourer	9	2.4
Self employed	5	1.3
Missing	50	13.5

Notes:

^aProvisional Licence held for less than one year.

^bProvisional Licence held for more than one and less than three years.

^cProvisional Licence held for up to three years. At the time of the study, some drivers still held this superseded licence type, and had done so for more than two and less than three years.

^dOccupations labelled according to the Australian Standard Classification of Occupations [24].

As shown in Table 4, the personality factor of Agreeableness was a significant individual predictor of 'loss of traction' driving behaviour during the previous month ($p < .05$), with those who scored lower on this trait more likely to engage in the behaviour.

Table 3. Personality factor means

Personality factor	LOT Group	n	M	SD
Neuroticism		370	2.46	.74
	No	316	2.44	.75
	Yes	54	2.55	.69
Extroversion		368	3.43	.67
	No	315	3.42	.68
	Yes	53	3.50	.57
Openness		369	3.55	.58
	No	315	3.56	.59
	Yes	54	3.50	.51
Agreeableness ^a		370	3.75	.54
	No	316	3.81	.53
	Yes	54	3.39	.48
Conscientiousness		369	3.70	.64
	No	317	3.71	.63
	Yes	54	3.63	.67

^aDifference between LOT = No and LOT = Yes was significant at $p < .01$

Discussion

The aim of the current study was to test the application of personality theory to LOT hooning behaviour, by testing the efficacy of the Five Factor Model of Personality in predicting the behaviour. It was found that personality differed between those drivers who did and those who did not engage in recent LOT events. The difference was limited to the trait of Agreeableness, revealing that those who did engage in the behaviour were less agreeable in personality compared to those who did not.

It is important to note, however, that on average all participants reported a moderately agreeable disposition, indicating that as a group, those drivers who engage in LOT behaviour are not characteristically low on the continuum measure of Agreeableness but rather somewhat less agreeable in disposition than those who do not engage in the behaviour. Although not significant, the directions of trends in group differences were consistent with predictions in accordance with characteristics of hooning-related behaviour and personality traits.

The utility of personality theory in explaining LOT behaviour further revealed that the Five Factor Model of Personality predicted additional variance in the behaviour, after controlling for the influence of sex and age. Consistent with the previous analyses, Agreeableness was found to be individually significant in predicting LOT behaviour, suggesting that in general, drivers who are less agreeable (and therefore are characterised as less warm and cooperative) are more likely to engage in LOT hooning behaviour.

Implications and recommendations for road safety

While it is not possible to legislate based on personality, studies such as this improve our understanding of the factors associated

Table 4. Sequential logistic regression: Contribution of personality factors to prediction of LOT behaviour (N=348)

Variables	B	SE	Wald	Odds ratio statistic	95% Confidence interval for odds ratio	
					Lower	Upper
Block 1: Sex and Age						
Sex	1.91	.40	22.96 ^a	6.78	3.10	14.80
Age	1.57	.41	14.66 ^a	4.82	2.16	10.81
Block 2: Personality						
Neuroticism	.27	.33	.68	1.31	.69	2.50
Extroversion	.38	.31	1.52	1.46	.80	2.68
Openness	.10	.34	.10	1.11	.57	2.15
Agreeableness	.89	.40	5.07 ^b	.41	.19	.89
Conscientiousness	.36	.33	1.19	1.43	.75	2.74

^a $p < .001$, ^b $p < .05$

with LOT behaviour prevention. The significant finding for the personality factor of Agreeableness has potential to inform advertising campaigns that promote responsible driving behaviour whilst appealing to less socially agreeable drivers. For example, an advertisement could feature a role model expressing no concern for breaking the law, but distress at the thought of injuring innocent people. Educational strategies and advertising campaigns could also encourage more caring and cooperative attitudes for drivers.

Strengths and limitations

Further, it is important to note that the current study has a number of strengths and limitations. For instance, the study is original in testing the association of personality with hooning-related behaviour. Second, the internal validity of results is enhanced by use of a clearly defined construct of hooning, limited to LOT events, which avoids possible confounds associated with other overlapping illegal driving behaviours, for example, speeding. Third, sample size was adequate to produce robust findings for the regression model, which tested the influence of personality on LOT behaviour. Control for the effects of sex and age in regression analysis further improves the validity of findings with regard to personality, as these factors are associated with both the independent and the dependent variable and could have posed rival explanations for the results.

A low base rate of hooning activity in the overall driving population may explain the proportionately small group of drivers who self-reported engaging in LOT behaviour. However, it is suspected that response bias has contributed to under-representation of the true proportion of drivers who engage in LOT behaviours. Fear of legal apprehension may have discouraged participation by some invitees, while personality may have also contributed to depletion of size for the target sample – that is, altruism, cooperation and social mindedness are attributes of those who score high on Agreeableness [12].

In the overall sample, the mean score for Agreeableness was higher than for the other four personality factors. It is possible that those lower on the trait of Agreeableness who stated they had engaged in LOT behaviour may have been inclined to contribute to response sets, and to submit incomplete surveys, all of which resulted in exclusion from the final sample.

Invitees who were less agreeable may also have been unwilling to participate at all. Therefore it is likely that drivers who are low on Agreeableness and thus more inclined to engage in LOT behaviour are under-represented in the current study. From this argument it is suggested that the association between Agreeableness and LOT behaviour may be stronger than revealed by current results and that personality may actually be a barrier to accessing a population sample that represents the true incidence of LOT hooning-related behaviour within the driver population.

Further, sample demographics for this study do not represent the general population of drivers [10, 24]. In particular, those who typically engage in hooning-related behaviour are under-represented in terms of age, sex, and occupation [6]. Hence, caution is recommended in generalising findings to other driver populations.

Definition of a homogenous subset of LOT hooning-related activities strengthened the internal validity of results in the current study. Future research could define and investigate a homogenous subset of hooning activities associated with speed and racing, to produce literature that encompasses the diversity of behaviours typical to hooning.

Additionally, future research may aim to improve external validity of results by accessing a more random sample of participants. Improved accessibility to participants from trade and technical institutions could be achieved by prior arrangement with management to ensure administration of request emails to a pre-determined number of potential

participants, or by employing a method that does not rely on institutions for accessing participants.

Conclusion

Overall, this study has added a unique dimension to road safety literature by demonstrating that there is a significant association between personality and hooning-related behaviour. Specifically, it was found that those who engage in the behaviour will be, on average, less agreeable in character than those who do not. No significant differences between drivers who do and do not engage in the behaviour were found for Neuroticism, Extroversion, Openness or Conscientiousness.

Further, results of this study confirm the role of personality, and in particular, the factor of Agreeableness, in explaining LOT hooning-related behaviour over and above the influences of sex and age. These findings can be utilised to better understand those drivers likely to engage in LOT behaviours, and to inform proactive interventions such as advertising and educational programs.

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Parents and young drivers: The role of learning, behaviour modelling, communication and social marketing

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Abstract

The rates of death and injury amongst young novice drivers remain disproportionately higher than for any other group of

licensed drivers despite a range of measures such as the Graduated Licensing System (GLS) and mass media-based safety education campaigns. To date, there has been little