



Sleeplessness, Stress, Cognitive Performance, & Academic Performance Following the September 4th Earthquake

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Two studies investigated psychological effects of the September 4, 2010 Christchurch earthquake.

Method for Study 1

1. Questionnaire containing 33 items

Depression, Anxiety, Stress Scale - Short form
 DASS-21

Sleep-disruption questions (3)

Cognitive-disruption questions (5)

Positive experiences questions (4)

All used 4-point Likert response scales

2. Brief measure of Big-5 personality traits
 Seven-point Likert scales

3. Personal information & information about person & earthquake experience (e.g., property damage), plus information about hours of sleep, use of sleeping pills, use of health services, and plans to stay or leave Christchurch.

240 residents who experienced the quake, and 59 who had not experienced the quake responded (n = 299)

Method for Study 2

Academic records of 9313 students attempting courses in Semester 1 2010 and Semester 2 2010 were used to find the Grade Point Average (A+ = 9 to E = -1) results for each student.

Analysis of Variance was used to compare Semester 1 vs Semester 2 (i.e., pre vs post quake)
 Gender: Female vs Male
 Semester x Gender interaction.

The same data was gathered for the 2009 academic year for comparison

Table 1. Results comparing Earthquake (n = 240) and non-earthquake exposed (n = 59)

Measure	Earthquake	Non-Earthquake	d
Sleep disruption	1.57 (0.97)	0.47 (0.77)***	1.06
Positive experiences	1.44 (0.69)	0.64 (0.62)***	1.18
Average Stress	11.7 (9.6)	5.0 (8.0)***	0.73
Cognitive disruption	0.84 (0.68)	0.39 (0.52)***	0.69
Average Depression	5.8 (6.3)	2.4 (4.6)***	0.57
Average Anxiety	6.4 (8.1)	2.9 (5.3)**	0.46
Average hours sleep	6.7 (1.5)	7.1 (1.0)*	0.3

Results of two-tailed t-test shown: * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2. Results comparing scores for men (n = 118) and women (n = 119) who experienced the earthquake

Measure	Men	Women	d
Average Stress	6.9 (7.0)	16.6 (9.3)***	1.17
Cognitive disruption	0.51 (0.48)	1.16 (0.6)	1.1
Sleep disruption	1.12 (.89)	2.01 (0.82)***	1.03
Average Anxiety	3.0 (5.0)	10.0 (9.1)	0.95
Average Depression	3.2 (4.8)	8.4 (6.5)*	0.91
Average hours sleep	7.2 (1.3)	6.3 (1.5)	0.6
Positive experiences	1.28 (0.70)	1.60 (0.6)	0.48

Results of two-tailed t-test shown: * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3. Results comparing scores for those who did (n = 104) and did not (n = 132) experience some damage to their property

Measure	Damage	No damage	d
Cognitive disruption	0.99 (0.74)	0.72 (0.6)	0.4
Positive experiences	1.55 (0.69)	1.34 (0.6)	0.3
Average Stress	13.3 (10.2)	10.6 (9.0)	0.28
Average Depression	6.6 (6.9)	5.2 (5.7)	0.22
Average Anxiety	7.4 (8.5)	5.7 (7.7)	0.21
Average hours sleep	6.8 (1.4)	6.6 (1.5)	0.13
Sleep disruption	1.62 (0.96)	1.53 (0.9)	0.09

Results of two-tailed t-test shown: * $p < .05$; ** $p < .01$; *** $p < .001$.

