Adolescents' Experience Doing Homework: Associations Among Context, Quality of Experience, and Outcomes

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Abstract

Extant data collected through the Experience Sampling Method – a signal contingent method for gathering data about students' immediate experiences – were analyzed to describe adolescents' subjective experiences doing homework. Analyses were conducted to explore variation in subjective experience in relation to the contexts in which homework was completed, and in relation to academic and social-emotional outcomes. Students' cognitive, affective, and motivational states showed significant variations depending on who they were with when they were doing homework, as well as whether homework was their primary or secondary activity. Variations in the quality of homework experience were, in turn, significantly associated with several outcomes, such as self-esteem, future expectations, and school grades. Findings are discussed in terms of contributions to the homework literature by addressing the much needed link between homework and students' cognitive, affective, and motivational states.

Key Words: homework, adolescents, motivation, subjective experience, Experience Sampling Method, students, middle school, high school, parents, peers, context, outcomes

Introduction

Past Studies of Homework

Although American adolescents do less homework than students in many other countries (Harmon et al., 1997), the majority of U.S. adolescents have some homework assigned each day (Snyder, 1998), and both educators and parents believe homework is beneficial to students' learning (Warton, 2001). Recent studies have documented the amount of time adolescents spend on homework (Loveless, 2003) and the relationship between academic achievement and homework time (Cooper, Robinson, & Patall, 2006); however, little is known about the contexts in which adolescents do their homework or about their subjective experience of homework. The present study describes these contexts among a middle class sample, investigates adolescents' cognitive, affective, and motivational states in the various contexts, and examines associations between adolescents' subjective experiences doing homework and their global academic and social-emotional functioning.

Homework consists of tasks teachers intend students to complete outside of school even though students might actually do that work during school (Cooper, 1989). Teachers assign homework because they expect it to enhance learning and achievement, parental involvement, study skills, work habits, and motivational dispositions (Bempechat, 2004; Warton, 2001). Researchers have studied the academic effects of homework for some time. A recent meta-analysis (Cooper, Robinson, Patall, & Warton, 2006) found that the amount of time adolescents report doing homework on surveys is related to academic achievement, but the researchers noted that most claims about the relationship between homework and outcomes other than achievement have never been tested empirically, making this an important area for research. One study did find that more high school than middle school students reported their homework was boring and therefore tended not to complete it (Xu, 2004).

The student perspective has been missing from research on homework in particular (Warton, 2001) just as it has been from most other educational publications and policy discussions (Phelan, Davidson, & Yu, 1998). The idea that educators must understand learner's perceptions and perspective about educational activities is central to contemporary constructivist theories (Daniels & Shumow, 2002). Leone and Richards (1989) conducted a study using the Experience Sampling Method (ESM) to describe the thoughts, affect, and motivation of young adolescents while doing homework in different contexts, but that study is limited because the data were collected from a previous generation of students, and the sample was comprised only of middle school students. According to survey data, the amount of time high school students spend on

homework has declined (Loveless, 2003) since the time the Leone and Richards study was done, while the pressures for achievement have increased. The present study addresses the need for research linking homework with students' perspectives.

Homework and Motivation

Several theoretical models of achievement motivation frame our analyses (Csikszentmihalyi, 1990; Eccles, 1983). We examined adolescents' reports of affect, interest, enjoyment, effort, and control when doing homework in various contexts because the expectancy-value model of achievement motivation suggests that subjective experience is related to subjective task value and that students will be more likely to repeat or continue tasks that are emotionally rewarding, utilitarian, and "worth" the effort (Warton, 2001). We also consider the comparative perceptions of ability, control, and concentration that adolescents report while working on homework. According to Csikszentmihalyi (1990), intense concentration in activities that adolescents feel able to master is among the conditions that foster optimal learning and growth. He also emphasizes the importance of positive affective experience in human growth as well. When an individual experiences happiness or enjoyment while engaging in a given activity, he or she is more likely to seek opportunities to engage in that activity again, in an attempt to replicate the positive affective experience. In this manner, positive affect is a motivating factor, influencing one's choice of activity. As one continues to engage in an activity because it is both challenging and enjoyable, the skills that are relevant to that activity improve in the process (Csikszentmihalyi, 1990, 1997). Thus, according to this model, if students feel happy when doing their homework, they would be more likely to continue to engage in homework, and learning would occur in the process.

Context of Homework Completion

One factor which might influence students' subjective states while doing homework is the context in which homework is completed. In this age of multitasking it is important to consider whether students view their homework as a primary activity. Do today's students tend to view homework as a "main activity" or as something they can get done while the bulk of their attention is focused on television, or friends, or some other activity? We examine how often homework is reported as a primary (compared to secondary) activity and then test whether adolescents' concentration, mood, and ratings of work habits vary when homework is the primary or secondary activity.

Companions During Homework

Some evidence suggests that adolescents' affect and motivation differs depending on who their companions are while they are doing homework. The

Leone and Richards (1989) study found that when adolescents were doing homework with peers they were happier than when alone or with parents. They were most attentive to their homework when with parents. In this study, we are especially interested in instances in which parents were reported to be helping with homework.

Little is known about parental involvement with adolescent homework; the few existing studies have depended on retrospective self-report data, usually from adolescents. Yet, literally thousands of articles and policy documents advise schools to involve parents as homework managers or helpers as a means of improving student achievement. Many believe that parental involvement in education is crucial to students' school success (Carnegie Council on Adolescent Development, 1989; Eccles & Harold, 1996; Henderson & Mapp, 2002). This "prevailing wisdom" about parental involvement with adolescent students and homework is belied by available evidence suggesting that adolescents whose parents help them with homework are actually less successful in school even when past achievement and numerous demographic variables are controlled (Shumow & Miller, 2001). Some have speculated that parents have difficulty helping adolescents because the material is more difficult in middle and high school than elementary school, and some limited evidence shows that parents help adolescents with homework primarily when the student is struggling academically. Anecdotal reports in the popular press conclude that "homework is a major battleground for many families" (Kantrowitz & Wingert, 2001, p. 52; Kralovec & Buell, 2000). Thus, we use ESM data to examine adolescents' quality of experience while doing homework with parents, and we compare these times to those when adolescents were doing homework alone or with their peers.

Associations Between Subjective Homework Experiences and Global Student Functioning

Given those expected variations, a critical question arises as to whether or not the immediate subjective experiences reported during homework are associated with longer term global student functioning. Our data do not allow us to determine the direction of these effects, but it is of interest to understand whether the transitory states are related to more global outcomes.

Quality of Experience During Homework and Global Outcomes

Are those students who report more stressful experiences during homework also likely to be anxious or depressed? A study conducted in India (Verma, Sharma, & Larson, 2002) found that middle class students in India reported quite negative emotional states during homework and that time spent during

homework also was related to having more internalizing problems. We pursue that line of inquiry within a middle class sample in the United States by analyzing if affect and motivation reported during homework are related to standardized measures of depression or anxiety.

We also posited that adolescents who reported feeling better about themselves and more productive, able, and in control when doing homework would have higher global self-esteem. Global self-esteem can stem from an adolescent's belief that they are competent in areas important to them (Harter, 2006). Conversely, high self-esteem might lead students to feel better when doing tasks like homework that need to be done. In addition, we tested whether adolescents' reports of concentration, interest, and involvement in their homework are associated with positive expectations for their future attainment. Adolescents who set short term goals, self-regulate their work, and challenge themselves have advantages in achievement and might thus expect to attain their aspirations (Bandura, 1997; Pintrich, 2003). It could also be that high future expectations drive them to concentrate and get involved.

Transitory States During Homework and Grades

Finally, we investigate whether the transitory cognitive, affective, and motivational states during homework are related to students' grades. The 2006 Brown Center Report on American Education (Loveless, 2006) presented findings that, on international comparison study surveys, student confidence and enjoyment of mathematics are strongly negatively related to their achievement. The report raises the question of whether the "happiness" factor is relevant to educational success. We examine relations between affect when doing homework and academic grades.

Summary of Study Goals

In summary, this study investigates three issues using data collected with the ESM. First, we describe the time, location, circumstances, and cognitive, affective, and motivational states of adolescents while doing homework. Second, we examine whether adolescents' cognitive, affective, and motivational states differ depending on the context in which homework is done. Specifically, we test whether the quality of homework experience varies by companionship (with peers, parents, or alone) or by whether homework is a primary or secondary activity. Finally, we ask if, controlling for background factors, homework predicts academic grades, academic goals, self-esteem, or adolescents' internalizing or externalizing disorders. The ESM is an excellent method for gathering information about daily experiences because it allows us to gather multiple samples from the same adolescent about immediate experiences rather than the one time retrospective reports of surveys.

Methods

Participants

Extant data from the University of Chicago Sloan Center 500 Family Study (Schneider & Waite, 2005) were used for secondary analysis. Data were collected between 1999 and 2000 from participants who resided in eight middle and upper-middle class communities. The communities varied in location and demographic characteristics. The present study focuses on 331 adolescent participants (the remaining children in the study were kindergarten-age and thus were not included in the present study). As shown in Table 1, the sample used in this analysis is 59% female and 86% White.

Table 1. Characteristics of the Sample

	%
Gender	
Male	41
Female	59
Grade level	
High school	79
Middle school	21
Race	
White	86
Non-white	14

Procedures

Data were collected from these adolescents using multiple methods including questionnaires, semi-structured interviews, and the Experience Sampling Method (ESM; Csikszentmihalyi & Larson, 1984). The ESM is a week-long data collection process during which participants wear wristwatches that are programmed to emit 8 signals each day. In the present study watches were set to beep randomly in two-hour time blocks during participants' waking hours, with the restriction that no two signals were closer than 20 minutes apart. In response to each signal, participants completed a brief 1-page questionnaire in which they answered a number of open-ended and scaled questions about their location, activities, companions, and psychological states at the time. Each questionnaire took 60-90 seconds to complete. The adolescents in the sample responded to an average of 34 signals over the course of a week. Open-ended questions about participants' locations and activities were coded by trained coders using detailed coding schemes. Inter-rater reliabilities for ESM coding, based on person agreement, ranged from .79 to .95 (Schneider & Waite, 2005). The ESM questionnaire used in the current study can be found in Hektner, Schmidt, and Csikszentmihalyi (2007, pp. 296-297).

The ESM has been shown to have strong psychometric properties (for reviews, see Hektner et al., 2007; Schneider & Waite, 2005). The method has a high degree of external or "ecological" validity, capturing participants' responses in everyday life. Moreover, findings indicate that respondents are generally truthful in reporting their immediate subjective experience (Larson & Richards, 1994). There are indications that the internal validity of the ESM is stronger than one-time questionnaires as well. Zuzanek (1999) has shown that the immediacy of the questions reduces the potential for failure of recall and the tendency to choose responses on the basis of social desirability. Moreover, the fact that participants are signaled randomly diminishes the reflexivity bias, or attempts of respondents to figure out the purpose of the research and respond accordingly (Kubey, Larson, & Csikszentmihalyi, 1996; Zuzanek). Further evidence of the internal validity of ESM items comes from the logic of the responses themselves. Emotional states that one would expect to co-occur, in fact, are reported at the same time, and those that are opposite are not. For instance, one study reported a correlation between being "happy" and "sociable" to be .52, while the correlation between "happy" and "unselfconscious" was -.09 (Csikszentmihalyi & Larson, 1984). Traditional methods of test-retest reliability on participant reports of internal states are generally not applicable to ESM data since the purpose of ESM is to measure how these states vary by context. Researchers more often rely on what has been called "situational validity" by examining the internal logic of a reported situation, checking whether reported internal states are consistent with what one might expect given the reported activities and context. For instance, individuals report being very relaxed when watching television, and students in school report the highest levels of concentration when they are taking exams. The very fact that the results represent "obvious" or "normal" patterns of experience speaks well for the validity of the method (see Hektner et al. for a review).

Available evidence suggests that the procedure itself is minimally disruptive to normal activity. In debriefing surveys administered at the end of the signaling week, the vast majority of participants (80%-90%) report having a "normal" week and that the ESM captured their week well (Csikszentmihalyi & Larson, 1987). In a sample of adult ESM participants, about one-fifth reported that the signals disrupted their daily routine (Hormuth, 1986). Analyses of adolescents' ESM responses suggest that signals that occur in the context of school are perceived by youth as less disruptive than signals occurring in other contexts such as paid employment and sporting events, as indicated by higher response rates while in school (Mulligan, Schneider, & Wolfe, 2000). Other studies have attempted to address the possibility of reactivity – the methodological confound that occurs when participants' behavior changes as a direct

result of participation in the study. Larson and Richards (1994) asked families participating in the ESM, "Do you think the family's week was different because of the study?" (pp. 267-268). Over half of participants responded "not at all," and no one said "very much" (see Hektner et al., 2007 for a review).

Measures

We defined *homework* as those ESM responses in which students were doing schoolwork outside of class, and those times when students were in class but reported doing work for a different class. Because data are gathered at multiple time points from individuals, the data set contains 1,315 instances of homework. Each time students reported their activities, they identified them as either *primary* ("the main thing you were doing") or *secondary* ("what else were you doing"); thus, each homework response was categorized as primary or secondary, based on students' responses. The physical *location* where students reported completing their homework was also recorded. The categories we used were (a) home, (b) at school, not in class, (c) in class (if adolescent specifically was doing homework as opposed to seatwork); and (d) public place. We also coded students' *companions* while doing homework. These categories included (a) alone, (b) with peers, and (c) with parents.

The ESM data also provided measures of students' subjective experience while doing homework. Each time students were signaled, they responded to a series of Likert and semantic differential scale items in which they reported on their cognitive, affective, and motivational states, as well as their views about themselves and their abilities at the time.

The analyses presented in this paper focus on 11 of these items from the Experience Sampling Form (ESF) completed by students when they were signaled. Each item was rated on a 4-point Likert-scale (0 = not at all, 1 = a little, 2 = somewhat, and 3 = very much), except for *happiness* which was on a 7-point semantic differential scale (i.e., 1 = very sad, 7 = very happy). We measured students' cognitive state by three separate items where students indicated their level of *concentration* and *involvement* in the activity (e.g., "how well were you concentrating?"), as well as how "hardworking" they felt at the time of the signal, which we called *effort*. Affective variables include single items in which students separately indicated their level of *anger, stress*, *enjoyment*, and *happiness* at the time of the signal. Items aimed at capturing students' motivational states include single items in which students indicated their level of *interest* in the activity they were doing at the time of the signal, as well as the degree of *control* that they felt at the time. Finally, analyses included 2 indicators of adolescents' self-views: the first is an indicator of the student's view of his or her *ability* for the task at hand. The second indicator, which we refer to as *good about self*, is

an item where students had to indicate how good they felt about themselves at the moment they were signaled.

As the ESM is designed to capture participants' in-the-moment experiences, we were able to select only those instances in which students reported doing homework and examine their subjective experiences at these moments. As such, we constructed measures of students' effort, anger, stress, enjoyment, interest, and control that specifically reflected those moments when students were engaged in homework. Additionally, we assessed students' views of their ability while doing homework, as well as how good they felt about themselves. The flexibility of the ESM also allowed us to examine whether students' subjective experience while doing homework varied systematically by their physical location (e.g., home vs. public), their companions (e.g., with parents vs. peers), or by whether homework was a student's primary or secondary activity.

Surveys provided indicators of students' demographic characteristics including gender, race (due to the homogeneity of the sample, students were characterized as white vs. non-white), and grade level (middle school vs. high school). The surveys also included several widely used measures that we used as outcome variables. *Depression* was measured using the 20-item Center for Epidemiologic Studies Depression Scale (CES-D), which measures the frequency of depressive symptoms experienced by respondents over the course of the previous week (Radloff, 1977). For these data, the reliability of this scale as indicated by Cronbach's alpha was .89. We measured adolescents' *anxiety* using the 8-item Taylor's Anxiety Inventory (Taylor & Tomasic, 1996), which yielded an alpha reliability of .85. Adolescents' *global self-esteem* was assessed using Rosenberg's 5-item self-esteem scale (Rosenberg, 1979), which had an alpha reliability of .81. We constructed a composite indicator of students' *behavioral problems* using 25 survey items indicating how often students had gotten into trouble at school or in their communities. This measure was constructed simply by taking the mean of all 25 items, so higher scores indicate more behavior problems. The alpha reliability of this scale was .82. A measure of students' *future expectations* was constructed from 13 survey items in which students indicated the likelihood that they would achieve "success" in their future academic, professional, and personal lives (examples of items include: the future likelihood of having a job that pays well, being able to own one's own home, being respected in the community, having a happy family life, having a healthy life, etc.). This measure was constructed by taking the mean of all 13 items, such that higher scores indicate more positive future expectations. The alpha reliability of this scale was .87. Finally, students reported their cumulative grades in school. *Grade point average (GPA)* is represented on a 1 (mostly Ds) to 4 (mostly A's) scale. Means and standard deviations for all variables used in analyses can be found in the appendix.

Analyses

Our first set of analyses is a series of simple descriptive statistics indicating how often, where, and with whom adolescents do homework. Second, we use paired-samples t-tests to compare students' quality of experience in each of these homework contexts. While repeated measures ANOVAs would have been a more desirable analysis, this was not possible because not all participants produced homework reports in each of the contexts examined. To guard against Type I error, the significance levels of the t-tests were adjusted to account for the multiple tests conducted. Finally, we use a series of Ordinary Least Squares (OLS) regression models to explore the relationship between students' daily subjective experience while doing homework and the global outcomes of interest (depression, anxiety, self-esteem, behavioral problems, future expectations, and grades). All regression analyses also control for gender, race, and grade level.

Results

General Description of Homework

Twenty-three percent of all adolescents' responses occurred when they were doing homework, which indicates that the youth in our sample spent about 3.7 hours each day on homework. (Note: We computed this figure by multiplying 23 – % of homework responses – by 16 – the estimated number of adolescents' waking hours a day – and dividing the product by 100.) When doing homework, students reported it was the primary activity 77% of the time. Students were alone approximately half of the time that they did homework, and about 65% of all homework responses occurred while students were at home. Table 2 displays details.

Table 2. Descriptive Analysis of Homework Time Use (N = 1315 homework instances, and N = 331 students)

Homework Contexts	N	%
Primary vs. Secondary Activity		
Homework as primary activity	1009	76.7
Homework as secondary activity	306	23.3
Location where Homework is Completed		
Home	861	65.5
School (not in class)	237	18.0
Class	151	11.5
Public place	66	5.0
Companionship		
Friends/peers	256	19.5
Parents	148	11.3
Alone	657	50.0

Note: The frequencies for companionship do not add up to 100 because some participants reported being with people other than their parents or peers while doing homework.

Comparison of Affect and Motivation in Different Homework Contexts

Students' affect when doing homework appears to depend on who they are with when they are doing homework, as well as whether homework was their primary or secondary activity. As the results in Table 3 indicate, when homework was the primary activity, adolescents reported higher levels of negative affect (i.e., anger and stress) as well as higher levels of cognitive engagement (e.g. control, effort, and involvement). Adolescents reported higher levels of positive affect (i.e., enjoyment of activity and interest) when homework was a secondary activity.

Table 3. Paired Samples T-test of Cognitive, Affective, and Motivational Ratings When Homework is Primary vs. Secondary Activity

	Primary		**Secondary**				
	M	*SD*	*M*	*SD*	*df*	*t*	*p*
Anger	.65	.55	.49	.57	143	3.19	.002
Ability	2.17	.74	2.13	.87	143	.75	.453
Good about self	1.97	.71	1.90	.84	144	1.37	.172
Happiness	4.54	1.06	4.85	1.21	138	-2.96	.004
Interest	1.22	.77	1.41	.90	144	-2.53	.012
Concentration	1.93	.70	1.74	.83	144	.30	.005
Stress level	.88	.71	.72	.81	141	2.44	.016
Effort	1.63	.85	1.46	.98	141	2.21	.029
Enjoy activity	1.10	.76	1.39	.89	144	-3.49	.001
Control	2.02	.77	1.84	.89	144	2.80	.006
Involvement	1.87	.95	1.70	.99	144	2.28	.024

In general, adolescents reported more positive affect when they were doing homework with a companion than alone. As can be seen in Table 4, for example, they enjoyed the activity more and were happier with both parents and friends than when alone. Negative emotions were more common alone than with friends; more anger and stress was reported while completing homework alone than with friends. Adolescents did not report being angrier or more stressed with parents compared to when they were either alone or with friends. Cognitive engagement, however, was greater when alone. Adolescents reported greater effort and more control when alone than with friends and greater concentration both when alone and with parents than with friends.

Table 4. Paired Samples T-tests of Cognitive, Affective, and Motivational Ratings of Doing Homework with Different Companions

	Alone vs. Friends			Alone vs. Parents			Friends vs. Parents		
	M		*t*	*M*		*t*	*M*		*t*
Anger	.68	.58	-2.15*	.74	.75	.12	.56	.76	-1.81
Ability	2.23	2.21	-.39	2.11	2.11	-.06	2.01	2.13	-1.10
Good about self	1.99	1.97	-.30	1.84	1.86	.21	1.79	1.69	.94
Happiness	4.38	4.94	6.25***	4.29	4.70	2.10*	4.85	4.64	.823
Concentration	2.00	1.75	-3.61***	1.90	2.03	1.08	1.67	1.97	-2.19*
Interest	1.25	1.41	1.98*	1.16	1.35	1.70	1.35	1.40	-.44
Stress level	1.01	.87	-2.03*	1.08	1.13	.46	.86	1.12	-1.99
Effort	1.76	1.48	-3.52**	1.83	1.66	-1.44	1.40	1.61	-1.38
Enjoy activity	1.09	1.35	3.13**	.97	1.26	2.38*	1.34	1.35	-.08
Control	2.16	1.88	-4.13***	1.99	1.96	-.33	1.64	1.86	-1.82
Involvement	1.88	1.80	-1.04	1.83	1.76	-.65	1.70	1.77	-.45

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

Note: Because many participants did not have homework observations in each of the companion contexts examined, paired t-tests were necessary rather than repeated measures MANOVA. As a result, means for any given context (e.g., alone, friends, parents) vary slightly from analysis to analysis.

Relationship Between Homework and Psychological and Behavioral Outcomes

Regression analyses suggest a complex relationship between students' homework and the outcomes of interest. While the amount of time students spent on homework was only rarely and inconsistently associated with any of the outcomes of interest, controlling for background characteristics of age, gender, and race, we found consistent associations between students' quality of experience while doing homework and each of the outcomes examined here. Table 5 displays the beta coefficients for the cognitive, affective, and motivational variables and the adjusted R squared for each equation. Student reports of negative affect (e.g., anger, stress) were negatively related to global measures of self-esteem, and positively related to internalizing disorders like depression and anxiety. Momentary reports of positive affect, such as feeling good about self, were negatively related to internalizing disorders and positively related to self-esteem and future expectations. Student reports of happiness – another indicator of positive affect – were also related positively to self-esteem and school grades. Students' momentary reports of ability were related to self-esteem, future expectations, and grades.

Motivational aspects of homework experiences such as interest, control, and enjoyment were positively related to self-esteem; effort was related positively

Table 5. Regression Analyses of Cognitive, Affective, and Motivational Homework States Predicting Outcomes while Controlling for Background Factors

	Depression		Anxiety		Self-esteem		Behavioral Problems		Grades		Future Expectations	
	β	Adj.R^2	β	Adj. R^2	β	Adj. R^2	β	Adj. R^2	β	Adj. R^2	β	Adj. R^2
Anger	.21**	.03	.25***	.06	-.16*	.02	.08	.06	.01	.06	-.01	-.02
Ability	-.14	.01	-.14	.02	.24***	.06	-.04	.05	.14*	.09	.24***	.04
Good about self	-.24**	.05	-.17**	.03	.43***	.18	-.02	.05	.09	.08	.27***	.06
Happiness	-.15	.01	-.09	.01	.26***	.06	-.00	.05	.23***	.04	.23	.04
Interest	-.09	-.01	-.12	.01	.17**	.03	-.02	.05	.02	.07	.17	.02
Concentration	-.45	-.01	-.08	.01	.08	.01	-.18**	.08	.04	.07	.15	.01
Stress level	.30***	.07	.24***	.05	-.18**	.03	.06	.05	.05	.06	-.03	-.02
Effort	-.02	-.01	-.06	.00	.17**	.03	-.13*	.07	.12(!)	.08	.18	.02
Enjoy activity	-.02	-.01	-.03	.00	.16**	.02	.03	.05	-.07	.07	.14	.01
Control	-.19*	.03	-.13	.02	.30***	.09	-.01	.05	.09	.08	.30***	.08
Involvement	-.03	-.01	-.01	-.01	.08	.01	-.01	.05	.05	.07	.13	.01

* $p < .05$, ** $p < .01$, *** $p < .001$, (!) $p = .05$.

Note: Separate regression analyses were run for each cognitive, affective, and motivational state controlling for background factors, age, gender, and race.

to both self-esteem and grades, and negatively to behavioral problems. Control was associated positively with future expectations and self-esteem, and negatively with depression. Students' reports of concentration while doing homework were negatively associated with behavioral problems.

Before proceeding further, the reader must be cautioned that many of the models specified here explain only a small portion of the variance in the outcomes of interests. In particular, the regression models generally do a poor job of explaining variance in global depression and anxiety, with adjusted R^2 s hovering around 0. The models do a slightly better job of explaining variance in the other outcomes, with adjusted R^2 s reaching as high as .18. Thus, while there are significant associations between one's subjective experience and these global outcomes – even after controlling for background factors – only a very small portion of the variance is explained by these models.

Discussion

This study makes several important contributions to the research on homework. First, it provides a detailed description of the contexts in which contemporary students do homework. Relatively little is known about where and with whom students do homework, and these factors are important in understanding how homework can be most beneficial for students. Somewhat surprisingly, given the reports of survey research that adolescents do little homework in the United States (Brown Center on American Education, 2003), adolescents in this sample reported doing homework the equivalent of three hours per day. Perhaps these findings can be attributed to the fact that these reports came from middle and upper-middle class high school students who expect to attend college. Other researchers, for example, have found a discrepancy between the total amount of time low-income urban minority and suburban White high school students spend on homework both in ESM (Larson, Richards, Sims, & Dworkin, 2001) and survey (Rigsby, Stull, & Morse-Kelley, 1997) studies. The much trumpeted national reports of homework time calculate averages for a very diverse population of high school students. Dramatic variation across diverse groups might be expected given the well recognized variation in school quality. More research is needed in examining which characteristics predict how much time is spent on homework in the broader population.

Teachers who assign homework most likely hope that their students will focus on the task assigned, rather than complete assignments as a secondary activity. We found that most students did in fact focus on homework as their primary, though not sole, activity. Many were multitasking while doing homework. The most common secondary activities reported were *being idle* (thinking, daydreaming, resting, nothing) and listening to or watching media. Interestingly, computer usage unrelated to homework was very rare as a secondary activity. Most homework advice given to adolescents or their parents includes admonitions against watching television, the need for quiet while studying, and computer access and use (see, e.g., Kids Health, 2007; National Education Association, 2007). Future studies will need to investigate whether there are systematic consequences related to these various secondary activities.

Adolescents reported doing about one-third of their homework in a place other than home, predominantly in school. Many high school students have one study period set aside in their schedule. The amount of time students reported doing homework at school, but not in class, corresponds roughly to about one period per day. Of some concern is the 11.5% of the time students reported doing homework *in class*. This is consistent with findings of an earlier study in which adolescents reported doing a portion of their homework in class (Leone & Richards, 1989). Stigler and Hiebert (1999) found that this tendency to do homework in class was more characteristic of U.S. than Japanese eighth grade mathematics classrooms. One problem with this practice is that students miss out on instructional time if they are completing homework.

Students were alone approximately half of the time that they did homework. Given that one recognized purpose of homework is to encourage parental involvement, we found that parents were involved for a relatively short amount of time. This might be because adolescents want autonomy and parents grant it or because parents expect homework to be their children's responsibility. The high grade point average of the students who participated in this study offers another explanation in that parents of adolescents tend to be far more actively involved with homework when their children are struggling with school work and earning low grades (Shumow & Miller, 2001)

We also systematically examined students' subjective perceptions of their homework experiences; few studies have considered the student perspective in their analysis of homework. Results indicate that students' subjective experience varies by the context in which they complete homework. Adolescent reports of more negative affect when homework is a primary activity are balanced by higher reported cognitive engagement in the same context. Not surprisingly, concentration on the task was higher and affect was more negative when completing homework alone compared to with friends. Although it seems that

these adolescents feel better and thus would likely prefer doing homework as a secondary activity with friends, they are likely to accomplish more when they are alone.

Anecdotes which have appeared in the popular press or in trade books about family battles and intense stress accompanying parent assistance with homework were not substantiated by the reports of the adolescents in this study. Surely, some adolescents experience anger and stress when doing homework with parents, but, overall, this was not an issue. Arguments that homework battles are damaging families do not appear to apply to this sample.

Several consistent relationships were identified between quality of experience while doing homework and outcomes beyond academic achievement such as global psychological and behavioral outcomes. If the association of these transitory states with long term outcomes are upheld in future studies designed to reveal causal links, then serious discussion about what outcomes are most valued and at what cost seems especially important given the co-occurrence of transitory states like positive affect and low engagement in one context and negative affect and greater effort in another context. It would also be important to examine ways to optimize positive states and outcomes while mitigating negative ones. In the present study, we were not able to examine direction of effects, so it will be important in future research to determine if students who are anxious or depressed might benefit from techniques like learning stress reduction strategies.

This study has several limitations that could be addressed in future studies. First, the participants in this study were drawn from middle and upper-middle class communities and were predominantly White. Readers should take care not to over-generalize the results of this study, then, to other groups of adolescents. Second, it is not possible to disentangle any direction of effects in the relationship between transitory states and more global outcome measures. A longitudinal study might be able to track whether and how changes in either predict subsequent changes in the other within subjects. A longitudinal study would also allow an examination of changes in time spent and subjective experiences of homework across adolescence. There are many different types of homework ranging from rote drill and practice to work on creative and complex projects. It would be of great interest to educators to know about how students' subjective experiences vary when doing different types of homework.

Despite these limitations, it is our hope that researchers and practitioners will consider the student perspective in planning studies, crafting homework policies, or designing homework activities. Ultimately, student motivation, affect, and cognition about homework will very likely influence how well adolescents do and how much they learn from their homework.

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Appendix: Descriptive Analysis of All Measures

Measures	M	SD	Range	N
Cognitive, Affective and Motivational Measures (measured via ESM)				
Concentration	1.96	.68	.00-3.00	330
Involvement	1.84	.92	.00-3.00	327
Effort	1.72	.83	.00-3.00	326
Anger	.62	.60	.00-3.00	327
Stress level	.86	.78	.00-3.00	325
Enjoy activity	1.20	.79	.00-3.00	329
Happiness	4.70	1.05	1.00-7.00	317
Interest	1.33	.78	.00-3.00	330
Control	2.06	.74	.00-3.00	329
Ability	2.27	.70	.00-3.00	329
Good about self	2.03	.72	.00-3.00	330
Outcome Measures (measured via one-time survey)				
Depression	14.88	9.37	.00-60.00	284
Anxiety	1.61	.69	.00-4.00	285
Self-esteem	2.85	.66	.00-4.00	291
Behavioral Problems	.25	.22	.00-3.00	276
Future Expectations	3.96	.51	1.00-5.00	277
Grades	3.64	.58	1.00-4.00	294