

Confidence and the older driver

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ABSTRACT

A sample of 555 drivers aged 50 or more were assessed in terms of their confidence in a range of driving situations, self-ratings of their driving ability, self-reported driving behaviour, and personality as measured by Eysenck's EPQ. Levels of nervousness when driving were surprisingly low, although there was no evidence of unrealistic self-ratings of driving ability. Female drivers reported significantly fewer errors and intentional violations than did male drivers. Female drivers were also found to score higher on the Extroversion, Neuroticism and Lie scales than did males. However, the males in the sample scored higher on the Psychoticism scale than the females. Driving confidence was associated with the following: a low level of lapses and errors, and a high level of violations; a low score on the Neuroticism scale and a high score on the Extroversion scale; being male, and high annual mileage. Personality did not mediate the relationship between driving confidence and self-rated driving ability.

KEY WORDS – drivers, self-rated ability, driver behaviour, age, personality..

Introduction

As the proportion of older people in society increases, and as more women become lifelong drivers, the proportion of drivers on the road who are over the age of 50 will inevitably increase in the early years of the new millennium. In 1995 it was estimated that in the UK, 35 per cent of men and five per cent of women over the age of 80 held a driving licence. These proportions are estimated to rise to 64 per cent and 14 per cent by the year 2010 (Joint 1995).

Driving is likely to play an important role in the lives of substantial numbers of older people. As the maintenance of personal mobility is

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increasingly recognised as a quality of life issue (Owsley 1997), it becomes important to understand the factors affecting older drivers' decisions to continue or to cease driving (Chipman *et al.* 1998; Hakamies-Blomqvist and Wahlstroem 1998; Rabbitt *et al.* 1996). There is some evidence that ceasing to drive can lead to feelings of isolation and loneliness (Johnson 1998) and to an increase in depressive symptoms (Marottoli *et al.* 1997). Older drivers, perhaps anticipating these negative consequences, have been shown to be reluctant to plan for driving cessation, and concerned to extend their driving careers as long as possible (Yassuda *et al.* 1997).

Some researchers have acknowledged the importance of maintaining independence through safe driving, and have suggested ways in which the mobility of older drivers may be facilitated (Ball 1997; Burns 1999). Others have attempted to develop ways of identifying older drivers who pose a safety risk, usually through a type of medical screening or periodic re-licensing, (Janke and Eberhard 1998; Marottoli *et al.* 1998; Schieber 1994). However, large-scale studies of the impact of such assessments have suggested that neither medical screening nor a reduction in the period between required license renewals have been successful in improving safety (Hakamies-Blomqvist *et al.* 1996; Rock 1998).

While attention has been focused on developing reliable methods for assessing the abilities of older drivers, far less has been devoted to their own perceptions of themselves and their experience of driving. So, while the stereotype of an older driver is portrayed as slow, timid, nervous and overcautious, little is known about how older drivers themselves perceive their abilities and how confident or nervous they feel behind the wheel. An understanding of these issues is important, as both confidence and an awareness of areas of weakness are likely to have an impact on safe driving. It is also important to identify the particular situations that prompt nervousness among older drivers so that targeted road safety advice can be given.

To the best of our knowledge, only one study has directly considered the issue of confidence among older drivers. Marottoli and Richardson (1998) carried out interviews in Connecticut with 125 community-dwelling drivers from a cohort aged 72 years and over. Their findings show that confidence in driving ability was closely related to self-rated driving ability, but not to demographics, driving history or driving performance as measured by an on-road test. Thus, objective measures of driving performance, such as test performance and accident/violation history were unrelated to subjective measures of confidence and ability. Unfortunately, in this study, the numbers who participated

in the test drive were low ($n = 35$), making it unlikely that the researchers would be able to detect a statistically significant association between test performance and perceived ability.

One aim of the present study was to assess the relationship between confidence, ability and self-reported driver behaviour using a larger sample of older drivers. The measure of on-road behaviour used was a 24-item self-report measure of driving violations, errors and lapses, the revised Manchester Driver Behaviour Questionnaire (DBQ), which has previously been established as a reliable and valid measure of driver behaviour (*e.g.* Parker *et al.* 1995; Lawton *et al.* 1997).

It might be suggested that using self-reported confidence in driving ability as a measure is problematic in itself, as it is possible for lack of confidence to be conceptualised as a personality trait. If that is the case then measures of confidence while driving might reflect nothing more than the personality of the respondent. Put another way, is lack of driving confidence actually related to self-rated ability, or does it reflect a personality trait typical of the neurotic or introverted individual? A second aim of the present study was to investigate the possible mediating role of personality as measured by the Eysenck Personality Questionnaire (EPQ; Eysenck and Eysenck 1975) on the relationship between confidence and perceived ability.

Consideration of scores on the DBQ and the EPQ also allowed us to assess whether self-reported behaviour on the road or measures of personality are more strongly associated with confidence on the road.

Method

Most of the data reported here were collected as part of a large-scale programme of research on older drivers in Great Britain. One aspect of that study was a questionnaire survey of 2,294 drivers aged 50 or over. The sample consisted of two groups. The first group ($N = 788$) were members of a subject panel maintained by the Age and Cognitive Performance Research Centre (ACPRC) in the University of Manchester. The second group were recruited specifically for this survey through a press release appealing for drivers aged 50 or over ($N = 1506$). A total of 642 panel members completed and returned the questionnaire, a response rate of 81 per cent. Similarly, 1,347 of those recruited through the media returned the questionnaire, a response rate of 89 per cent. In total, 1,989 drivers completed the questionnaire.

Three sections from the questionnaire are of relevance here. The first

TABLE 1. *Self-rated ability of older drivers*

Self-rated ability as a driver	% very good	% poor/very poor
To read road signs	28.8	1.1
To judge gaps in traffic	29.8	0.7
To notice vehicles, pedestrians etc. out of the corner of your eye	27.9	0.7
To see clearly in low light conditions	8.9	5.8
To see clearly in bright light conditions	19.2	4.7
To make decisions quickly in traffic	28.1	1.4
To react quickly in traffic	34.2	0.4
To navigate efficiently an unknown area	11.1	9.2
To follow a route travelled only once before, from memory	16.1	15.5
To stay alert for long periods while driving	18.1	3.1
To recognise when your attention has wandered	18.0	1.1
To judge the speed of oncoming traffic	17.1	2.2
To divide your attention between two tasks	12.5	12.2
To reverse park into a confined space	19.0	17.2

was a set of 14 items each of which asked respondents to rate their own ability as in a range of driving situations, using a five-point response scale where 1 = very poor, 2 = poor, 3 = adequate, 4 = good and 5 = very good. The wording of the items is shown in Table 1. The second set of items was designed as a measure of driving confidence. Seven items required respondents to rate how nervous a range of driving situations usually made them feel. A further three items asked how relaxed, stressed and confident respondents usually felt while driving. The remaining two items asked how calm, and how flustered respondents were in situations likely to provoke anxiety while driving. The full text of all the confidence items can be seen in Table 2. They were all answered using a five-point response scale where 1 = not at all, 2 = a little, 3 = moderately, 4 = very and 5 = extremely. Respondents could also choose a sixth response option labelled 'Not applicable, I never do it', which was designed to eliminate from the analyses those with no experience of the situations listed, either because they avoid them or because they simply are not exposed to them.

The third measure of interest here was the Driver Behaviour Questionnaire (DBQ), a self-report measure of lapses, errors and violations on the road. Respondents were required to respond to the DBQ items by indicating how often, if at all, they did each of the 24 DBQ behaviours. The scale used was as follows: 1 = never, 2 = hardly ever, 3 = occasionally, 4 = quite often, 5 = frequently and 6 = nearly all the time.

TABLE 2. *Levels of confidence among older drivers*

	% not at all	% very or extremely
How nervous do you usually feel?		
When overtaking	56.1	2.6
When turning right	74.1	0.9
When negotiating a mini-roundabout	77.8	1.1
When negotiating a large roundabout	57.7	1.5
When joining a motorway	46.7	4.9
When changing lanes on a motorway	54.4	4.0
When driving in heavy traffic	39.3	4.1
When driving-		
How relaxed do you usually feel?	5.0	11.0
How stressed do you usually feel?	60.7	0.6
How confident do you usually feel?	1.8	15.6
When you are driving and you are suddenly faced with a potentially dangerous situation how flustered do you become?	24.4	2.8
When you are driving and things happen quickly, giving you little time to think, how calm do you remain?	4.6	7.4

Six hundred and thirty of those who completed the survey questionnaire were invited to participate in the second phase of the research programme, which involved the collection of further data, one aspect of which is included in the analysis reported here. That was Eysenck's EPQ, a 90-item measure of four personality dimensions: Extroversion, Neuroticism, Psychoticism and dissimulation (the Lie scale). As data on the personality measure was available for only 600 of the questionnaire respondents, all analyses reported will be on the basis of the questionnaire responses of that subset only.

Results

The complete data set was available for 555 drivers with ages ranging from 50 to 90. The average age was 69 years. Of these drivers, 271 (49 per cent) were men and 284 (51 per cent) were women. Respondents were mainly middle class, with 87 per cent falling into SES band ABC1. Almost all of them (92 per cent) had taken an initial driving test. Their average current annual mileage was 6,242 miles, with a range of 10–30,000 miles. They were also asked whether there had been any change in their average annual mileage over the previous three years. Most (63 per cent) said the amount of driving they did was unchanged. However, 31 per cent reported a decrease in the mileage they drove, while only six per cent reported an increase.

Confidence

Table 2 shows the percentage of respondents who reported that they were not at all nervous in each of the driving situations, together with the percentage reporting that they were either very or extremely nervous in those situations.

It is clear that most were quite confident over a range of potentially challenging driving situations. In response to eight of the 12 items, more than half of the respondents indicated that they did not feel nervous at all. In fact, five individuals reported that they did not feel nervous at all in any of the situations listed, rating themselves as extremely relaxed and confident drivers. The situations that made most respondents feel nervous were joining a motorway, driving in heavy traffic and changing lanes on a motorway. Almost five per cent also reported that they did not remain calm at all when things happened quickly and they had little time to think. A driving confidence scale was computed from the 12 confidence-related items, reverse scored where necessary, and the scale gave an alpha reliability coefficient of 0.87. A high score on the scale indicates a high level of nervousness experienced while driving.

Respondents' ratings of their driving ability in a range of situations can be seen in Table 1, which shows that in most situations between 15 per cent and 30 per cent of respondents rated their ability as very good. A much smaller percentage, typically between one per cent and five per cent rated their ability as poor or very poor. The situations most respondents reported problems with were reverse parking, remembering a route only driven once before, dividing their attention between two tasks, and navigating efficiently through an unknown area. On the other hand, fewer than 15 respondents reported that they had problems judging gaps in traffic, using their peripheral vision or reacting quickly to a changing situation in traffic. A scale was computed from the 14 items measuring self-rated ability. The scale had a high alpha reliability coefficient of 0.91.

Driver behaviour

Previous factor analysis of these data (see Parker *et al.* 2000, for details of the factor analysis) had revealed five DBQ factors, which together explained 44.8 per cent of the variance in responses. The two factors, Errors and Lapses, originally identified with a full age-range sample (Parker *et al.* 1995) were maintained more or less intact. As

TABLE 3. Mean scores (and standard deviations) on the five DBQ scales identified by factor analysis by sex

Scale	Men	Women	t-value
Errors	1.49 (.37)	1.42 (.36)	2.13*
Lapses	2.07 (.42)	2.15 (.48)	-1.91
Aggressive violation factor	1.22 (.32)	1.09 (.19)	6.19***
'Normal' violation factor	1.72 (.56)	1.39 (.43)	7.82***
Traffic light factor	1.51 (.45)	1.49 (.48)	0.46

Note: * = $p < .05$; *** = $p < .001$

expected, two violation factors emerged, although they were slightly different from those found in a younger sample (see Lawton *et al.* 1997). The first, the Aggressive violations factor, consisted of four of the eight violations, including the three violation items that involve interpersonal aggression. Another three violations loaded onto a second, the 'Normal' violation factor. These were drink-driving, speeding and overtaking on the inside. The fifth, the Traffic lights factor consisted of the two items related to behaviour at traffic lights. The first was driving away from traffic lights in third gear (a lapse) and the second was shooting through traffic lights as they turned red (a violation). Scale scores on each of the five factors were calculated for each respondent by summing their scores on the items loading into the factor and then dividing by the number of items. Scale scores were deemed preferable to factor scores for use in subsequent analyses because factor scores are standardised to a mean score of 0 and a standard deviation of 1. Table 3 shows, separately for males and females, the mean scores and standard deviations on each of the five scales. Lapses were the type of poor driving reported most frequently by both male and females in this sample. Among men the next highest mean score was for the 'normal' violation factor, followed by the traffic light factor, errors, and lastly the first violation factor, which included the interpersonally aggressive violations. The rank ordering among women was slightly different. After lapses, the next most frequently reported type of poor driving was errors, followed by the traffic light factor and then the 'normal' violation factor. The factor with the lowest mean score among women was the violation factor that included the interpersonally aggressive violations. Independent sample t-tests revealed some significant differences between male and female drivers in terms of their scale scores. Men reported significantly more errors, and more violations of both kinds, than did women. There was no

TABLE 4. *Mean scores (and standard deviations) on the Eysenck personality scales by sex*

	Men	Women	T-value
Extroversion	11.13 (5.37)	12.54 (4.95)	-3.13**
Neuroticism	8.06 (5.15)	9.24 (5.21)	-2.68**
Psychoticism	1.99 (2.12)	1.55 (1.61)	2.79**
Lie scale	9.35 (4.08)	10.10 (3.97)	-2.19*

Note: * = $p < .05$; ** = $p < .01$.

TABLE 5. *Stepwise regression analysis predicting scores on the driving confidence scale*

	Adjusted R square	Beta weight
Self-reported lapses	.12	.23***
Mileage	.22	-.22***
EPQ neuroticism	.26	.18***
Self-reported errors	.28	.21***
EPQ extroversion	.30	-.15***
Self-reported 'normal' violations	.31	-.12**
Sex	.32	.11**

Note: ** = $p < .01$; *** = $p < .001$.

statistical difference between men and women in terms of the lapses reported or in terms of score on the traffic lights factor.

Personality

Table 4 shows the mean score and standard deviations of the sample on the main Eysenck personality dimensions, separately for men and women, together with the results of t-tests showing that men and women respondents differed significantly on all four scale scores, with women scoring significantly more on the Extroversion, Neuroticism and Lie scales than men, but significantly less on the Psychoticism scale.

Stepwise multiple regression analysis was used to assess the relationship of a range of demographic, driving behaviour and personality variables with scores on the scale of confidence. The following independent variables were entered stepwise into the regression equation: scores on the five DBQ scales, scores on the personality dimensions of Extroversion, Neuroticism and Psychoticism, and age, sex and mileage. The results are shown in Table 5.

A high score on the driving confidence scale (reflecting a high level of nervousness, that is a low level of confidence) was associated with a high level of self-reported lapses, relatively low mileage, a high EPQ Neuroticism score, a high level of self-reported errors, a relatively low EPQ Extroversion score, a low level of self-reported violations and being female. The total amount of variance in confidence scores predicted was 32 per cent. There was no association between score on the confidence scale and age, EPQ Psychoticism score or EPQ Lie score. As the regression used is a stepwise entry technique, the order in which the independent variables were selected for inclusion in the regression equation reflects the size of association with the dependent variable, the most important being selected first. Thus it can be seen that self-reported lapses were more strongly predictive of driving confidence than any of the personality variables, and that, while scores on the three main DBQ sub-scales were independently and significantly associated with driving confidence, only two of the three main Eysenck scales were.

Score on the driver confidence scale was also associated with score on the index of self-perceived driving ability. The zero-order correlation coefficient was -0.59 , showing that the lack of confidence in a range of driving situations is associated with perceived lack of ability. However, as shown by the regression results, personality, in terms of scores on Eysenck's Extroversion and Neuroticism scales, is also associated with driving confidence. Therefore, it might be argued that the relationship between confidence and self-rated ability might simply be a reflection of the association between personality and self-rated ability, with Introverts and possibly Neurotics rating themselves as less good drivers. To test this possibility a mediation analysis was performed following the procedure suggested by Baron and Kenny (1986). First the association between the possible mediator (personality) and the independent variable (driving confidence) was assessed using multiple regression. Second the relationship between the outcome variable (self-rated driving ability) and the independent variable (driving confidence) was assessed. Third, the outcome variable (self-rated driving ability) was regressed onto both the mediator (personality) and the independent variable (driving confidence). Mediation is established if the first two analyses yield significant beta weights for the predictor variables, the effect of the mediator remains significant in the third analysis, and the relationship between independent and dependent variables is weaker in the third analysis than in the second. As both Extroversion and Neuroticism were shown to be independently related to driving confidence in the regression analysis, they were both tested

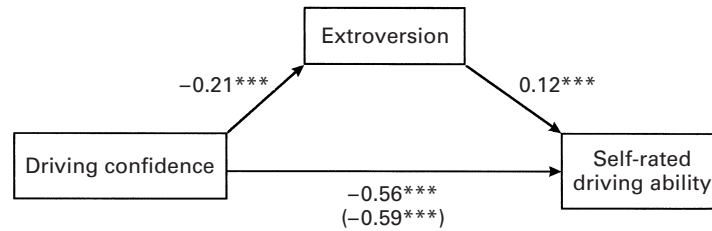


Figure 1. Driving confidence, extroversion and self-rated driving ability.

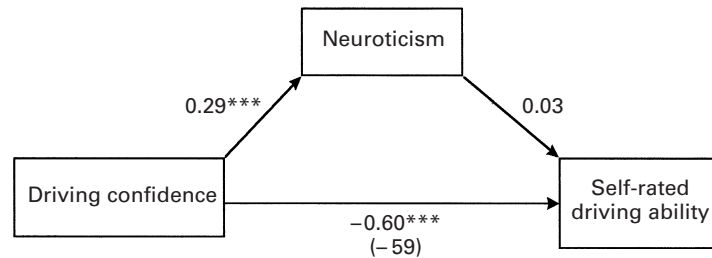


Figure 2. Driving confidence, neuroticism and self-rated driving ability.

as possible mediators. The results are shown in diagram form in Figures 1 and 2.

Figure 1 shows that there is evidence of some mediating role for Extroversion. The relationship between driving confidence and self-rated ability (beta = -0.59) was slightly weakened (beta = -0.56) when Extroversion, itself correlated with self-rated ability (beta = 0.12), was controlled for. In contrast, Figure 2 shows that there was no evidence that Neuroticism mediated the relationship between driving confidence and self-rated driving ability. The relationship between Neuroticism and self-rated driving ability was non-significant (beta = 0.03) and had no suppressing effect on the relationship between confidence and self-rated ability (beta = -0.59).

Discussion

One aim of the present study was to assess the relationship between confidence, ability and self-reported driver behaviour using a large sample of older drivers. Around 600 older drivers were surveyed about their level of confidence while driving, their self-rated driving ability, their driving behaviour and their personality. The results indicate that surprisingly few older drivers experienced high levels of ner-

vousness on the road, with over 60 per cent indicating that they did not usually feel stressed at all when driving. Across a range of potentially difficult driving situations, fewer than five per cent of those surveyed indicated feeling very or extremely nervous. These figures are somewhat surprising, given the media stereotype of the elderly driver as timid, nervous and over-cautious. On the other hand, although confidence while driving is desirable, over-confidence is not. Accordingly, drivers in the sample were also asked to indicate how they rated their own driving ability across a range of tasks and situations.

Evidence that they rated themselves as very good in all situations might indicate that these drivers were not aware of areas of weakness in their own abilities. However, as shown in Table 1, the drivers in this sample were able to make distinctions between relatively strong and relatively weak areas of competence. No more than 34 per cent of the sample rated themselves as very good on any single aspect of driving, which does not seem indicative of unrealistic levels of over-confidence. Moreover, they were clearly aware that certain abilities tended to weaken with advancing age such as the ability to see clearly in low light conditions, or to divide attention between two driving tasks, as fewer than nine per cent and 13 per cent, respectively, rated themselves as very good in those circumstances.

Regression analysis was used to assess which of the measured variables was associated with level of nervousness while driving. The results suggested that the best single predictor of nervousness was score on the self-reported DBQ lapse scale. Those who reported a relatively high level of lapses also reported a relatively high level of nervousness. Scores on the error scale and one of the violation scales of the DBQ were also significantly predictive of levels of nervousness, such that drivers committing more errors were more nervous, and those committing more 'normal' violations were less nervous drivers.

The relationship between personality and driving confidence showed that relatively stable individuals *i.e.* those scoring low on the EPQ Neuroticism scale, were less nervous drivers, as were those who were relatively extroverted according to the EPQ Extroversion scale. Mileage was negatively associated with nervousness, so that those who drove more tended to be less nervous and more confident, while the males in the sample tended to be more confident drivers than the females. It is interesting to note that, within this sample of 50–90 year olds, there were no age-related differences in driving confidence.

A further aim of the study was to investigate the possible mediating role of personality on the relationship between confidence and perceived ability. Mediation analyses were carried out separately for

two dimensions of personality, Extroversion and Neuroticism, as both had been shown to be significantly associated with level of driving confidence in the regression analysis. Driving confidence was negatively associated with both Extroversion and self-rated ability, so that relatively confident drivers were both more Extroverted and rated their abilities relatively highly. When both Extroversion and driving confidence were regressed onto self-rated ability, the relationship between confidence and ability was only partially mediated. This suggests that there is a relationship between confidence and self-rated ability that is independent of level of Extroversion.

When the same mediation analysis technique was used to look at the relationships among driving confidence, Neuroticism and self-rated ability, it was found that level of Neuroticism had no impact on the association between confidence and ability. In fact there was no significant association at all between neuroticism and self-rated ability. These analyses suggest that driving confidence is not simply a proxy measure of level of personality as measured by either Extroversion or Neuroticism, but reflects something distinct and separate that impacts substantially on self-rated ability as a driver.

These results show that older drivers, at least those involved in this research, have fairly high levels of confidence when driving, and yet do not rate their own ability unrealistically. Level of driving confidence was higher among males and among those who drove more, but the single most important predictor of confidence was level of self-reported lapses. As it has recently been demonstrated empirically that lapses are predictive of accident involvement among older drivers (Parker *et al.* 2000), it may be argued that the perceptions of these drivers are not unrealistic. Those who have a lot of lapses while driving do have an elevated risk of accident-involvement and so perhaps are right to feel more nervous than drivers who have fewer lapses.

The results also provide some preliminary evidence that older drivers' ratings of their ability reflect their level of confidence, rather than their personality. Again this suggests that the judgments older drivers make about their own abilities are reliable. It may be that those who are less confident behind the wheel perform less well, or that those who perform less well become less confident. Either way, level of confidence appears to be an important factor. It is especially interesting to note that level of confidence is unrelated to age, suggesting that older drivers are making judgments based on their actual performance on the road rather than on their age. This is encouraging for those concerned to support older drivers in maintaining their personal mobility for as long as they are safe to drive. In practical terms it might

be important to encourage drivers to refer to their own feelings of nervousness or confidence when judging whether it is safe to carry on driving. Those who suffer from nervousness and lack of confidence on the road are also likely to be prone to lapses, and it is those drivers who might be well advised to consider ceasing to drive. Those who feel confident however, and who do not suffer from lapses, can be encouraged to continue enjoying the personal freedom and mobility that comes with driving.

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