Australian Teacher Education Association

Annual Conference Proceedings Archive

Comparing Teacher Stress Sources in Queensland and Hong Kong Secondary School Teachers

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Abstract

Levels of teacher stress have increased both nationally and internationally, with reports of teachers experiencing increased occurrence of psychological distress, physiological illness, and job dissatisfaction of recent decades. Stress affects teachers' capacity to fulfill their duties effectively and incorporates considerable costs in absenteeism from work, reduced quality of teaching, and negative impact upon student learning. This study investigated self reported sources of occupational stress for a large sample of secondary school teachers in Queensland. Survey design was chosen as the data collection method incorporating influences from current international studies. The survey employed an Australian stress inventory and was found to be socially validated. Sources of teacher stress were collected from Queensland in order to gather a profile of current stress sources. Queensland and Hong Kong data were compared revealing comparable findings except for reports of psychosomatic indicators.

Findings of this study hold implications for practicing teachers in their awareness of sources of stress associated with their work. Functional outcomes of this research may further expand present understanding of the extent that stress can impact upon the general well-being and health of secondary school teachers. Flow-on effects may include the implementation of coping strategies that ameliorate the quality of teaching and learning.

Introduction

This paper outlines a Queensland study that attempted to identify sources of stress and associated symptoms for secondary school teachers. The study drew substantially from work conducted by Jin, Yeung, Tang, and Low (2008) into Hong Kong secondary school teacher stress. The method of data collection was an online survey with statewide distribution. Queensland results from a teacher stress inventory were compared with those previously derived from Hong Kong.

Stress has been recognized as a concern amongst professionals employed in human service occupations (Chan, Chen, & Chong, 2010; Lazarus & Launier, 1978; Onwuegbuzie, Jiao, & Collins, 2007; Travers & Cooper, 1993; Yang, Ge, Hu, Chi, & Wang, 2009). For some time, it has been of increasing concern for those in the teaching profession (Earp, 2010; Kyriacou & Sutcliffe, 1979) as this profession involves both high pressure and serious responsibilities, factors often beyond the control of the individuals employed (Sorenson, 2007). Life Insurance actuaries have considered teachers to be a high risk for health insurance due to the higher than usual incidence of stress-related illnesses (Fisher, 1996). A shorter life expectancy has been reported for teachers due to occupational stress in countries such as China (Yang et al., 2009).

Teacher stress has been identified as a causal factor in reducing teacher competence (Kyriacou, 1987). It has been reported to impose upon the working relationship between teacher and student (Geving, 2007), student learning (O'Connor & Clarke, 1990; Sainty, 2011), incur costs in the form of workers' compensation (Bachkirova, 2005; Guthrie, 2005), increase expenditure on relief teachers (O'Connor &

Clarke, 1990) and has become an topic of public media (Caldwell, 2011; Munt, 2004). If disproportionate levels of stress are experienced, other issues may arise such as health concerns, impeded work productivity, increased absenteeism, and higher levels of staff turnover (Ganster & Schaubroeck, 1991). These issues have increased the need to investigate what stress teachers experience in their occupation and to what extent they are affected in their work as teachers.

There exists an extensive body of research on this topic, but it has some limitations. First, the main body of knowledge was published in the 1980s and 1990s. Second, this body of knowledge consisted mainly of small qualitative studies. Third, numerous changes to Queensland in secondary teaching i.e., increased administration demands, electronic syllabus requirements, augmented computer capabilities expected of teachers, restructuring in the form of National Curriculum, increased reporting of student abuse and harm, poor remuneration, general change from teaching and learning to test preparation and publication of student results, introduction of year seven classes to secondary schools, have all increased the need for updated empirical investigation of teacher stress within the local context. A multi-faceted and state-wide approach will contribute a comprehensive perspective of this issue and support comparative analysis with findings from other cultures.

Research Approach

This study aimed to compare self-reported stress levels of secondary school teachers from Queensland and Hong Kong. A survey was designed encompassing questions drawn and adjusted from national surveys that focused on sources of stress (Jin, Yeung, Tang & Low, 2008), job satisfaction (Pang, 2012), and coping strategies (Richards, 2012). These inquiries provided a broad view of teacher stress and supported contemporary perspectives from Australia, Hong Kong and America. This study intended to address the following research questions.

From the perspective of secondary teachers:

1) What sources of stress are identified in the workplace and in personal lives?

2) Which Teacher Stress Inventory items are identified as most stressful by Queensland teachers?

3) How do Queensland Teacher Stress Inventory results compare with those reported from Hong Kong?

Participants

The participants comprised secondary school teachers registered with the Queensland College of Teachers (QCT) which is a statutory government body that regulates, enhances and promotes the teaching profession. Practicing teachers are required to be registered with the QCT to teach in Queensland schools. Recruitment of participants was conducted by the QCT distribution of an email inviting secondary school teachers to participate in an online survey. This email included an electronic link to the Griffith University portal. Attached to this portal was an explanatory letter, a Participant Information Sheet/Informed Consent Package and electronic access to the survey. Participants acknowledged their willingness to participate in the survey when they accessed the portal, viewed the attachments, and commenced the survey. The QCT emailed registered secondary teachers from all Queensland school systems. The survey was available for 8 weeks. The sample of participants comprised of a convenience sample of teachers that were able to participate (Cresswell, 2008).

Instrument

The instrument employed was an adapted version of a Teacher Stress Inventory (TSI) developed by Jin, Yeung, Tang and Low (2008). The survey consisted of seven sections. Section One requested information pertaining to demographic, school environments, and characteristics of students taught.

Section Two contained an adapted version of the TSI. Five of the original 27 items were replacement with items (Appendix A) sourced from Australian research conducted by McCormick (1999). Vocabulary such as "inspector", "panel chair" and "public exams" were replaced with more appropriate terms. Participants were asked to rate each source of stress on a six point Likert type scale (*no stress to extreme stress*).

Section Three required teachers to select the most stressful TSI category and to provide a justification. Section Four contained 11 physical indicators that were rated against a five Likert type scale (*almost never to very often*). This paper addresses the first four sections of the survey.

Data Analysis

Descriptive statistics using SPSS 20.0 (IBM, 2012) software were applied to the data to produce mean, standard deviation, variance of mean, independent sample t-tests, Eta Squared test and Cohen's D test results (Pallant, 2007). The application of these tests supported comparison of difference in the two sample results on each measure. Leximancer 4 (Smith & Humphries, 2006) was used to analyse qualitative responses to an open-ended question seeking justification of a choice of the most stressful category of items contained in the TSI. The combination of these two approaches to data analysis provided a balanced perspective of the research issue.

Results

Participant demographics
A total of 543 surveys were returned. Eight surveys were discarded as insufficient information was supplied for the demographics section. In total 535 surveys were analysed for this study.

Table 1 contains a breakdown of the demographics of the sample.

Table 1 *Characteristics of the Sample Completing the Teacher Stress Survey*

Characteristic	Number	Percent
Gender		
Female	370	70
Male	154	30
Age		
20-30	73	15
31-40	105	20
41-50	153	29
51-60	165	31
61+	28	5
Number of Years Teaching		
1-2	41	7
3-10	161	30
11-20	126	23
21+	204	38
Employment Basis		

Permanent Full-time	412	74
Permanent Part-time	49	9
Contract	60	11

As shown in table 1 the respondent sample consisted of 370 females and 154 males. Female respondents comprised just above two thirds of the sample. The majority of the respondents were employed by the Department of Education and Training (DETA). The next largest group of employees was employed in the Catholic sector, with the remainder comprising Independent and other schools (see Table 1). The locality of these schools consisted of Metropolitan (49%), Regional/provincial centre amounting to (33%), rural schools (14%), and rural or remote schools being the remainder (2%). Almost one half of respondents were employed in metropolitan cities.

Table 2 *Employment/qualifications and years of teaching experience*

Characteristic	Number	Percent
Type of School		
DETA	375	71
Catholic	78	15
Independent	62	13
Other	5	1
School Location		
Metropolitan	260	49
Regional/Provincial Centre	175	30
Rural	75	14
Remote	11	2
Master Degree	74	14
Doctor Degree	5	1
Position		
Principal	3	1
Head of Department	80	14
Classroom teacher	320	60
Support teacher	18	3
Relief teacher	13	2
Year Level Most Taught		
8	57	11
9	66	12
10	75	14
11	75	14
12	100	19

N = Missing data results in some percentages not adding up to 100%.

Table 2 shows that classroom teachers comprised 60% of respondents with 19% of the sample teaching year 12. Almost 50% of respondents had teaching experience of 16 or more years. A large percent of the sample population (69%) had at least four years of teacher qualifications. With regards teaching experience, 38% of the sample reported greater than 21 years experience. In sum, the sample was mostly female (70%), was middle aged (44.7 years), had extensive teaching experience (>16 years), with greater than one half having acquired a bachelor degree or higher qualification, and were mostly employed as classroom teachers.

The TSI was used to specify what sources of stress that were reported by Queensland and Hong Kong teachers. Table 3 shows comparative results for the first 6 categories of the instrument. These categories consisted of factors that were considered to be sources of stress. Appendix B contains t-test analysis results.

Table 3 *Comparative Teacher Stress Inventory Results from Jin et al. (2008) and Present Study*

Teacher Stress Inventory Indicator	Jin (N=259)	Study (N=535)
Student		
Late submissions of work	3.17 (0.9)	2.97 (0.9)*
Poorly motivated	3.58 (0.9)	3.63 (1.0)
Low ability	3.31 (0.9)	3.05 (1.0)*
Refusal to complete homework	3.52 (0.9)	3.03 (1.2)*
Noisy classes	3.89 (1.0)	3.22 (1.1)*
Maintaining class discipline	3.52 (1.0)	3.28 (1.1)*
Curriculum		
Overloaded curriculum	3.84 (1.1)	3.75 (1.1)
Feeling responsible for student's exam results (e.g., NAPLAN)	3.64 (1.1)	3.52 (1.1)
Providing senior classes extra support for exam preparation	3.42 (1.0)	3.10 (1.1)*
Ill-defined syllabus	3.68 (1.0)	3.01 (1.2)*
Teaching the syllabus in the allotted time	3.78 (1.0)	3.66 (1.1)
Non-teaching		
Having to cover lessons for absent teachers	3.32 (1.0)	2.97 (1.4)*
Attendance at school meetings after hours	3.62 (1.0)	2.99 (1.0)*
Extracurricular activity requirements	3.58 (0.9)	3.02 (1.2)*
Supervisory duties (e.g., yard duty, toilets, hall)	3.33 (0.9)	2.87 (1.1)*
Teaching		
Fast pace of school day	3.68 (0.9)	3.16 (1.4)*
Lack of time for lesson preparation	3.88 (0.9)	3.75 (1.0)
High expectations of teachers (e.g., good teaching performance)	3.96 (1.0)	3.64 (1.1)*
Too much time spent marking (e.g., worksheets, essays, drafts, final submissions)	4.07 (1.0)	3.86 (1.1)*
High expectations from the Principal regarding your teaching	3.45 (0.9)	3.31 (1.2)
Recognition		
Lack of recognition for good teaching	3.45 (0.9)	3.29 (1.2)
Lack of participation in decision making	3.15 (0.9)	3.19 (1.5)
Lack of promotional opportunities	3.20 (1.0)	2.71 (1.4)*
Others		
High expectations from parents (e.g., good academic results)	3.06 (0.8)	2.98 (1.1)
Pressure from societal change	3.52 (1.0)	3.26 (1.1)*
Psychosomatics symptoms		
Persistent irritability	2.39 (0.8)	3.09 (1.1)*

Persistent anxiety	2.56 (0.9)	3.26 (1.3)*
Periods of high blood pressure	1.69 (0.8)	2.38 (1.4)*
Insomnia (inability to sleep)	2.17 (0.9)	3.29 (1.2)*
Bruxism (grinding teeth)	1.65 (0.8)	2.37 (1.5)*
Headaches	2.52 (1.1)	3.00 (1.3)*
Heart palpitations	2.02 (0.9)	2.08 (1.2)
Unusual heart rhythms	1.73 (0.8)	1.83 (1.9)
Inability to concentrate	2.42 (0.8)	2.93 (1.1)*
Forgetfulness	2.77 (0.9)	3.10 (1.2)*

* Significant difference after Holm–Bonferroni correction

Table 3 shows that 24 of 35 items differed significantly with reference to increased stress on the Jin administration when compared to this study administration. Specifically, the present study results suggest that for the first six categories TSI items, Hong Kong teachers reported greater means than did Queensland teachers. The three greatest mean differences were associated with the items 'Overloaded curriculum', 'Too much time spent marking', and 'Lack of time for lesson preparation'.

When results for psychosomatic symptoms are considered, a reverse pattern appears. All results for psychosomatic symptoms indicate that Queensland teachers report greater means for each symptom. T-test was applied to all TSI items to compare the differences in means. The resultant tables are contained in Appendix B. Items with asterisks in Table 3 indicate significant differences in means. These results were next analysed using Eta Squared test to indicate the effect size or magnitude of mean differences independent-samples t-tests. The results of Eta Squared test for each asterisked item is presented in Table 4. These results were compared with Cohen's D scale to establish the level of effect between the means.

Table 4 *Effect size of Teacher Stress Inventory Items*

Teacher Stress Inventory	Eta Squared	Effect Size %	Level of Effect*
Student			
Late submissions of work	0.11	11	large
Low ability	0.01	1	small
Refusal to complete homework	0.05	5	small
Noisy classes	0.09	9	moderate
Maintaining class discipline	0.01	1	small
Curriculum			
Providing senior classes extra support for exam preparation	0.02	2	small
Ill-defined syllabus	0.08	8	moderate
Non-teaching			
Having to cover lessons for absent teachers	0.02	2	small
Attendance at school meetings after hours	0.08	8	moderate
Extracurricular activity requirements	0.06	6	moderate
Supervisory duties (e.g., yard duty, toilets, hall)	0.04	4	small
Teaching			
Fast pace of school day	0.05	5	small
High expectations of teachers (e.g., good teaching performance)	0.02	2	small
Too much time spent marking (e.g., Worksheets, essays drafts, final submissions	0.01	1	small

Recognition			
Lack of promotional opportunities	0.04	4	small
Pressure from societal change	0.01	1	small
Psychosomatic Symptoms			
Persistent irritability	0.10	10	moderate
Persistent anxiety	0.09	9	moderate
Periods of high blood pressure	0.09	9	moderate
Insomnia	0.20	20	large
Bruxism	0.09	9	moderate
Headaches	0.04	4	small
Inability to concentrate	0.06	6	moderate
Forgetfulness	0.03	3	small

* Cohen's D guidelines for interpretation of Eta Squared values

Table 4 shows the Eta Squared results when significant differences between the means of the two studies were compared. The overall levels of effect between the results indicated that the TSI has generated mostly small or moderate differences in level of effect reported by Queensland and Hong Kong teachers. The notable difference between results is more apparent when psychosomatic symptoms results are considered.

Table 4 contains eight psychosomatic symptoms that reflected significant differences between the means reported by Queensland and Hong Kong teachers. Of these symptoms, 'Insomnia' reported 20% or 'large' Eta Squared effect size (Pallant, 2007). The next largest difference between reported symptoms was 'Persistent Irritability' with a 10% or 'moderate' Eta Squared effect size. Queensland teachers specified greater occurrence of both insomnia and persistent irritability than Hong Kong teachers.

Queensland teachers were required to rank the six TSI categories in respect to stressful experienced. Results expressed as percent are presented in Table 5.

Table 5 *Ranking of Most Stressful Categories of the Teacher Stress Inventory*

Ranked Category	Percent
Student Influence	17
Curriculum Influence	17
Non Teaching Influence (includes extracurricular)	14
Teaching Influence	15
Recognition Influence (by school and society)	5
Others (other than students and yourself)	17
No Response	15

Table 5 shows that Queensland Teachers identified the three most stressful TSI categories as 'Student influence', 'Curriculum Influence' and 'Others (other than students and yourself)'. All three categories were deemed to be equally stressful (17%). Respondents were required to justify their choices and Leximancer 4 text analysis was applied to response data. Leximancer 4 utilises word-association information to obtain embryonic concepts from text (Smith & Humphries, 2006). Four main themes were established by this process (see Figure 1) consisting of: *Student*, *Assessment,* and *Time*.

The theme size capability was set at 75% in order to have three concept map spheres in the concept map illustrating the themes. All three spheres are overlapping which reflects the inter-relatedness of these concepts and associated co-occurrence. Overlapping circles demonstrate that numerous concepts were mentioned in association with more than one theme i.e., the concept *School* was mentioned in statements related to both *Student* and *Time* themes. The colour of each sphere highlights the frequency of concept occurrence. The themes are heat-mapped to indicate importance. The most important themes are the hottest and represented as hot colours such as red. *Student* is represented by the colour purple, *Assessment* – blue, and *Time* – green.
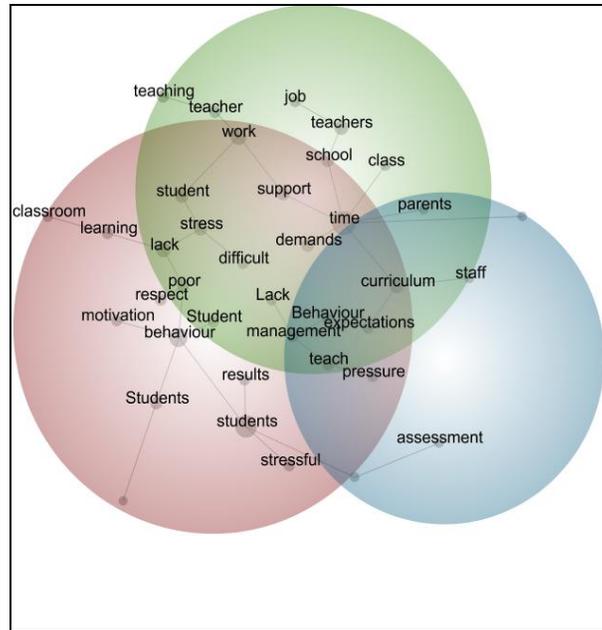

Figure 1 Concept Map of Reasons for TSI Most Stressful Category Selection

Respondents produced a range of positive and negative comments (*n = 391*) substantiating their choice of most stressful category. A typical response regarding the theme *Student* follows:

"*Student behaviour, motivation, attitude and work ethic are the greatest influences on my personal stress because I find them the most difficult to deal with on a daily basis*." Adding to this comment was the view *"The unpredictability of having to deal with disruptive students."* Unmotivated and/or disruptive students are difficult issues for teachers to control as this can impact upon learning and student achievement. Schools expect students to achieve passing or better results but this may be hampered by "*Students [who] expect to pass despite missing weeks of lessons and with minimal effort"*. Teachers are concerned for the welfare of their students as one respondent identified in the following comment; *"Not enough time to prepare students for assessment."* Finally one teacher clarified the most stressful influence of students as originating "*From students who are rude and disrespectful, ignorant of the most basic of manners and who have absolutely no desire to learn anything you are required to teach."* Teachers perceive student behaviour and attitude to be issues that are common sources of stress.

The second theme derived from the TSI most stressful category was *Assessment.* The recent introduction of the Australian National Curriculum has generated negative comments about difficulties teachers have experienced regarding assessment and associated curriculum.

'The school based assessment system with external moderation via Panel used in Queensland is particularly stressful as it relies so heavily on teachers.' This comment identifies the view that school assessment, which is a component of curriculum, places stressful demands on teachers. Similar concerns were voiced *"C2C curriculum and assessment are too difficult to introduce with such limited resources."* Teachers also articulated concerns about extra work associated with newly introduced assessment typified by the following; *"The introduction of the Australian Curriculum has been very stressful due to hours spent planning lessons and developing assessment."* The introduction of the Australian Curriculum was perceived as a burdensome hindrance to continuing professional judgement as the following identified; *"Too many demands on me from too many people, too many deadlines, not enough resources (human and other), trying to juggle competing agendas knowing I can address student's literacy difficulties but being constrained by curriculum and continuing assessment."* The workload associated with new forms of assessment has placed extra pressure on teachers to design and implement assessment with less than ideal available resources. One solution proposed was; "There should be a bank of high quality assessment pieces for teachers to use for consistency and work load purposes."

The third theme, *Time,* generated mostly negative comments. For example; *"Lots of pressure from administration, constant expectations of immediate results/responses to requests for information/behaviour reports etc. – without any follow-up or acknowledgement ever. It seems to demand a lot of time and energy and takes away from core duties and it's the area I have least control over."* A similar view consisted of the following*: "As soon as one administration task is able to be done efficiently, another is added - because the other task can be done more quickly now, so there is more time for more tasks!"* Respondents appeared to be overwhelmed with tasks that take up valuable time and thus create a sense of frustration due to frequency of occurrence.

Discussion

This study has aimed to identify sources of stress identified by Queensland secondary teachers. The results indicate that "Student", "Curriculum" and "Others" were the three most stressful influences that were stress causal factors for Queensland teachers. All three were deemed to be equally stress inducing, however the last category "others" was closely linked to demands emanating from school administrations, Principals, parents and fellow staff.

Results for the TSI indicated that Queensland teachers reported less stress than Hong Kong teachers for the first six categories. These categories related to daily teaching demands. Queensland teachers did report moderate to large differences in their perceived levels of psychosomatic symptoms when compared with Hong Kong teachers. In particular, the level of insomnia experienced was 20% higher than that experienced by Hong Kong teachers. Insomnia has been acknowledged as the second highest source of stress for teachers in America (Richards, 2012) and Hong Kong (Leung, Mak, Chui, Chiang & Lee, 2009).

Queensland teachers also reported moderate levels of persistent irritability and anxiety. These indicators have been identified as one of the two main types of common stress responses among teachers (Dunham, 1976). French teachers have reported higher prevalence of anxiety disorders in males (Kovess-Masfety, Sevilla-Dedieu, Rios-Seidel, Nerriere, & Chan Chee, 2006).

The third notable difference reported by Queensland teachers was a moderate level of periods of high blood pressure. Sutcliffe and Whitfield (1976) found that heart rates of teachers working in classrooms

can reach levels as high as 100 to 110 beats per minute. This level of heart rate was deemed to be 'quite high' by these researchers.

Queensland teachers accounted for their most stressful categories of the TSI by the provision of comments related to influences for the Student, the Curriculum, and Time constraints. All three categories contributed to teacher stress to varying degrees. Respondents felt that these influences consumed much time and personal effort and detract from the core business of teaching.

Conclusion

This paper outlined sources of stress reported by Queensland secondary school teachers. These results were compared with Hong Kong data based on the same instrument. When compared with Hong Kong stress levels, Queensland teachers report greater levels of psychosomatic symptoms across a range of factors. The same group reported less stress associated with stress categories that are commonly associated with daily teaching i.e., students, curriculum, non-teaching duties, teaching, and recognition.

Three TSI items 'Overloaded curriculum', 'Too much time spent marking', and 'Lack of time for lesson preparation' scored the highest means for Queensland and Hong Kong teachers. Similar findings were reported by Lortie (1975) in New England. Lortie found that teachers' main sources of stress consisted of 'clerical duties' and 'interruptions and time pressures'. Both Queensland (M = 3.86) and Hong Kong (M = 4.07) teachers recorded highest means for this item.

What is contributed here is empirical data that supports the belief that teaching can be perceived as a stressful occupation and stress manifestations can impact upon professional and personal lives of teachers. Queensland teachers may perceive their working environments to less stressful than Hong Kong teachers. However, Queensland teacher appear to suffer psychosomatic symptoms at a greater level than do Hong Kong teachers. Secondly, Queensland teachers have identified two categories of stress over which they have little control, namely *Curriculum* and *Others*. These teachers would be well placed to expand their coping capacity to manage their personal interaction with stress sources and associated symptoms.

Much study into teacher stress has utilised self report factors. This has implications regarding the use of the term 'stress'in studies involving survey. The word *stress* may be associated with strain or threat (Jex, Beehr, & Roberts, 1992). There appears to be a need for empirical investigation of this issue utilising experimental design to reduce emotive influences to reveal specific factors implicated in teacher stress and the interrelatedness of these factors.

Limitations

The limitations of this study need to be borne in mind when interpreting the findings. Both data samples were derived 4 years apart. Further, studies of teacher stress should not be confined only to the use of self-report and psychometric assessment. Interview and direct observation of teachers in classrooms would provide further insight into the issue of sources of teacher stress and associated impact upon professional and personal lives.

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APPENDIX A

TSI indicator items replaced with substituted indicators

Original TSI items	Substituted indicator
Pressure from Education Department inspectors	Pressure from societal change
Panel's Chair's/Principal's regular checks on students' assignments marked by the teacher	Pressure from Government education policies
Pressure from panel chair, senior staff and the principal	Demands from my employer in the form of paperwork
Too much time spent on marking (eg., exercises, composition)	Too much time spent on marking (e.g., worksheets, essay drafts)
High expectations from the Principal	High expectations of teachers (e.g., good teaching performance)

APPENDIX B

Independent means t-test was conducted as two experimental conditions existed with different participants assigned to each condition. This test indicated the difference in the two sample results on each measure. The following assumptions were accepted; sampling distributions were normal, data were measured on at least the interval scale, variance population was roughly equal, and scores were independent.

Table 6 *Student Level Differences between Jin et al. (2008) TSI and Present Study*

Student	t	df	p
Late submissions of work	3.01	547.7	0.0028*
Poorly motivated	-0.722	557	0.4702
Low ability	3.822	579.9	0.0002*
Refusal to complete homework	6.514	674.7	0.0000*
Noisy classes	8.747	577	0.0000*
Maintaining class discipline	3.114	572	0.0020*

* Significant after Holm–Bonferroni correction

On average, participants did differ significantly on the question of if *late submission of work* increased stress on the Jin administration (M=3.17, SE=0.05) compared to this study administration (M=2.97, SE=0.04), $t(547.7)=3.01$, $p=0.003$

Table 7 *Curriculum Level Differences between Jin et al. (2008) TSI and Present Study*

Student	t	df	p
Overloaded curriculum	1.08	515.3	0.279
Feeling responsible for student's exam results (e.g., NAPLAN)	1.445	515.3	0.149
Providing senior classes extra support for exam preparation	4.099	561.7	0.000*
Ill-defined syllabus	8.583	561.7	0.000*
Teaching the syllabus in the allotted time	1.537	561.7	0.125

* Significant after Holm–Bonferroni correction

On average, participants did not differ significantly on the question of if *teaching the syllabus in the allotted time* increased stress on the Jin administration (M=3.78, SE=0.06) compared to this study administration (M=3.66, SE=0.05), $t(561.7)=1.537$, $p=0.13$.

Table 8 *Non-teaching Differences between Jin et al. (2008) TSI and Present Study*

Non-teaching	t	df	p
Having to cover lessons for absent students	4.04	688	0.000*
Attendance at school meetings after hours	8.515	529.6	0.000*
Extracurricular activity requirements	7.269	651.5	0.000*
Supervisory duties (e.g., yard duty, toilets, hall)	6.154	614.8	0.000*

* Significant difference after Holm–Bonferroni correction

Table 9 *Teaching Differences between Jin et al. (2008) TSI and Present Study*

Teaching	t	df	p
Fast pace of school day	6.194	717.4	0.000*
Lack of time for lesson preparation	1.818	555.6	0.0696
High expectations of teachers (e.g., good teaching performance)	4.152	572	0.000*
Too much time spent marking (e.g., worksheets, essays, drafts, final submissions)	2.724	572	0.0066*
High expectations from the Principal regarding your teaching	1.817	651.1	0.0696

* Significant difference after Holm–Bonferroni correction

Table 10 *Recognition Differences between Jin et al. (2008) TSI and Present Study*

Recognition	t	df	p
Lack of recognition for good teaching	2.08	651.5	0.038
Lack of participation in decision making	-0.459	745.9	0.646
Lack of promotional opportunities	5.806	712.6	0.000*

* Significant difference after Holm–Bonferroni correction

Table 10 *Other Differences between Jin et al. (2008) TSI and Present Study*

Others	t	df	p
High expectations from parents (e.g., good academic results)	1.16	672.5	0.25
High expectations from Principal**	na	na	na
Pressure from societal change	3.35	566.8	0.001*
Pressure from Governmental education policies	0.897	561.7	0.37

* Significant difference after Holm–Bonferroni correction
** Indicator included for future research purposes

Table 11 *Psychosomatic Symptoms Differences between Jin et al. (2008) TSI and Present Study*

Psychosomatic Differences	Jin (N=261)	Study (N=535)
Persistent irritability	2.39 (0.85)	3.09 (1.12)*
Persistent anxiety	2.56 (0.91)	3.26 (1.26)*
Periods of high blood pressure	1.69 (0.78)	2.38 (1.40)*
Insomnia (inability to sleep)	2.17 (0.95)	3.29 (1.23)*
Bruxism (grinding teeth)	1.65 (0.82)	2.37 (1.48)*
Headaches	2.52 (1.06)	3.00 (1.29)*
Heart palpitations	2.02 (0.87)	2.08 (1.20)
Unusual heart rhythms	1.73 (0.80)	1.83 (1.89)
Inability to concentrate	2.42 (0.81)	2.93 (1.10)*
Forgetfulness	2.77 (0.91)	3.10 (1.17)*
Physical Exhaustion**	na	3.86 (1.09)

 * Significant difference after Holm–Bonferroni correction
** Indicator included for future research purposes

APPENDIX C

Missing data treatment

The steps associated with each research question were as follows:

Howell (2012) has clearly identified that missing data is a reality of conducting research in the social sciences. Missing data is an issue that needs to be addressed in one way or another when analysis of such data is considered. In this study, missing data that formed individual data missing from individual cells were deemed to be missing completely at random (MCAR) in other words, the probability that X_i is missing is unrelated to the value of X_i or other variables in the analysis (Little & Rubin,1998). There appeared to be no consistent pattern indicating that such data were only associated with particular questions. The most common approach to the handling of missing data (and the one that is implemented by programs such as SPSSS by default) is to simply omit those cases with missing data and to run our analyses on what remains. This approach is called listwise deletion and was utilized for this study. The number 99 was used to replace these missing data items. The number 99 did not appear in any data as an identified answer and was used as a default data item not recognised by Leximancer text analytic software (Smith & Humphries, 2006).