

# Wanna Drive? Driving Anxiety and Fear in a New Zealand Community Sample

Joanne Taylor & Diana Paki, *Massey University*

Driving anxiety can impact everyday functioning and is common following motor vehicle crashes. However, no research has investigated its general community prevalence, despite the consistent finding that driving anxiety is not always a function of a vehicle crash. The present study explored the frequency and characteristics of driving anxiety and fear in a general community convenience sample of 100 participants who completed a questionnaire about driving anxiety, avoidance behaviour, and types of driving-related cognitions. Most of the sample described no anxiety, fear, or avoidance in relation to driving. However, 8% reported moderate to extreme anxiety about driving, and 7% described moderate to extreme driving fear. Women reported more driving anxiety, fear, and avoidance than men. These results indicate the need for more formal methods of establishing prevalence to clearly ascertain the extent of population-based driving anxiety and fear and its effects, so that research can begin to focus on developing effective treatment approaches for those whose anxiety has a psychological and functional impact.

Road safety is an important concern in New Zealand. More than one person a day dies in a road accident and drivers constitute half of all fatalities (Land Transport New Zealand, 2007). In addition to physical injuries, it is well documented that a range of psychological problems, including post-traumatic stress disorder, depression, and fear and anxiety reactions, can develop subsequent to a motor vehicle crash (MVCs; Blanchard & Hickling, 1997; Duckworth, Jezzi, & O'Donohue, in press; Taylor & Koch, 1995), even a minor MVC (Smith, Mackenzie-Ross, & Scragg, 2007). While most research has focused on driving fear which is subsequent to an MVC, the level of severity of driving fear in non-clinical community samples who have not experienced an MVC is similar to that of MVC survivors (Taylor & Deane, 2000; Taylor, Deane, & Podd, 2000).

Furthermore, many of those who report driving fear do not attribute their fear to an MVC, despite being involved in at least one such accident (Taylor & Deane, 1999, 2000). Despite this, most research on driving fear has been done with MVC samples.

Driving anxiety and fear is reportedly common in MVC victims, although inconsistent definitions of what constitutes driving fear and phobia have affected reports of incidence rates (Taylor, in press). Studies of post-MVC driving phobia and phobic travel anxiety (using Diagnostic and Statistical Manual criteria for simple or specific phobia; American Psychiatric Association, 2000) have reported rates of 18-77%, although rates are higher in samples of referred patients (57-77%; Hickling & Blanchard, 1992; Horne, 1993; Kuch, Swinson, & Kirby, 1985) than those recruited consecutively following

hospital admission (18-22%; Mayou, 1997; Mayou, Bryant, & Duthie, 1993; Mayou, Bryant, & Ehlers, 2001). Driving phobia is also reported in non-clinical samples in overseas studies, although these studies have selected participants on the basis of driving fear and phobia and therefore cannot provide accurate incidence rates (e.g., Ehlers, Hofmann, Herda, & Roth, 1994; Mathew, Weinman, Semchuck, & Levin, 1982; Munjack, 1984). It is important to clearly establish the incidence and prevalence of driving anxiety and fear in this broader population than MVC survivors alone, given the similar severity of driving fear reported amongst non-clinical, community samples to date. Accurate information about the degree to which problems with driving anxiety extend to the general population is important in order to ascertain the broader treatment needs of those who experience psychological and functional effects related to driving anxiety. The central aim of the present study was to conduct a community survey of people's experiences of anxiety and fear related to driving in New Zealand.

Driving anxiety and fear does not easily fit into a diagnostic category (Antony, Brown, & Barlow, 1997; Ehlers et al., 1994; Herda, Ehlers, & Roth, 1993; Himle, Crystal, Curtis, & Fluent, 1991; for a review, see Taylor, Deane, & Podd, 2002). For example, people may not necessarily be fearful of driving itself, but instead of certain driving situations such as overpasses

or tunnels, which could be accounted for by having a fear of heights or claustrophobia, respectively (Mathew et al., 1982). In addition, people who are anxious about driving have been found to differ in terms of the object of threat, even though the specific fear (i.e., driving) remains the same (Ehlers et al., 1994). The focus of driving fear can range from concerns about having an accident, causing injury to self or others, experiencing symptoms of panic anxiety, losing control over the car, or having no control over other people's driving (Ehlers et al., 1994; Taylor et al. 2000). In a New Zealand study, anxious drivers showed a mixture of cognitions that were characteristic of panic disorder (e.g., not being able to react fast enough), specific phobia (e.g., getting stuck in traffic), and social phobia (e.g., people thinking they are a bad driver), which reinforces the difficulty in diagnosing driving phobia using current classification systems (Taylor et al., 2000). As well as differences in the focus of fear, some drivers experience a less fearful reaction that would not be considered phobic. Rather than experiencing an overwhelming desire to avoid driving, such people experience discomfort at the thought of driving or when driving a vehicle. They are considered reluctant drivers who tolerate their anxiety while driving, despite the distress, in order to attend to necessary tasks, and avoid driving at all other times (Blanchard & Hickling, 1997; Blaszczynski, Gordon, Silove, Sloane, Hillman, & Panasetis, 1998).

As well as a lack of information about the prevalence of driving anxiety and fear in the general community, an additional gap in the literature relates to whether there are gender differences in driving anxiety. The majority of studies have focused on the nature and characteristics of driving anxiety and fear with samples predominantly comprised of women (Ehlers et al., 1994; Ehlers, Taylor, Ehring, Hofmann, Deane, Roth, et al., 2007; Taylor & Deane, 1999, 2000; Taylor, Deane, & Podd, 1999, 2000). While it is widely documented that women consistently exhibit higher rates of anxiety, worry, fear, and phobias than men (Armstrong & Khawaja, 2002; Fredrikson, Annas, Fischer, & Wik,

1996; Robichaud, Dugas, & Conway, 2003; Turk, Heimberg, Orsillo, Holt, Gitow, Street et al., 1998), little is known about gender differences in driving anxiety in clinical and non-clinical samples. Current research on anxiety in non-clinical samples suggests a gender difference in self-reports of anxiety symptoms, catastrophic cognitions, and overall anxiety sensitivity (Armstrong & Khawaja, 2002; Stewart, Taylor, & Baker, 1997). Women tend to endorse higher levels of anxiety symptoms than men, misinterpret anxious cognitions as more personally catastrophic or threatening, and are more concerned than men about the unpleasant physical, mental, and emotional consequences of anxiety (Armstrong & Khawaja, 2002). Whether these gender differences are also relevant for driving anxiety has yet to be investigated.

In summary, driving anxiety and fear has mostly been studied in the context of the psychological effects of MVCs, despite evidence that driving fear is not always a function of a vehicle crash and can impact on psychological, occupational, social, and recreational functioning in non-clinical community samples. However, the extent of driving anxiety and fear in the general community remains unknown. The present study aimed to examine the frequency and characteristics of driving anxiety and fear in men and women from a non-clinical, general community sample in New Zealand. Based on the existing literature, it was hypothesised that (1) a general community sample would report low levels of driving anxiety and fear, and (2) men would report lower levels of driving anxiety, fear, and avoidance, as well as negative driving-related thoughts than women.

## Method

### Participants

Participants were a non-probability convenience sample from a rural Hawke's Bay community who held a valid drivers' licence. Information sheets and questionnaires were distributed to potential participants through acquaintanceship networks, approaching members of various community organisations, and responses to a flyer about the study which was posted around the local community.

From 150 distributed questionnaires, 100 were returned, representing a 67% response rate. One participant was removed from the sample due to a considerable amount of missing data, leaving 99 participants. There were 42 men and 57 women, aged between 15 and 69 years (men:  $M = 41.80$ ,  $SD = 16.31$ ,  $n = 41$ ; women:  $M = 36.61$ ,  $SD = 14.23$ ,  $n = 56$ ; total sample:  $M = 38.80$ ,  $SD = 15.28$ ,  $n = 97$ ; two participants had missing data for age). Although women were slightly younger on average, the gender differences in age were not statistically significant,  $t(95) = 1.67$ ,  $p = .10$ . There were 32% of participants who described themselves as Māori and 56% who described themselves as Pakeha/European. The rest of the sample described themselves as from the Pacific Islands (2%), Indian (2%), Asian (4%), and of other ethnicity (4%).

### Measures and Procedure

Participants completed a self-report questionnaire that consisted of demographic and driving history information as well as measures of driving anxiety and avoidance, driving cognitions, and trait anxiety as described below. They were also asked to separately rate their anxiety and fear about driving on a scale from 0 (*not at all*) to 10 (*extremely*), as used in previous research (Taylor et al., 1999, 2000; Taylor, Deane, & Podd, 2007). Completing the questionnaires implied consent to participate in the study.

*Driving anxiety and avoidance.* The Driving Situations Questionnaire (DSQ; Ehlers et al., 1994) is a self-report measure of the severity of driving anxiety. Respondents rate their anxiety regarding 42 driving situations on a scale from 0 (*no anxiety*) to 4 (*extreme anxiety*), and how much they avoid the same situations on a scale from 0 (*never avoid*) to 4 (*always avoid*). Ten situations concern driving in residential areas (e.g., left turn, changing lanes), 10 concern driving on busy urban thoroughfares, 13 relate to driving on motorways, and 9 other driving situations include tunnels, bridges, or steep roads. The version of the DSQ used in the present study was one that has been modified for more appropriate use within a New Zealand sample (see Taylor & Deane, 2000). Some items were termed differently (e.g., *freeways* became *motorways*)

and the questionnaire was shortened. Items included in the shortened version were those regarded as most important according to previous research (Ehlers et al., 1994). The resulting version of the DSQ is a questionnaire with 39 items. The total scores summarising participants' anxiety (DSQ-Anxiety) and avoidance ratings (DSQ-Avoidance) when driving were used for the present study (range from 0-156). Ehlers et al. (2007) reported internal consistency reliability with a clinical sample as  $\alpha = .98$  and  $\alpha = .97$  for the DSQ-Anxiety and DSQ-Avoidance scales, respectively, and  $\alpha = .99$  for the anxiety scale with a sample of driving-fearful volunteers. Internal consistency in the present sample was  $\alpha = .97$  for both the anxiety and avoidance scales.

*Negative driving-related cognitions.* The original Driving Cognitions Questionnaire (DCQ; Ehlers, 1990) consists of 42 items that assess the presence and frequency of various negative driving-related cognitions. Typical concerns consist of those which are panic-related (e.g., not being able to breathe), accident-related (e.g., being injured or causing an accident), and social (e.g., people laughing at one's driving). Each item is rated according to how often each thought (i.e., item) occurs while driving, using a five-point Likert scale from 0 (*Never*) to 4 (*Always*). The total score ranges from 0 to 196, and subscale scores for the panic-, accident-, and social-related concerns are also calculated. Since the present study was conducted, the DCQ has been further developed and published as a 20-item scale, and psychometric data indicates adequate internal consistency ( $\alpha = .83$  to  $.96$ ) and convergent and discriminant validity (.83 to .94; Ehlers et al., 2007). The DCQ used in the present study was different from the original and published

versions, however, as the published version did not appear in the literature until after the study was completed. The original 42-item DCQ was shortened for use in the present study to the 19 items that showed a significant difference between the clinical and control groups, had a high correlation with DSQ scores, had high mean scores in the clinical group, and did not lower Cronbach's alpha for the factor scales (Ehlers et al., 2007). Therefore, the total score ranged from 0 to 76, and internal consistency for the present study was  $\alpha = .92$ .

*Trait anxiety.* The State-Trait Anxiety Inventory (STAI-Form Y; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) is a self-report measure of state and trait anxiety that is widely used in research and clinical practice and has well-documented psychometric properties. The 20-item trait scale of the STAI (i.e., STAI-T) was used in the present study to measure trait anxiety. Respondents were asked to describe the way they feel on a scale from 0 (*Not at all*) to 4 (*Very much*). The total STAI-T score ranges from 20 to 80. In the present study, the internal consistency reliability was  $\alpha = .89$ .

#### Data Analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS Inc., 2001). Effect size statistics were represented by eta squared (Pallant, 2001). Where participants had not completed parts of the questionnaire, data were treated as missing or were prorated accordingly. For the DSQ and DCQ, 10-15% of missing data is acceptable (Ehlers, personal communication, 2005), and the STAI-Y manual permits up to two missing items (Spielberger et al., 1983). In such cases, total scores were prorated separately for all measures. Unless

otherwise stated, missing data accounted for cases where percentages did not add to 100%. Preliminary analyses showed that scores were positively skewed on all measures for men and women (i.e., scores were clustered at the lower end of the scale). This is common for measures of anxiety in the general population (Pallant, 2001).

## Results

### Driving History and Experience

One-third of participants had held their driver's licence for less than ten years, with the rest of the sample having held a licence between 11 and 30 years (35%) and 31 and 54 years (31%;  $M = 21.39$ ,  $SD = 15.00$ ). On average, men had held their driver's licence for more years than women ( $M = 25.48$ ,  $SD = 16.47$ ;  $M = 18.47$ ,  $SD = 13.25$ , respectively),  $t(94) = 2.31$ ,  $p = .02$ . Age and driving experience (as measured by years having held a driver's licence) were strongly correlated at  $r = .92$  ( $p < .001$ ), in that increased years licensed were associated with advancing age. The majority of the sample (78%) reported driving more than once a day, 1% reported driving once a day, 15% several times a week, 4% once a week, and 2% several times a month. Most of the participants (61%) had never had a minor accident, with the rest of the sample having had minor accidents once (26%) or a few times (13%). Most participants (78%) had never had a major accident, while a small number reported having had major accidents once (3%) or a few times (19%).

### Driving Anxiety, Fear, and Avoidance

There were 41% of the sample who described themselves as having no anxiety about driving on the 0-10

Table 1  
Means and Standard Deviations (SD) According to Gender and for the Total Sample

| Measure       | Men   |       |    | Women |       |    | Total sample (N = 99) |       |
|---------------|-------|-------|----|-------|-------|----|-----------------------|-------|
|               | M     | SD    | n  | M     | SD    | n  | M                     | SD    |
| DSQ-Anxiety   | 23.33 | 21.51 | 42 | 34.28 | 23.73 | 57 | 29.64                 | 23.34 |
| DSQ-Avoidance | 14.64 | 19.87 | 42 | 28.63 | 23.26 | 57 | 22.70                 | 22.86 |
| DCQ           | 6.64  | 6.52  | 42 | 9.77  | 9.95  | 56 | 8.43                  | 8.75  |
| STAI-T        | 32.71 | 8.64  | 41 | 36.26 | 9.36  | 57 | 34.78                 | 9.19  |

Note. DSQ = Driving Situations Questionnaire (range: 0-156). DCQ = Driving Cognitions Questionnaire (range: 0-76). STAI-T = Trait scale of State-Trait Anxiety Inventory (Form Y; range: 20-80).

\*New Zealand norms are 33.11 (7.80) for men and 36.85 (8.89) for women (Knight, Waal-Manning, & Spears, 1983).

Table 2

Means (and SDs) for the Highest Rated Items According to Gender and for the Total Sample

| Measure and item                                  | Men  |        | Women |        | Total sample |        |
|---|------|--------|-------|--------|--------------|--------|
|   | M    | SD     | M     | SD     | M            | SD     |
| DSQ-Anxiety                                       |      |        |       |        |              |        |
| Being tailgated by another car                    | 1.40 | (0.86) | 1.75  | (1.17) | 1.61         | (1.06) |
| Driving on the motorway                           | 0.95 | (1.00) | 1.61  | (1.32) | 1.34         | (1.24) |
| Driving in the fog                                | 1.10 | (0.85) | 1.39  | (0.91) | 1.27         | (0.89) |
| Driving in heavy traffic                          | 0.93 | (0.89) | 1.47  | (1.09) | 1.24         | (1.04) |
| DSQ-Avoidance                                     |      |        |       |        |              |        |
| Being tailgated by another car                    | 1.17 | (1.31) | 1.82  | (1.24) | 1.55         | (1.30) |
| Driving fast                                      | 0.76 | (1.19) | 1.42  | (1.31) | 1.14         | (1.29) |
| Being in a traffic jam                            | 0.90 | (1.12) | 1.09  | (1.21) | 1.01         | (1.17) |
| Driving in heavy traffic                          | 0.60 | (0.83) | 1.21  | (1.11) | 0.95         | (1.04) |
| DCQ   |      |        |       |        |              |        |
| I cannot control whether other cars will hit me*  | 0.90 | (0.97) | 0.98  | (1.10) | 0.95         | (1.05) |
| People will think I'm a bad driver**              | 0.52 | (0.86) | 0.84  | (0.89) | 0.70         | (0.89) |
| People riding with me will be hurt*               | 0.69 | (0.84) | 0.64  | (0.80) | 0.66         | (0.81) |
| I will cause an accident*                         | 0.55 | (0.67) | 0.75  | (0.82) | 0.66         | (0.76) |
| I will hold up traffic and people will be angry** | 0.48 | (0.86) | 0.73  | (0.95) | 0.62         | (0.92) |
| I will injure someone*                            | 0.52 | (0.71) | 0.59  | (0.76) | 0.56         | (0.73) |
| I will be injured*                                | 0.48 | (0.74) | 0.50  | (0.79) | 0.49         | (0.76) |
| The way I drive will endanger others*             | 0.43 | (0.63) | 0.39  | (0.59) | 0.41         | (0.61) |

Note: DSQ = Driving Situations Questionnaire (item range: 0-4); DCQ = Driving Cognitions Questionnaire (item range: 0-4). \*Accident-related concern. \*\*Social-related concern.

scale, and 8% reported moderate to extreme levels of anxiety (ratings from 5-10). The mean anxiety rating was 2.26 ( $SD = 1.39$ ). Half of the sample reported having no fear of driving on the 0-10 scale, and 7% reported moderate to extreme fear (ratings from 5-10). The mean fear rating was 2.07 ( $SD = 1.43$ ). On average, women reported significantly more anxiety about driving than men,  $t(96) = 2.16, p = .03$  [women:  $M = 2.50, SD = 1.55$ ; men:  $M = 1.93, SD = 1.07$ ; Levene's statistic:  $F = 6.96, p = .01$ ]. Women also reported more fear about driving than men,  $t(96) = 2.66, p = .009$  [women:  $M = 2.38, SD = 1.62$ ; men:  $M = 1.67, SD = 1.00$ ; Levene's statistic:  $F = 8.40, p = .005$ ]. Using a paired samples  $t$ -test, no differences were found between the average ratings of anxiety and fear,  $t(97) = 1.72, p = .089$  (eta squared = .03), indicating that participants perceived these as similar concepts. This finding was replicated for the ratings made by men [ $t(41) = 1.76, p = .09$ ] and women [ $t(55) = .83, p = .41$ ].

Table 1 shows that participants reported low scores on the anxiety and avoidance scales of the DSQ, indicating that they were not overly anxious or avoidant of particular driving situations. However, differences emerged when the results were examined separately for

men and women. Women had higher DSQ-Anxiety scores than men,  $t(97) = 2.36, p = .02$ . The magnitude of the difference in the means was moderate (eta squared = .05), indicating that 5% of the variance in driving anxiety was explained by gender. Participants rated the most anxiety about being tailgated by another car, driving on a motorway, driving in the fog, and driving in heavy traffic (see Table 2). Men and women both rated being tailgated by another car as the most anxiety-provoking driving situation (see Table 2). Men gave only two driving situations mean ratings above 1 on the 0-4 scale compared with women who rated 18 items with means higher than 1.

There was also a significant difference in mean scores for men and women on the DSQ-Avoidance scale, with women having higher total scores than men  $t(97) = 3.14, p = .002$ . Again, the magnitude of the differences in the means was moderate (eta squared = .09), indicating that 9% of the variance in avoidance of driving situations was explained by gender. The extent to which the participants avoided certain driving situations was explored. Results showed that participants rated the highest avoidance for being tailgated by another car, driving fast, and being in a traffic jam. Consistent with results on

the anxiety scale, men and women rated the most avoidance for being tailgated by another car.

#### Negative Driving-Related Thoughts

In contrast to the results on the DSQ, there were no gender differences in mean DCQ scores,  $t(96) = 1.77, p = .08$  (eta squared = .03). The sample reported low levels of negative driving-related thoughts. The total sample rated *I cannot control whether other cars will hit me*, *People will think I am a bad driver*, *People riding with me will be hurt*, and *I will cause an accident* as the most frequent concerns while driving. In the present sample, men and women rated *I cannot control whether other cars will hit me* as the most frequent concern while driving. *I will cause an accident* was rated highly by men and women, although rated more frequently was *People riding with me will be hurt* (rated as the second most frequent concern by men) and *People will think I am a bad driver* (rated second most frequent by women; see Table 2). Of the most frequent driving-related thoughts, men reported six accident-related concerns and two social-related concerns. Women also had more accident-related thoughts than any other types of thoughts but placed social-related concerns higher than did the men. The sample most frequently reported accident-related

thoughts ( $M = 4.27$ ,  $SD = 4.16$ ). Social concerns and panic-related thoughts were also reported but not to the same frequency as thoughts concerning accidents ( $M = 2.28$ ,  $SD = 3.07$ ;  $M = 1.74$ ,  $SD = 2.57$ , respectively). There was a gender difference in the mean scores for men ( $M = 1.07$ ,  $SD = 1.61$ ) and women ( $M = 2.26$ ,  $SD = 3.04$ ) for panic-related concerns,  $t(84) = 2.46$ ,  $p = 0.02$  (eta squared = .06). There was no difference for accident-related concerns [men:  $M = 3.98$ ,  $SD = 4.10$ ; women:  $M = 4.48$ ,  $SD = 4.23$ ;  $t(95) = .59$ ,  $p = .56$ ; eta squared = .004] or social concerns [men:  $M = 1.69$ ,  $SD = 2.36$ ; women:  $M = 2.74$ ,  $SD = 3.48$ ;  $t(94) = 1.68$ ,  $p = .097$ ; eta squared = .03].

### Trait Anxiety

As seen in Table 1, the average STAI-T score indicates that the sample was not generally anxious, and mean scores for men and women were similar to New Zealand norms (Knight, Waal-Manning, & Spears, 1983). Men reported lower trait anxiety than women, although this difference was not significant,  $t(96) = 1.92$ ,  $p = .06$  (eta squared = .04). The STAI-T was correlated with the measures of driving anxiety to explore the relationship between driving and trait anxiety. The STAI-T had moderate correlations with the DCQ ( $r = .45$ ), DSQ-Anxiety ( $r = .37$ ), DSQ-Avoidance ( $r = .34$ ), 0-10 anxiety ( $r = .34$ ), and 0-10 fear ratings ( $r = .37$ ; all  $ps < .001$ ).

### Discussion

The present study supported the hypothesis of overall low levels of driving anxiety and fear in a general community sample, as well as low levels of avoidance behaviour and negative driving-related thoughts. However, there was a small but significant minority (7-8%) who reported moderate to extreme driving anxiety and fear. This degree of fear is likely to impact on daily life to some degree, and indicates the need for a population-based study on people's experiences of anxiety and fear related to driving in New Zealand. Such a study would ascertain the prevalence of driving anxiety and fear which, if replicated to at least 7% as found in the present study, would suggest that 296,000 New Zealanders experience moderate to high fear related to driving. Such levels of fear would likely have

important effects on psychological, vocational, social, and recreational functioning. As expected, the overall low level of driving anxiety and fear is in contrast with driving-fearful samples who rate their levels of driving anxiety and fear relatively highly ( $M = 6.68$ ,  $SD = 2.81$ ;  $M = 6.98$ ,  $SD = 1.94$ , respectively; Taylor et al., 2007). While the present community sample reported much lower levels, their ratings were still higher than a control group from the same comparison study (anxiety:  $M = .64$ ,  $SD = .78$ ; fear:  $M = .40$ ,  $SD = .76$ ). It was not possible to examine patterns of behavioural avoidance and negative cognitions for the highly anxious and fearful participants compared with the rest of the sample because of the small sample size for this study, but these comparisons could be done with a more representative population-based sample.

While there were no gender differences in trait anxiety, as predicted, men were less anxious and fearful about driving, and less avoidant of particular driving situations. These findings are consistent with previous research on gender differences in anxiety in general (Armstrong & Khawaja, 2002; Craske, 2003; Fredrikson et al., 1996; Robichaud et al., 2003; Turk et al., 1998) and in driving anxiety more specifically (Ehlers et al., 1994; Taylor et al., 1999, 2000). Craske (2003) emphasised that gender differences are not necessarily found in the inclination to be anxious or fearful, but rather in differences in levels of anxiety and avoidant responding. Furthermore, gender differences in prevalence rates for anxiety disorders are not explained by women's inclination to seek help as these data are taken from non-treatment-seeking, community samples (Craske, 2003).

Additional considerations are relevant to the present study. The sample was from a rural community where driving anxiety may be associated with significant stigma. Alternatively, men may be less anxious than women, or have different ideas about what constitutes anxiety (e.g., rather than get anxious about being tailgated by another car, men may instead feel angry or frustrated by it). On average, men had held their driver's licence for seven years longer than women. The increased exposure

to driving could have accounted for the decreased anxiety about driving reported by men, but another relevant factor was that men, on average, were five years older than women. There were no gender differences in negative driving-related thoughts on the DCQ overall, but women reported a higher frequency of panic-related concerns than men. It is unclear whether the lack of differences on the DCQ reflect a non-significant result or is the result of a small sample size and small to moderate effect sizes (ranging from .03 to .09). For this reason, it is important to conduct these comparisons with a larger sample.

The present community sample was clearly different from samples that have been selected on the basis of driving fear. Community participants were less anxious about driving in general, and where anxiety was endorsed, it tended to relate to different driving situations than those endorsed in previous studies by fearful drivers. The results from the present study differed slightly from past research with a non-clinical sample selected for driving fear, who were mostly anxious about passing ( $M = 3.28$ ,  $SD = .90$ ), being tailgated by another car ( $M = 3.02$ ,  $SD = 1.12$ ) and driving past a truck ( $M = 3.00$ ,  $SD = 1.05$ ; Taylor et al., 2007). In comparison, participants from this general community sample were mostly anxious about situations in which there was more traffic (i.e., on a motorway or in heavy traffic). The sample was from a rural community and therefore had less exposure to heavy traffic situations than the fearful sample which was recruited from the Manawatu and Wellington regions where there would be more exposure to heavy traffic situations. However, being tailgated by another car was rated as an anxiety-provoking driving situation for fearful drivers as well as the present sample. Consequently, many people also tended to avoid this situation the most, possibly because the participants were mainly concerned about accident-related events. Many participants avoided similar driving situations to those that caused them anxiety, although some situations were not avoided despite being rated as anxiety-provoking (e.g., driving in fog or strong winds), which could also be due to the geographical area in which

the study was conducted, where such weather conditions are uncommon. It was difficult to compare the results from the avoidance scale with other studies as some omitted this scale (e.g., Taylor et al., 2007), some grouped many driving situations under one heading (e.g., driving in heavy traffic, driving in fog, and others came under the heading of 'driving under special circumstances'; Taylor & Deane, 2000), and others did not report avoidance ratings (e.g., Ehlers et al., 1994).

The sample reported low levels of negative driving-related thoughts, although the most frequent concerns related to lack of control over other cars, causing an accident, injuring passengers, and others negatively evaluating them as a driver. This differed slightly from Taylor et al.'s (2007) study of driving-fearful participants, who rated *I will not be able to react fast enough* ( $M = 2.38, SD = 1.26$ ) and *I will hold up traffic and people will be angry* ( $M = 2.10, SD = 1.36$ ) as the most frequent concerns, although *People will think I am a bad driver* ( $M = 2.28, SD = 1.28$ ) was also rated as a frequent concern. The present sample reported more accident-related concerns while driving than any other concern. Men and women endorsed accident-related concerns most frequently, although women were also concerned with social factors. While men and women had less frequent thoughts relating to panic-related concerns than accident or social concerns while driving, women had significantly more frequent panic-related thoughts about driving than men. Previous research has suggested that rumination implies an emphasis on thoughts and a direction of attention to negative cognitions (Robichaud et al., 2003). This process could explain the tendency for women to report more anxiety and fear than men as it has been shown that if a problem is perceived as being out of one's control, or beyond coping abilities, one of the likely emotions expressed is fear (Robichaud et al., 2003). Fuller (2005) also notes that subjective ratings of perceived collision risk are not always consistent with statistical risk or the occurrence of collisions, and therefore the ratings made by the present sample do not necessarily correlate with safety on the

road. This may also be related to the tendency for subjective risk to inform driver decision-making in terms of reduced task difficulty (Fuller, 1990, 2005).

The present study is limited by the fact that it is based on a small, non-representative rural sample. The participants volunteered from a non-probability sample selected on the basis of availability, and thus an unknown portion of the population was excluded. There was a high degree of variability in the data on the DSQ and some of the DCQ subscales, reflecting the fact that the data were positively skewed and had some outliers. There were a minority of people who produced high scores on the measures which influenced the central tendency and spread of data, even though most of the scores were in the low range. The median and interquartile ranges may have provided a better summary of the data, however, central tendency data were reported to permit across-study comparisons. The driving anxiety measures only had moderate correlations with trait anxiety, suggesting that driving anxiety is not a subtype of a more generalised form of anxiety. An additional limitation relates to the problems raised by some researchers in terms of the validity of self-report measures when assessing driving behaviour using questionnaires which can be more vulnerable to socially desirable responses than observational methods (Lajunen & Summala, 2003). Given the nature of the study, it would have been costly and time-consuming to use observational methods, and self-report was considered the best method of data collection for the present study. Nevertheless, in research investigating social desirability response tendencies on a self-report driving measure, measures of driving behaviour and attitudes were fairly reliable if the anonymity of participants and confidentiality of the treatment of information are emphasised (Lajunen & Summala, 2003), which was the case in the present study.

Despite these limitations, the present study indicates that a more systematic investigation of the prevalence of driving anxiety and fear in the population is needed. It has provided preliminary confirmation that there are low levels of anxiety and fear about driving in the

general community when compared with people who consider themselves to be fearful of driving, but also a smaller group with moderate to extreme self-reported driving fear that is likely to affect psychological functioning and the ability to engage in daily tasks such as work and social activities. There were noticeable differences in men's and women's levels of driving anxiety, fear, and avoidance. A larger study with a representative New Zealand sample is needed in order to replicate these findings and establish the prevalence of driving anxiety and fear. Further research is also needed to examine what it is about certain driving situations that cause driving anxiety. For example, if a person is anxious about driving on a motorway, are they anxious about high speed, heavy traffic, or some other characteristic of the driving situation? Furthermore, what is it specifically about speed or heavy traffic that is anxiety-provoking? Is it because they believe they may cause an accident, or that they may drive in a way that makes other drivers angry? These different interpretations have implications for the treatment of driving anxiety, such as whether to focus treatment on increasing exposure to motorways, or learning how to manage speed safely, for example. Answers to these questions would provide further knowledge about the characteristics of driving anxiety and could have implications for the focus of treatment for clinical samples.

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# Wanna drive? driving anxiety and fear in a New Zealand community sample

Taylor JE

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