

# Hazardous Homework?

## The Relationship Between Homework, Goal Orientation, and Well-Being In Adolescence

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**An empirical study finds that extensive homework in high school is associated with physical symptoms, academic worries, and mental health problems.**

Studies on homework have often focused on the links between amount of homework and academic achievement, with mixed results. Some researchers have indicated a positive relationship, some negative, and some have reported no relationship (Cooper, Lindsay, Nye & Greathouse 1998; Cooper & Valentine 2001). However, only a few studies have explored the links between homework and well-being (e.g., Kouzma & Kennedy 2002). We were interested in further examining this link, particularly in suburban schools, where many students experience stress over schoolwork (Galloway, Pope & Osberg 2007; Pope 2001; Lucile Packard Foundation 2006).

Though research is limited on the relationship between homework and well-being, more research has been conducted on the links between students' approach to learning (known as goal orientation) and their well-being. Recent studies show that adopting a *mastery* goal orientation, where students seek to learn and improve, is linked to learning, and feelings of hope and pride in their work; and that adopting a *performance approach* goal orientation, where students seek to outperform others, can also be associated with feelings of pride (Pekrun, Elliot, & Maier 2006). However, in suburban schools, the pressure to excel and get into selective colleges may particularly

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heighten students' fear of failure and their attempts to avoid looking like they cannot do the work (a *performance avoidance* goal orientation). This fear of failure can impact their mental and physical well-being. When individuals fear failure or adopt a performance avoidance goal orientation, they are more likely to experience general anxiety, test anxiety, hopelessness, and shame (Middleton & Midgley 1997; Pekrun, Elliot & Maier 2006; Skkalvik 1997). Additional studies show that performance approach goals improve school performance, while performance avoidance goals have been linked to poorer school performance (Elliot & Church 1997; Harackiewicz, Barron, Carter, Lehto & Elliot 1997; Harackiewicz, Barron, Tauer & Elliot 2002).

These studies indicate a need for understanding the relationships between homework, well-being, goal orientation, and achievement. Our study aimed to help fill this gap, with particular attention to the experiences of suburban high school students. Three research questions guided our study: (1) Do students report homework as a primary source of stress in their lives? (2) Is amount and quality of homework related to students' mental and physical health? (3) How do students' goal orientation and achievement play a role in academic-related stress and general mental health?

## Method

### Participants

A sample of 496 students from two upper middle class suburban high schools (one private all-girls school and one public school) participated in the study. The private school participants had a distribution of 9th (24.8%), 10th (34.4%), and 11th (40.8%) graders. The majority of the students reported their ethnicity as European-American (57.6%) or Asian (19.2%), with a small percentage of students reporting their ethnicity as mixed (4.8%), Hispanic (4.8%), Native American (1.6%), African American (0.8%), or other (8.8%). Three students did not report their ethnicity (2.4%).

The public school sample was 64.4% female, and spanned all four grades, with a distribution of 9th (37.2%), 10th (30.5%), 11th (26.7%), and 12th (5.7%) graders. The majority of the public school students reported their ethnicity as European-American (47.

8%) or Asian (35.8%), with a small percentage of students reporting their ethnicity as mixed (2.7%), Hispanic (1.9%), African American (0.8%), Native American (0.3%), or other (10.7%). Five students did not report their ethnicity (1.3%).

### Procedure

Students with parental consent completed a 40-minute survey during the school day. School staff administered the surveys with the help of the authors and a doctoral research assistant. Teachers at the schools were given a common script to read to students prior to the survey administration, which informed students that their school was taking part in a survey in connection with Stanford University, with the goal of gaining an understanding of student experiences at their school. Students were reminded that there were no right or wrong answers and that their answers would remain confidential. They were also asked to read and sign an assent form if they were willing to participate. Once survey administration began, the researchers traveled to classrooms to answer student questions while students completed the survey.

### Measures

The survey assessed students' self-reported mental and physical health, stress over schoolwork, homework load, perceptions of homework usefulness, goal orientation, school achievement, and perceptions of home and school climates. This paper does not include analyses on the climate scales.

*Mental health.* Mental health was measured through a self-report 5-point Likert scale with 8 items, including internalizing symptoms (e.g., "During the last six months how often have you felt hopeless?" 1=never to 5=almost everyday) and externalizing symptoms (e.g., "During the last six months how often have you felt that you couldn't control your temper?"). These items were drawn from the Symptoms Checklist-90 (Derogatis, Rickels & Rock 1976; Roeser, Eccles & Freedman-Doan 1999). We also asked students to report on the following open-ended question: "Right now in your life, what would you say causes you the most stress and why?"

*Physical health.* Physical health was assessed by whether students had experienced any of seven stress-related physical symptoms in the past month

(sweating, headaches, exhaustion, weight loss, weight gain, stomach problems, and/or sleeping difficulties). Each was a dichotomous variable: students answered that they either had or had not experienced the reaction because of stress. One additional item asked whether students had ever been forced to drop an enjoyable activity or hobby because schoolwork took too much of their time.

*Stress over schoolwork.* Stress about schoolwork was measured in two ways. First, students completed a set of items on academic worries. This scale included seven items such as, "How often do you worry about school assignments?" Second, we asked

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one item on stress over school work: "How often do you feel stressed by your schoolwork or academic experience?" (from 1=never to 5=always).

*Homework.* Homework load was measured by students' response to the following question: "On a typical day, how many hours do you spend on homework (Do not include time spent taking breaks, instant messaging, etc.)?" Homework usefulness was assessed by two items: "In general, how useful is your homework for helping you learn the material?" and "In general, how well does your homework prepare you for tests, papers, or projects?" Students rated these items from 1=not at all useful/well to 5=very useful/well. These items were used to create a homework usefulness scale.

*Goal orientation.* We looked at three different goal orientation dimensions, all of which were based on Elliot's (1999) achievement motivation scale. We used three Mastery Goal items (e.g., How important is it to you that your schoolwork challenges you to think?), five student Performance Approach goal items (e.g., How important is it to you to get better grades than most of the students in your school?),

and three Performance Avoidance Goal items (e.g., How worried are you that if you ask questions in class, the teacher might not think you're very smart?). Students rated their responses on the mastery and performance approach items from 1=not at all important to 5=very important. On the three avoidance items, students rated their feelings from 1=not at all worried to 5=very worried.

*School achievement.* School achievement was measured by students' self-reported GPA on their last report card. We also asked students to report the number of regular and AP courses they took.

*Demographic information.* Demographic information was gathered at the end of the survey. Students reported on gender, ethnicity, grade in school, and age.

## Results

### Hours of Homework and Mental and Physical Well-Being

The first question we explored was whether students in our sample felt that schoolwork was a stressor in their lives. When we asked students to list what caused the most stress in their lives, the majority of student comments (67.8%) were related to schoolwork, homework, and tests. Responses included stress over deadlines, essays, tests and finals, general homework, projects, grades, and fear of failure. On a separate item, about two-thirds of the students in our sample (65%) reported that they were often or always stressed by their schoolwork. These data confirm that homework, and schoolwork more broadly, were primary stressors in these students' lives.

The students spent an average of 3.04 hours per night ( $SD=1.40$ ) doing homework, with the number ranging from 0 to 8 hours per night. A majority of the students (56%) reported that they had dropped an activity or hobby they enjoyed because schoolwork took too much of their time. The majority of students (77.4%) also reported having experienced one or more stress-related physical problems in the month prior to the survey, with more than 50% reporting headaches, difficulty sleeping, and/or exhaustion.

We expected these deleterious outcomes to differ based on the amount of homework that students completed each night. To examine this question, we

split the sample into three groups: those who reported doing two or fewer hours of homework per night (35.2% of the participants), those who reported doing between 2.1 and 3.5 hours per night (32.9% of the participants), and those who reported doing more than 3.5 hours per night (31.9% of the sample). The deleterious physical symptoms were particularly high for students who reported spending 3.5 or

Table 1. Percent of students who have dropped an activity, experienced exhaustion, and experienced weight gain by hours of nightly homework.

Symptom	<= 2 hours of hwk per night	2.1-3.5 hours of hwk per night	>3.5 hours of hwk per night
Dropped Activity	41.2%	52.2%	77.9%
Exhaustion	49.5%	53.5%	70.2%
Weight Gain	14.3%	10.9%	28.9%

more hours on homework per night (See Table 1). A series of chi-squared analyses showed that this group of students was significantly more likely than expected to drop out of an activity because of the stress of schoolwork ( $p<.001$ ), experience exhaustion ( $p<.05$ ), and gain weight ( $p<.01$ ). In addition, this group indicated getting significantly fewer hours of sleep ( $M=6.39$ ,  $SD=.99$ ) than students who reported doing 2.1-3.5 hours per night ( $M=7.10$ ,  $SD=.98$ ) and students who reported doing two or fewer hours of

Table 2. Mean school stress and mental health of students completing varying hours of homework.

Hours on hwk	Academic Worries		Mental Health Problems		Stress from Schoolwork	
	M	SD	M	SD	M	SD
2 or fewer hours	3.07	.72	2.38	1.08	3.43	.99
2.1-3.5 hours	3.19	.74	2.27	.95	3.74	.79
Over 3.5 hours	3.55	.67	2.65	1.01	4.28	.68

homework per night ( $M=7.38$ ,  $SD=1.26$ ). This difference was significant,  $F(2,478)=34.91$ ,  $p<.001$ .

We also examined the possibility that hours of homework were associated with students' academic worries, mental health problems, and stress from schoolwork. As Table 2 indicates, those who did more homework reported more problems. Although we do not report the inferential statistical analyses here, the group differences on academic

worries, mental health problems, and school stress based on hours of homework per night were statistically significant.

Table 3. Bivariate correlations between homework usefulness and mental and physical well-being

Symptom	Homework Usefulness
Academic Worries	-0.10*
Mental Health Problems	-0.28***
Sweating	-0.11*
Headaches	-0.12*
Exhaustion	-0.11*
Weight Loss	-0.25***
Weight Gain	-0.10
Stomach Problems	-0.18***
Difficulty Sleeping	-0.14***

### Usefulness of Homework and Mental and Physical Well-Being

Quantity of homework was only one element we expected to be associated with student well-being. We also asked students to report on the *usefulness* of their homework, that is, how well their homework helped them learn the material and prepare for tests. As we can see in Table 3, students' perceptions of homework as useful were modestly but consistently related to fewer academic worries, lower incidence of mental health problems, and fewer stress-related physical symptoms (such as headaches and exhaustion).

### School Stress and Mental Health: Relationships with Homework, Goal Orientation, and Achievement

Using hierarchical regression analyses, we examined how four sets of variables were related to academic worries and mental health. The variables included homework variables, goal orientation variables, student achievement, and student demographics.

Table 4 presents the results. Most of the associations were modest. Out of all variables, students' report of performance avoidance goal orientation was most strongly associated with academic worries, indicating that those who wanted to avoid looking bad at their schoolwork reported more worries. GPA and hours of homework were also associated with aca-

ademic worries: Students who reported higher GPAs had fewer worries, but those who reported more hours of homework indicated more worries. We also found a relationship between gender and worries and ethnicity and worries: Females reported more academic worries than males, while European-American students reported fewer academic worries than Asian students.

Generally speaking, students' ratings of their mental health were most strongly related to gender, GPA, and grade level: Females reported poorer mental health than males, students with higher GPAs reported better mental health than those with lower GPAs, and 11th graders reported poorer mental health than 9th and 10th graders. Students' perceptions of homework usefulness and students' performance goal orientation were also significantly related to mental health. The more useful students found their homework, the better their mental health; the more they wanted to avoid looking bad at

schoolwork or sought to outperform classmates, the poorer their mental health.

### Conclusion

This study corroborates previous research suggesting that homework and schoolwork are significant causes of high school student stress. In our sample, students reported an average of over three hours of homework each night. Students who spent the most hours on homework each night experienced

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***A majority of the students reported that they had dropped an activity or hobby they enjoyed because schoolwork took too much of their time.... When students spend 6 or 7 hours in school and another 3 or more hours on homework, they face a longer workday than most adults.***

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Table 4. Predictors of academic worries and mental health difficulties.

Variables	Academic Worries $\beta$	Mental Health Problems $\beta$
Block 1: Homework		
Hours of Homework	.25***	.05
Homework Usefulness	-.05	-.21***
Block 2: Orientation		
Mastery Goals	-.04	-.06
Performance Approach Goals	.11*	.14**
Performance Avoidance Goals	.51***	.17***
Block 3: Achievement		
GPA	-.20***	-.25***
Number of AP Courses	-.11	-.09
Block 4: Demographic Variables		
Grade 9	-.02	-.19*
Grade 10	-.06	-.14*
Grade 12	-.01	-.01
Ethnicity 1 (European-Am.)	.14**	-.08
Ethnicity (Non-Asian Minority)	-.09	-.10
Female Gender	.11**	.22***
Public School	.03	.00
Adjusted R <sup>2</sup>	.49	.27

\* p<.05, \*\*p<.01, \*\*\*p<.001

more stress-related physical symptoms and poorer mental health than the other groups. These students were more likely to drop activities or hobbies that they enjoyed because of the amount of time they needed to complete their schoolwork. Additionally, these students were more likely to report that they experienced exhaustion and weight gain than students who completed less than 3.5 hours of homework per night. The results indicate that suburban high schools need to examine homework load and the total number of hours students spend on school-related work. When students spend 6 or 7 hours in school and another 3 or more hours on homework, they face a longer workday than most adults. We recommend that schools regularly monitor homework load and consider policies that set a maximum number of homework hours each day or a maximum time on task per assignment.

Our findings also indicate that school homework policies and reform efforts need to address usefulness

and relevance of homework, not just time on task. Previous research has shown that relevant and purposeful schoolwork is linked to increased student motivation (see Committee on Increasing High School Students' Engagement and Motivation to Learn 2003). Our study extends this connection to positive mental and physical health. When students perceived homework as more useful for their learning and preparation for tests and projects, they reported fewer academic worries, fewer stress-related physical symptoms, and more positive mental health. While these relationships were modest in magnitude, they were generally consistent. Useful homework assignments may be fundamental not just to students' engagement in school, but also to their overall well-being. Schools should consider homework policies that strive to eliminate "busy work" and that are explicit about the purposes of the work sent home each night.

While other researchers have recommended a specific maximum for hours of nightly homework (see Cooper 2001; Cooper, Robinson & Patall 2006), we hesitate to provide a hard and fast rule, given that quality homework is more strongly associated with students' mental health than homework load. Rather, we recommend further research to determine the health risks associated with high amounts of "useful" homework. How much "useful" homework can still be considered healthy?

Another important finding was that students doing over 3.5 hours of homework each night were more likely to drop activities or hobbies that they enjoyed because of the amount of time they needed to complete their schoolwork. Research has shown significant benefits for students who pursue extracurricular activities (Larson 2000; Mahoney, Larson, Eccles & Lord 2005). Schools should enable students to maintain a healthy balance between schoolwork and extracurricular pursuits by carefully monitoring homework load and revising homework policies.

Furthermore, our study corroborates previous research that suggests that students who have lower GPAs and students who adopt a performance avoidance goal orientation (avoiding looking incapable) are more likely to experience school anxiety and report poorer mental health (Kaplan & Maehr 1999; Middleton & Midgley 1997). Creating purposeful

homework assignments may be particularly important for students who fall into these categories. For example, other studies have shown that offering variety and choice on assignments can reduce the likelihood that students will compare their work to their peers (see Stipek 1996).

Finally, the regression analyses demonstrated that Asian students had more academic worries than European-American students, yet did not indicate poorer overall mental health. This finding deserves additional research attention (see also Crystal et al. 1994; Elliot, Chirkov, Kim & Sheldon 2001).

Although our data are limited by student self-reports alone, the results of the present study have significant implications for both research and practice. Given the hazards of homework observed in this study, we recommend that researchers, educators, policymakers, and parents work together to pursue a more balanced workload for high school students.

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