

# Stressing out?

## An exploration of stress in students in years 7 through 13

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### Abstract

Recent research by those working with young people has noted rising levels of stress and anxiety in children and adolescents. This study aimed to investigate the levels and sources of stress reported by students at an urban, multi-ethnic secondary school in New Zealand. Six hundred and ninety-seven students completed the Adolescent Stress Questionnaire (ASQ; Byrne, Davenport, & Mazanov, 2007). Students in this study were as stressed or more stressed than those in comparable studies in other countries, with girls significantly more stressed than boys. Analysis of subscale scores revealed the main sources of stress to be “school performance,” “school/leisure conflict,” and “future uncertainty.” With regard to ethnicity, Asian students’ scores were significantly lower than those of any other ethnic grouping. Results have implications for policy and practice in a variety of contexts, but especially in the school setting where reducing stressors and increasing support to stressed students is recommended.

**Keywords:** adolescent, levels, sources, stress, stressors

Stress is commonly understood as a negative response to “environmental events or chronic conditions that objectively threaten the physical and/or psychological health or well-being of individuals of a particular age in a particular society” (Grant et al., 2003, p. 449). As research progresses it is becoming clear that stress affects the entire human organism, both psychosocial and biomedical, in a dynamic model of action and interaction (Aldwin, 2007). Further, as a result of research in the neurobiological sciences, we are now aware that stress affects executive functions such as working memory and the ability to inhibit unhelpful impulses, thus negatively influencing daily life and school achievement (Blair, 2012).

While stress in adults has long been the subject of research, it is only recently that attention has been drawn to the experience of stress in children and adolescents

(Grant et al., 2003). Such interest has been prompted by a need to understand problematic behaviours observed in some young people, such as intentional self-harm, heavy drinking and the misuse of drugs, and early sexual experimentation—behaviours which have been identified as indicators of distress or attempts to manage stress (Albano, Chorpita, & Barlow, 2003; Carters & Byrne, 2013). In New Zealand, attention has been drawn to these issues in documents such as the Education Review Office report on school counselling Phase 1 and Phase 2 (ERO, 2013a; 2013b), and in publications from the Youth 2000 national youth health surveys completed in 2002, 2007, and 2012 (Adolescent Health Research Group, 2008; Clark et al., 2013).

Internationally, reviews of the literature conducted by Grant et al. (2003; 2004; 2006) have identified the association between stress and psychological problems in young people. However, measuring stress in young people has been problematic, showing little consensus with respect to definitions or what is being measured. In their review of over 500 studies, Grant, Compas, Thurm, McMahon, and Gipson (2004) found that the same instrument was used in only 3% of cases. Only 10% had used a well-validated measure, and study designs varied widely, meaning comparability across studies was difficult if not impossible. Compounding the issue has been the fact that until recently, adult measures have been adapted for use with young people, with a study by Ryan-Wenger, Sharrer, and Campbell (2005) showing little convergence between issues identified by adults as stressful for young people and those identified by young people themselves. In response to such problems, the Adolescent Stress Questionnaire (ASQ) was developed (Byrne, Davenport, & Mazanov, 2007) and has since been used in countries such as Australia, Norway, and China.

In New Zealand, few studies into stress in children or young people have been reported aside from Pienaar (2010), who investigated the nature of stress and coping in children of primary school age, and Jose and Ratcliffe (2004) who explored the relationship between stress and mental health outcomes in students aged 11 to 20 years. The results of the Youth 2012 National Survey of Wellbeing for Year 9 to Year 15 students (Clark et al., 2013), while not explicitly measuring stress, found the majority of young people reported good mental wellbeing, but significant numbers described depressive symptoms, self-harming, and suicidality.

This study aimed to contribute to the understanding of stress in young people

by identifying the levels and sources of stress experienced by students at an urban, multi-ethnic intermediate and secondary school in New Zealand.

## **Methods**

### *Research design*

A quantitative anonymous on-line survey was undertaken using the Adolescent Stress Questionnaire (ASQ; Byrne et al., 2007).

### *Setting and participants*

The study was conducted in a decile 8, urban, multicultural school, with years 7 to 13. All students on the school roll (N=980) were invited to participate. Six hundred and ninety-seven students (70%) completed the questionnaire.

### *Measure*

The ASQ (Byrne et al., 2007) is comprised of 54 items representing 10 subscales which measure factors such as Stress of Home Life and Stress of School Performance. Responses to items were measured using a five-point Likert-type scale ranging from “1= not at all stressful” through to “5= very stressful.” The ASQ has been used widely and found to be valid for a variety of populations including students in Australia, Norway, Europe, and China. In addition, demographic information including sex, age, and ethnicity, and whether or not they were born in New Zealand, was collected. The ASQ was piloted on a sample of students drawn from a neighbouring school to establish the validity and reliability of the questionnaire for the local population. Overall the young people had no problems reading and understanding the items. In addition, Cronbach alpha obtained for data from each of the 10 subscales in the current study were very similar to those reported by Byrne et al. (2007).

### *Procedure*

The survey was conducted over a two-week period in term 2 of the school year. Consent to undertake the research was given by the principal and board of trustees of the school. Participant Information Sheets were sent out to parents/caregivers and students with the school newsletter. Parents of students under 16 years of age were required to give written consent for their children to participate. The Participant Information Sheet was distributed to students one week prior to administration of

the survey and was presented again on-line at the beginning of the questionnaire. Thus, students were aware of the anonymous nature of the survey and that, in completing the questionnaire, they were consenting to participate in the research. At the conclusion students were reminded that, if completing the questionnaire had raised issues for them, they should contact one of the school counsellors or use the details in the Participant Information Sheet to contact a helpline.

The questionnaire was uploaded to Survey Monkey and completed by students during supervised health lessons or study periods.

## Results

**Table 1.** Demographic characteristics of participants

Demographic characteristic	Number	Percentage
<b>Gender</b>		
Female	365	52.4
Male	332	47.6
<b>TOTAL</b>	<b>697</b>	<b>100</b>
<b>Year level at school</b>		
Year 7 & 8	187	26.8
Year 9 & 10	239	34.3
Year 11, 12 & 13	271	38.9
<b>TOTAL</b>	<b>697</b>	<b>100</b>
<b>Ethnicity</b>		
NZ Euro/other European	316	47.5
Asian	241	36.2
Other*	108	16.3
<b>TOTAL</b>	<b>665</b>	<b>100</b>
<b>Country of birth</b>		
New Zealand	431	63.8
Other country	245	34.3
<b>TOTAL</b>	<b>676</b>	<b>100</b>

\*“Other” includes small numbers of students identifying with various ethnic groups including Māori, Pacific Islands, and South Africa.

### *Ethics*

Approval to conduct the study was granted by the University of Auckland Human Participants Ethics Committee, reference number 9291.

### *Data analysis*

Data were downloaded in an EXCEL spreadsheet, cleaned, and then imported into IBM SPSS 20 for analysis. Descriptive statistics were generated and Univariate and MANOVA were conducted to identify significant main effects and interactions.

As can be seen in Table 1, there were slightly more female than male participants. Approximately half identified as New Zealand or other European, and almost two-thirds were born in New Zealand.

**Table 2.** Mean total stress scores and standard deviations as a function of gender, ethnicity, school year level, and country of birth

	<b>Mean</b>	<b>SD</b>
<b>Gender (n=697)</b>		
Male	136.31	38.84
Female	150.57	37.81
<b>Ethnicity (n=665)</b>		
NZ Euro/other European	144.95	37.10
Asian	141.38	37.54
Other	146.61	43.57
<b>Year level (n=697)</b>		
Years 7 & 8	140.82	39.50
Years 9 & 10	148.12	40.50
Years 11, 12 & 13	141.99	36.88
<b>Country of birth (n=675)</b>		
New Zealand	144.15	38.56
Other	144.64	38.66
<b>Total (N=697)</b>	<b>143.78</b>	<b>38.94</b>

### Levels of stress

The maximum possible total stress score was 270, with higher scores equating to higher levels of stress. Scores ranged from 54 to 270, with a mean and median of 143. Twenty per cent of students scored 180 or greater, with 8% scoring more than 200.

To determine if stress levels differed significantly as a function of gender, ethnicity, year level, or place of birth, a univariate analysis was conducted. This revealed a significant main effect for gender, with girls scoring significantly higher than boys,  $F_{(1,642)} = 12.46$ ,  $p = .0005$ . In addition, a significant two-way interaction between ethnicity x school year level was identified,  $F_{(4,642)} = 3.23$ ,  $p = .01$ . However, post hoc analysis failed to confirm any significant differences. Similarly, a univariate analysis conducted on mean scores above 180 yielded a significant three-way interaction, gender x ethnicity x year level,  $F_{(3,127)} = 3.68$ . While both girls and boys in years 9 and 10 had higher total stress scores than their counterparts in years 7 and 8 and years 11, 12, and 13, post hoc analysis showed that these differences were not statistically significant.

### Sources of stress

**Table 3.** Mean total subscale and associated item response scores and standard deviations for data from each of the ten subscales

Source of stress (subscales)	Number of items	Mean	SD	Mean item score	
				M	SD
Home life	10	27.39	9.21	2.45	1.30
School performance	7	22.20	6.32	3.16	1.23
Peer pressure	7	17.58	7.17	2.58	1.34
Teacher interaction	7	17.05	6.31	2.44	1.25
School/leisure conflict	5	15.52	5.03	3.11	1.31
Financial pressure	4	10.46	4.02	2.62	1.31
Romantic relationships	5	10.10	5.13	2.02	1.28
Future uncertainty	3	9.32	3.12	3.11	1.28
School attendance	3	7.69	3.20	2.57	1.38
Emerging adult responsibility	3	6.45	2.57	2.51	1.21

An examination of the mean subscale scores showed associations between high stress levels and “school performance,” “school/leisure conflict,” and “future uncertainty.” Data from these three subscales had mean item scores above 3, on a 5-point scale, indicating they were associated with moderate levels of stress.

To determine the significance of any differences in subscale scores, as a function of gender, year level, and ethnicity, a multivariate analysis (MANOVA) was undertaken on mean subscale scores. Significant main effects were found for all three moderating variables.

## Gender

**Table 4.** Mean total subscale scores as a function of gender

Source of stress (subscales)	Female		Male		Significance	
	M	SE	M	SE	$F_{(1,664)}$	P
Home life	29.05	.53	25.96	.62	14.42	.0005
School performance	23.57	.35	20.17	.41	39.25	.0005
Peer pressure	19.39	.41	15.59	.48	36.51	.0005
Teacher interaction	17.72	.36	16.01	.42	9.62	.002
School/leisure conflict	16.28	.29	14.86	.34	10.31	.001
Financial pressure	10.92	.23	9.91	.27	8.01	.005
Romantic relationships	9.66	.30	10.53	.39	3.68	.06
Future uncertainty	10.92	.23	9.91	.27	39.25	.0005
School attendance	8.18	.19	7.23	.23	11.13	.0005
Emerging adult responsibility	6.64	.15	6.18	.18	3.89	.05

Significant gender differences were found. In all cases except “romantic relationships,” girls scored significantly higher than boys.

## Ethnicity

Only one significant difference was found for ethnicity. Asian students’ scores on the “teacher interaction” subscale ( $M = 15.87$ ,  $SE = .40$ ) were significantly lower than those of both New Zealand European ( $M = 17.86$ ,  $SE = .35$ ) and “Other” ( $M = 16.88$ ,  $SE = .64$ ),  $F_{(2,664)} = 7.17$ ,  $p = .001$ .

*Year level*

With regard to school level, post hoc analysis revealed significant differences on four of the 10 subscale scores.

With respect to “teacher interactions,” students in years 9 and 10 ( $M = 18.21$ ,  $SE = .43$ ) had significantly higher scores than both other groups: years 7 and 8 ( $M = 16.05$ ,  $SE = .56$ ); years 11, 12, and 13 ( $M = 16.34$ ,  $SE = .42$ ),  $F_{(2,664)} = 6.64$ ,  $p = .0005$ . On the “peer pressure” subscale, students in both years 7 and 8 ( $M = 17.7$ ,  $SE = .65$ ), and 9 and 10 ( $M = 18.23$ ,  $SE = .49$ ) had significantly higher scores than those in years 11, 12, and 13 ( $M = 16.54$ ,  $SE = .49$ ),  $F_{(2,664)} = 3.12$ ,  $p = .05$ .

Older students scored higher than younger students on the subscale related to “future uncertainty,” with year 11, 12, and 13 scores ( $M = 9.96$ ,  $SE = .21$ ) being significantly higher than for both other groups: years 9 and 10 ( $M = 9.15$ ,  $SE = .22$ ); years 7 and 8 ( $M = 8.47$ ,  $SE = .29$ ),  $F_{(2,664)} = 9.33$ ,  $p = .0005$ . Finally, a significant difference was found on the “financial pressure” subscale where the scores for students in years 11, 12, and 13 ( $M = 11.10$ ,  $SE = .28$ ) were higher than those of students in years 7 and 8 ( $M = 9.63$ ,  $SE = .37$ ) and years 9 and 10 ( $M = 10.51$ ,  $SE = .28$ ),  $F_{(2,664)} = 5.16$ ,  $p = .006$ .

In summary, while a main effect for gender was found on total ASQ scores, whereby girls were significantly more stressed than boys, no main effects were found for ethnicity or year level and no significant interactions between the three variables were identified. To identify specific sources of stress, analysis of subscale scores was undertaken. This revealed that the main sources of stress were “school performance,” “school/leisure conflict,” and “future uncertainty.” Further, girls scored significantly higher than boys on all subscales except “romantic relationships,” and while mean scores on several subscales differed as a function of year level, with regard to ethnicity only one significant difference was found, with Asian students’ scores being significantly lower than those of any other ethnic group.

**Discussion**

This study sought to determine the levels and sources of stress in students attending an ethnically diverse urban secondary school. Compared to students participating in other studies, using the same tool to measure stress, students in



this study appear to be as stressed or more stressed. For example, in the study by De Vriendt et al. (2011), which also involved an ethnically diverse sample of students attending urban schools in six European cities, mean total stress scores ranged from 116.1 for males to 127.4 for females, an average of 121.75 compared to a mean score of 143 in the current study. However, mean stress levels were comparable to those of Australian students as reported by Byrne et al. (2007). This may not be too surprising given their geographical proximity, similarities in the education system, and the historical origins of the populations, which may mean they share similar values and expectations of young people.

Although differences in total stress scores across year levels were not statistically significant, it is noted that students in years 9 and 10 had the highest mean scores. Such findings align with those in other studies including the Youth 2000 surveys (Adolescent Health Research Group, 2008; Clark et al., 2013) conducted in New Zealand, which consistently identify students in this age group as particularly at risk on a number of health and wellbeing measures.

While overall stress levels of students participating in this study are concerning, of note are the 20% whose scores were greater than 180. This is particularly so given that New Zealand has some of the highest youth suicide rates in the developed world (Ministry of Health Mortality Collection, 2017; Science Media Centre, 2012) and points to the need for routine screening of students to identify those at highest risk.

As in other studies (e.g., Byrne et al., 2007; De Vriendt et al., 2011; Mosknes, Byrne, Mazanov, & Espnes, 2010a; Mosknes, Moljord, Espnes, & Byrne, 2010b), the stress levels of girls in this study were significantly higher than those of boys. Girls may be more concerned about school performance and pleasing others (Laftman, Almquist, & Ostberg, 2013), and socially there is evidence of a greater propensity for girls to prioritise relationships and to mull over interpersonal problems (Flynn & Rudolph, 2011; Hankin, Stone, & Wright, 2010). Given that such differences stand, irrespective of year level or ethnicity, there would appear to be scope to investigate further what underpins girls' apparently universal tendency to be more stressed. We suggest that such research should move beyond straight description of the problem to a focus on research which will inform intervention.

### *Sources of stress*

Not surprisingly, an examination of subscale scores reveals a strong gender effect, with scores for girls on all subscales except “romantic relationships” significantly higher than those of boys. This further points to the pervasive nature of stress in girls and reinforces the recommendation above for the need to seek effective interventions.

The only identified difference in relation to ethnicity was that Asian students found interactions with teachers less stressful than did students in the two other ethnic groupings. This may reflect the expectations of Asian families regarding education, and the young person’s willingness to conform to these (Bankston & Zhou, 2002), perhaps avoiding the range of challenges and choices faced by adolescents in more liberal cultures (Brooks-Gunn, Auth, Petersen, & Compas, 2001). Such students have been described by Haddad (2012) and others as “model minorities” who tend to do better academically than natives of the new country. However, these same students have been referred to as “doing well but not being well” (Bankston & Zhou, 2002; Qin, 2008). Given that the results for Asian students’ overall stress profiles in this study were not significantly different from those of other students, there is some support for this claim.

Asian students in this study were a mix of recent arrivals and those who were born in New Zealand or had been here most of their lives. It is likely that experiences and thus levels of stress varied in this group, with a number being well settled and secure in both their ethnicity and their place in a new country. However, sample size precluded us from investigating within-group differences in more detail. A study that identified factors associated with resilience in these students and those from other migrant groups could be useful to parents and educators.

Differences in scores on subscales across year levels were as might be expected. Peer pressure caused greater stress for students in years 7 and 8 and years 9 and 10, while students in years 11, 12, and 13 were significantly more stressed by “future uncertainty” and “financial pressures” than students in either of the other two groups. The increasing influence of peers at this time in adolescence is well recognised (Dahl, 2004; Steinberg, 2007). Schools and parents may need to assist young people with strategies to deal with this pressure as it is not easy to avoid (Elinoff, Chafouleas, & Sassu, 2004; Murray-Harvey & Slee, 2007). Further, many studies have reported that students in years 9 and 10 are more likely than

other students to experience difficulties at home and at school, with risk-taking behaviours peaking in young people aged between 13 and 15 years (Clark et al., 2013; Low et al., 2012; Steinberg, 2007). Again, it was not surprising to find that senior students were more likely to feel stress associated with financial pressure and future uncertainty as they approach the transition to the adult world and its associated responsibilities. Kouzma and Kennedy (2002; 2004) report similar findings in their studies of Australian students. Findings like these point to the probable value of interventions to assist students with this transition.

### **Strengths and limitations of the study**

While the study has several strengths, including the very high response rate, the diversity of the sample regarding ethnicity and age, and the use of a well-validated standardised tool, the generalisability of the findings is limited by the fact that the participants are from one school.

A further limitation is the reliance on self-report and the implications that might have for the accuracy of responses. The fact that the survey was anonymous and was supervised by staff unconnected with the study goes some way towards mitigating this.

### **Conclusion**

This study investigated the levels and sources of stress in a sample of New Zealand adolescents. The results indicate high levels of stress relative to those obtained in similar studies overseas, using the same instrument. While this may be a function of the school where the study was conducted, other statistics such as the youth suicide rate in New Zealand suggest it might not be unrepresentative. It would seem imperative that a more nationally representative study be conducted or alternatively that schools use the Adolescent Stress Questionnaire to identify the levels and sources of stress in their students and use the information to inform interventions.

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