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An exploratory analysis of the personal, school and demographic variables affecting the homework effort of Australian secondary students

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Recent reports based on PISA data have shown a generally positive relationship between the amount of time spent on homework and achievement, and a negative relationship between a measure of socioeconomic status and homework time for secondary students. These findings suggest that homework practices are either reflecting or contributing to achievement differences based on a students' socioeconomic and cultural background. However, a research gap has been identified in relation to how other demographic and educational variables associated with differences in achievement relate to differences in homework practice. We examined relationships between student socioeconomic status, gender, language background, school type and school location with various measures of homework time and frequency of completion for mathematics homework; two measures of homework time and effort available in the 2012 PISA data. Analysis of Australian 2012 PISA data largely confirmed that factors associated with variation in achievement were generally also associated in measures of homework practice. Suggestions are made for further research to illuminate the processes by which the independent variables examined affect homework practice.

Introduction

Recent OECD reports based on PISA have shown a generally positive relationship between the amount of time spent on homework and achievement, and a negative relationship between a measure of socioeconomic status and homework time for secondary students (OECD, 2014; OECD., 2016). This suggests that homework practices are either reflecting or contributing to achievement gaps based on a students' socioeconomic and cultural background. It is likely that identifying demographic and other variables associated with students' homework practices is a useful first step in developing and targeting effective pedagogical strategies around homework. As noted by Lareau (1987), much research examining the effects of student family background on education has focussed largely on outcomes rather than processes. However, in order to reduce the degree to which structural variables such as socioeconomic status (SES), parental education, gender, cultural background, and the like

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influence educational outcomes, it is important to first establish which of these factors are linked with processes, like homework practices, that may produce differential outcomes on an aggregated level.

Bourdieu's explanations of the economic and cultural generation of family and student dispositions to school (1977), combined with Wigfield and Eccles' Expectancy Value theories of achievement motivation(2002) offer a framework of looking at homework that may account for some of the differences in homework practices at both an aggregated and individual student level. Strong links between the student level factors examined here and homework practices would support elements of both theoretical perspectives.

Given that the OECD has reported that Australian secondary students report considerably more homework time than the OECD average (2014), and that a research gap on the factors affecting homework practices has been identified (Horsley & Walker, 2013; New South Wales Department of Education and Communities, 2012). The aim of this paper is to examine what PISA data for Australian students reveals about variations in homework practice. The predictor variables of interest here are student family SES, gender, language spoken at home, grade repetition, school type and school location. Justifications for the selection of these particular independent variables follow below.

Defining homework

Cooper's definition of homework, or very similar definitions are, commonly employed by researchers attempting to measure its use (Daw, 2012; Horsley & Walker, 2013; Lutz & Jayaram, 2015; Maltese, Tai, & Fan, 2012). Cooper's definition of homework is 'tasks assigned to students by school teachers that are meant to be carried out during non-school hours (excluding) in-school guided study, home study courses, and extracurricular activities' (Cooper, 1989b, p. 86). This definition is also very similar to that used by PISA in its questionnaire administered to 15-year-old students which asks them to estimate how many hours they spend per week on 'Homework or other material assigned by your teachers' (OECD, 2013, p. 233). Although the questions that follow in the PISA survey ask for separate estimates of time spent with home tutors; in outside-of-school classes; on 'Practice content from school lessons by working on a computer'; and studying 'with a parent or other family member', it is not clear whether 'material assigned by your teachers' is inclusive or exclusive of these subsequent categories, highlighting the difficulties associated with defining and measuring homework and its utility. PISA data also includes students' assessments of the frequency with which they complete mathematics homework which offers another, domain specific way of conceptualising homework practice.

Together, the PISA measures of homework offer useful ways of quantifying homework time and effort. However, these measures are also problematic in some ways. For instance, there may be differences in the level of student autonomy required by different homework assignments (compare a mathematics worksheet to an exploratory research assignment, for example), and for many, one of the primary goals of homework is to promote independent learning (Bempechat, 2010). Such definitions as PISA's do not reveal the level of autonomy exercised in homework practice, nor do they reveal the wide range of forms or functions that homework can take. PISA's homework data does, however, offer convenient, if general, dependent variables on which variation can be measured against a broad range of predictor variables.

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Homework in Australia

According to the most recently available PISA data, in 2012 Australian 15 year-old students report undertaking around six hours of homework per week– an hour more than the OECD average (Figure 1). It is important to note that this amount of homework time is similar to the amount of time recommended for this age group (as reflected by modal year level) by the Victorian Department of Education and Training (2014).
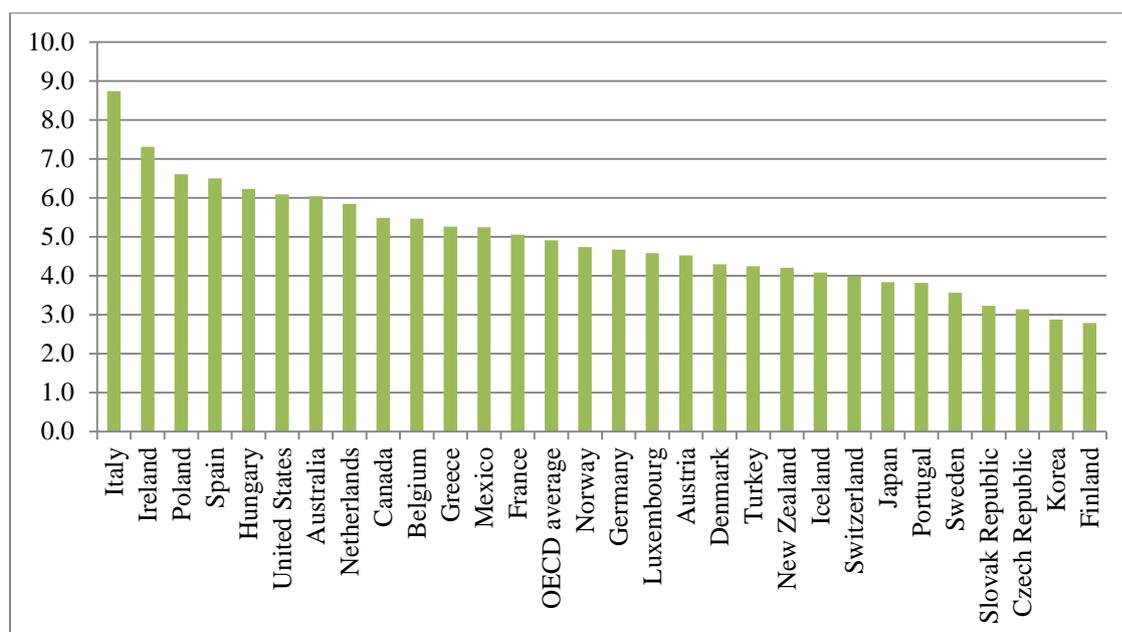

Figure 1. Hours of homework per week – PISA 2012. Source: (OECD, 2014))

The PISA data also shows that although the OECD average amount of reported weekly homework time declined by around an hour between 2003 and 2012, homework time in Australia increased by 24 minutes over the same period..

Australia also stands out from the bulk of OECD countries in the degree to which the amount of reported homework time varies by SES. The SES measure used in Figure 2 is PISA's index of economic, social and cultural status [ESCS]. In Australia, the difference in reported homework time between the top and bottom ESCS quartiles was 2.9 hours compared to the OECD average of just 1.7 hours (Figure 2).

The relationship between homework time and socioeconomic status in Australia suggests that this variable is a strong predictor of the amount of homework time undertaken. It is of interest here to examine whether/and how other statistical predictors of achievement, such as those listed above, also relate to the amount of time spent on homework or the frequency with which mathematics homework is completed.
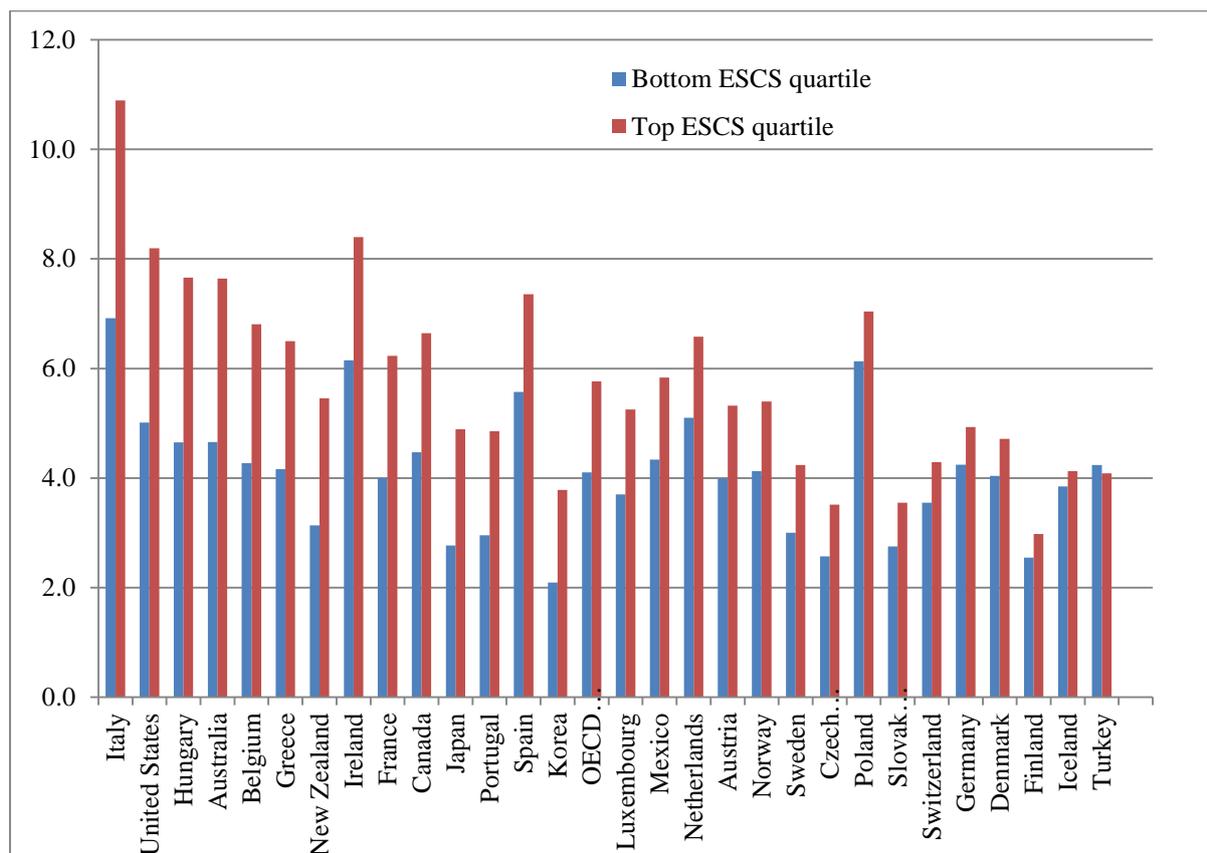
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Figure 2. Weekly homework hours, bottom and top ESCS quartiles, PISA 2012. Source: (OECD, 2014)

Benefits and costs of homework

Positive effects of homework

Although the relationship between homework and achievement is often the subject of much contention, evidence of a positive relationship between homework time and achievement for secondary students is more generally supported than for primary school students (Cooper, 1989a; Daw, 2012; Hattie, 2013; Horsley & Walker, 2013). Such support is not universal however and heterogeneous effects of homework on achievement for secondary students are commonly reported. For example, a study of 2003 PISA data found that the relationship between homework time and achievement varied by the aggregation level of these measures (from the student, to the school, to the nation) and across national systems (Dettmers, Trautwein, & Lüdtke, 2009). A study of the 1988 cohort of the U.S. National Educational Longitudinal Study found not only that the relationship between homework time and achievement varied by parental income (with the relationship being stronger for students with higher parental income), but that it also varied by year level and subject area. This study also found that the achievement returns to homework were non-linear and that achievement benefits declined after a certain amount of time spent on out-of-school study (Daw, 2012). Flunger et al. (2015) in their study of German students studying French as a second language found that the relationship between homework time, homework effort, and achievement varied by

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learning styles. Taken together, this research suggests that effective homework practice is dependent on a range of contexts.

Cooper acknowledges that homework's benefits for immediate achievement and learning are largely associated with increased time on-task (1989a, p. 10). The theoretical basis of the benefits of extra time on-task in the schooling context is often sourced back to Carrol's model of classroom achievement where time provided for the opportunity to learn was an important input variable for achievement, albeit one that was tempered by a student's aptitude, perseverance and instructional quality (Carroll, 1989). The concept of academic learning time (ALT) builds on Carrol's original formulation by describing a taxonomy of qualitative measures of how time on task is spent (Berliner, 1990). Although during homework time a teacher has less direct opportunity to control the quality of engagement, allocated time, at least, is increased.

It is the absence of a proximate teacher that actually accounts for another of homework's purported benefits by providing the space for students to move from proximal to actual developmental stages of learning (Horsley & Walker, 2013; Tharp & Gallimore, 1991). Theoretically, homework is also beneficial in providing students with the opportunity to develop and practice self-directed and self-regulated learning. Several researchers propose that homework plays an important role in the development of student's metacognitive capacities including achievement beliefs, self-efficacy, self-regulation, and locus of control (Bempechat, 2010; Kitsantas, Cheema, & Ware, 2011; Ramdass & Zimmerman, 2011; Zimmerman & Kitsantas, 2005). Bempechat argues that 'homework assignments provide children with the time and experience they need to develop beliefs about achievement and study habits that are helpful for learning, including the value of effort and the ability to cope with mistakes and difficulty' (Bempechat, 2010, pp. 189-190).

Another claimed benefit of homework is its capacity to increase parental engagement with student's learning although this too has been found to vary across contexts (Patall, Cooper, & Robinson, 2008). As Hallam notes, 'In the UK and Australasia, school–home relationships can be fraught with difficulty. Particularly in secondary education, parental roles are not well defined and their potential to contribute can be a source of misunderstanding between teachers and parents.' (2009, p. 48). Despite variations in parents' capacities to support homework, homework at least provides time and space in which students may further develop and consolidate their learning and enhance their cognitive and metacognitive capacities.

Negative effects of homework

Cooper's meta-analysis of homework research lists some of the suggested negative effects of homework. These effects include satiation (including emotional and physical fatigue), a reduction in time available for leisure and community activities, parental interference, increased opportunities for cheating, and 'increased differences between high and low achievers' (1989b, p. 86). Previous studies have suggested that the achievement payoffs for extra time invested in homework are greater for students from higher SES backgrounds (Daw, 2012; Ronning, 2011). Lamkin and Saleh suggest that homework provision

> … can elevate the Mathew's effect: Parents from low socioeconomic and educational
> background can provide little support to their children at home, while parents from high
> socioeconomic and educational background are more able to provide support to their
> children at home. This practice can directly contribute to increasing the gap between the
> poor and rich children (2010, pp. 452-453).

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Conversely, the OECD posits that a lack of homework undertaken by low performing secondary students is an explanation of the achievement gap: 'Low performers are not devoting enough time to homework – at least not more than their better performing peers – to close the performance gap'(OECD., 2016). Confusingly, it may appear that homework is both the performance gap's malady and remedy. Such contrary positions are not surprising given the complex range of homework's forms, functions and contexts.

According to Horsley and Walker, 'An audit is required to examine the relationship between homework practices and socioeconomic status, within and across classrooms and schools. Specific analysis is needed to correlate the quantity of homework and the socioeconomic level of students' (2013, p. 197). As shown above, high SES Australian 15 year-olds were already undertaking substantially more homework than their low SES counterparts in 2012. At an Australian level, a more complete audit of homework practices should include other variables known to be associated with achievement differences both at a student and school level as well as any interactions between these variables. To our knowledge, such an audit has not been conducted with Australian PISA data.

Research questions

The specific aim of this study is to examine whether student background variables, traditionally associated with differences in measures of student achievement, predict the amount of time 15 year-old Australian students report spending on homework, the likelihood of a student reporting that they undertake no homework, and the frequency with which they complete mathematics homework. These independent variables are described below..

Socioeconomic Status

As mentioned above, students from the lowest SES quartile in Australia report undertaking almost three hours less homework per week than the highest SES quartile (OECD, 2014)OECD, 2014. We predict that SES will be positively related to reported homework time, negatively related to the likelihood of reporting no homework. Given that low SES students spend less time on homework on average we predict that students' SES will also be positively related to the frequency of mathematics homework completion.

Gender

Reported homework time has also been shown to vary by gender , with girls reporting more homework time than boys (Mau & Lynn, 2000; Xu, 2006) although the opposite has been found in relation to mathematics homework (Kitsantas et al., 2011). In line with this research, it is predicted that female students will report more homework hours than males and be less likely to report no homework. We predict that gender differences will disappear or reverse for the mathematics homework completion.

Grade repetition

A study of PISA data from 2009 has found that students who had repeated a grade had lower results on measures of achievement than those who had never repeated a grade, 'even after controlling for student socio-economic background and a set of individual differences' (Ikeda & García, 2014, p. 291). It has also been found that students who have repeated a grade a less likely to engage in self-regulated learning, suggesting that these students may also engage in less homework time (Rosário,

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Núñez, Valle, González-Pienda, & Lourenço, 2013). It is predicted that grade repeaters are likely to report less homework across all models.

School Type

It has been observed that American non-government school students report more homework time on average than public school students (Deluca & Rosenbaum, 2001). Internationally, PISA data shows that private school students report undertaking more homework than government school students (OECD, 2014). It is predicted that a similar situation will exist in Australia

Language spoken at home

Australian studies have found that secondary students from non-English speaking backgrounds are more likely to participate in higher education than student from English speaking backgrounds (Marks, Fleming, Long, & McMillan, 2000), and are more likely to achieve 'outstanding results' (Considine & Zappalà, 2002). It is predicted that students from families where a language other than English is spoken will report undertaking more homework and a higher frequency of mathematics homework completion.

School location

It has been found by the Victorian Auditor General that 'rural students are less likely to realise their learning potential and maximise their educational achievement', due to 'individual aspirations, socio-economic influences and the proximity and quality of education services' (Victorian Auditor-General's Office, 2014). It has also been found by Xu (2009) that for Grade 8 students in the USA, rural students reported being less self-motivated for homework tasks. Given these findings, it is predicted that non-metropolitan students will report lower levels of homework time and less frequent mathematics homework completion.

Methodology

PISA data

The PISA student survey was administered to 14481 Australian, 15-year-old students of which 8995 provided estimates of how many hours they spent per week on 'Homework or other material assigned by [their] teachers' (OECD, 2013, p. 233). Questionnaires were administered in the second half of 2012. These students were selected randomly from within 769 schools which in turn were selected by stratified sampling methods. Descriptive statistics for categorical predictor variables are provided in Table 1. Slightly more than 38 per cent of the sample did not report their estimates of weekly homework time. The implications of the missing data are discussed below.

Table 1

Descriptive statistics for categorical variables

Variable	Category	Frequency	Mean Weekly homework	SE Weekly homework time

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			time	
Gender	Female	4411	6.56	0.12
	Male	4543	5.55	0.13
Grade repetition	No grade rep.	8264	6.13	0.10
	Grade rep.	594	4.72	0.26
	NA	96	6.42	0.88
School type	Private	5356	7.37	0.15
	Public	3586	5.08	0.10
	NA	12	2.88	0.26
English spoken at home	English main language spoken at home	7857	5.86	0.09
	Language other than English spoken at home	786	7.77	0.28
	NA	311	5.77	0.38
Location	Non metropolitan region	5718	5.29	0.11
	Metropolitan region	3029	7.11	5.88
	NA	207	4.53	0.71

Note. Means and standard errors reflect applied sampling weights

Predictor variables

Two of the categorical predictor variables have been recoded to simplify the models that follow. Grade repetition has been reduced from three response options (never repeated a grade, repeated a grade once, repeated a grade twice or more) to a binary variable (never repeated a grade, repeated a grade one or more times). Schools located in centres with a population of less than one million people have been collapsed into a single category of 'non metropolitan region'.

PISA's measure of SES is its index of economic, social and cultural status (ESCS). This index is based on parental occupational and educational status, family wealth, and home educational and cultural resources. The ESCS index is a standardised score with a mean of zero and a standard deviation of one (Thomson, De Bortoli, & Buckley, 2013).

Dependent variables

The first dependent variable is students' estimates of hours spent on homework per week. The distribution of this variable is shown in Figure 3. As can be seen the variable is highly skewed and zero-inflated. The second dependent variable is a four point Likert scale response to the statement: 'I have my homework finished in time for mathematics class' with responses ranging from 'Strongly agree' to 'Strongly disagree'.

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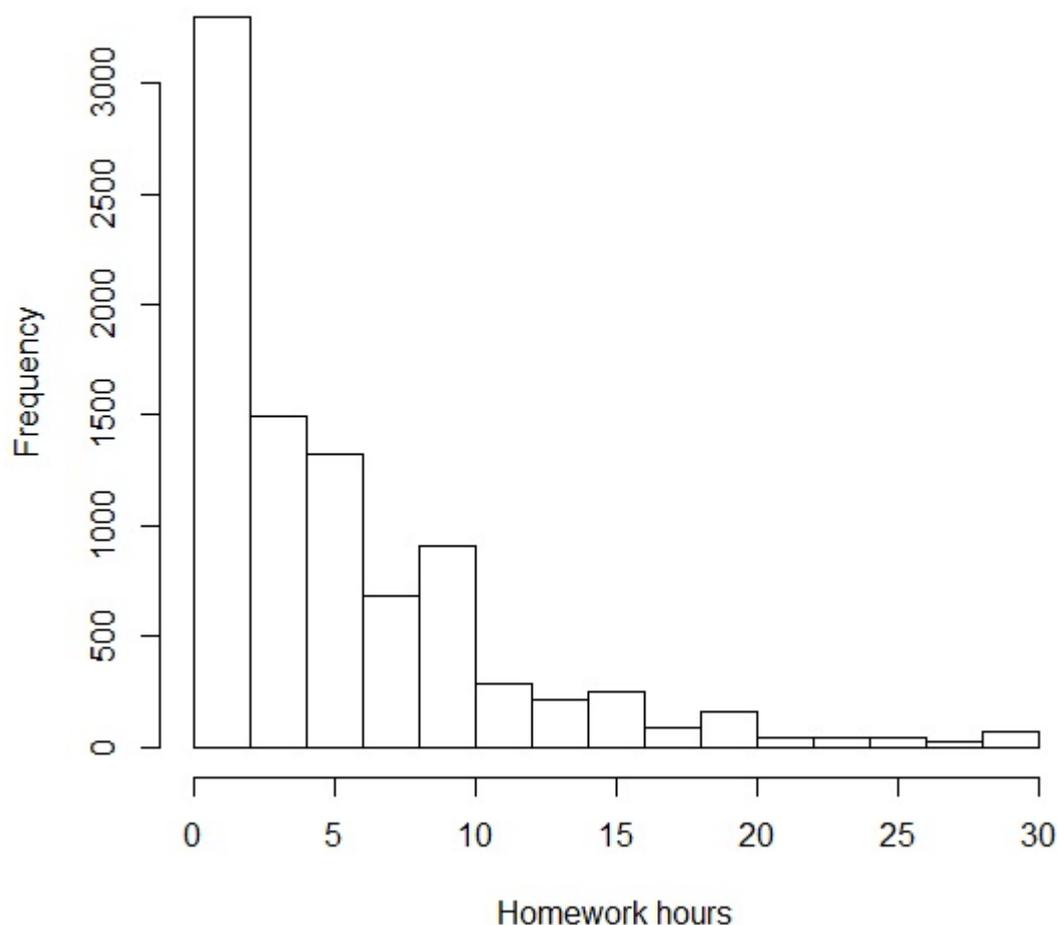Contact Email: jbowd@student.unimelb.edu

Figure 3. Histogram of weekly homework time

Missing data

As mentioned above, a large proportion of the initial survey sample did not report homework time. To test whether there was a systematic pattern of missing data across the independent variables, a binary logistic regression was conducted with the dependent variable coded as missing or not missing. Compared to the proportions contained in the original sample, low SES and government school students were significantly under-represented in the dataset utilised. We rely on the large size of the sample to preclude systematic bias based on missing data although the existence of bias resulting from missing data remains a possibility that may be avoided by more sophisticated analytical techniques.

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Results

Homework time

Mixed effects models were chosen for the analysis as the grouping of students within schools has the potential to violate the independence of predictor variables assumption required for the use of ordinary least squares (OLS) regression models (Raudenbush & Bryk, 1986). As the dependent variable follows a highly right-skewed and a zero inflated distribution, a two-step approach was employed to bypass some of the complexities of fitting such models. Firstly, a generalised linear mixed logistic regression model with a random intercept at the school level and fitted by maximum likelihood estimation was employed to examine the factors determining the likelihood of students reporting no homework (scored as zero, n=835) to any amount of homework (scored as one, n=8119). All analyses were conducted using R (R Core Team, 2014). Model log odds are presented in Table 3.

Table 3

Mixed effects logistic regression results – zero and more than zero hours per week of homework reported

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	3.26	0.14	23.26	0.001***
ESCS	0.62	0.06	11.17	0.001***
Gender– (male)	-0.89	0.09	-10.04	0.001***
Grade repetition (yes)	-0.17	0.16	-1.08	0.281
Language other than English at home	0.54	0.18	3.03	0.002**
School type (private)	1.19	0.14	8.81	0.001***
Location (non metro)	-0.72	0.13	-5.54	0.001***

*p<.05. **<.01 ***<.001

Table 3 shows that students from non-metropolitan schools, males, government school students, students from homes where English is the only language spoken, and low SES students are all more likely to report undertaking no homework than students from metropolitan schools, female students, non-government school students, students from homes where a language other than English is spoken, and high SES students. Comparisons of log likelihood values showed that the model presented here was significantly different from an intercept only model (chi square = 887.71, p<.001, df = 6), suggesting that all of the predictor variables explained the differences in homework behaviour except grade repetition.

The second step was to run a separate model for only those students who reported at least one hour of homework (all reported homework was rounded to the nearest hour). A generalised linear mixed model with a Gamma link was used to most closely fit the distribution of the dependent variable. The estimation method was maximum likelihood. As with the first model, a random intercept at the school level was employed to account for variance in homework time explained by within-school correlations. Model coefficients are presented in Table 4 below.

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Table 4

Generalised linear mixed model coefficients for homework time > 0 hours per week

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	1.77	0.03	57.28	0.001***
ESCS	0.14	0.01	11.26	0.001***
Gender– (male)	-0.13	0.02	-6.77	0.001***
Grade repetition (yes)	-0.13	0.04	-3.52	0.001***
Language other than English at home	0.22	0.03	6.76	0.001***
School type (private)	0.29	0.03	9.46	0.001***
Location (non metro)	-0.20	0.03	-6.24	0.001***

*$p<.05$. **$<.01$ ***$<.001$.

As can be seen, the predictors are largely similar with those in the logistic regression model with the exception that grade repeaters are shown to undertake less homework than those who did not repeat a grade although the average difference is just 8 minutes per week ($p<.001$). Similarly, females reported undertaking just 8 minutes less homework than males when other predictors in the model were controlled for ($p<.001$). The biggest gap in homework time is between private and government schools with private school students reporting an extra 17 minutes per homework when other predictor variables are held constant ($p<.001$).

It is difficult to say from the results presented here whether the non-significant log odds for grade repeaters in the zero homework time versus non-zero homework model reflects a real difference in the phenomena being measured (i.e. the propensity to do little homework compared to do no homework), or is the result of an unbalanced design in the former model due to there being relatively few grade repeaters and few students reporting zero homework hours.

In assessing the model in Table 4, a correlation matrix did not suggest significant collinearity between predictor variables, and a qqplot and histogram of the model's residuals showed them to be approximately normally distributed and consistent across magnitudes of the dependent variable. The model was fitted using the lme4 package in R (Bates, Maechler, Bolker, & Walker, 2014).

Mathematics homework completion

Responses to the mathematics homework completion question were available from 9411 students. Response frequency counts are presented in Table 5.

Table 5

Frequency counts for responses to 'I have my homework finished in time for mathematics class'

Response	n

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Strongly agree	1699
Agree	4496
Disagree	2549
Strongly disagree	667

A mixed effects ordinal logistic regression model was originally fitted but two predictor variables violated the proportional odds assumption. As a result, responses to this question were collapsed into two categories, 'Agree' (1) and 'Disagree' (2) and were modelled with a binary logistic regression using the same technique to produce the results displayed in Table 3 (above). The log-odds for predictor variables are presented in Table 6.

Table 6

Mixed effects logistic regression results – 'I have my homework finished in time for mathematics class'*

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-0.54	0.06	-9.16	0.00***
ESCS	-0.31	0.03	-9.93	0.00***
Gender (male)	0.09	0.05	1.91	0.06
Grade repetition (yes)	0.16	0.09	1.73	0.08
Language other than English at home	-0.35	0.09	-4.08	0.00***
School type (private)	-0.28	0.06	-5.11	0.00***
Location (non metro)	0.00	0.06	0.05	0.96

*p<.05. **<.01 ***<.001

Note. 0=Agree, 1=Disagree

The log odds in Table 6 show that low SES students, students from homes where English is the only language spoken, and students from government schools are more likely to disagree with the statement: 'I have my homework finished in time for mathematics class'. Whereas males, grade repeaters and non-metropolitan students estimated spending less time on homework (Table 4), they were not significantly more likely to report that they did not complete mathematics homework in time for class although the signs were consistent with the previous models. Comparisons of log likelihood values showed that the model presented here was a significantly different from an intercept only model (chi square = 1080.9, p<.001, df = 6), suggesting that the predictor variables are explaining differences in homework behaviour.

Discussion

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The results obtained here are largely supportive of the conclusion that many of the demographic and educational variables associated with achievement are also positively associated with students' reported estimates of weekly homework time and, to a lesser extent, the timely completion of mathematics homework.

For all predictor variables except one it was found that predictors of achievement from research literature were significantly related the binary measure of homework time (none versus any) with grade repetition being the exception. There may be a possibility that this exception is due to low cell counts for this category of student.

For all predictor variables it was also found that for students who reported more than zero hours of homework per week there was a significant relationship between predictor variables and homework time reported.

For mathematics homework it was found that for higher SES students, private school students and students from households where a language other than English was spoken were more likely to report that they finished their mathematics homework on time. The same caveats around smaller cell sizes that applied to the first model also apply to this model given the analysis technique employed. It is interesting that although non-metropolitan students reported undertaking less homework and were more likely to report undertaking no homework, there was no significant difference for them in reported mathematics homework completion. Taken together, these findings support the conclusion that overall reported homework time and mathematics homework completion are reflecting different phenomena as found by Trautwein et al. (2006).

These findings, however, are not sufficient to prove that variation in homework time is the cardinal explanation of differences in achievement associated with students' demographics or their educational histories; the direction of causality may flow in the opposite direction. It may be that variations in achievement linked to demographic and educational variables explain differences in homework practice, or that these variables are explaining differences in homework practices and achievement independently. Such a conclusion would be supported by support Bourdieu's concept of habitus and Eccles and Wigfield's expectancy value model of educational motivation. Both theories explain why there may be differences in perceived opportunity costs in spending time and effort on homework across demographic variables. Norms associated with 'collective identities' shaped by demography may also affect how time and effort on homework may is valued in relation to alternative activities (Eccles, 2009).

For Bourdieu, habitus is a dispositional reaction to students' 'objective chances' of academic success in the context of their access to cultural capital:

> The disposition to make use of the School and the predispositions to succeed in it depend…on the objective chances of using it and succeeding in it that are attached to the different social classes, these dispositions and predispositions in turn constituting one of the most important factors in the perpetuation of the structure of educational chances as an objectively graspable manifestation of the relationship between the education system and the structure of class relations (Bourdieu & Passeron, 1977, pp. 204-205).

Crucially, habitus is framed as a driver of practice in a particular field (such as the School). In a similar fashion, Eccles and Wigfield's expectancy value theory of achievement motivation includes the functioning of identities influenced by an adolescent student's cultural milieu including 'gender role stereotypes' and 'cultural stereotypes of subject matter and occupational characteristics'(Wigfield & Eccles, 2002, p. 93). Although Eccles and Wigfield are more concerned with individual variations

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in expectancy of success and perceived value associated with specific educational tasks (and the relationship between those expectancies and values), together both theories offer an explanation of how demographic differences may account for differences in homework practice and, more importantly, how these differences may be addressed. The relationships between measures homework practice and student background variables found in this study offer tentative support for both theories.

There are several ways in which the analysis presented here could be improved upon. As mentioned above, a more thorough accounting of missing data and allowances for unbalanced cell frequencies for logistic regression models are warranted. The homework time variable relies on students' estimations whereas time-diary analysis may provide a more objective measure of homework time. Expanded quantitative and qualitative research exploring measures of motivation and differences in student background variables may provide more understanding of the underpinnings of effort, and investment of time applied by students to homework commitment..

Conclusion

Notwithstanding the possibility that demographic factors theoretically associated with motivation may contribute to differences in homework practice, the evidence presented here does not conclusively prove the existence any direct causal relationships. It may be that more immediate, material differences, apart from motivational factors, are accounting for differences in homework practice associated with variation in demographic and educational variables. For instance, it may simply be the case that more discretionary time in which homework may be performed is available for high SES students and metropolitan students. It may also be the case that the material requirements necessary for homework such as a place to study and other educational resources such as parental time for support, differ across demographic variables. Similarly, students from non-English speaking backgrounds may simply need more time to address challenges posed by a curriculum delivered in a second language (although this would not explain their tendency to be more likely to complete mathematics homework on time).

Further research examining the relationship between the independent variables examined here and measures of other factors such as motivation, as well as their interactions with homework and achievement, has the potential to offer a more complete explanation of the relationship between homework, demography and other educational variables. Importantly, conclusions that will be of direct value to practitioners are more likely to be gathered from a substantial and rigorous qualitative examination of how homework is perceived and motivated by students with varying demographic backgrounds and educational histories.

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