Gender differences in the relationship between pressure from schoolwork and health complaints: A three country study

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ABSTRACT

Pressure from schoolwork is associated with health complaints in primary and high school students. Girls are more likely to report high levels of pressure and experience frequent health complaints. However, the moderating effect of gender on the relationship between pressure and health complaints has not been fully explored. Logistic regression was used to examine the association between pressure from schoolwork and health complaints for a sample of 11-12 and 13-14-year-olds in Australia (*N*=4,723), England (*N*=2,734) and Spain (*N*=3,743), moderating for gender and controlling for family affluence and teacher support. Across the entire sample, a significant relationship between pressure and frequent health complaints was found (OR = 3.03, p<.001). Among students reporting a lot of pressure, differences between boys and girls in marginal odds of frequent health complaints were greater in Spain than in Australia or England (difference in log odds: Australia 0.426, p=.211; England 0.445, p=.821; Spain 1.044, p<.001). Pressure from schoolwork is an important issue for student mental health. This study suggests that the role of gender in moderating this relationship differs across countries. Differing national approaches to testing and grade repetition, as well as differences in macro-economic and social contexts, especially between Australia and England on the one hand, and Spain on the other, are discussed as possible explanations for these gender differences. More research is needed on how these factors influence boys' and girls' perceptions of pressure and stress associated with schoolwork.

BACKGROUND

Pressure on students to do well at school, and its association with health outcomes, is recognised as a problematic issue for student wellbeing and education policy (Banks & Smyth, 2015; McDonald, 2001). Research on pressure from schoolwork grew out of the considerable literature on demands placed on employees, and impacts on employee health; school students are theorised as having a similar relationship to demands placed on them by teachers, and potentially experiencing some of the same effects (Samdal et al., 2000). As with pressure from employment, perceptions of pressure from schoolwork may be associated with a wide range of proximal and distal factors, internal to the individual student, or in the external environment (Torsheim & Wold, 2001b).

The incidence of perceived pressure from schoolwork varies considerably by age and gender, and across countries (Inchley et al., 2020; Löfstedt et al., 2020). Data from the 1994 to 2010 Health Behaviour in School-aged Children (HBSC) surveys show the countries of North America and the UK as having the highest rates of perceived pressure (Klinger et al., 2015). However, findings from a later round of the same study (HBSC 2017/2018) suggest that a greater share of Spanish 13-year-old girls (63%) and boys (57%) report feeling ‘some’ or ‘a lot’ of pressure from schoolwork, compared with girls (58%) and boys (44%) in England (Inchley et al., 2020). Single country studies conducted in Ireland, Scotland and Sweden also report that while girls, on average, achieve higher school marks, they also report higher levels of school-related demands or pressure (Banks & Smyth, 2015; Låftman & Modin, 2012; Sonmark et al., 2016; West & Sweeting, 2003).

Students’ perceptions of pressure can be related to structural issues such as transition from primary to high school and how classes and examinations are organised

(Klinger et al., 2015), or to teacher or classmate support, or levels of bullying within the school environment (Torsheim & Wold, 2001a). Generalised anxieties have been associated with increased individualisation of risk in contemporary education, manifested in concerns about educational expectations (West & Sweeting, 2003), young people's own internalisation of their academic credentials as a basis for self-worth (Putwain, 2009; Putwain et al., 2012), and also with their concerns about how they think their peers or their parents will view their academic performance (Banks & Smyth, 2015; Putwain, 2009; Putwain et al., 2012).

Pressure has also been linked to proximity to exams, and the 'all or nothing' nature of final exams (Banks & Smyth, 2015; West & Sweeting, 2003). One study of high-performing high school students in Spain suggests that students' perceptions of stress increase with the perceived importance of a test, but also that gender differences in perceptions of stress decline as the perceived importance of the test increases (Azmat et al., 2015). While most of the literature focuses on the effects of testing in the final years of schooling, both formal and informal assessments at younger ages are also shown to induce pressure, for example in the case of 13-year-old students in Sweden who expect to participate in formal assessments for upper secondary school at age 14 (Sonmark et al., 2016).

Conversely, factors such as pupils' sense of school belonging, feeling safe and positive relationships in the school environment are predictors of reduced pressure (Lester & Cross, 2015). Teachers are seen as important sources of support for adolescents' wellbeing, with most adolescent students developing meaningful relationships with at least some teachers, and experiencing reduced stress as a result (Banks & Smyth, 2015; García-Moya et al., 2019). On the other hand, teachers are also

seen as having a mixed impact on students' stress, sending both pressuring messages and providing supportive pastoral care (Putwain, 2009).

There is a significant association between pressure from schoolwork and frequent health complaints (Banks & Smyth, 2015; Cosma et al., 2020; Låftman & Modin, 2012; Sonmark et al., 2016; West & Sweeting, 2003). Survey data for England show that young people's experience of school life is strongly correlated with indicators of emotional health and well-being, and life satisfaction (Brooks et al., 2017). Students with the lowest life satisfaction scores were also more likely to feel pressured by school work and less likely to perceive their teachers as being supportive (Brooks et al., 2017). Some single country studies show that this relationship is stronger for girls than for boys (Låftman & Modin, 2012; Östberg et al., 2015; West & Sweeting, 2003). One comparison between France and Sweden on the relationship between health complaints and school demands notes a significant relationship between tiredness and difficulty associated with schoolwork on the one hand, and health complaints on the other, with stronger effects for girls than for boys in both countries (Sonmark et al., 2016). In their multi-method study, Östberg et al. (2015) report that boys and girls associate the same factors with school-related stress; however they find that effects for girls are stronger.

There are reasons to expect gender differences in this relationship, and that they might vary across countries such as Australia, England and Spain, all of which have quite distinct educational systems. Testing and assessment regimes may impact girls more than boys (Banks & Smyth, 2015; Harris, 2003; Ringrose, 2007). Education systems in English speaking countries including Australia and England, while nominally comprehensive, encourage competition between schools as a means of driving up standards (Green et al., 2006). School choice is facilitated by national testing regimes of students in Years 3, 5, 7 and 9 in Australia, and in Years 4 and 6 in England,

where schools' average test results are published online (www.myschool.edu.au; www.compare-school-performance.service.gov.uk), and used by parents in choosing schools for their children. In Australia, the eight states and territories control important elements of education policy and directly run all government schools that two thirds of students attend. In every jurisdiction, however, school choice is facilitated, mostly for those who can afford it, by a large Catholic and independent schools sector, which educates about a third of all primary and secondary students across the country (Gurr, 2020). Many government and private schools are selective, and use national test results as one criterion for entry to secondary school, or streaming within school. In England, the vast majority of students go to government schools. Many of these schools are now controlled by their local communities, and many are selective (often using national test results as an entry criterion), resulting in a more decentralised education system. However, a considerable degree of centralised control is maintained through a national (but not compulsory) curriculum, national tests and other accountability mechanisms (Whitty & Wisby, 2016).

Similar to Australia, the Spanish system is de-centralised, with autonomous regions handling day-to-day policy-making and administering funding within a national framework (OECD, 2018). Most schools are state schools, with around a third of students in private schools (Escardíbul & Villarroya, 2009). However, these private schools must follow the rules that govern public schools, so there may be less differentiation between them and the public system than is the case in Australia. Selective access to school and tracking or streaming during compulsory education are not performed either, with Spain being categorized by Eurydice as a comprehensive school system with a common core curriculum for all students (European Commission/EACEA/Eurydice, 2018).

Unlike in England or Australia, there are no national testing regimes during the compulsory education years in Spain. However, 29% students in Spain are made to repeat a school grade, compared with about 6% in Australia, and 3% in the United Kingdom (in the US, 9% are repeaters) (OECD, 2020). Students in Spain must repeat when they fail at least three subjects, based on teachers' assessments, and this mostly happens in the lower secondary years, with more boys than girls repeating (Escardíbul & Villarroya, 2009; García-Pérez et al., 2014). It is possible that across the three countries, students may experience differential pressure to do well in tests that serve as unofficial entry exams for secondary schools or for progression in streamed systems, or pressure to do well in order to progress to the next year. Research shows that the impact of grade repetition on academic outcomes is mixed (García-Pérez et al., 2014; Ikeda & García, 2014; Manacorda, 2012; Martin, 2011; Pedraja-Chaparro et al., 2015; Schwerdt et al., 2017). However, there is little direct evidence on grade repetition and mental health, although the high level of grade repetition in France is noted as one likely factor associated with French students experiencing higher levels of pressure from schoolwork than their Swedish counterparts (Sonmark et al., 2016).

To summarise, expectations embedded in education systems, and enacted in policies such as school choice, streaming, testing or grade repetition, are all likely to be associated with increased pressure on students to do well at school. Citing Harris (2003), Östberg et al. (2015) suggest that gender differences in schoolwork pressure and its health effects may be due to higher expectations placed on girls in the post-feminist era, where girls are positioned as winners in neoliberal educational discourses: "Through these discourses young women are disciplined into creating their own successful life trajectories and taking personal responsibility if they fail." (Harris, 2003, p. 9) However, the moderating effect of gender on the relationship between pressure

from schoolwork and health complaints, and how this differs across countries, remains under-researched. In the remainder of this paper, we compare these relationships in Australia, England and Spain. As discussed above, marketised competition between schools is a hallmark of the Australian and English systems, while the Spanish system has a more comprehensive character. The Australian and English systems rely on national testing regimes to assess students (and schools). In contrast, the Spanish system is characterised by high levels of grade repetition. Each of these factors may weigh differently on boys and girls in the three countries. Background social and economic factors may also play a role. These are considered further in the Discussion section.

Study aims and hypotheses

While existing research shows that in most countries, there is a relationship between school pressure and health complaints, and that girls report more pressure and also more frequent health complaints than boys, there is currently little research on whether the association between pressure and health complaints varies significantly by gender across countries. For that reason, the aims of this study are first, to examine the prevalence of pressure from schoolwork in boys and girls from the three countries; and second, to analyse the links between pressure from schoolwork and health complaints, while considering gender as a potential moderator. Regarding potential moderation effects we hypothesised the following:

1. Gender will moderate the association between pressure from schoolwork and health complaints.
2. The moderating effect of gender will vary across Australia, England and Spain.

Given that teacher support and family affluence are known correlates of health complaints (Elgar et al., 2013; Låftman & Modin, 2012), these are included as controls in the analysis.

METHODS

Data

This study uses data from the international Health Behaviour in School-aged Children (HBSC) survey in England and Spain (conducted on 11-15-year-old students), and the Australian Child Wellbeing Project (ACWP) survey (conducted on 9-14-year olds). The HBSC is a multinational survey of 11, 13 and 15-year-olds with data collection every four years in most OECD countries since the 1980s (although never in Australia). This paper uses data from the HBSC conducted in September 2013–April 2014 in England, and in March-December 2014 in Spain. The HBSC survey instrument facilitates exploration of associations between young people's health, family support, peer relationships and experiences at school (Inchley et al., 2016). The survey instrument for the ACWP survey was built on extensive consultations with children aged 8-14 years who identified the domains that they considered important for their wellbeing – these included family, health, peer relationships, and school (Redmond et al., 2016). Where possible, the ACWP incorporated measures from other validated surveys, including several key items from the HBSC 2014 survey used in the present study. The ACWP survey was conducted among students in school years 4, 6 and 8 in July-October 2014 (ages 9-10, 11-12 and 13-14, respectively). All three surveys were based on probability samples and were designed to be nationally representative.

Sub-samples of 11-12 and 13-14-year-olds from each country are compared in the present study (Australia: N=4,723; England: N=2,734; Spain: N=3,743). While weights

to adjust for non-response were available for all three countries, they were not applied in this study, as they were designed to be representative of slightly different populations in the three countries (specific age groups in the English and Spanish data; specific school years in the Australian data). However, a senate weight was applied to descriptive analyses to equalise age and country representation (with 11-12 and 13-14-year-olds in each country comprising 1/6th of the total weighted sample for the three countries). Girls comprised 51.3% of the Australian sample, 48.1% of the English sample and 48.3% of the Spanish sample.

With respect to data collection, for England and Spain, the recommendations set by the HBSC international network were followed (Roberts et al., 2009) A similar protocol was followed for Australia (Redmond et al., 2016). That is: adolescents themselves responded to the questionnaires, they did so during school hours and their participation was voluntary and anonymous.

Measures

Pressure from schoolwork: Students in all three countries were asked the following question developed by the HBSC study network, 'How pressured do you feel by the school work you have to do?', with four possible responses: 'Not at all', 'A little', 'Some', and 'A lot'. This was converted to a binary indicator ('a lot' = 1, otherwise 0). This indicator is described by Torsheim and Wold (2001a) as a *global* measure of school related stress in that it does not attempt to identify specific stressful events such as high-stakes exams.

Health complaints: Students in all three countries were also asked the same questions about the frequency with which eight common health complaints occurred: headache, stomach-ache, backache, sleeplessness, dizziness, and feeling low, nervous or irritable

(Ravens-Sieberer et al., 2008). High levels of health complaints can be interpreted as an indicator of stress. For this analysis, following practice in other studies, a binary indicator was derived where a value of 1 (otherwise 0) was given to students who reported experiencing at least two of the eight health complaints about every week or more in the six months before being surveyed (Inchley et al., 2016). The health complaints scale showed good reliability (α=0.81).

Teacher support: Similar (but not identical) questions were asked in all three surveys about teacher support. In the Australian survey, students were asked to respond to the item, 'At my school, there is a teacher or another adult who really cares about me.' In the English and Spanish surveys, students were asked to respond to: 'I feel that my teachers care about me as a person.' (Torsheim et al., 2000). For all three countries, a binary indicator was constructed and a value of 1 (otherwise 0) given to responses agreeing/strongly agreeing with the statement.

Family affluence: The HBSC Family Affluence Scale was also included because it has been shown to be a reliable predictor of health complaints (Elgar et al., 2013). This validated indicator was constructed from the same six items on household possessions in all three countries: number of cars, number of holidays, number of computers, number of bathrooms, own bedroom, and dishwasher in the home, giving a range of 0-13 (Inchley et al., 2016; Torsheim et al., 2016). This was converted to a binary relative deprivation indicator, with about 15% of the sample in each country classified as having low family affluence (a score of 7 or less in Australia, and 6 or less in England and Spain).

Analytical strategy

Analysis was conducted using Stata 16.1 (StataCorp, 2020). Where possible, missing values for key variables in the analysis were imputed (pressure from schoolwork, health complaints, teacher support, and family affluence). Since the data used in this analysis were categorical, Stata's Multiple Imputation by Chained Equations method was used to impute for missing data. In the Australian survey, 15% of observations included at least one imputed value, as did 17% in the English survey and 23% in the Spanish survey. Findings were consistent across non-imputed and imputed data.

Descriptive analyses were conducted to determine relationships among key variables. Logistic regression analysis was used to examine the association between pressure from schoolwork and health complaints. Binary indicators representing high school pressure, age (age 13-14=1), sex (girl=1), teacher support (low support=1) and family affluence (low family affluence=1) were included in the model. The 'high school pressure' item was interacted with sex. 'High school pressure' was also interacted with age, but this was excluded from the final model, as it was found to be non-significant. Results from both a single model (country interacted with every explanatory variable) and separate models for each country are reported as odds ratios. Differences between odds are calculated as log odds, with a Bonferroni Correction applied to the p-value (m=24).

The research for the Australian part of the study was approved by Flinders University Human Research Ethics Committee (no.5918). HBSC questionnaire and procedure in Spain were approved by the Ethics Committee of the University of Seville (Spain). Data for all three surveys used in this study are publicly available for bona fide researchers. See www.hbsc.org and http://www.australianchildwellbeing.com.au/

RESULTS

Table 1 shows that across the three countries, 14.9% of students reported ‘a lot’ of pressure from schoolwork - 14.7% in Australia, 11.1% in England and 18.9% in Spain. Proportions with ‘a lot’ of pressure were highest among older girls in Australia, and older boys and girls in Spain (about a quarter in all three cases). Overall, older students reported more frequent health complaints than younger students, and girls reported more frequent health complaints than boys.

[Insert Table 1 here]

In all three countries, significantly higher percentages of boys and girls reporting ‘a lot’ of pressure from schoolwork experienced frequent health complaints than those reporting lower pressure (Table 2). Moreover, percentages for girls were higher than percentages for boys. In all three countries, about three quarters of 13-14-year-old girls reporting ‘a lot’ of pressure experienced frequent health complaints. Among13-14-year-old boys reporting ‘a lot’ of pressure on the other hand, respective shares were more variable. While older boys in Spain reported higher levels of pressure from schoolwork than boys in Australia and England (Table 1), only about half of the boys in Spain reporting ‘a lot’ of pressure experienced frequent health complaints, compared to about seven in ten boys reporting ‘a lot’ of pressure in England and Australia.

[Insert Table 2 here]

Table 3 shows the adjusted odds of students experiencing two or more health complaints at least weekly. The base case model (Australia=1) shows that the adjusted odds of experiencing at least two health complaints per week were significantly lower for students living in England and Spain, and higher for low affluence students, students who did not agree that their teacher cared about them, and girls. Odds for students

reporting ‘a lot’ of pressure from schoolwork were notably high (OR=3.03; p<.001). Among the interactions with England, only age was significant. Among the interactions with Spain, age and girl were significant, with ‘a lot’ of pressure from schoolwork approaching significance (OR=0.702; p=.079). The interactions of girl*pressure and country*girl*pressure were not significant. Separate country models (Table 4) show that in all three countries the adjusted odds of experiencing frequent health complaints were significantly higher for girls and for students reporting ‘a lot’ of pressure. In the case of Spain, the interaction of girl*pressure approached significance (OR=1.475, p=.065). Table 4 also shows that teacher support was a significant predictor of health complaints in all three countries. Low affluence was a significant predictor in Australia (OR=1.293, p=.013), but not in Spain (OR=1.192, p=.056), or in England (OR=1.026, p=.846).

[Insert Table 3 here]

[insert Table 4 here]

Odds associated with interactions need to be interpreted in conjunction with main effects. Figure 1 shows marginal odds of having frequent health complaints for boys and girls, according to levels of pressure from schoolwork that they reported (derived from the model in Table 3). Bars on the Figure are scaled according to log odds, with *OR>1* converting to *log odds>0*, and *OR<1* converting to *log odds<0* (unlike odds ratios, log odds have the advantage of being symmetrically scaled). Differences between estimates are reported as differences in log odds in the text below. The ‘All countries’ panel (top left) shows that overall, both boys and girls who reported lower pressure from schoolwork had significantly lower marginal odds of experiencing frequent health complaints than boys and girls reporting ‘a lot’ of pressure. For students reporting low pressure from schoolwork, the odds of frequent health complaints were less than one for both boys and girls, but significantly higher for girls (difference in log

odds = 0.465, p<.001). For students who reported ‘a lot’ of pressure from schoolwork, odds of experiencing frequent health complaints were significantly greater than one, and significantly greater for girls than for boys (difference in log odds = 0.637, p<.001).

[Insert Figure 1 here]

The panels for each of the three countries in Figure 1 also show that among students reporting low pressure from schoolwork, girls had significantly higher marginal odds of frequent health complaints than boys. In each of the three countries too, boys and girls respectively reporting ‘a lot’ of pressure had significantly greater marginal odds of experiencing frequent health complaints than boys and girls reporting low pressure (although note that the marginal odds for boys in Spain who reported ‘a lot’ of pressure were not significantly different from one). Moreover, there were no significant differences across the three countries in the (relatively high) odds of girls who reported ‘a lot’ of pressure experiencing frequent health complaints (differences in log odds: Australia-England 0.053, p>.999; Australia-Spain 0.278, p>.999; England-Spain 0.330, p>.999). On the other hand, among students reporting ‘a lot’ of pressure, odds of experiencing frequent health complaints were higher for girls than for boys in all three countries. This difference was not significant in Australia or England, but was large and significant in Spain (difference in log odds: Australia 0.426, p=.211; England 0.445, p=.821; Spain 1.044 p<.001).

Robustness of results was tested using alternative estimations. First, analysis repeated on unimputed data gave similar results to those presented here (available on request). Second, the logistic regression analysis reported on Table 3 was repeated, replacing the binary health complaints dependent variable with an ordinal scale health complaints variable (range 0-8) with one point added to the scale for each health complaint experienced frequently; and replacing the binary pressure from schoolwork

explanatory variable with the original ordinal scale indicator with four values (ranging from ‘none at all’ to ‘a lot’). With this alternative model, there were still no significant differences across the three countries in the odds of girls who reported ‘a lot’ of pressure experiencing frequent health complaints (differences in log odds: Australia-England 0.087, p>.999; Australia-Spain 0.318, p=.386; England-Spain 0.230, p>.999). Odds of experiencing frequent health complaints for girls reporting ‘a lot’ of pressure were significantly higher than odds for boys in England as well as in Spain, but the difference was larger in Spain than in the other two countries (difference in log odds: Australia 0.352, p=.252; England 0.532, p=.007; Spain 1.088, p<.001).

DISCUSSION

Consistent with the literature, the overall findings presented here suggest that higher levels of pressure from schoolwork are associated with significantly more frequent health complaints in students, and that girls are likely to experience these more often than boys (Banks & Smyth, 2015; Låftman & Modin, 2012; Sonmark et al., 2016; West & Sweeting, 2003). However, findings for each country point to more nuanced associations, with differences between boys and girls experiencing ‘a lot’ of pressure being more pronounced in Spain than in Australia or England. Jessica Ringrose argues that the “neoliberal discourse of successful girls” (2007, p. 485) pits boys against girls in educational debates and raises expectations for girls’ educational performance. These arguments are consistent with tensions associated with pressure from schoolwork that research shows to have psychosomatic effects (Banks & Smyth, 2015; Sonmark et al., 2016; West & Sweeting, 2003). The overall findings from this study, that girls reporting ‘a lot’ of pressure from schoolwork also have the greatest marginal odds of frequent health complaints, provide some support for these arguments. However, identification of factors driving the greater gender differentials among students reporting ‘a lot’ of

pressure in Spain compared to Australia or England demands further consideration.

Higher rates of grade retention were identified as one education policy related factor setting Spain apart from Australia and England that could be associated with school pressure and its impact on health. A new educational law, to be implemented in Spain in 2022, states that grade retention should only be used in exceptional circumstances, when other support measures have been proven unsuccessful. However, it is not immediately clear whether this will impact gender differences in the health effects associated with school pressure in Spain, considering these effects are stronger for girls, while boys are more likely to repeat a grade (García-Pérez et al., 2014). On the other hand, the relatively strong association between pressure and health complaints for both boys and girls in Australia and England could be associated with national testing regimes and school choice policies in those countries, but here gender effects are more subdued. If policy concerns around pressure are driven by evidence on its association with mental health, then the gendered effects of both grade repetition and testing (both of which are part of education policy in several US states (Schwerdt et al., 2017) are worth exploring further in international comparison. However, findings for Spain (boys experience more pressure, but effects on health are stronger for girls) suggest the possibility of other explanations outside of education systems. Differences across countries in social expectations for boys and girls, or differences in economic factors such as youth unemployment may be worth exploring further. For example, OECD data suggest that unemployment rates have historically been considerably higher overall (and higher for women) in Spain than in Australia or the UK. Moreover, the gender gap in labour market participation (that is, proportion of the working age population who are employed or looking for work) is higher in Spain than in Australia or the UK (OECD, 2021). Whether factors such as these are associated with increased pressure to do well at

school and attendant mental stress is worthy of further investigation (Lager & Bremberg, 2009).

Finally, even though indicators of teacher support used in the present study are not fully consistent across the three countries, the relationship between teacher support and health complaints was consistently strong, with low teacher support being linked to increased odds of frequent health complaints. Putwain and colleagues have argued that a potential tension between teacher's roles with respect to pastoral care and pressure on them to demonstrate added academic value may reduce the impact of the teacher as a protective health asset (2009; 2012). On the other hand, the relationship between low affluence and health differs across the three countries. More research is needed to more fully unpack the relationship between affluence or socio-economic status, teacher support and pressure, their joint impact on student health, and gender differences in these relationships.

A number of limitations need to be highlighted in the context of the current findings. First, the cross-sectional design does not allow conclusions to be drawn concerning the causality of the reported associations. Second, the studies did not include any direct information on the sources of pressure from schoolwork, which could come from anxiety about performance in tests, or grade repetition, but also from parental expectation, or broader ecological factors such as post-school expectations. Third, information was exclusively drawn from adolescents' self-reports, and did not include any clinical measures of anxiety or mental distress. Finally, given that perceptions of pressure are shown to increase as students move towards their final years of schooling (Banks & Smyth, 2015), further study of gender differences in pressure and mental health among final year students is an important issue for future research.

CONCLUSION

In all three countries in this study, a strong association between students' reports of 'a lot' of pressure from schoolwork and experience of health complaints was found. However, while the relationship between pressure and health complaints was stronger for girls than for boys in all three countries, gender differences were most marked in Spain. This suggests that cross-country differences in education policy or ecological factors may influence how boys and girls experience the effects of school pressure.

The promotion of positive mental health and resilience among students is a priority for educational outcomes and for positively impacting young people's life chances. This paper confirms a strong overall positive relationship between school pressure and frequent health complaints among 11-12 and 13-14-year-old students in Australia, England and Spain, especially for girls. A key priority for education and health policies should be to better understand the factors that may influence this relationship. These factors may include mechanisms through which students are subjected to systematic pressure to improve their performances (through streaming, testing, and grade repetition, for example). How girls and boys may respond differentially to these pressures, and the role of teacher support in moderating these pressures, are key areas for education policy, and future research.

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Table 1
Sample proportions, by age, sex and country for 'a lot' of school pressure and frequent health complaints

	All		Australia		England		Spain	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
				'A lot' of school pressure				
boys aged 11-12	10.4	[8.2-12.6]	9.3	[4.5-14.1]	8.1	[5.5-10.7]	13.7	[10.2-17.2]
boys aged 13-14	18.1	[16.1-20.1]	16.2	[13.1-19.3]	12.1	[8.9-15.3]	25.4	[22.6-28.3]
all boys	14.3	[12.7-15.8]	13.1	[10.2-16.0]	9.9	[8.2-11.7]	19.6	[17.0-22.2]
girls aged 11-12	9.8	[8.3-11.3]	9.0	[6.5-11.5]	9.0	[6.7-11.2]	11.6	[8.6-14.5]
girls aged 13-14	21.3	[19.3-23.3]	24.3	[21.2-27.4]	15.1	[11.8-18.4]	25.0	[22.1-27.9]
all girls	15.5	[14.1-17.0]	16.0	[13.4-18.7]	12.3	[10.1-14.4]	18.3	[16.0-20.5]
Total	14.9	[13.6-16.2]	14.7	[12.4-16.9]	11.1	[9.5-12.6]	18.9	[17.0-20.9]
				Frequent health complaints				
boys aged 11-12	35.2	[32.1-38.3]	42.8	[35.6-50.1]	35.4	[31.7-39.1]	28.9	[25.3-32.5]
boys aged 13-14	41.2	[39.0-43.4]	46.4	[43.1-49.8]	41.9	[37.3-46.5]	35.5	[32.6-38.3]
all boys	38.2	[36.3-40.1]	44.8	[41.1-48.5]	38.4	[35.6-41.2]	32.2	[29.7-34.7]
girls aged 11-12	44.2	[41.1-47.3]	52.0	[46.7-57.3]	41.5	[37.7-45.2]	37.3	[33.0-41.6]
girls aged 13-14	57.2	[55.0-59.5]	56.3	[53.2-59.4]	58.9	[54.2-63.6]	56.4	[53.4-59.4]
all girls	50.7	[48.7-52.7]	54.0	[50.8-57.1]	50.9	[47.3-54.5]	46.8	[43.7-50.0]
Total	44.5	[42.9-46.1]	49.8	[47.0-52.5]	44.5	[41.7-47.3]	39.3	[37.2-41.4]

Table 2

Percent of boys and girls reporting two or more weekly health complaints, by low and 'a lot' of school pressure

	All		Australia		England		Spain	
	Low pressure	'A lot' of pressure	Low pressure	'A lot' of pressure	Low pressure	'A lot' of pressure	Low pressure	'A lot' of pressure
boys aged 11-12	32.2	61.2	39.6	74.2	32.7	65.8	25.4	51.1
	[28.9-35.5]	[53.5-68.8]	[31.6-47.6]	[59.9-88.6]	[29.4-36.1]	[54.6-77.0]	[21.4-29.3]	[40.1-62.1]
boys aged 13-14	37.1	59.8	42.0	69.2	37.9	71.3	30.9	48.9
	[34.6-39.6]	[55.4-64.2]	[38.8-45.2]	[63.4-75.0]	[32.5-43.3]	[63.1-79.6]	[27.5-34.2]	[42.2-55.6]
all boys	34.5	60.3	40.9	70.8	35.0	68.9	27.9	49.7
	[32.5-36.6]	[56.2-64.4]	[36.8-45.0]	[64.7-76.9]	[32.1-37.9]	[62.7-75.1]	[25.1-30.7]	[43.5-55.8]
girls aged 11-12	41.1	72.4	48.7	85.3	38.8	68.5	33.9	63.1
	[37.9-44.4]	[65.2-79.7]	[43.0-54.5]	[74.4-96.2]	[35.1-42.5]	[57.9-79.1]	[29.7-38.2]	[50.9-75.4]
girls aged 13-14	51.5	78.4	49.5	77.3	54.5	83.6	49.9	76.0
	[49.0-54.0]	[75.2-81.6]	[46.4-52.6]	[73.3-81.4]	[49.4-59.6]	[77.1-90.2]	[46.3-53.5]	[70.4-81.6]
all girls	46.0	76.5	49.0	79.8	47.0	78.6	41.2	71.9
	[43.8-48.1]	[73.3-79.8]	[45.5-52.6]	[75.2-84.3]	[43.5-50.5]	[72.4-84.8]	[38.0-44.5]	[66.3-77.5]
All boys and girls	40.2	68.8	45.2	76.1	40.8	74.1	34.4	60.0
	[38.5-41.9]	[66.0-71.6]	[42.2-48.3]	[72.2-80.0]	[38.0-43.6]	[69.1-79.2]	[32.2-36.6]	[55.7-64.3]

Table 3

Adjusted odds of experiencing at least two or more health complaints per week

	Base		Interactions with England		Interactions with Spain	
	odds	p	odds	p	odds	p
England	0.675	.005				
	[0.514 - 0.887]					
Spain	0.448	<.001				
	[0.336 - 0.598]					
Age 13-14	0.964	.745	1.403	.023	1.508	.003
	[0.772 - 1.203]		[1.048 - 1.877]		[1.145 - 1.987]	
Low family affluence	1.293	.013	0.794	.170	0.922	.556
	[1.056 - 1.584]		[0.57 - 1.105]		[0.702 - 1.21]	
Teachers care (does not agree)	1.558	<.001	1.210	.120	1.005	.963
	[1.363 - 1.78]		[0.951 - 1.54]		[0.814 - 1.241]	
Pressure from schoolwork (a lot)	3.025	<.001	1.192	.419	0.702	.079
	[2.334 - 3.92]		[0.779 - 1.823]		[0.472 - 1.043]	
Girl	1.373	<.001	1.152	.205	1.403	.003
	[1.186 - 1.59]		[0.926 - 1.433]		[1.12 - 1.756]	
Girl*school pressure	1.115	.510	0.885	.653	1.323	.293
	[0.807 - 1.54]		[0.521 - 1.504]		[0.784 - 2.232]	
Constant	0.598	<.001				
	[0.473 - 0.756]					
N	11,200					

Note. 95% CIs are presented in square brackets. Fit statistics: pseudo R^2: 0.065; c-statistic: 0.663.

Table 4

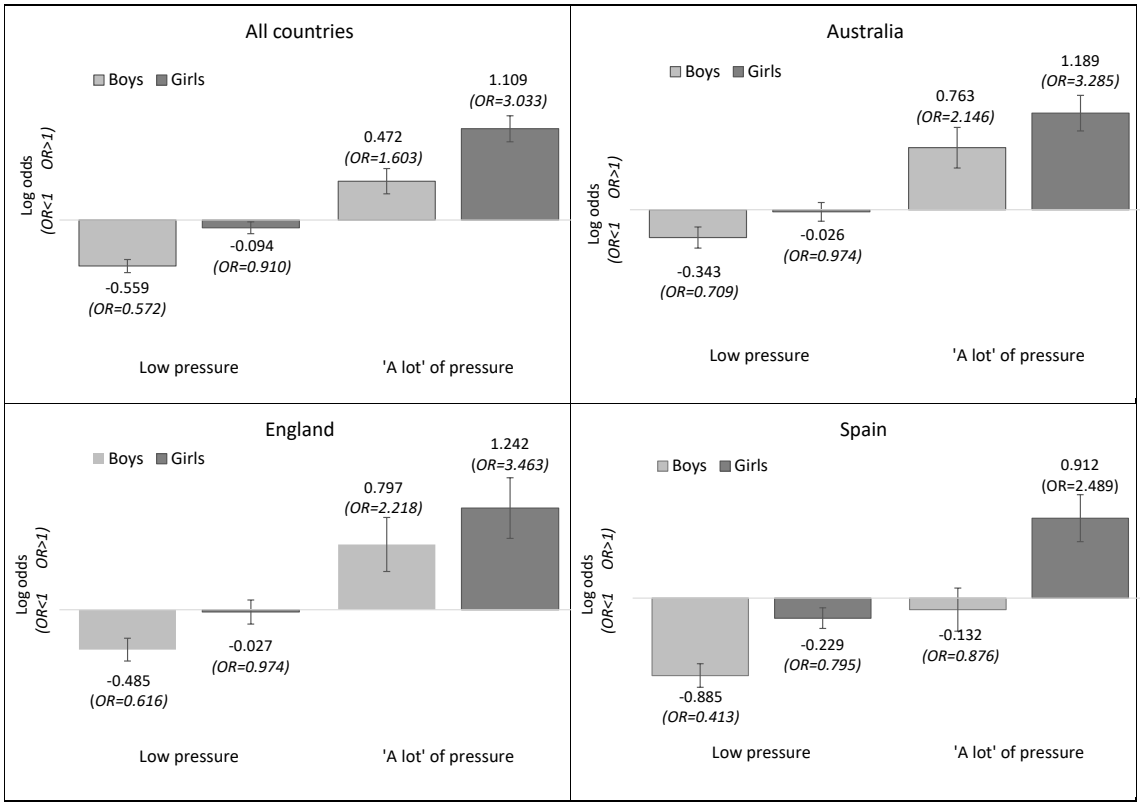
Adjusted odds of experiencing at least two or more health complaints per week (separate models for Australia, England and Spain)

	Australia		England		Spain	
	odds	p	odds	p	odds	p
Age 13-14	0.964	0.746	1.352	0.002	1.454	<.001
	[0.772 - 1.204]		[1.117 - 1.637]		[1.236 - 1.711]	
Low family affluence	1.293	0.013	1.026	0.846	1.192	0.056
	[1.056 - 1.584]		[0.789 - 1.335]		[0.995 - 1.427]	
Teachers care (does not agree)	1.558	<.001	1.885	<.001	1.565	<.001
	[1.363 - 1.78]		[1.539 - 2.309]		[1.329 - 1.843]	
Pressure from schoolwork (a lot)	3.025	<.001	3.604	<.001	2.122	<.001
	[2.333 - 3.921]		[2.565 - 5.064]		[1.573 - 2.863]	
Girl	1.373	<.001	1.582	<.001	1.926	<.001
	[1.186 - 1.591]		[1.345 - 1.86]		[1.613 - 2.3]	
Girl*school pressure	1.115	0.511	0.987	0.952	1.475	0.065
	[0.806 - 1.541]		[0.647 - 1.507]		[0.976 - 2.229]	
Constant	0.598	<.001	0.404	<.001	0.268	<.001
	[0.473 - 0.756]		[0.352 - 0.463]		[0.226 - 0.318]	
N	4,723		2,734		3,743	

Note. 95% CIs are presented in square brackets. Fit statistics: Australia Pseudo-R^2: 0.053; c-statistic: 0.654. England: Pseudo-R^2: 0.061; c-statistic: 0.650. Spain: Pseudo-R^2: 0.069; c-statistic: 0.670.

Figure 1

Predicted odds of boys and girls experiencing at least two or more health complaints per week, by pressure from schoolwork (log odds; odds ratios in parentheses).



Note. 'mimrgns' macro in Stata 16 was used to predict adjusted odds, based on logistic regression results shown in Table 3. Age, family affluence and teacher support indicators set at sample means. Bar heights are set to the log odds scale, with the horizontal axis at 0, (*OR=1*). Bars below the horizontal axis have *OR<1*, while bars above the axis have *OR>1*. Error bars represent 95% CIs.