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R.A.C. Tarrant, Joint Centre for Disaster Research, Massey University/GNS Science,
PO Box 756, Wellington

D. M. Johnston, Joint Centre for Disaster Research, Massey University/GNS Science,
PO Box 30368, Lower Hutt

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ABSTRACT

This study investigated earthquake and tsunami preparedness in intermediate school children in relation to the socio-economic status (SES) of their families. SES was operationalised as the decile rankings of the schools. The survey comprised 852 children from five intermediate schools, deciles 2 to 10, in the Wellington region. Overall, lower decile schools appeared to be the least informed and the least prepared for hazards, suggesting that a school's decile ranking may be a key indicator in hazards education and preparedness. It is possible that differences between schools may be due to something other than SES, but the relationship between SES and hazards-preparedness in this study cannot and should not be ruled out at this point. This is particularly so, given findings in previous studies demonstrating relationships between SES and educational outcomes. Since the decile ranking of schools generally reflects the SES of the surrounding area (Ministry of Education, 2010), it appears that low SES communities at large may generally be in the greatest need of hazards education and support for hazards preparedness. A study comprising a greater number of schools across a range of deciles is required to further explore the relationship between school decile ranking and school children's hazards-preparedness.

KEYWORDS

Hazards, earthquake, tsunami, preparedness, school children, socio-economic status

1.0 INTRODUCTION

New Zealand, situated in the South Pacific basin, comprises three main islands and is traversed by over 300 active faultlines, making a large part of the country at risk of a significant earthquake (Berryman, 2005). Areas of greatest risk for tsunami are “along both the east coasts of the North and South Islands, and in Northland and Coromandel” (Berryman, 2005, p. 7).

In the course of their lives, people living in New Zealand typically travel near beaches, rivers, lakes and mountains as they pursue leisure, private or business activities. Thus, the population at large is potentially vulnerable to a range of natural hazards, and needs to be prepared to cope in a significant event.

From their first entry to school, children need to be taught about the potential risk and the nature of hazards, and how to cope in a significant earthquake or tsunami event. Ongoing hazards-education through the school years is likely to flow on to the children’s families, stimulating awareness and preparedness at home and, ultimately, in the wider community. In Ronan, Johnston, Daley, and Fairley’s (2001) study of the effects of hazard education programmes among 5-13 year olds in Auckland, New Zealand, children who had been exposed to a teacher-taught hazards-education programme were more likely to have a family emergency plan and to have practised this at home. They were also more likely to discuss hazards with their parents, and to have a greater general knowledge about hazards. Therefore, as Ronan and Johnston (2005, p. 95) point out, “hazards education in school can play a vital role” in preparing a community to respond in the event of a disaster.

Children’s sense of security and control can be undermined by exposure to a major disaster (Shen & Sink, 2002). Preparedness in the form of hazard education in schools has been shown to reduce children’s anxiety surrounding hazards, and to increase their sense of control and ability to cope in the event of a major disaster (Ronan & Johnston, 1999).

Children benefit from their parents being interested in their children’s schooling. Parental interest could include follow-up discussions of what has been happening at school and, in the case of hazards education, taking family action on best-practice advice for hazards-preparedness at home. In socioeconomically disadvantaged homes, parents involvement in their children’s education becomes even more important, particularly involvement for fathers (Hango, 2007). Hango states that the impact of socioeconomic disadvantage can be reduced by children’s fathers becoming involved in their schooling, especially for children aged around 11 years (i.e., Intermediate school age in New Zealand). It also makes intuitive sense that children are more likely to engage in their schooling if they feel their parents are supportive of their education. However, many lower socio-economic families do not have the resources to support their children’s education in ways that may be available to children from higher socioeconomic backgrounds.

In a New Zealand study, Marie, Fergusson, and Boden (2008) investigated educational achievement in Maori children. Maori are the indigenous people of New Zealand, representing 14.6% of the total population of New Zealand (Total population: 4, 143, 279 as at the 2006 census count), (Statistics New Zealand, 2006). Maori children had significantly

lower levels of educational achievement than non-Maori children, but when socioeconomic factors were controlled, there was no statistically significant difference between Maori and non-Maori for educational outcomes. This finding supports Hango's (2007) claim that differences have been demonstrated in school achievement according to economic group status. Part of the group-difference can be attributed to the particular levels of cognitive stimulation at home, and the degree of parental involvement in children's schooling (McLoyd, 1998). Children's education and readiness to cope flows on to their families and the wider community, increasing the likelihood of better-prepared and safer homes and communities at large. The opportunity for children to receive hazards education at school may be particularly important for lower socio-economic status (SES) families in this respect. The relationship between SES and children's preparedness to cope with hazards is the focus of this study.

2.0 BACKGROUND TO THE STUDY

This study arises from an earlier, larger study by Tarrant and Johnston (2010) that investigated hazards-preparedness in Intermediate (Years 7&8) school children in Wellington, New Zealand. Incidental observation of data in the original study suggested that there may be a pattern of results related to decile rankings of the schools, though this was not investigated as part of the Tarrant and Johnston study. School decile rankings are calculated according to census information, and reflect the extent to which the school's pupils come from low socioeconomic communities, Decile 1 schools having the highest proportion of children from low socio economic families, and decile 10 schools, the lowest proportion (Ministry of Education, 2009). Thus, each school provides a snapshot of a particular SES group. This study analyses descriptive data from Tarrant and Johnston's study in relation to the schools' decile rankings which represent the SES composition of the schools.

3.0 AIM

This study is a preliminary investigation of Intermediate school children's perceptions, understanding, anxiety, and preparedness to cope in an earthquake or tsunami in relation to SES. The SES of the children represented in the study is operationalised by the decile ranking of the schools taking part in the study.

New Zealand schools are required to have preparedness plans in place for various types of emergencies, including those resulting from natural hazards (Ministry of Education, 2009). It is hypothesised that schools in the lower deciles will not be as well prepared as schools in the higher deciles to deal with an earthquake or tsunami event. It was expected that this study may provide some insight into gaps in preparedness according to the decile ranking of schools, accordingly relating to the socio-economic status of the families represented in the different schools.

4.0 METHOD

4.1 Participants

Five intermediate schools agreed to participate in the study, with 852 participants returning completed questionnaires. (Response rate: 35/40 classes, averaging 25 students per class.) The schools were situated in the Wellington region of New Zealand, an area bordered by sea on the west, east, and southern limits. The region is highly seismic, with four main active faults (Berryman, 2005).

The decile rankings of the five schools are as follows:

- Decile 2: Situated on a harbour on the western side of the Wellington region.
- Decile 4: Situated in a valley on the eastern side of the region
- Decile 6: Situated in the north of the region, and located one housing block from a major river.
- Decile 7: Situated in the north of the region, and located within two housing blocks of a major river.
- Decile 10: Situated inland, 8 kilometres north of Wellington CBD.

Ages of participants ranged from 10-12 years (plus four 13-year-olds), comprising 436 (52%) males, and 408 (48%) females. Participants identified their ethnicity as follows: NZ European 57%, Maori 23%, Pacific Island 7.5%, Asian 6%, other ethnicities 5%, unstated 1.5%.

4.2 Measure

This study uses data obtained from Ronan and Johnston's (2001) self-administered questionnaire that was used in Tarrant and Johnston (2010). The questionnaire investigates children's perceptions and understanding of eight environmental hazards relevant to New Zealand (earthquake, tsunami, flood, storm with high winds, house fire, volcanic eruption, chemical spill or gas leak, and tornado). This study focusses on data relating to earthquake and tsunami in particular because it is important that children are prepared to deal with these hazards, as they live in a highly seismic region bordered by sea. The questionnaire also assessed: children's emotional responses to hazards; children's discussion rates with parents; children's exposure to hazards programmes; children's knowledge of facts and safety practices; and family preparedness for emergencies. (See Appendix for questions.)

4.3 Procedure

Invitations to participate in the study were sent to all 13 state (i.e., government-funded) Intermediate schools in the Wellington region, from the southern coast of the North Island as far as Upper Hutt in the north, and from the west to east coasts.

Five schools, from deciles 2 to 10, agreed to take part, and individual questionnaires were provided for all the pupils of these schools. In total, questionnaires were provided for 40 classes, with most classes comprising about 25 pupils. Questionnaires were returned from 35 classes.

Intermediate school children were chosen for this study as they generally comprise a suitable group from whom to gather self-reported data, with most children at this level able to complete questionnaires independently following an initial introduction and explanation of the questionnaire from a class teacher.

5.0 RESULTS AND DISCUSSION

Presented below are results of intermediate school children's perceptions, understanding, anxiety relating to, and preparedness to cope in the event of an earthquake or tsunami. These results are presented in relation to the SES of the children's families, SES being operationalised by the decile ranking of the schools.

5.1 Perceived likelihood of an earthquake or tsunami occurring

The perception that an earthquake was "likely" (rather than there being "a chance", or that is was "unlikely") was highest in the decile 10 (65% of participants) and decile 7 (63%) schools, and lowest in the decile 2 (39%) and decile 4 (51%) schools (see Appendix for details of results). Thus the two highest decile schools reported the most realistic expectation of earthquake for this particular geographic region, and the two lowest decile schools reported the least realistic.

Overall, tsunami was rated as "unlikely" at home or school by 73% of participants, a reasonably realistic expectation, given that historically a tsunami has only rarely occurred in this part of New Zealand. Participants from the decile 2 school, situated on a harbour, reported the highest likelihood of a tsunami occurring, with 8.4% of the school perceiving a tsunami as "likely." In contrast, only 1.2% of the most inland school (decile 10) perceived a tsunami as "likely." Thus, expectations for a tsunami were reasonably realistic, and demonstrated an understanding of local risk factors.

5.2 Perceived harm from earthquake or tsunami

Ratings for the five schools for "likely" harm from an earthquake ranged from 37% to 52% of participants. The decile 2, 6, and 4 schools, respectively, perceived the least likelihood of being harmed by an earthquake. Thus compared with the two highest decile schools (10 & 7), the three lowest decile schools demonstrated a lowered awareness of the potential for an earthquake to cause harm in this region, which is earthquake-prone.

Ratings for the five schools for "likely" harm should a tsunami occur, ranged from 38% to 55%, with the lowest ratings for "likely" harm being reported by the decile 2 and decile 10 schools. The decile 10 school is situated inland, their location somewhat validating their response. However, the decile 2 school response is not consistent with the increased likelihood of this harbourside school being affected by a tsunami, perhaps suggesting gaps in the children's understanding of the nature of a tsunami.

5.3 Anxiety about earthquakes and tsunami

Children from the decile 4 and decile 2 schools reported the least anxiety concerning earthquakes, with 17% and 18% of participants respectively, reporting they were “often” scared when talking or thinking about earthquakes (compared with the two highest rates for the decile 7 (24%) and 6 (21%) schools). The lower levels of anxiety in the two lower decile schools might be accounted for by the reported lower levels of understanding for these children regarding the potential dangers of earthquakes. That is, if the children did not appreciate the potential danger of earthquakes, there would be little reason to be anxious about them. Conversely, the higher levels of anxiety in children from the higher decile schools in this instance may actually reflect a more realistic level of anxiety regarding earthquakes, though further investigation is required to explore this possibility.

The two schools reporting the least anxiety about tsunami were the decile 4 school (23% reporting they were “often” scared), and the decile 10 (inland) school (22%). The highest anxiety was reported by the decile 2 school (31%), situated on a harbour and realistically exposed to the greatest risk of tsunami. The decile 4 school is not located in a tsunami zone.

The highest and the lowest decile schools (10 & 2) reported the two highest scores (i.e., a score of 5, 6 or 7 on a 7-point Likert scale: see Appendix) for the percentage of participants believing they had the ability to reduce their own distress if they were upset about a hazard: 61% and 59% respectively. Likewise, these two schools reported the highest scores for their families being able to help them reduce their distress (decile 10: 83%; decile 2: 76%). For these two SES groups, the dependence on self or family, rather than on the school for help, appears consistent with the independence frequently associated with higher SES groups (who often have considerable intrinsic resources) and, perhaps paradoxically, with the less privileged nature of lower SES groups (who often have fewer intrinsic resources, but still tend to depend on themselves, rather than to seek “outside” support: Perilla, Norris, & Lavisso, 2002).

In contrast to a question that referred to earthquakes in general terms (Question 5), participants were asked how they felt if they had experienced a “scary earthquake,” (Question 10). The two lowest decile schools (2 and 4) reported the highest levels of fear. The least fear was reported by the decile 10 school. Fear levels were consistent with the amount of earthquake study at these schools in the last two years, with more earthquake study (at the decile 10 school), see below, being associated with lower levels of fear.

5.4 Hazards education programmes

The decile 10 (82%) and decile 7 (80%) schools reported the greatest number of participants who had been involved in more than one hazards education programme. There was a drop in involvement to the other three schools who were all clustered from 67% to 72% of participants having been involved in more than one hazards education programme.

Overall, most participants (70%) knew the cause of earthquakes, but there was considerable difference between the highest scoring school, decile 10, where 86% of participants correctly identified cause, and the lowest scoring school, decile 2, where only 53% identified cause. Most participants knew best practice in an earthquake. The decile 10 school was the only

school where 100% of participants identified either sheltering under a table, or curling as best practice. The next highest response for sheltering or curling was reported by the decile 7 school (99%). The lowest scoring schools were the decile 2 school (92%) and the decile 4 (88%). While differences between schools were reasonable small, once again the lower decile schools were not as well informed as the higher decile schools on best practice in an earthquake.

Overall, most participants (85%) knew the cause of tsunami, but there was considerable difference between the highest scoring school, decile 10, where 97% knew the cause, and the lowest scoring school, decile 2, where only 67% identified cause. Overall, knowledge of best practice was greatest in the higher decile schools, with consistently fewer participants knowing best practice as the decile ranking of the schools decreased. This result occurred even though the lowest decile school, decile 2, reported the greatest exposure to “seeing something about tsunami” on television.

While school results for earthquake knowledge of cause and best practice were consistent with the degree of earthquake study at school in the last two years, the pattern of results for tsunami understanding were slightly varied. The lowest decile school (decile 2) had the second-most respondents who had studied tsunami at school in the past two years (decile 4, reported the lowest), but the decile 2 school scored lowest for tsunami-knowledge and -best practice. The nature of the tsunami education programme in the decile 2 school is not known, but again the lowest decile school scored lowest on tsunami-understanding.

The decile 10 and 7 schools reported the greatest percentage of participants discussing earthquakes with parents, and the two lowest decile schools reported the least. For discussion of tsunami with parents, again the decile 10 school reported the highest percentage of participants, followed by the decile 2 school. The decile 4 school reported the least discussion with parents. The increased discussion for the decile 2 school regarding tsunami might be explained by the school being situated on a harbour and the children perceiving greater personal relevance for tsunami education, though this possibility is not known. It is important that schools encourage children to talk about hazards and preparedness at home. Such discussion is important in terms of flow-on effects for hazards preparation in the wider community (Ronan & Johnston, 2005).

5.5 Preparedness at school and home for dealing with hazards

Overall, home preparedness for dealing with hazards was greatest in the highest decile school, and least in the lowest decile school, with preparedness reducing uniformly in relation to the lower decile ranking of the schools.

Participants were asked if they had practised for an emergency at school. The decile 10 school reported the highest percentage, followed by the decile 4 school. The lowest percentages were reported by the decile 7 and 2 schools respectively. Once again the highest decile school appears the most prepared, and the decile 2 school is among the least prepared.

Participants were asked if their family had an emergency plan at home, if their family had arranged a place to meet in an emergency, and if they knew who would collect them from school in an emergency. A consistent response-pattern emerged for these home-

preparedness questions, with the two highest decile schools reporting the greatest preparedness, and the two lowest decile schools reporting the least. Participants from the two lowest decile schools also reported the least parental willingness to prepare for hazards at home.

6.0 CONCLUSION

Overall, lower decile schools tended to be the least informed and the least prepared for dealing with hazards, suggesting that a school's decile ranking may be a key indicator in hazards education and preparedness. Though small, this study reveals findings consistent with previous studies (e.g., Hango, 2007), demonstrating a relationship between SES and educational outcomes, in this case, hazards education outcomes. Since the decile ranking of schools generally reflects the SES of the area surrounding the school (Ministry of Education, 2010), low SES communities at large may be in the greatest need of hazards education and support, including a need for input from emergency management agencies in their own communities.

7.0 LIMITATIONS, AND SUGGESTIONS FOR FURTHER STUDY

Although this study arose from an earlier, larger study (Tarrant & Johnston, 2010) comprising 852 participants, these participants represented only five schools. It is possible that differences between schools may be due to something other than SES, but the relationship between SES and hazards-preparedness in this study cannot and should not be ruled out at this point. This is particularly so, given findings in previous studies (discussed earlier) demonstrating relationships between SES and educational outcomes. Thus a study comprising a greater number of schools across a range of deciles is required to further explore relationships between school decile ranking and the children's hazards-preparedness. If lower decile schools are confirmed as generally less well prepared to cope with hazards, it will be important to investigate which types of support are most useful to support hazards preparedness in lower decile schools and, by extension, in their lower SES communities.

Ethnicity was not investigated in this study. However, given the generally lower socio-economic status of Maori and Pacific Island peoples (according to the 1996 New Zealand census data cited in Howden-Chapman, Wilson, and Blakey, 1999), it is also important to consider the possible impact of ethnic variation within schools as a factor in school learning outcomes (see Hango, 2007 as mentioned earlier). Ethnic variation in communities is reflected in schools, and further studies are also required to investigate effects of ethnicity on hazards-preparedness in schools and, by implication, in the associated communities.

8.0 REFERENCES

- Berryman, K. (2005). *Review of Tsunami Hazard and Risk in New Zealand* (Client Report 2005/104: Ministry of Civil Defence & Emergency Management). Lower Hutt, NZ: Institute of Geological & Nuclear Sciences.
- Hango, D. (2007). Parental investment in childhood and educational qualifications: Can greater parental involvement mediate the effects of socioeconomic disadvantage? *Social Science Research*, 36, 1371-1390.
- Howden-Chapman, P., Wilson, N., & Blakey, T. (1999). *Social inequalities in health—New Zealand*. Retrieved 3 March 2010 from: www.moh.govt.nz/moh.nsf/0/.../SIHch8.pdf
- Marie, D., Fergusson, D. M., & Boden, J. M. (2008). Educational achievement in Maori: The roles of cultural identity and social disadvantage. *Australian Journal of Education*, 52 (92), 183-196.
- McLoyd, V. C. (1998). Socioeconomic disadvantage and child development. *American Psychologist*, 53 (2), 185-204.
- Ministry of Education (2009): *Emergency management planning, Worksafe at schools*. Retrieved 20 November, 2009 from: <http://www.minedu.govt.nz/Boards/LegalObligations/EmergencyManagementPlanning.aspx>
- Ministry of Education (2010) Decile ratings. Retrieved 26 April, 2010 from: <http://www.minedu.govt.nz/NZEducation/EducationPolicies/Schools/SchoolOperations/Resourcing/ResourcingHandbook/Chapter1/DecileRatings.aspx>
- Perilla, J. L., Norris, F. H., & Lavisso, E. A. (2002). Ethnicity, culture, and disaster response: Identifying and explaining ethnic differences in PTSD six months after Hurricane Andrew. *Journal of Social and Clinical Psychology*, 21(1), 20-45.
- Ronan, K.R. & Johnston, D.M. (1999). Behaviourally-based interventions for children following volcanic eruptions: An evaluation of efficacy. *Disaster Prevention and Management*, 8, 169-176.
- Ronan, K. R. & Johnston, D. M. (2001). Correlates of hazards education programs for youth. *Risk Analysis*, 21, 1055-1063.
- Ronan, K. R., Johnston, D. M., Daly, M., & Fairley, R. (2001). School children's risk perceptions and preparedness: A hazards education survey. *Australasian Journal of Disaster and Trauma Studies*, 1 (on-line journal URL <http://massey.ac.nz/~trauma/>)

Ronan, K.R & Johnston, D.M. (2005). Promoting community resilience in disasters: The role for schools, youth and families. New York: Springer.

Shen, Y.J. & Sink, C.A. (2002). Helping elementary-age children cope with disasters. *Professional School Counseling*, 5(5), 322-331.

Statistics New Zealand (2010). Retrieved 21 June 2010 from: <http://www.stats.govt.nz/Census/2006CensusHomePage/QuickStats/quickstats-about-a-subject/culture-and-identity/maori.aspx>

Tarrant, R.A. & Johnston, D. M. (2010). Preparedness to cope with hazards: A survey of Wellington Intermediate schools. *GNS Science Report 2010/02*: GNS Science.

APPENDIX RESPONSES TO QUESTIONS BY DECILE RANKINGS OF SCHOOLS

No.	Question	Decile	(%)	Decile	(%)	Decile	(%)	Decile	(%)	Decile	(%)
1.	Earthquake "likely"	10	(65)	7	(63)	6	(52)	4	(51)	2	(39)
2.	Tsunami "likely"	2	(8.4)	4	(5.2)	7	(2.4)	6	(2.6)	10	(1.2)
3.	Earthquake will harm me	7	(52)	10	47	2	(43)	6	(40)	4	(37)
4.	Tsunami will harm me	7	(55)	6	(44)	4	(41)	10	(38)	2	(38)
5.	"Often" scared about EQ	7	(24)	6	(21)	10	(21)	2	(18)	4	(17)
6.	"Often" scared about tsunamis	2	(31)	6	(26)	7	(24)	4	(23)	10	(22)
7.	Able (Score =5-7) to help self feel less upset	10	(61)	2	(59)	6	(56)	4	(53)	7	(50)
8.	Family able (Score =5-7) to help child to feel less upset	10	(83)	2	(76)	7	(74)	4	(73)	6	(72)
9.	School able (Score =5-7) to help child to feel less upset	7	(46)	4	(46)	6	(43)	10	(41)	2	(31)
10.	Very scared (Score=7) in an earthquake	2	(14)	4	(14)	7	(8.9)	6	(8.4)	10	(5.2)
11.	Feels "awful" when thinking about EQs	2	(13.6)	6	(9.9)	10	(6.5)	7	(5.7)	4	(5.6)
12.	Involved in one or more hazards educ progs	10	(82)	7	(80)	2	(72)	6	(70)	4	(67)
13.	Correctly identified cause of an earthquake	10	(86)	6	(70)	4	65	7	(64)	2	(53)
14.	Correctly identified best practice in an earthquake	10	(100)	7	(99)	6	(93)	2	(92)	4	(88)
15.	Correctly identified cause of tsunami	10	(97)	6	(88)	4	(82)	7	(79)	2	(67)
16.	Correctly identified best practice in a tsunami	10	98	7	89	6	(89)	4	(82)	2	(81)
17.	Studied EQ at school in last 2 yrs	10	(67)	7	(60)	6	(57)	2	(52)	4	(46)
18.	Studied tsunamis at school in last 2 yrs	10	(41)	2	(33)	6	(32)	7	(26)	4	(24)
19.	Has seen something about tsunami on TV?	2	(94)	10	(92)	6	(90)	4	(85)	7	(85)
20.	Has discussed EQs with parents?	10	(74)	7	(74)	6	(65)	4	(53)	2	(50)
21.	Has discussed tsunamis with parents?	10	(39)	2	(35)	7	(33)	6	(28)	4	(28)
22.	Have practised for emergency at school	10	(92)	4	(84)	6	(82)	2	(79)	7	(77)
23.	Has home emergency plan	10	(41)	7	(36)	6	(29)	4	(24)	2	(22)
24.	Family has arranged place to meet in emergency	7	(34)	10	(24)	6	(22)	2	(21)	4	(20)
25.	Know who will collect from school in emergency	10	(50)	7	(50)	6	(49)	4	(41)	2	(38)

1. How likely is it that an earthquake will occur around your home or school in the future? (“Likely” or “A chance” or “Unlikely”)
2. How likely is it that a tsunami will occur around your home or school in the future? (“Likely” or “A chance” or “Unlikely”)
3. If an earthquake did occur around your home or school in the future, how likely is it that it could hurt you? (“Likely” or “A chance” or “Unlikely”)
4. If a tsunami did occur around your home or school in the future, how likely is it that it could hurt you? (“Likely” or “A chance” or “Unlikely”)
5. How much does thinking or talking about earthquakes scare or upset you? (“Not at all”, “Sometimes”, “Often”)
6. How much does thinking or talking about tsunamis scare or upset you? (“Not at all”, “Sometimes”, “Often”)
7. If hazards occur, some kids and adults get upset. That’s normal. If you got upset, do you think you would be able to help yourself feel less upset? [1 (not at all), 2, 3, 4 (A bit), 5, 6, 7 (Completely able)]
8. If hazards occur, some kids and adults get upset. That’s normal. If you got upset, do you think your family would be able to help yourself feel less upset? [1 (not at all), 2, 3, 4 (A bit), 5, 6, 7 (Completely able)]
9. If hazards occur, some kids and adults get upset. That’s normal. If you got upset, do you think your school would be able to help yourself feel less upset? [1 (not at all), 2, 3, 4 (A bit), 5, 6, 7 (Completely able)]
10. If you’ve been in a scary earthquake, how scared were you? [1 (“A little bit”), 2, 3, 4 (“Pretty scared”), 5, 6, 7 (“Really really scared”)]
11. Generally speaking, which one of these sentences describes you best when you think about earthquakes?
 - 1 I’m not too worried about earthquakes really.
 - 2 I don’t like thinking about earthquakes very much.
 - 3 The thought of an earthquake makes me feel really awful.
12. How many separate education units or programmes do you think you’ve been involved in where you learnt about hazards or any disasters? (None, 1, 2, 3, 4, 5, over 5)
13. Circle the **very best** sentence below to explain what is happening during an earthquake:

During an earthquake rocks are moving.

During an earthquake the moon’s gravity pulls the sea.

During an earthquake tectonic plates are moving.

During an earthquake ultrasonic waves cause ground movement.
14. If you were inside and you felt an earthquake, which of the following things is the best thing to do during an earthquake?
 1. Run outside
 2. Get under a table or bed
 3. Curl into a turtle shape
 4. Stay exactly where you are and wait for it to be over.

(Note: Responses for answers 2 and 3 are combined in the results-table above.)
15. Tsunamis are large ocean waves that are caused by something big happening out in the ocean. Circle the **very best** sentence below to explain more clearly what happens out in the ocean to cause a tsunami:
 - 1 A tsunami happens because of ice melting at the South Pole.
 - 2 A tsunami happens because the earth is gradually changing over time.
 - 3 A tsunami happens because of an underwater earthquake or earth movement.

- 4 A tsunami happens because of global warming.
- 16.** What would be the very best thing to do if a tsunami was coming and you were at the coast?
1. Go inside or stay inside a building
 2. Run outside and take cover nearby
 3. Go inland and up a hill if you can
 4. Stay at the coast and watch for the sea wave to come
- 17.** Have you studied earthquakes at school in the last two years? (Yes or No)
- 18.** Have you studied tsunamis at school in the last two years? (Yes or No)
- 19.** Have you ever seen anything about a tsunami on TV? (Yes or No)
- 20.** Have you ever discussed earthquakes with your parents? (Yes or No)
- 21.** Have you ever discussed tsunamis with your parents? (Yes or No)
- 22.** Have you practised what to do in an emergency at school? (Yes or No)
- 23.** Does your family have an emergency plan that tells you what to do to be ready for an emergency? (Yes or Not sure or No)
- 24.** Have you and your family arranged a place to meet if you're away from home and there's an emergency? (Yes or No)
- 25.** In an emergency, do you know who is responsible for collecting you from school? (Yes or Not sure or No)



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Principal Location

1 Fairway Drive
Avalon
PO Box 30368
Lower Hutt
New Zealand
T +64-4-570 1444
F +64-4-570 4600

Other Locations

Dunedin Research Centre
764 Cumberland Street
Private Bag 1930
Dunedin
New Zealand
T +64-3-477 4050
F +64-3-477 5232

Wairakei Research Centre
114 Karetoto Road
Wairakei
Private Bag 2000, Taupo
New Zealand
T +64-7-374 8211
F +64-7-374 8199

National Isotope Centre
30 Gracefield Road
PO Box 31312
Lower Hutt
New Zealand
T +64-4-570 1444
F +64-4-570 4657