



Personality and Driving Behaviour

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Introduction

The concept of traffic psychology is not new to South Africa, but it is not often something that practitioners discuss in professional forums. This is somewhat strange, as traffic is probably one of the most ubiquitous topics of discussion for any person who finds themselves in it on a regular basis. More specifically, you will often find that South Africans lament the lack of driving skills or basic courtesy of drivers on the roads today. This, combined with added stressors such as construction on the roads, ill-maintained roads and traffic jams, probably makes the mention of traffic in a conversation a daily occurrence for any driver or passenger.

There is very little published research on driving behaviours in South Africa, but internationally, traffic psychology is a thriving field of research and practice. There are some reports on the incidence of road rage, and many transport companies make use of special assessments to select their drivers, but very few of these studies are published, so very little is publicly known about this field in South Africa.

The aim of this study was to conduct very preliminary research into the link between driving behaviours and aspects of personality. A brief (and very broad) questionnaire on different types of driving behaviours was created, and this was administered to a sample of South Africans along with two personality questionnaires in order to investigate whether there were any links. The personality questionnaires used were the Basic Traits Inventory and the Hogan Personality Inventory.

These results reported in this publication are purely experimental, as the samples were mainly samples of convenience, but they do provide some avenues for future research. Each of the personality questionnaires are described in more detail below.

The Basic Traits Inventory (BTI) is a South African-developed personality test also based on the Big Five model of personality. Each of the five factors on the BTI have four to five facets that provide a more in-depth look at the nature of the factor. The BTI scales are described in more detail in Table 1.

Table 1. Descriptions of the BTI scales

Factor	Descriptions of people with high scores
Extraversion (E)	Enjoys being around other people, likes excitement and is cheerful in disposition
Gregariousness	Enjoys frequent social interaction
Positive affectivity	Frequently experiences positive emotions
Ascendance	Enjoys entertaining and leading large groups of people
Excitement-seeking	Seeks out adrenaline-pumping experiences and intense stimulation
Liveliness	Is bubbly, lively and energetic
Neuroticism	Experiences negative affects in response to their environment
Anxiety	Is nervous, apprehensive, and tense
Depression	Frequently experiences guilt, sadness, and hopelessness
Self-consciousness	Is sensitive to criticism, and feels shame and embarrassment
Affective instability	Is easily upset, emotionally volatile and feels anger or bitterness
Conscientiousness	Is effective and efficient in how they plan, organise and execute tasks
Order	Is neat, tidy and methodical
Self-discipline	Able to start tasks and carry them through to completion
Dutifulness	Sticks to principles, fulfils moral obligations and is reliable and dependable
Effort	Sets ambitious goals and works hard to meet them
Prudence	Thinks things through carefully, checks the facts and has good sense
Openness to Experience	Is willing to experience new or different things and is curious
Aesthetics	Appreciates art, music, poetry and beauty
Actions	Tries new and different activities
Values	Is willing to re-examine social, political and religious values
Ideas	Enjoys considering new or unconventional ideas
Imagination	Has a vivid imagination and is creative-thinking
Agreeableness	Is able to get along with other people and has compassion for others
Straightforwardness	Is frank and sincere
Compliance	Defers to others, inhibits aggression and forgives easily
Modesty	Is humble and self-effacing
Tendermindedness	Has sympathy and concern for others
Prosocial tendencies	Is kind, generous, helpful and considerate

The Hogan Personality Inventory (HPI) was the first measure of normal personality based on the Five Factor Model of personality that was designed to be able to predict occupational performance. There is an enormous database of research studies done using the HPI in various occupational contexts and countries, and it has been validated across a range of jobs and industries. The HPI measures personality of seven scales that are linked to aspects of the FFM. The scales and their definitions are listed below:

- Adjustment (the degree to which a person is calm in the face of pressure versus moody and self-critical)
- Ambition (the degree to which a person seeks status and leadership positions or prefers to avoid the limelight)
- Sociability (the degree to which a person enjoys and seeks out social interaction)
- Interpersonal Sensitivity (the degree to which a person has tact, social sensitivity, and perceptiveness)
- Prudence (the degree to which a person is conforming, dependable, and has self-control)
- Inquisitive (the degree to which a person is imaginative, adventurous and analytical)
- Learning Approach (the degree to which a person enjoys academic activities and values education and training)

To date, there has been no research using the BTI for the purposes of investigating driver behaviour. The HPI, however, has been used in a number of studies, and most notably in the assessment of transport drivers in both Australia and the USA. It is hoped that this project will spur interest in this topic that it can be investigated more thoroughly in future.

Description of the sample

The Basic Traits Inventory, Hogan Personality Inventory and a brief questionnaire on driving behaviour were administered to 200 drivers in order to conduct a preliminary study on personality and driver behaviour. After removing 30 individuals who had incomplete information on any of the three assessments, the final sample then consisted of 120 South African drivers and 50 professional bus drivers. The demographic composition of the sample is provided in Table 2.

The professional bus driver group was made up of both luxury liner bus drivers who engage in long distance travel and shuttle bus drivers who provide daily transport for commuters working for a large organisation in South Africa. The comparison group was made up of a convenience sample of South African drivers who voluntarily completed the questionnaires.

Men and women were almost equally represented, and the participants ranged in age from 19 years to 80 years (Mean = 36 years). All four major population groups were represented, although the majority of the respondents were White (62.4%) or African (34.1%). Most of the respondents had an educational level of Grade 12 or higher, although 16.5% did not have a Grade 12 level of education. Most career sectors were represented in the sample.

Table 2. Demographic composition of sample

Category	Frequency	Percent
Gender		
Women	87	51.2
Men	83	48.8
Ethnicity		
Asian/Indian	5	2.9
African	58	34.1
Coloured	1	0.6
White	106	62.4
Educational Level		
Lower than Grade 12	28	16.5
Grade 12	36	21.2
National Diploma	18	10.6
Bachelors Degree	22	13.5
Honours Degree	34	20.0
Masters Degree	26	15.3
Doctorate Degree	5	2.9
Type of driver		
Standard	120	70.6
Professional	50	29.4
Career Sector		
Arts, Design, Entertainment, Sports, & Media	3	1.8
Business & Financial Operations	20	11.8
Community & Social Services	1	0.6
Computer & Mathematical Science	4	2.4
Construction & Extraction	2	1.2
Education, Training, & Library	15	8.8
Healthcare Practitioner & Technical	7	4.1
Healthcare Support	2	1.2
Legal	2	1.2
Life, Physical, & Social Science	14	8.2
Management	35	20.6
Office & Administrative	11	6.5
Production	1	0.6
Sales & Related	3	1.8
Transportation & Material Moving	50	29.4
Total	170	100.0

Descriptive statistics

Driving behaviour

The distributions of responses to the questions asked in the driving behaviour questionnaire are provided in Table 3. The drivers spent between 30 minutes and 10 hours a day on the road, with an average of 3 hours a day spent driving. Most drivers would stop to rest only when tired (40%) when driving long distances, although a large number would stop to rest every two hours (36.5%). Over half of drivers (54.7%) indicated that they would answer their cell phone without a hands-free kit while driving.

Table 3. Responses to the driver behaviour questionnaire

Hours spent driving per day	Frequency	Percent
Less than 1 hour	9	5.3
1 to 3 hours	102	60.0
4 to 8 hours	43	25.3
More than 8 hours	8	4.7
Did not specify	8	4.7
Rests when driving long distance	Frequency	Percent
Every two hours	62	36.5
Every four hours	31	18.2
When tired	68	40.0
Hardly ever	8	4.7
Did not specify	1	0.6
Cell phone behaviour	Frequency	Percent
Would not answer without hands-free kit	77	45.3
Would answer without hands-free kit	93	54.7
Aggressive driving level	Frequency	Percent
Complaining to myself or others in the car	133	78.2
Hooting, flashing lights or showing the other driver signs	31	18.2
Cutting the other driver off the road, or chasing the other driver	3	1.8
Did not specify	3	1.8

Table 3. (continued)

Number of accidents	Frequency	Percent
0	72	42.4
1	50	29.4
2	24	14.1
3	15	8.8
4	2	1.2
5	3	1.8
6	2	1.2
Did not specify	2	1.2

Number of infringements	Frequency	Percent
Routine stop	37	21.8
One infringement	68	41.2
Multiple infringements	28	16.5
Did not specify	35	20.6

Aggressive driving is often classified into four levels, namely: Expressions of annoyance, aggressive driving (verbal abuse or making gestures, flashing lights and using the hooter), direct threatening/intimidating (cutting people off or chasing people), and direct confrontational (arguing with or assaulting others). The majority of drivers in the sample indicated that they engage in Level 1 aggressive driving behaviours, while only 1.8% indicated that they actively cut other drivers off or chase them when frustrated in traffic (Level 3). None of the drivers indicated specific road rage behaviours of directly attacking another motorist.

The number of accidents reported ranged from 0 to 6 accidents, with an average accident rate of 1.06. The majority of respondents indicated that they had not been involved in a motor accident (42.4%). Drivers were also asked to indicate whether or not they had been pulled over by the police for driving infringements. The majority of the respondents (41.2%) indicated that they had been pulled over for at least one infringement, and 16.5% indicated that they had been stopped for two or more infringements. The rest of the group either did not specify why they had been pulled over, or had not been pulled over.

Hogan Personality Inventory

The descriptive statistics for the entire sample on the scales of the Hogan Personality Inventory are provided in Table 4. The HPI scores are presented as percentiles. On average, the South African sample scored lower than the 50th percentile on Adjustment, Ambition, Interpersonal Sensitivity and Prudence, and higher than the 50th percentile on Sociability, Inquisitive and Learning Approach.

Table 4. Means and standard deviations for the HPI scales

HPI Scale	Mean	SD
Adjustment	33.82	23.49
Ambition	37.05	26.17
Sociability	51.69	28.02
Interpersonal sensitivity	43.45	29.75
Prudence	42.72	26.04
Inquisitive	57.66	28.49
Learning approach	56.98	28.07

Basic Traits Inventory

The descriptive statistics for the T-scores of the BTI scales for the entire sample are presented in

Table 5. The T-scores are based on the norms for working adult South Africans. Most of the scales ranged around the midpoint of 50, although the scores on Extraversion and Conscientiousness scales tended to be slightly lower and scores on Neuroticism and Openness to Experience scales tended to be slightly higher than 50.

Table 5. Means and standard deviations of the BTI scales

BTI Scale	Mean	SD
Extraversion	47.12	10.93
Ascendance	47.18	11.83
Liveliness	47.03	10.18
Positive Affectivity	48.74	9.79
Gregariousness	47.54	11.03
Excitement Seeking	49.58	11.63
Neuroticism	52.25	10.20
Affective Instability	53.42	10.39
Depression	51.38	10.54
Self Consciousness	51.09	11.14
Anxiety	51.62	9.86
Conscientiousness	46.73	10.80
Effort	48.91	10.24
Order	46.17	11.22
Dutifulness	48.72	10.99
Prudence	47.61	11.38
Self Discipline	45.66	10.88
Openness to Experience	54.18	11.37
Aesthetics	54.26	8.84
Ideas	53.49	10.73
Action	51.48	10.70
Values	53.15	10.67
Imagination	52.26	11.15
Agreeableness	49.55	12.04
Straightforwardness	48.60	11.62
Compliance	50.01	11.75
Prosocial Tendencies	48.88	11.83
Modesty	50.49	10.34
Tendermindedness	50.64	10.77

Results

Number of accidents

The difference in the number of accidents incurred was investigated for gender groups, the type of driver, road rage levels, cell phone behaviour and the number of infringements reported by drivers. The results of one-way ANOVAs are presented in Table 6.

Table 6. Differences in reported accident rates across groups

Group	<i>N</i>	Mean	SD	<i>F</i>	<i>p</i>
Gender					
Women	86	1.02	1.35	0.142	.707
Men	82	1.10	1.20		
Type of driver					
Standard	119	1.23	1.37	7.298	.008
Professional	49	0.65	0.88		
Aggressive driving level					
Level 1	131	0.93	1.11	8.858	.000
Level 2	31	1.42	1.57		
Level 3	3	3.67	2.08		
Cell phone behaviour					
Would not answer	76	0.84	1.10	4.112	.044
Would answer	92	1.24	1.39		
Number of infringements					
Routine stop	37	0.89	1.02	5.613	.005
One infringement	68	1.10	1.28		
Multiple infringements	28	1.93	1.63		

Note. Values for $p < .05$ are shown in boldface.

The results show that men reported higher accident rates than women, although the difference was not statistically significant. However, the bus drivers reported significantly fewer accidents than the other drivers. A significant effect was found for the different levels of aggressive driving, and post hoc tests indicated that those

drivers who tend to cut off other drivers and chase them down (Level 3) reported significantly more accidents than those who demonstrate Level 1 or Level 2 aggressive driving behaviours. However, there were only 3 drivers who reported Level 3 aggressive driving, so this result will have to be confirmed in larger, more representative samples.

In addition, drivers who admitted that they would answer the cell phone without a hands-free kit while driving also reported having statistically significantly more accidents than those drivers who would not answer the phone. In terms of being pulled over for driving or vehicle infringements, a statistically significant effect was found, and post hoc tests showed that drivers who were pulled over for multiple infringements also reported statistically significantly more accidents than those who had been stopped for a routine check or one infringement.

There was no correlation between the number of accidents incurred and the number of years a person had their driver's licence ($r = 0.000, p = 0.998$) or the number of hours a driver spends on the road per day ($r = -0.044, p = 0.582$).

From a personality perspective, low but statistically significant correlations between the number of accidents and BTI scales were found for Liveliness ($r = -0.173, p = 0.025$), Self Discipline ($r = -0.193, p = 0.012$), and Straightforwardness ($r = -0.195, p = 0.011$). The results indicate that drivers who are less energetic, less self-disciplined, and less likely to admit their mistakes are more likely to have road accidents than others. No significant correlations were found between the number of accidents reported and any of the HPI scales.

Standard and professional drivers

The bus drivers were compared to the other drivers on each of the personality assessments. The results of the ANOVA for mean differences on the BTI scales are shown in Table 7. Statistically significant mean differences were found on all the Conscientiousness and Agreeableness scales, as well as for the factors, indicating that the bus drivers reported consistently higher scores on each of these scales. The bus drivers also reported statistically significantly higher scores than the other drivers on Liveliness, Gregariousness, and Openness to Action.

Table 7. Mean differences between standard and professional drivers on the BTI

BTI Scale	Standard (N = 120)		Professional (N = 50)		F	p	η_p^2
	Mean	SD	Mean	SD			
Extraversion	46.68	11.43	48.20	9.65	.686	.409	.004
Ascendance	45.55	11.14	51.08	12.63	8.028	.005	.046
Liveliness	47.43	9.95	46.08	10.77	.614	.434	.004
Positive Affectivity	48.32	8.74	49.74	12.00	.744	.390	.004
Gregariousness	46.45	11.49	50.14	9.42	4.024	.046	.023
Excitement Seeking	50.17	12.80	48.18	8.12	1.029	.312	.006
Neuroticism	51.58	10.10	53.86	10.35	1.767	.186	.010
Affective Instability	53.47	9.75	53.32	11.89	.007	.933	.000
Depression	50.63	10.51	53.16	10.49	2.042	.155	.012
Self Consciousness	50.42	11.04	52.72	11.34	1.513	.220	.009
Anxiety	50.70	9.98	53.82	9.32	3.585	.060	.021
Conscientiousness	43.58	9.95	54.30	8.86	43.614	.000	.206
Effort	47.91	10.17	51.32	10.12	3.985	.048	.023
Order	42.87	10.71	54.10	8.02	44.509	.000	.209
Dutifulness	46.76	10.54	53.44	10.69	14.057	.000	.077
Prudence	44.02	10.04	56.22	9.73	53.070	.000	.240
Self Discipline	42.64	10.05	52.90	9.34	38.304	.000	.186
Openness to Experience	54.03	11.31	54.52	11.63	.064	.800	.000
Aesthetics	54.70	9.17	53.20	7.97	1.017	.315	.006
Ideas	53.91	10.30	52.50	11.76	.606	.437	.004
Action	50.01	10.76	55.00	9.78	7.999	.005	.045
Values	53.40	10.07	52.54	12.09	.228	.634	.001
Imagination	52.12	11.31	52.60	10.86	.066	.798	.000
Agreeableness	46.53	10.89	56.82	11.65	30.261	.000	.153
Straightforwardness	45.44	10.53	56.18	10.66	36.468	.000	.178
Compliance	48.28	10.93	54.14	12.70	9.189	.003	.052
Prosocial Tendencies	45.48	10.53	57.02	10.84	41.625	.000	.199
Modesty	49.29	9.56	53.38	11.61	5.673	.018	.033
Tendermindedness	49.13	10.26	54.26	11.21	8.339	.004	.047

Note. Values for $p < .05$ are shown in boldface.

The results of an ANOVA for means differences between bus drivers and other drivers on the HPI scales are given in Table 8. The results indicate that the bus drivers reported significantly lower scores than other drivers on Adjustment and Ambition, and significantly higher scores than other drivers on Prudence and the Inquisitive scale.

Table 8. Mean differences for standard and professional drivers on the HPI

HPI scale	Standard		Professional		F	p	η_p^2
	Mean	SD	Mean	SD			
Adjustment	36.11	23.95	28.32	21.58	3.948	.049	.023
Ambition	40.87	27.08	27.88	21.43	9.112	.003	.051
Sociability	50.24	29.45	55.18	24.18	1.097	.297	.006
Interpersonal sensitivity	45.32	31.86	38.98	23.65	1.607	.207	.009
Prudence	39.27	26.02	51.02	24.40	7.466	.007	.043
Inquisitive	53.96	27.49	66.56	29.15	7.159	.008	.041
Learning approach	55.62	27.87	60.26	28.57	.965	.327	.006

Note. Values for $p < .05$ are shown in boldface.

Aggressive driving

The mean differences on the scales of the BTI across different levels of aggressive driving were tested using ANOVA (Table 9). Statistically significant mean differences were found on four of the BTI scales, namely Positive Affectivity, Order, Straightforwardness and the Agreeableness factor. Post hoc tests indicated that these differences all were related to only Level 1 and Level 2 drivers, with Level 1 drivers scoring higher than the Level 2 drivers on all four scales.

The ANOVA results for mean differences on the HPI across different levels of aggressive driving are shown in Table 10. There were no statistically significant differences between groups on any of the HPI scales. These tests should be repeated with a larger sample group, as only 3 drivers indicated that they engaged in Level 3 aggressive driving behaviours, so it may well be that different patterns emerge in a more representative group.

Table 9. Mean differences across aggressive driving behaviours on the BTI

	Level 1 (N = 133)		Level 2 (N = 31)		Level 3 (N = 3)		F	p	η_p^2
	Mean	SD	Mean	SD	Mean	SD			
Extraversion	47.15	11.06	45.97	11.02	51.33	6.66	.381	.684	.005
Ascendancy	46.96	11.46	47.10	14.07	49.33	6.43	.059	.943	.001
Liveliness	47.20	10.14	45.81	10.71	45.33	8.02	.268	.765	.003
Positive Affectivity	49.80	10.19	44.35	7.45	46.67	4.04	4.047	.019	.047
Gregariousness	47.83	11.05	45.84	11.53	48.67	10.07	.422	.657	.005
Excitement Seeking	48.88	11.28	51.48	13.58	59.67	4.04	1.770	.174	.021
Neuroticism	52.04	10.19	53.61	10.06	51.67	11.02	.307	.736	.004
Affective Instability	52.86	10.37	55.03	9.93	52.33	12.70	.570	.566	.007
Depression	51.23	10.31	52.74	11.38	48.33	10.26	.396	.674	.005
Self Consciousness	50.99	11.26	52.61	10.15	52.33	11.24	.283	.754	.003
Anxiety	51.86	9.80	51.32	9.97	51.67	9.29	.038	.962	.000
Conscientiousness	47.54	11.23	43.48	8.22	41.33	5.69	2.193	.115	.026
Effort	49.16	10.57	47.39	9.64	50.67	4.62	.414	.661	.005
Order	47.29	11.52	41.71	8.58	38.67	2.52	3.949	.021	.046
Dutifulness	49.15	11.07	47.16	10.00	43.67	11.02	.745	.476	.009
Prudence	48.22	11.36	45.94	11.10	39.67	5.13	1.283	.280	.015
Self Discipline	46.39	11.53	42.32	7.39	41.67	9.29	1.958	.144	.023
Openness to Experience	54.46	11.39	53.32	12.06	54.33	5.03	.124	.884	.002
Aesthetics	54.32	8.36	54.52	10.41	52.67	14.01	.060	.942	.001
Ideas	53.88	11.13	52.42	9.39	52.33	8.08	.250	.779	.003
Action	51.38	10.82	51.61	11.00	54.67	10.07	.138	.871	.002
Values	53.24	10.66	53.13	11.24	53.00	4.58	.002	.998	.000
Imagination	52.66	11.24	50.23	10.96	55.00	7.81	.692	.502	.008
Agreeableness	51.05	11.83	45.19	11.44	40.67	8.14	4.062	.019	.047
Straightforwardness	50.38	11.32	42.84	10.51	39.67	5.51	6.807	.001	.077
Compliance	51.12	11.46	48.03	11.88	36.67	6.51	3.054	.050	.036
Prosocial Tendencies	49.63	11.74	46.68	11.96	47.33	8.14	.828	.439	.010
Modesty	51.21	9.92	48.48	11.54	46.67	11.93	1.115	.330	.013
Tendermindedness	51.76	10.41	47.45	11.51	47.33	5.86	2.257	.108	.027

Note. Values for $p < .05$ are shown in boldface.

Table 10. Mean differences across aggressive driving behaviours on the HPI

Scale	Level 1 (N = 133)		Level 2 (N = 31)		Level 3 (N = 3)		F	p	η_p^2
	Mean	SD	Mean	SD	Mean	SD			
Adjustment	35.68	24.27	26.52	18.66	29.33	22.37	1.997	.139	.024
Ambition	36.60	25.60	34.13	26.85	46.00	15.59	.333	.718	.004
Sociability	51.31	28.55	53.23	27.03	67.00	27.87	.491	.613	.006
Interpersonal sensitivity	45.69	29.40	36.48	30.44	30.33	7.51	1.546	.216	.019
Prudence	44.39	26.52	37.65	23.63	41.67	25.50	.850	.429	.010
Inquisitive	58.14	27.99	54.55	30.03	63.67	24.01	.273	.761	.003
Learning approach	58.28	27.47	50.97	30.43	53.67	22.50	.877	.418	.011

Note. Values for $p < .05$ are shown in boldface.

Number of infringements

The results of the ANOVA for mean differences across types and number of driving infringements on the BTI scales are presented in Table 11. Statistically significant mean differences were found on the Openness to Experience factor, Openness to Aesthetics and Openness to Values. Post hoc tests showed that those drivers who had been pulled over for multiple infringements scored significantly higher than drivers who had only been stopped for routine checks on Openness to Aesthetics, and higher than all other drivers on the other two scales.

Differences in mean scores on the HPI were investigated using ANOVA across drivers who had been stopped by the police for various infringements or as part of a routine stop. The results of the ANOVA appear in Table 12. There were no significant effects for any of the scales of the HPI.

Table 11. Mean differences across number of infringements on the BTI

	Routine stop (N = 37)		One (N = 70)		Multiple (N = 28)		F	p	η_p^2
	Mean	SD	Mean	SD	Mean	SD			
Extraversion	46.14	9.33	46.43	10.83	50.57	11.15	1.818	.166	.027
Ascendance	45.11	11.01	47.81	12.33	47.75	10.89	.709	.494	.011
Liveliness	45.92	10.55	46.44	9.68	50.75	10.56	2.221	.113	.033
Positive Affectivity	48.46	9.90	48.07	10.50	51.00	9.62	.857	.427	.013
Gregariousness	48.38	11.65	46.77	10.82	47.54	11.50	.253	.776	.004
Excitement Seeking	49.43	9.71	49.11	10.95	53.00	15.71	1.148	.321	.017
Neuroticism	51.41	11.01	51.73	10.50	52.21	9.97	.047	.954	.001
Affective Instability	53.35	12.36	52.49	9.63	54.75	10.36	.463	.630	.007
Depression	51.38	11.46	50.70	10.58	50.57	10.99	.059	.943	.001
Self Consciousness	49.49	11.12	49.87	11.04	53.21	11.85	1.077	.344	.016
Anxiety	50.54	9.75	52.93	10.52	47.79	9.38	2.710	.070	.039
Conscientiousness	49.68	10.96	46.47	10.81	44.50	10.63	1.962	.145	.029
Effort	50.57	9.92	47.90	9.23	50.64	11.93	1.224	.297	.018
Order	48.54	11.16	46.71	11.54	42.36	11.35	2.436	.091	.036
Dutifulness	50.03	11.45	48.69	11.46	48.21	11.54	.239	.788	.004
Prudence	51.27	11.83	47.59	11.66	44.50	9.56	2.934	.057	.043
Self Discipline	48.27	11.32	45.33	11.02	42.64	9.85	2.172	.118	.032
Openness to Experience	53.19	11.66	53.63	10.45	60.25	10.28	4.420	.014	.063
Aesthetics	53.22	8.83	54.37	7.91	58.75	9.23	3.773	.026	.054
Ideas	52.16	12.12	53.99	9.55	57.04	10.12	1.753	.177	.026
Action	52.05	9.96	49.84	10.47	55.39	10.80	2.895	.059	.042
Values	51.35	12.47	52.47	9.86	59.14	8.41	5.274	.006	.074
Imagination	51.84	12.38	51.94	10.58	56.14	9.79	1.661	.194	.025
Agreeableness	50.97	13.74	48.80	11.39	50.82	10.47	.530	.590	.008
Straightforwardness	50.62	11.47	48.66	11.09	47.29	12.51	.707	.495	.011
Compliance	50.76	14.27	49.83	10.14	50.82	12.01	.111	.895	.002
Prosocial Tendencies	49.95	12.88	47.57	10.62	50.57	10.24	.962	.385	.014
Modesty	51.19	11.19	50.10	10.54	49.96	11.20	.146	.864	.002
Tendermindedness	51.03	11.51	49.27	10.93	54.68	7.66	2.649	.074	.039

Table 12. Mean differences across number of infringements on the HPI

	Routine stop (N = 37)		One (N = 70)		Multiple (N = 28)		F	p	η_p^2
	Mean	SD	Mean	SD	Mean	SD			
Adjustment	38.76	23.89	35.31	24.74	28.64	21.15	1.462	.236	.022
Ambition	39.22	26.20	38.04	26.13	41.43	27.83	.164	.849	.002
Sociability	52.84	25.79	50.20	29.74	59.14	27.70	.999	.371	.015
Interpersonal sensitivity	44.11	26.58	42.39	32.11	48.04	31.02	.344	.710	.005
Prudence	50.22	25.00	40.30	26.71	37.50	26.09	2.374	.097	.035
Inquisitive	58.65	29.02	59.16	27.63	61.18	29.59	.070	.932	.001
Learning approach	57.19	27.32	56.53	28.15	55.39	29.29	.033	.968	.000

Taking rests when driving long distances

An ANOVA for the difference between means on the BTI for drivers who stop at different intervals when driving long distances was conducted (Table 13). Statistically significant effects were found for Effort, Dutifulness, Openness to Imagination, and the Openness to Experience factor. Post hoc tests indicated that drivers that endorsed "Hardly ever" tended to score significantly lower than all the other drivers on Effort, and lower than drivers who endorsed "When tired" on the Dutifulness and the Openness to Imagination scales. While the drivers who hardly ever take rests when driving long distances scored lower than all other drivers on the other scales as well, the differences were not statistically significant. Again, there were only 8 drivers who endorsed this category, so it is possible that in larger samples, different patterns may emerge.

The results of the ANOVA for mean differences on the HPI scales across drivers who take different types of rest stops when travelling long distances are shown in Table 14. There were no significant effects for any of the HPI scales.

Table 13. Mean differences across types of rest stops on the BTI

	Every 4 hours (N = 31)		Every 2 hours (N = 62)		When tired (N = 68)		Hardly ever (N = 8)		F	p	η_p^2
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
Extraversion	44.97	11.70	48.52	8.46	48.79	10.74	43.88	13.81	1.750	.159	.031
Ascendancy	46.68	12.13	50.90	12.35	46.54	11.53	41.13	7.59	1.843	.141	.032
Liveliness	45.35	10.05	49.23	9.20	48.04	10.63	42.38	9.84	1.839	.142	.032
Positive Affectivity	49.52	10.76	48.52	10.40	48.01	9.11	49.38	6.16	.265	.850	.005
Gregariousness	45.37	11.06	46.42	9.21	50.19	11.14	46.00	14.13	2.308	.078	.040
Excitement Seeking	46.89	12.25	49.81	9.66	52.01	10.68	49.25	18.60	2.137	.098	.037
Neuroticism	52.37	9.91	52.74	11.45	52.25	10.12	49.88	10.16	.168	.918	.003
Affective Instability	52.65	9.93	55.00	11.39	53.71	10.57	51.13	9.85	.494	.687	.009
Depression	51.77	10.44	53.00	11.54	50.57	10.51	49.25	8.65	.508	.678	.009
Self Consciousness	52.06	10.86	50.45	11.89	50.57	11.24	51.00	11.87	.236	.871	.004
Anxiety	51.26	10.00	50.81	10.14	52.68	9.84	48.63	9.20	.596	.618	.011
Conscientiousness	48.18	9.14	47.74	10.16	46.04	12.25	37.50	9.12	2.557	.057	.044
Effort	49.18	9.47	51.71	9.52	48.74	10.87	38.13	7.81	3.927	.010	.067
Order	47.74	10.36	47.39	10.03	44.79	12.61	40.63	8.18	1.526	.210	.027
Dutifulness	50.87	9.15	48.03	11.13	48.37	11.94	38.63	11.10	3.216	.024	.055
Prudence	48.65	11.01	48.81	10.51	47.09	11.94	38.63	10.90	2.021	.113	.035
Self Discipline	46.69	9.37	45.35	10.64	45.26	12.55	42.13	8.63	.499	.684	.009
Openness to Experience	53.76	11.52	52.68	9.06	56.62	11.55	45.13	10.56	3.088	.029	.053
Aesthetics	54.73	8.23	52.97	7.54	55.29	9.67	48.13	8.84	1.906	.131	.033
Ideas	53.21	11.25	51.97	8.84	55.40	11.07	47.13	7.06	1.910	.130	.034
Action	50.34	10.89	50.52	9.91	53.85	10.21	45.38	13.32	2.360	.073	.041
Values	52.89	11.51	50.48	9.96	55.06	10.40	51.25	5.20	1.487	.220	.026
Imagination	51.69	11.22	52.90	9.70	54.13	10.96	41.13	9.61	3.609	.015	.062
Agreeableness	50.74	12.45	50.26	11.24	49.12	12.10	42.50	11.05	1.181	.319	.021
Straightforwardness	49.11	11.99	49.16	10.00	48.46	12.35	45.13	9.05	.301	.825	.005
Compliance	51.73	11.65	49.65	11.15	49.12	12.31	45.50	10.53	.967	.410	.017
Prosocial Tendencies	49.27	11.68	49.81	11.38	48.91	12.31	42.75	11.39	.796	.498	.014
Modesty	51.68	9.94	51.55	10.96	49.74	10.48	44.00	9.06	1.559	.201	.028
Tendermindedness	51.39	11.57	50.16	10.37	51.01	10.03	45.63	11.64	.723	.540	.013

Note. Values for $p < .05$ are shown in boldface.

Table 14. Mean differences across types of rest stops on the HPI

	Every 4 hours (N = 31)		Every 2 hours (N = 62)		When tired (N = 68)		Hardly ever (N = 8)		<i>F</i>	<i>p</i>	η_p^2
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
Adjustment	37.97	26.31	34.37	22.47	30.06	22.71	44.13	25.77	1.432	.235	.025
Ambition	38.94	27.83	34.97	24.25	37.57	27.71	36.75	21.93	.188	.904	.003
Sociability	55.06	28.25	45.92	29.33	55.66	25.63	49.63	35.42	1.500	.216	.027
Interpersonal sensitivity	46.55	35.75	41.79	28.64	42.26	28.89	55.00	22.92	.606	.612	.011
Prudence	41.32	25.62	44.85	24.86	39.25	25.99	57.13	34.03	1.399	.245	.025
Inquisitive	63.32	31.23	54.90	28.36	58.40	28.15	53.25	23.11	.674	.569	.012
Learning approach	63.42	22.86	60.24	26.86	51.60	31.13	55.13	24.46	1.681	.173	.030

Answering the cell phone

The ANOVA results for mean differences on the BTI scales across drivers who would or would not answer their cell phone without a hands-free kit while driving are presented in Table 15. Significant effects were found on a number of scales, namely: Positive Affectivity, Affective Instability, Openness to Action, Openness to Imagination, and all the Conscientiousness scales and Agreeableness scales. Those drivers who would answer the cell phone while driving scored lower than drivers who would not answer on all of the BTI scales where significant effects were found, apart from Affective Instability, where they scored higher.

Mean differences on the HPI scales across groups who would or would not answer the cell phone without a hands-free kit while driving were tested using ANOVA. The results are shown in Table 16. The results indicated that drivers who were prepared to answer their cell phone while driving scored significantly lower than drivers who were not prepared to answer their cell phone on Inquisitive and Learning Approach.

Table 15. Mean differences across cell phone behaviour on the BTI

Scale	Would not answer (N = 77)		Would answer (N = 93)		F	p	η_p^2
	Mean	SD	Mean	SD			
Extraversion	47.32	9.94	46.96	11.74	.047	.828	.000
Ascendance	48.95	12.50	45.71	11.11	3.195	.076	.019
Liveliness	46.22	9.71	47.70	10.56	.887	.348	.005
Positive Affectivity	50.71	9.77	47.10	9.56	5.913	.016	.034
Gregariousness	48.00	10.04	47.15	11.82	.249	.619	.001
Excitement Seeking	48.04	10.30	50.86	12.54	2.499	.116	.015
Neuroticism	51.06	9.84	53.24	10.44	1.921	.168	.011
Affective Instability	51.65	11.11	54.89	9.56	4.183	.042	.024
Depression	51.39	10.19	51.37	10.87	.000	.988	.000
Self Consciousness	49.78	10.90	52.18	11.28	1.971	.162	.012
Anxiety	50.56	9.25	52.49	10.31	1.629	.204	.010
Conscientiousness	50.61	10.64	43.52	9.88	20.262	.000	.108
Effort	50.84	10.45	47.31	9.84	5.132	.025	.030
Order	49.10	11.40	43.74	10.51	10.146	.002	.057
Dutifulness	51.95	10.30	46.05	10.87	12.978	.000	.072
Prudence	51.29	11.77	44.56	10.15	16.019	.000	.087
Self Discipline	49.95	10.82	42.11	9.62	24.981	.000	.129
Openness to Experience	55.65	11.43	52.96	11.24	2.379	.125	.014
Aesthetics	55.06	8.68	53.59	8.96	1.173	.280	.007
Ideas	53.51	11.84	53.48	9.78	.000	.989	.000
Action	53.42	10.58	49.87	10.59	4.724	.031	.027
Values	53.49	11.17	52.86	10.30	.148	.701	.001
Imagination	54.10	10.59	50.73	11.42	3.922	.049	.023
Agreeableness	54.30	12.53	45.62	10.11	24.959	.000	.129
Straightforwardness	53.56	11.80	44.49	9.77	30.032	.000	.152
Compliance	53.25	12.72	47.32	10.20	11.359	.001	.063
Prosocial Tendencies	53.18	12.11	45.31	10.38	20.825	.000	.110
Modesty	53.04	10.78	48.39	9.51	8.930	.003	.050
Tendermindedness	53.16	11.31	48.56	9.89	7.986	.005	.045

Table 16. Mean differences across cell phone behaviour on the HPI

Scale	Would not answer (N = 77)		Would answer (N = 93)		F	p	η_p^2
	Mean	SD	Mean	SD			
Adjustment	35.94	23.04	32.06	23.83	1.145	.286	.007
Ambition	35.12	24.50	38.65	27.50	.765	.383	.005
Sociability	53.26	25.55	50.40	30.00	.438	.509	.003
Interpersonal sensitivity	44.03	26.15	42.98	32.57	.052	.820	.000
Prudence	46.69	23.54	39.44	27.63	3.308	.071	.019
Inquisitive	63.97	28.31	52.44	27.71	7.156	.008	.041
Learning approach	65.18	26.94	50.19	27.30	12.850	.000	.071

On closer inspection of the data, it appeared that most of the professional drivers indicated that they would not answer the cell phone while driving. In order to get a picture of what the personality profiles of the ordinary driver groups looked like, it was decided that the professional drivers should be removed from the analysis to see if a different pattern arose.

The results of the ANOVA for mean differences on the BTI scales across groups of drivers who would or would not answer the cell phone while driving are shown in Table 17. The pattern of results is quite different to those found with the professional drivers included in the analysis. The new results show that drivers who are willing to answer the cell phone while driving scored statistically significantly higher than drivers who would not answer the cell phone on Affective Instability, Self-Consciousness, Anxiety, and the Neuroticism factor and lower on Openness to Aesthetics.

For the HPI scales, the results of the ANOVA for mean differences are displayed in Table 18. These results tend to reflect those found for the BTI in that drivers who admitted that they were willing to answer the cell phone while driving scored significantly lower than other drivers on both Adjustment and Learning Approach. This pattern is also slightly different to the one found in the sample including the professional drivers.

Table 17. Mean differences across cell phone behaviour on the BTI (without professional drivers)

	Would not answer (<i>N</i> = 31)		Would answer (<i>N</i> = 89)		<i>F</i>	<i>p</i>	η_p^2
	Mean	SD	Mean	SD			
Extraversion	45.35	10.77	47.13	11.68	.556	.458	.005
Ascendance	44.19	11.31	46.02	11.11	.617	.434	.005
Liveliness	46.58	8.29	47.72	10.49	.299	.585	.003
Positive Affectivity	50.77	7.47	47.46	9.02	3.371	.069	.028
Gregariousness	44.77	10.65	47.03	11.77	.888	.348	.007
Excitement Seeking	48.19	13.14	50.85	12.69	.993	.321	.008
Neuroticism	47.06	7.44	53.16	10.46	8.924	.003	.070
Affective Instability	48.87	9.16	55.07	9.48	9.998	.002	.078
Depression	48.06	9.22	51.53	10.82	2.530	.114	.021
Self Consciousness	46.23	9.15	51.88	11.30	6.297	.013	.051
Anxiety	46.35	7.95	52.21	10.20	8.426	.004	.067
Conscientiousness	44.06	10.05	43.40	9.97	.100	.752	.001
Effort	49.32	11.08	47.42	9.85	.808	.371	.007
Order	41.06	10.91	43.49	10.63	1.185	.279	.010
Dutifulness	48.10	9.45	46.29	10.91	.672	.414	.006
Prudence	43.29	10.45	44.27	9.94	.217	.642	.002
Self Discipline	44.90	10.90	41.85	9.68	2.137	.146	.018
Openness to Experience	57.19	10.77	52.93	11.35	3.326	.071	.027
Aesthetics	57.71	9.02	53.65	9.04	4.640	.033	.038
Ideas	55.10	11.77	53.49	9.77	.555	.458	.005
Action	50.90	11.07	49.70	10.70	.287	.593	.002
Values	55.58	8.86	52.64	10.40	1.975	.163	.016
Imagination	55.48	10.32	50.94	11.46	3.793	.054	.031
Agreeableness	49.52	12.53	45.48	10.13	3.212	.076	.026
Straightforwardness	48.06	12.11	44.53	9.82	2.631	.107	.022
Compliance	50.84	12.89	47.39	10.09	2.308	.131	.019
Prosocial Tendencies	47.35	11.19	44.83	10.28	1.324	.252	.011
Modesty	52.03	9.28	48.34	9.51	3.511	.063	.029
Tendermindedness	50.87	10.97	48.53	10.00	1.200	.276	.010

Table 18. Mean differences across cell phone behaviour on the HPI (without professional drivers)

	Would not answer (<i>N</i> = 30)		Would answer (<i>N</i> = 89)		<i>F</i>	<i>p</i>	η_p^2
	Mean	SD	Mean	SD			
Adjustment	47.23	21.08	32.47	23.93	9.039	.003	.072
Ambition	43.93	27.11	39.98	27.26	.474	.493	.004
Sociability	47.70	26.94	50.78	30.36	.243	.623	.002
Interpersonal sensitivity	52.13	29.19	42.40	32.15	2.148	.145	.018
Prudence	39.77	20.43	39.30	27.82	.007	.933	.000
Inquisitive	59.27	27.79	52.26	27.46	1.453	.230	.012
Learning approach	68.67	26.64	51.54	27.06	9.058	.003	.072

Discussion

The preliminary research conducted during this study revealed some patterns in driving behaviour and its relationship with aspects of personality. This study should be repeated in more representative samples of both ordinary and professional drivers, and probably requires a more comprehensive type of driving behaviour questionnaire, with demonstrated measurement properties. Nonetheless, the findings still provide possible avenues for future research and reveal interesting trends.

The results indicated that drivers who engage in more risky driving behaviours such as aggressive driving, answering their cell phone while driving, and who get caught breaking the driving laws are also likely to be involved in more road accidents than those who do not engage in such risky behaviours. There were also correlations between aspects of personality such as level of personal energy, self-discipline, and willingness to admit mistakes and the number of accidents incurred.

There were also notable differences in personality style between professional drivers and ordinary drivers. Professional drivers reported being more conscientious, agreeable, having higher personal energy, being more sociable and being more adventurous than ordinary drivers. They also reported being somewhat less likely to remain calm under pressure, and less likely to seek out the limelight.

The findings related to personality and risky driving behaviours were also illuminating. However, in many of these cases the size of the groups was small, so there is limited generalisability of the results. Various trends and patterns in personality traits were found for different admissions of risky driving behaviours. Further research into these areas may provide useful insights into the characteristics and behaviours that can lead to accidents, and perhaps aid the selection of safe drivers and promotion of safe driving behaviour. In addition, research into the aspects of personality that predict safer driving behaviour is needed.