

# Survival confidence of New Zealanders in outdoor and post-earthquake situations

*Smith and Walton argue that New Zealanders may be overconfident in their abilities in an emergency scenario they have not experienced.*

## Abstract

Three hundred and sixty three participants (233 from New Zealand, 130 from overseas) were surveyed on their preparedness for, and confidence at performing tasks in two hypothetical scenarios; being lost in the bush and losing their home after an earthquake. Participants compared their abilities to those of the average person from their own country. In the bush scenario, 67% of New Zealanders and 69% of those from overseas showed an optimism bias by rating themselves better than average. However, in the earthquake scenario 72% of New Zealanders and only 33% of those from overseas showed this bias. The difference in confidence between scenarios can be explained by the likelihood of having experienced the scenario examined, and it is suggested that New Zealanders may be overconfident in their abilities in a scenario they have not experienced.

## Introduction

New Zealand is a country with a history of significant risks of natural disaster, representing a range of different disaster types (including tsunami, earthquake, storms, and volcanic activity). Due to its geographical position on a number of major fault lines, residents of the city of Wellington are particularly aware of the threat of a damage-causing earthquake. Extensive education campaigns in the community, schools and workplaces emphasise the need to plan for such events and include the message that individuals will likely need to be self-sufficient for at least three days (Get Thru website, 2008). A recent survey prepared for the Greater Wellington Regional Council suggests that over three quarters of households could remain self-sufficient for more than 3 days (van Schalkwyk & Hare, 2007), and further research suggests Wellingtonians are better prepared than the New Zealand average (Colmar Brunton, 2008). The majority of preparation measures

taken have been found to be “survival facilitation” (e.g. storing food and water), rather than “damage limitation” (e.g. fastening heavy objects; Spittal, McClure, Siegert & Walkey, 2008) suggesting that it is survival preparation that is most salient in people’s minds.

The majority of Wellington survey respondents also said they would expect to be responsible for themselves, both in the early stages of (83%), and immediately following (71%; van Schalkwyk & Hare, 2007) a disaster. This finding is further supported by the result that 98% of respondents in the Colmar Brunton (2008) survey agree it is their responsibility to look after themselves; although if looking for help from outside sources, the majority of respondents would expect to go to neighbours or the fire service (both 80%), followed by Civil Defence (77%) and the police (70%). These findings fit with the patterns shown by actual disaster survivors, but are contrary to the results of a study by Wenger, Dykes, Sebok and Neff (1975) examining the expectations of participants who have not experienced a disaster. In this case almost half of respondents believed survivors would go to aid agencies such as the Red Cross first.

New Zealand is also known as a country that has large national parks and resources for camping in bush areas. There are around 1000 managed camping areas in New Zealand, half of which are privately owned (Department of Conservation, 2006). New Zealanders are perceived by many overseas as having extensive experience in the outdoors, and this is an opinion also shared by many residents. A report of focus group research conducted for Auckland Regional Council showed camping was regarded as being part of the “New Zealand way of life” (Mobius, 2006). Outdoor education is a key part of the curriculum in New Zealand schools, and data suggests over one third of New Zealanders are regular campers (Department of Conservation, 2006). Based on this research, we are interested in whether New Zealanders are more confident in both camping and earthquake survival tasks than those from overseas.

As well as comparing the confidence of New Zealanders to that of overseas participants, it is of interest whether participants believe they are more competent than the average person from their own country. Previous

studies in a New Zealand context have examined the relationship between earthquake preparedness and social psychological constructs including attributions, locus of control and risk taking (see McClure, Allen & Walkey, 2001; Spittal et al., 2008; McClure, Walkey & Allen, 1999; Spittal, Siegert, McClure & Walkey, 2002), and various scales of preparedness have been created (e.g. Spittal, Walkey, McClure, Siegert & Ballantyne, 2006). In this study, we examine “better than average” effects or optimism biases; studies in other areas of research (e.g. De Joy, 1989) have found that most participants rate themselves higher than the average on a range of tasks, despite this being statistically unlikely for many (Moore, 2007). For example, in the area of driver confidence, the majority (usually ranging between 70 and 80%) of people believe their driving ability to be greater than that of the average driver (e.g. Svenson, 1981; McCormick, Walkey & Green, 1986; Walton & Bathurst, 1998), with similar effects seen in areas such as financial investment (e.g. Bhandari & Deaves, 2006) and the assessment of personality traits (e.g. Kanten & Teigen, 2008). It has been noted by researchers that this “better than average” effect tends to be limited to common abilities, while rare behaviours show opposite “worse than average” effects (Moore, 2007). In this case, one of our scenarios could be seen as common, with one uncommon; however the tasks required to be performed are consistent across scenarios. It is therefore of interest how participants will rate their abilities at similar tasks in two quite different situations compared to the average person.

As earthquakes have been found to be the highest recalled natural hazard, and that rated as having the largest effect on the area by Wellington residents (van Schalkwyk & Hare, 2007) this event was chosen as the natural hazard situation for this study. We suggest that there are a number of skills and attributes that people with experience in the outdoors may be able to apply to survival after an earthquake. For example, being able to cook a meal in the open should translate between the two situations. This study tests this theory by comparing a group that is typically regarded as having good outdoor knowledge (New Zealanders) to those from different countries that perhaps have less experience (tourists or recent immigrants to New Zealand), and determining how well these skills transfer. This research will also test New Zealanders’ perceptions of their own disaster preparedness, and whether they themselves a) believe they do possess these skills, and b) make the connection between the two scenarios. However, most importantly, comparisons with the “average” person from the participants’ country will allow for the identification of any “better than average” effect or optimism bias. Finally, any differences between groups in who they would rely on if needing assistance in either situation will be examined. Actual disaster survivors have been shown to go to family and friends first, but this is contrary to the expectations of participants who had

not experienced a disaster in a study by Wenger, Dykes, Sebok and Neff (1975). In this case almost half of respondents believed survivors would go to aid agencies such as the Red Cross first.

Within this context a number of hypotheses can be generated. First, we expect that New Zealanders will be relatively well-equipped for a disaster, with many having camping equipment that could be used in a disaster scenario. Second, we expect that the majority of participants will be confident of surviving around 2-3 nights in both the bush and after an earthquake, but that New Zealanders may think they can last longer than others. Third, in line with previous research, it is expected that participants will judge themselves as more confident in all survival tasks than the average person; however, this may vary across cultures, or due to the rare nature of disasters, may not be seen in this case. Finally, we expect there to be cultural differences found in what groups participants would rely on for emergency assistance; overseas participants are expected to rely more on agencies such as the Red Cross, while those from New Zealand are expected to rely more on looking after themselves.

## Method

### Participants

Three hundred and sixty three participants were recruited for the study during a public holiday weekend earthquake exhibition at Te Papa, New Zealand’s national museum. When asked where they were from, 233 were from New Zealand, with 130 from overseas (organised by geographical region in Table 1). Of those that were from New Zealand, 62% had lived in New Zealand all their lives, with 24% living in New Zealand for most of their lives. Males formed 52% of the sample, while 48% were female, with an average age of 36 years overall.

**Table 1. Home regions of overseas participants.**

Region	Number	%
United Kingdom	40	31
United States/Canada	28	22
Europe	21	16
Australia	19	15
Other (predominantly Asia)	22	17

**Materials**

A Computer Assisted Personal Interviewing (CAPI) survey was used that consisted of two sections. The first two sections were based on either an outdoor survival, or a natural disaster situation, and included questions about experience, future likelihood, equipment and skills participants felt they possessed. Participants were asked to evaluate their skills at three tasks (building a shelter, disposing of their waste and cooking a meal), as well as the skills of the average person from their country.

Surveys were counter-balanced so that half of the participants were presented with the camping-related questions first and the other half with the natural disaster questions first. Questions were mirrored as much as possible for each situation to allow direct comparison. For example, the items “If you were lost in the bush, how long do you believe you could survive on your own?” and “After a major earthquake, how long do you believe you could survive on your own?” both had the answer options of “I could not survive overnight”, “1 night”, “2-3 nights”, “1 week or more”. The survey also included general demographic questions on age, gender and household living situation.

**Results**

**Kit contents**

A high number of New Zealanders have some camping equipment (72%), slightly more than those from overseas (66%). Overall, New Zealanders are quite well-equipped for a disaster, with 65% suggesting they had some level of survival kit. This compares to 57% of those from overseas. However, many of the participants did not make the link between the uses of supplies across situations. Of those that said they had a gas cooker for camping, 26% suggested that they did not have a bbq or gas cooker for an emergency. Of those that said they had a tent for camping, 41% said they did not have an emergency shelter, and 28% of those that owned a sleeping bag said they did not have blankets or bedding for an emergency.

**Survival ability**

New Zealand and overseas participants were not significantly different in their estimates of how long they could survive in the bush alone, with both having a median estimate of 2 to 3 nights. However chi-square analyses revealed that overseas participants were more likely than New Zealand participants to estimate that the average person from their country could survive for a week or more,  $2(2, N = 347) = 9.258, p < .05$  (19% compared to 8%). There were no significant differences found in estimates of how long participants could survive after an earthquake with both groups estimating a median of 1 week or more. Median estimates of the amount of time for the average person from the participant’s country were lower, at 2 to 3 nights for both groups.

**Confidence**

Participants’ ratings of their confidence at performing the 3 survival tasks in each scenario were compared to their ratings of the average person from their country’s confidence. From these comparisons, 3 groups were formed; those that believed they were less confident (worse), those that believed they were the same (average), and those that believed they were more confident (better) than the average person from their country. The results for the bush survival task are included in Table 2 below.

**Table 2. Chi-square analysis of participants’ self-other comparisons for the three bush survival tasks**

Self-other comparison	Country of origin	
	New Zealand	Overseas
Worse than average	24% ASR = 1.0	19% ASR = -1.0
Average	9% ASR = -.8	12% ASR = .8
Better than average	67% ASR = -.4	69% ASR = .4

ASR = Adjusted standardised residual

The majority of participants from both groups believed they would be better than the average person at performing these tasks. This result did not differ significantly between the New Zealand and overseas groups,  $2(2, N = 363) = 1.30, p > .05$ . Results for the same tasks in the earthquake scenario are included in Table 3 below.

**Table 3. Chi-square analysis of participants’ self-other comparisons for the three earthquake survival tasks**

Self-other comparison	Country of origin	
	New Zealand	Overseas
Worse than average	17% ASR = -8.1*	58% ASR = 8.1*
Average	12% ASR = .7	9% ASR = -.7
Better than average	72% ASR = 7.1*	33% ASR = -7.1*

ASR = Adjusted standardised residual;  
\* = significant effect

Those in the New Zealand group were significantly more likely to believe they would be better than average, and less likely to believe they would be worse than average, compared to those from overseas,  $2(2, N = 363) = 66.48, p < .001$ . In this case, the majority of New Zealanders

believed they would be better than average, while the majority of those from overseas believed they would be worse than average.

Further chi-square analyses were also performed to determine any effect of gender. There was no significant difference between males and females as to how likely they were to be above or below average in either scenario (bush,  $2(2, N = 347) = 4.21, p > .05$ ; earthquake,  $2(2, N = 347) = 2.05, p > .05$ ).

Finally, the effect of experience on confidence was also examined. In this case, those who rated themselves as average were excluded from the chi square analyses to maintain adequate cell counts. As shown in Table 4 below, experience in the bush made it more likely participants would rate themselves better than average at the most experienced level on the bush tasks, with those with little experience rating themselves worse,  $2(4, N = 318) = 32.23, p < .001$ . However, experience with disasters showed no significant effect,  $2(3, N = 258) = 7.08, p > .05$ .

**Table 4. Chi-square analysis of the effect of experience on participants' self-other comparisons for the three bush survival tasks**

	Self-other comparison	
	Worse than average	Better than average
Outdoor experience		
I regularly spend nights in the bush	1% ASR = -2.4*	10% ASR = 2.4*
I have spent a night in the bush before	24% ASR = -3.2*	44% ASR = 3.2*
I regularly make day trips in the bush	8% ASR = -.5	10% ASR = .5
I have spent the day in the bush before	33% ASR = 1.4	25% ASR = -1.4
I have never spent any time in the bush before	33% ASR = 4.8*	10% ASR = -4.8*

ASR = Adjusted standardised residual;  
\* = significant effect

**Emergency assistance**

A series of chi-square analyses were conducted to compare rescue expectations across groups in the two situations (see Table 5). Some categories from the survey were collapsed or excluded to maintain adequate cell counts for these analyses.

**Table 5. Chi-square analyses of participants' own and estimates of others' expectations for assistance in each situation.**

Agency responsible in each situation	Country of origin	
	New Zealand	Overseas
<b>Responsible for getting you out of the bush (self)</b>		
Yourself	51% ASR = -2.5*	65% ASR = 2.5*
Police and/or other emergency services	6% ASR = -.7	8% ASR = .7
Search and Rescue	43% ASR = 2.9*	27% ASR = -2.9*
<b>Responsible for getting you out of the bush (average)</b>		
Themselves	15% ASR = -1.7	23% ASR = 1.7
Police and/or other emergency services	25% ASR = -1.9*	34% ASR = 1.9*
Search and Rescue	60% ASR = 3.0*	43% ASR = -3.0*
<b>Responsible for your welfare after a disaster (self)</b>		
Yourself, family, friends and neighbours	66% ASR = .8	61% ASR = -.8
Police and/or other emergency services	7% ASR = -3.3*	21% ASR = 3.3*
Local council/Civil Defence	27% ASR = 1.4	18% ASR = -1.4
<b>Responsible for your welfare after a disaster (average)</b>		
Themselves, family, friends and neighbours	19% ASR = .2	18% ASR = -.2
Police and/or other emergency services	32% ASR = -3.7*	57% ASR = 3.7*
Local council/Civil Defence	43% ASR = 4.9*	10% ASR = -4.9*
Other organisations e.g. Red Cross, Armed Forces	6% ASR = -2.4*	15% ASR = 2.4*

ASR = Adjusted standardised residual;  
\* = significant effect

If lost in the bush, the majority of participants named themselves or Search and Rescue as being responsible; however overseas participants were more likely to believe they were responsible for getting themselves out than New Zealand participants, and less likely to rely on Search and Rescue,  $2(2, N = 347) = 8.40, p < .05$ . Both groups nominated Search and Rescue as being the most likely choice for the average person, however overseas participants are also more likely to believe that the average person from their country would rely on police and emergency services and less likely to rely on Search and Rescue  $2(2, N = 347) = 9.24, p < .05$  than New Zealand participants.

After an earthquake, all participants were most likely to rely on themselves and their family, although participants from overseas were more likely to rely on police and emergency services than those from New Zealand,  $2(2, N = 277) = 11.42, p < .05$ . Emergency services and civil defence were the most commonly named choice for the average person from both groups, however, overseas participants were also more likely to believe that the average person from their country would rely on police and emergency services, as well as other organisations such as the Red Cross or armed forces, and less likely to rely on local council or civil defence assistance,  $2(3, N = 288) = 29.54, p < .001$  than New Zealand participants.

## Discussion

As predicted, New Zealanders were reasonably well-equipped for a disaster, although so were participants from overseas. Slightly more New Zealanders did have camping equipment, however, this did not always translate across situations in the minds of participants; many did not make the link that having camping supplies therefore means they have resources for disaster survival. Despite counterbalancing the survey to remove any effect of being exposed to one scenario influencing the other, over 40% of respondents did not realise that the tent they have for camping could act as an emergency shelter in a disaster. This result has possible impacts on disaster preparedness education, suggesting it could be emphasised that many items already in households such as tents and portable cookers could be used in a disaster if stored correctly when not in use. This type of approach could be useful in increasing preparedness as research has shown that more people know what they need to do, they just lack the urgency to actually put it in place (Dew, 1999) so recognising what they already have available would be a good start to increasing preparedness. Our prediction of how long participants believe they could survive unaided proved to be slightly conservative. Participants from both groups believed they could last 2 to 3 days in the bush scenario, but appear to be more confident in the earthquake scenario with most estimating a week or more. However participants rated the average person from their country lower, with estimates of 2 to 3 days in most cases. This point ties in to the examination of self-other comparisons, with an optimism bias being seen. In this case, it appears that the majority of participants do rate themselves as better than average in their survival skill. This effect can also be described as overconfidence, or an example of an optimism bias. This result is in line with previous research that found an optimism bias in a New Zealand context where participants rated their preparedness better than average (Spittal, McClure, Siegert & Walkey, 2005).

This optimism bias was further shown in the self-other comparisons on the task confidence scales. As predicted, the majority of participants rated themselves better than

the average person for the bush survival tasks. According to Moore's (2007) argument, this can be expected, as this scenario can be considered relatively commonplace. However, being a less common situation, the results for the earthquake scenario are mixed; the optimism bias holds for New Zealand participants, but not for the overseas participants, who in fact show a "worse than average" effect. As Moore (2007) states, these "worse than average" effects are most often found for tasks that are not common. However, in this case, the scenario in which the tasks are set is uncommon, but the tasks themselves remain the same across the scenarios.

To some extent, this confidence shown by participants may in fact be justified, as experience was related to confidence in the bush survival task. In making judgements about how they would perform in hypothetical scenarios, past experience would be the easiest starting point for most participants. However, for the earthquake scenario, few (9% of New Zealanders, 6% of those from overseas) of the participants had experienced a serious natural disaster. This could explain the lack of an effect of experience on confidence in this scenario. Without a reference point for performance, it could be expected that participants would tend towards worse than or average performance ratings, which was the case for the overseas sample. For the New Zealand sample however, the optimism bias was still seen. With little past experience to base this on, it is suggested that New Zealand participants may be overconfident in their abilities. The scenario affects the confidence of overseas participants (most likely due to most not having experienced it before), but New Zealanders maintain an overconfidence as the tasks themselves are familiar, even if in a different setting.

Lastly, against our predictions, it was overseas participants who were more likely to rely on themselves in the bush scenario, while both groups suggested this was the case in a disaster. However, both groups suggested the average person from their country would rely on various authorities in both scenarios, and as expected, it was the overseas participants that were more likely to suggest that at least the average person would rely on the Red Cross in a disaster. The result for the average person is in line with the results of Wenger et al. (1975). However again overconfidence may have reduced participants suggesting they themselves would need assistance from agencies. This research sets a useful starting point for cross-cultural research in the area of emergency preparedness and other relevant survival skills, as well as another application for self-other comparisons in different cultures. However, while cross-cultural comparisons are made, there were no set controls on the samples, with the overseas sample encompassing a range of countries that in themselves could show differences if studied more systematically. It is suggested that future research could extend the research questions to more make direct comparisons between participants of different nationalities, rather than comparing New Zealanders to a group of others with a range of

nationalities. Despite its limitations, the results of this study have implications for both emergency management and social psychology in general. For emergency management, it suggests overconfidence could be an issue in the New Zealand population, and gives some insight into who New Zealanders will rely on, as well as how prepared they are for a disaster. From a wider perspective, these results present a further example of an optimism bias in one scenario, while also producing surprising results in another. It appears that for some people (those from overseas) the context of the tasks required affects confidence, while for others (those from New Zealand) it does not. Our interpretation of this finding is that New Zealanders are overconfident in their abilities in a scenario most have never experienced, but that may appear similar to a scenario many are accustomed to.

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