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**The Relationship between Homework
and Academic Achievement**

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and Academic Achievement**

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Report

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Master of Arts

The University of Texas at Austin

August 2013

Abstract

The Relationship between Homework and Academic Achievement

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The University of Texas at Austin, 2013

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Homework has been a topic of interest in the public, research and educational arenas throughout the last decades. Yet, researchers disagree on the influence of homework on academic achievement and its value as an instructional technique. Similarly, educators, parents and policymakers have debated on the appropriate amount of homework that students should have, if any. This report reviews the literature on the relationship between homework and academic achievement. Starting from an overview of the historic views of homework in the US and the early literature on the topic, this report provides a thorough analysis of recent literature (post-1980 studies), including factors mediating the effect of homework on academic achievement, such as gender, race/ethnicity, socioeconomic status, age and grade level, parental involvement, aspirations and attitudes, teachers' attitudes, cognitive ability, homework time, motivation and social interactions. The report concludes with implications and suggestions for practice and education policy.

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Introduction

Homework has been a topic of interest in the public, research and educational arenas throughout the twentieth century, and considered one of the main predictors of learning and academic achievement (Walberg & Paschal, 1994; Cooper & Valentine, 2001). The latest National Assessment of Educational Progress report shows that more than 80% of the students attending US schools report doing homework at least 3 days per week. Among students in grades 9th to 12th, the average time spent on homework is 6.8 hours per week.

In his seminal book, Cooper (1989) defined homework as those “tasks assigned to students by school teachers that are meant to be carried out during non-school hours” (p. 7). Such definition excludes other school-related activities such as tutoring, after-school programs, or preparations for quizzes and exams. These activities can also have an impact on the academic achievement of students, but they are not technically considered homework, which takes place at the students’ home most of the time.

The reason most often cited by teachers and education professionals for giving homework is that it can improve students’ retention and understanding of the covered material. However, some educators point out that it can remain rewarding for only a certain period of time. Thus, if students are required to spend too much time on academic material, they are bound to lose interest in it, and their achievement is likely to decline (Cooper et al., 1998).

The relationship between homework and academic achievement has been extensively discussed in the field of educational research, with researchers suggesting different outcomes on the influence of homework on achievement, such a homework having a positive, a negative, or even an unclear correlation with academic achievement

(Keith, 1987; Farrow et al., 1999; Cooper et al., 2006). Such disputes, and the fact that homework is often a source of friction between home and school (Cooper et al., 2006) have made authors call homework a “complicated thing” (Corno, 1996) or a “battlefield” (Cooper, 2001). Nevertheless, most literature seems to support the idea that doing homework regularly is positively associated with students’ academic performance (Coleman, 1982; Natriello & McDill, 1986; Keith & Cool, 1992; Zimmermann & Kistanas, 2005), although the controversy still persists today.

Purpose of the Research Review

Although for many homework seems to positively impact students' academic performance, researchers have been far from unanimous in their assessments of the strengths and weaknesses of homework as an instructional technique (Cooper, 1998). Similarly, parents and teachers frequently clash on the advisability of assigning homework daily, as well as the ideal amount of time that students should spend doing homework daily, if any.

As a response to these concerns, the purpose of this study is to analyze the previous research that has been carried out in the field, examine the strengths and especially the weaknesses that may have caused disagreements among researchers, or that may have affected the reliability of the results, and shed some light on the role that homework may play with respect to students' academic performance and other school indicators. Suggestions for future research and educational policy are included.

Outline of the Views of Homework in the United States

Public attitudes toward homework have been cyclical (Gill & Schlossman, 1996, 2003). During the late 19th and early 20th centuries, homework was believed to be an important tool for disciplining children's minds (Brink, 1937; Reese, 1995). The mind was seen as a muscle, and memorization was valued not only as a path to knowledge acquisition, but also considered good mental exercise. Homework was an essential part of the educational system, as memorization could easily be practiced at home.

However, in the 1940s, a growing reaction against homework took place (Otto, 1941). There was a shift towards problem-solving skills in US education, as opposed to learning through drill, and the use of homework as mental exercise was put into question. In addition, some social movements considered homework to be an intrusion in the everyday life of Americans, and an obstacle to their regular home activities (LaConte, 1981).

This trend reversed again in the late 1950s. After the Russians launched the Sputnik satellite in 1957, Americans became concerned about the rigor of their education system, fearing that it would leave children unprepared to face a complex technological future and to compete against their ideological adversaries (Goldstein, 1960; Epps, 1966; Gill & Schlossman, 2000, 2004). Homework was again adopted as an instrument to accelerate the acquisition of knowledge.

In the mid-1960s, the cycle reversed itself once again (Jones & Colvin, 1964). Homework started to be seen as a sign of excessive pressure on students (Wildman, 1968). Current learning theories at the time critiqued the value of homework, and started questioning its probable negative consequences for mental health.

In the early 1980s, as concerns raised about declining achievement in test scores and the Americans' ability to compete in a global marketplace, homework regained its positive status among the US society and education system. The 1983 release of the National Commission on Excellence in Education's report, *A Nation at Risk*, brought about a new educational excellence movement and a new view of homework. Throughout the 1980s and 1990s, the majority of adults supported and endorsed homework for its character-building and academic benefits.

Nonetheless, at the turn of the century, yet another strong rejection sentiment against homework began to grow, led by parents worried about the stress put on their children's shoulders, which attracted considerable attention from the media (Winerip, 1999). Despite of this public revolt against homework, researchers currently report that the majority of parents, educators and policymakers support homework being regularly assigned to students (Gill and Schlossman, 2004).

Early Literature on Homework

Homework has been an active area of study among education researchers in the US since the third decade of the 20th century (Cooper, 2006). As early as 1927, Hagan studied the use of homework compared to supervised study on the achievement of 11- and 12-year-olds in the school context. Unfortunately, findings from this study are unknown.

Between 1960 and 1987, more than a dozen reviews of the homework literature were conducted, with results ranging from homework having a positive impact, to a negative impact, to even showing no clear relationship with academic achievement (cf. Knorr, 1981; Keith, 1987). In any event, the majority of the studies concluded that homework seemed to have a powerful impact on achievement (Paschal, Weinstein & Walberg, 1984; Keith, 1986). This positive relationship was found at different levels: college (Polacheck, Kniesener & Harwood, 1978), high school (Keith, 1982; Foyle, 1984; Keith & Page, 1985), and elementary school (Wolf, 1979; Paschal, Weinstein & Walberg, 1984), although the correlation was much more significant for students in the higher grades. Furthermore, homework seemed effective for students of different ethnicities (Keith & Page, 1985), and gifted and low-performing students (Stanley, 1980; Keith, 1982). Also, Wolf (1979) found a positive relationship between homework and performance across the different subject areas.

Current Research on the Relationship between Homework and Academic Achievement

In 1989, Cooper conducted a review of nearly 120 empirical studies on the relationship of homework and academic achievement and the characteristics of successful homework assignments. His review included two types of studies: treatment/control and effect size. Twenty studies compared the achievement of the students who were given homework regularly to that of students who didn't get any homework; 14 favored homework, and 6 did not. Additionally, fifty studies examined the relationship between the amount of time that students spent on homework and their academic achievement in the different content areas. 43 of those studies found a significant correlation between homework and achievement outcomes, with 7 showing no relationship between both variables.

In recent studies on homework, scholars have identified several factors related to the relationship between homework and academic achievement (Cooper, 1989; Keith & Benson, 1992; Muhlenbruck et al., 2000). Some of the most important are gender, race/ethnicity, socioeconomic status, age and grade level, parental involvement, aspirations and attitudes, teachers' attitudes and feedback on homework, cognitive ability, homework time, motivation and social interactions.

Gender

The relationship between gender and achievement has been frequently studied in homework research. Most authors agree that girls spend more time than boys doing homework (Timmer et al., 1985; Natriello & McDill, 1986; Leone & Richards, 1989; Keith & Cool, 1992, Trautwein et al., 2003). Nevertheless, Leone & Richards (1989)

found that time spent doing homework did not increase with age for either sex, and in fact, decreased with age for girls. Drawing from Rafaelli and Duckett (1989), the researchers point out that girls spent more time socializing as they moved into junior high and high school, which may explain the decreased time spent on schoolwork. Nevertheless, studies investigating achievement by gender have produced mixed results, from boys achieving more than girls, primarily in math and science (Keith et al., 1986; Mau & Lynn, 2000), to girls achieving more than boys (Natriello & McDill, 1986; Trautwein et al., 2002; Duckworth & Seligman, 2006), to no differences by gender (Leone & Richards, 1989). Thus, research hasn't produced clear results on the influence of gender in the homework-academic achievement.

Race / Ethnicity and Socioeconomic Status

Researchers have also focused their attention on the variability of the homework / academic achievement dichotomy by race/ethnicity and socioeconomic status. Children in schools with a high percentage of students from minority groups have been found to do less homework than those in predominantly white schools (Easton & Bennett, 1989). In this regard, several researchers have pointed out that teachers in high minority schools hold lower expectations for the academic achievement of English language learners (Valenzuela, 1999; Ruiz-de-Velasco & Fix, 2001; Callahan, 2005), which could translate into teachers assigning less homework to minority students, and therefore, into minority students doing less homework.

In another study examining the influence of homework, among other variables, on a sample of 12,142 white, black, Hispanic, Asian American, and Native American students, Keith & Benson (1992) found that homework had a stronger impact on Asian American students than it did on students of other ethnicities. The researchers posited that

other factors, such as parental support, may increase the importance of homework by race and ethnicity.

Socioeconomic status is also an important indicator of homework as related to academic performance. For example, students in low-performing and high-poverty schools have been found to do less homework than students in more high-performing and high-SES schools (Easton & Bennett, 1989). Similarly, researchers have argued that differences in the access to resources only exacerbates the existing gap in achievement. Upper-class students are more likely to have access to places conducive to their learning style in which to do assignments, and better resources to help them complete assignments successfully (Cooper et al., 2003). Also, high SES students may benefit from homework because they have more opportunities to complete it and often get help with assignments from family members, particularly parents.

On the other hand, students from poor families suffer due to home circumstances caused by economic deprivation (Odum, 1984). Low-SES students are more likely to move frequently and have parents who work several jobs, making difficult the completion of homework or other academic activities (Scott-Jones, 1984; McDermott et al., 1984). Scott-Jones (1984) and McDermott et al. (1984) also identified crowded homes as a factor negatively related to academic achievement and time spent on homework, consistent with the results of Natriello & McDill (1986), who found that students from smaller families spend more time on homework. Consequently, students from lower social classes not only benefit less from homework, but also do less homework than those from more affluent families.

It hence follows that students from wealthy families seem to gain more from homework compared to students of lower SES, which puts into question how much students from lower-income groups —especially those of low-achieving levels— actually

benefit from homework, and whether it is really the homework or other factors that more clearly shape achievement.

Age and Grade Level

Age and grade level have proven of particular relevance among the factors that have been studied in homework research. For example, in the first set of studies that Cooper (1989) analyzed, he found that, after controlling on background characteristics, high school students who were given homework scored higher on standardized tests or got better grades than 70% of the students who were not. As age and grade levels decreased, so did the relationship between homework and academic achievement. In junior high school, the average value of this measure was half a percent, and in elementary school, homework was not found to be related to achievement gains. Similarly, in the second type of studies, the correlation between amount of homework and academic achievement was .25 for high school students, .07 for students in middle grades (5th through 9th), and nearly zero for elementary students.

Other researchers have obtained similar results. For example, Dufresne and Kobasigawa (1989) examined the home study time of 128 Canadian students in Grades 1, 3, 5 and 7 and their responses to test items, asking them to pair words associated with each other. The researchers found that older students (5th and 7th graders) spent more time studying harder items and performed better than the younger students. According to Muhlenbruck et al. (2000), the reason for this phenomenon is that "younger children are less able than older children to ignore irrelevant information or stimulation in their environment" (Muhlenbruck, Cooper, Nye & Lindsay, 2000, p. 298). In addition, Hoover-Dempsey et al. (2001), in a review of parental involvement in student homework,

found that younger children have less-effective study habits because of their inability to focus and avoid distraction.

Parental Involvement and Attitudes

Hoover-Dempsey et al. (2001) also found that parents' involvement in their children's homework appears to be related to their academic attainment, as long as this involvement supports attributes related to achievement (e.g., attitudes toward homework, perceptions of personal competence and self-regulation, etc.). Similarly, Keith et al. (1986), in a study of 28,051 high school seniors from the 1980 High School and Beyond longitudinal study (HSB) of the National Center for Education Statistics, found parental involvement to be strongly associated with homework, second only to intellectual ability. In the same fashion, Leone & Richards (1989), examining the social ecosystem of students doing homework, argue that "...while completing homework alone may reflect increasing autonomy, it appears that young adolescents still benefit from parental structure around homework tasks" (p. 546).

Other scholars, however, fail to find a positive correlation between parental involvement in their children's homework and academic achievement. For example, Natriello & McDill (1986) found that teachers' and peers' standards are more effective in generating effort on homework and achievement than parents', although the researchers acknowledge that a small portion of the parents' standards does result in increased effort and achievement. In any event, studies neglecting the benefits of parental involvement on academic attainment through homework seem to be the exception, rather than the rule, as most of the literature on the topic has consistently supported such relationship (Keith et al., 1993; Forgatch & Ramsey, 1994; Xu and Corno, 1998; Balli, Demo & Wedman, 1998; Hong, 2000; Stright et al., 2001).

There seem to be significant discrepancies among scholars on the level of parental involvement depending on the students' ability. Epstein (1988), in her study of homework, parental involvement and student achievement in elementary schools, found that more time spent doing homework, more help from parents, and more requests for parent involvement from teachers were associated with lower achievement in reading and mathematics. She attributes the results to the possibility that parents may spend more time helping their children if they are low-performing students, rather than high-performing. Other investigations have generated similar results (Natriello & McDill, 1986; Cooper, Lindsay & Nye, 2000). However, other scholars argue that average and high-performing students are more likely to do homework with family members than students struggling academically (McDermott, Goldman, & Varenne, 1984; Leone & Richards, 1989; Odum, 1994). This last body of literature highlights the importance of socioeconomic status as a key factor on the success of homework for students (see *Race / Ethnicity and Socioeconomic Status*).

Parental Aspirations

Parental involvement is highly associated with parental aspirations and attitudes. Parents are believed to enhance their children's appreciation of education by expressing positive attitudes toward their achievement (Cooper & Valentine, 2001). Most frequently, parents who have high aspirations or positive attitudes for their children are involved in their education, and vice versa. Hong (2000), in her study of preferred and actual homework styles of 272 7th graders, found that students in the high homework achievement group had parents with better educational attitudes and aspirations than those in the low homework achievement group. In the same manner, Natriello & McDill (1986) found more educated parents to show better attitudes and involvement in their

children's education, which in turn results in more time spent on homework, although they found no correlation between time spent on homework and English GPA.

Teachers' Attitudes

In addition to the importance of attitudes from parents, teachers' attitudes toward homework influence the quality of homework and students' homework effort (Trautwein, 2007). For instance, educators have been found to give more and/or higher quality homework to high-achieving than low-achieving students (Cool and Keith, 1991; Burstein, 1993; Cooper et al., 1998). However, in classes of mixed ability, the lower-performing students spend more time on homework than their higher-performing peers (see *Cognitive Ability and Homework Time*), which may account for the difficulty in finding clear relationships between time spent on homework and student achievement. Epstein & Dauber (1991) suggest that teachers with positive attitudes look at homework as an interactive tool to involve parents in the school, rather than an instrument to drill newly acquired skills. Likewise, Epstein & Van Voorhis (2001) contend that "when teachers design homework to meet specific purposes and goals, more students complete their homework and benefit from the results, and more families remain involved in their children's education through the middle grades" (p. 191). Consequently, from a teacher standpoint, a positive view of homework may not only entail increased academic standards, but also serve as a catalyst for the parent-school connection.

The conventional view on homework is that teachers who assign more homework are more successful in improving the academic level of their class (Trautwein & Köller, 2003). However, if grades do not reflect the overall achievement level of a class, this association may not hold true. For example, the best students in a poorly performing class usually receive an A even if they would get a B or C in an average- or high-performing

class. Because teachers use the class as the frame of reference, grades are roughly standardized within a class. This, along with Cooper's finding that homework has more influence on grades than on test scores (Cooper, 1998), has made some researchers suggest that standardized scores, instead of grades, should be used to measure class-level (teacher) effects on homework (Trautwein & Köller, 2003). Some researchers, though, have noted that grades are more likely to reflect the students' individual achievements, efforts and attitudes (Cooper et al., 1998; Trautwein et al., 2001); grades are also more appropriately viewed as influenced by homework practices, and thus, better indicators of the students' academic progress (Keith, 1982; Natriello & McDill, 1986; Cooper, 1998).

The teachers' feedback to homework assignments has also been found to positively influence the relationship between homework and achievement. Murphy and Decker (1989), in a study on homework use from the perspective of 3,000 high school teachers, found that a large percentage of the teachers (90%) checked and graded their students' homework. To examine the importance of the teacher's feedback on homework, Paschal et al. (1984) synthesized 15 empirical studies of homework and of various homework strategies on academic achievement and attitude at the elementary and secondary level. They concluded that homework appears to be related to higher achievement in general, but homework that is graded or receives feedback has an even stronger impact.

Some researchers have found contrary results, however. For example, Cooper (2001) found no significant impact on student achievement from the teacher's feedback. Likewise, Trautwein et al. (2002), in a study of 1976 seventh-graders in Germany, found that German teachers less frequently collect, correct and return assignments to students, and that homework does not have a significant impact on final grades. Their data show

the frequency with which the teacher monitored homework is positively related to achievement, although such improvement was not statistically significant.

Furthermore, teachers' homework behaviors not only reflect their attitudes toward homework, but also their teaching quality and goals. In this regard, de Jong et al. (2000), in their analysis of the relationship between homework and math achievement in junior high schools, argued that teachers who allocated their lesson time effectively tended to assign more homework. In contrast, Trautwein et al. (2002) suggested that teachers who assign a lot of homework might be less organized and have to assign more of the workload as homework. Similarly, they found that teachers who assigned higher amounts of homework were more likely to choose repetitive exercises than teachers who assigned less homework. Later, the same authors argued that lengthy homework assignments may lead students to internalize wrong routines (Trautwein & Köller, 2003).

Cognitive Ability and Homework Time

Cognitive ability has long been argued to be one of the main predictors of academic achievement (Elshout & Veenman, 1992, Neisser et al., 1996, Pintrich et al., 1986, Sternberg & Kaufman, 1998; Veenman et al., 1994). As seen in the previous section, students' cognitive ability might also influence how or how much homework teachers assign. But what role does cognitive ability play in the homework-academic achievement equation?

According to Hong (2000), high-achieving students reported that they liked to be self-, parent- and teacher- motivated, persistent, and responsible in doing their homework, compared to lower ability groups. They also preferred structured homework instructions, and were more organized. In contrast, students from the medium- and low-achievement groups reported to actually change places, eat or drink, and move about the

room when they did homework. High-achieving students, therefore, had better work habits, which may help them optimize their time spent on homework.

Different ability levels have often been related to the time spent on homework in previous research. Trautwein & Koller (2003), for example, call into question the appropriateness of considering time spent on homework as an absolute variable (in some cases, the only one) in studies examining the relationship between homework and academic achievement. They argue that more time spent on homework could indicate lower levels of cognitive ability. In other words, students struggling academically usually need more time to complete their homework than their high-achieving counterparts. According to Trautwein et al. (2002), “researchers might still fail to find a significant correlation between homework and achievement, because a higher working speed of [academically] stronger students would lead to a negative correlation between achievement and time spent on homework *within each class* [italics in the original]” (p. 29). In a similar assessment, Eren & Henderson (2007) assert that “Relying on hours spent on homework from the student reports is not as accurate and may yield spurious correlations, since it may reflect unobserved variation in student ability and motivation” (p. 333).

In view of the above, some researchers (Keith, 1982; Cooper, 1989) have suggested that low-ability students could benefit from spending more time on homework, because they need more time to catch up with high-performing students. In fact, low-performing students have been documented to spend more time on homework than high-performing students (De Jong et al., 2000; Epstein & Van Voorhis, 2001). Trautwein et al. (2002) obtained results that support Keith’s and Cooper’s hypothesis. They found that the within-class gap between low- and high- achieving students decreased when the teacher assigned more homework. Yet, they pointed out that the overall achievement

gains of a class with a high amount of homework was lower than for those in a class with a lighter amount of homework, concluding that, although frequent homework assignments correlate with higher achievement gains, the gains tend to decline as the length of homework assignments increase. Other researchers, however, oppose this view and argue that homework assignments would be equally beneficial to students of various achievement levels (Walberg et al., 1985).

Motivation

Leone & Richards (1989) argue that the experience of schoolwork (including homework) is itself an activity that does not appear intrinsically motivating for students. Thus, motivation seems to be an important factor affecting the effectiveness of the time spent on homework, and its positive impact on academic achievement.

Motivation and self-regulatory strategies have been deemed to be an essential part of the homework process (Xu & Corno, 1998; Corno, 2000). Many researchers have found that students achieve better when their actual classroom environment was similar or matched that preferred by them (Boulmetis & Sabula, 1996; Callan, 1996; Dunn, Griggs, Olson, Beasley & Gorman, 1995; Fraser & Fisher, 1983; Hodgins & Wooliscroft, 1997). However, these studies have been carried out in the school environment, and the students' perceptions of their school environment may be different from those of their home learning environment, where homework is ultimately done most of the time. Similarly, Hong (2000) claims that students give crucial importance to their own characteristic styles and learning preferences. She found high-achieving students were more self-motivated in doing their homework, while the low-achieving students were less self-motivated.

In addition, as explained in the previous section, motivation may also be related to the time spent doing homework. As with cognitive ability, more time on homework could reflect a positive (or negative) motivational effect (Trautwein & Köller, 2003). A student needing more or less time to complete homework than his/her classmates could indicate a motivational deficit or, on the contrary, a motivational surplus. For example, a high-achievement student with low levels of motivation may report the same amount of time spent to complete his/her homework than other students of lower ability but with high morale. Because motivational and cognitive effects take place at the same time, Trautwein & Köller (2003) caution that the overall correlations between time spent on homework and achievement gains could be low, and substantive effects may be overlooked.

Modern expectancy-value theory (Eccles et al., 1984; Eccles and Wigfield, 2002) is particularly suited to explain the motivational aspects of students' homework behavior (Trautwein & Köller, 2003). According to this theory, homework behavior is likely to depend on students' expectations of success. For example, some students may not engage in algebra homework because they do not expect to solve the assigned tasks. In addition, a positive self-concept or high self-efficacy leads to higher persistence when confronting difficult tasks.

Furthermore, homework behavior depends on the personal task value assigned to its completion. There are four components of task value in the expectancy-value theory: attainment value, intrinsic value, utility value and cost. Attainment value reflects the personal importance of doing well on the specific task. For example, students who attach value to being a good writer will actively engage in the homework set for writing classes. Intrinsic value describes the enjoyment that a student has while doing an activity. For some students, some homework assignments are intrinsically motivating (for example, a

student who particularly likes science may enjoy doing science homework), although, as described earlier, homework does not appear to be an intrinsically motivating activity for most children. Trautwein & Köller (2003) argue that both attainment value and intrinsic value have a positive influence on the quality and quantity of the time that a student spends on homework in each content area, but also prompt for additional leisure-time activities in these domains, which is a novel finding in the field.

Utility value can be described as the degree to which doing homework promotes current or future goals. For example, although not all students enjoy math homework, they may see it as a necessary prerequisite for their college studies; doing homework may also prevent students from confronting their teachers and parents. On the other hand, “good” homework behavior may have social costs when classmates are less academically oriented (Fend, 1998). Such social costs may be explained by the final component of task value, cost, which entails that homework is accompanied by negative aspects, such as frustration and the loss of time for other intrinsically motivating activities (i.e. meeting friends, spending time in leisure activities, etc.).

Social Interactions

Motivation and social interactions often go hand in hand as catalysts of homework effectiveness. Actually, students’ companions during homework may increase their internal motivation in the higher grades (Leone & Richards, 1989). In their analysis of the amount of time spent on classwork and homework of 532 students in grades 5 to 9, Leone and Richards found that the 9th graders spend more time alone doing homework than the 5th and 6th graders, and that students across the different grade levels spend less time doing homework in class. This developmental trend may reflect a greater capacity to engage in homework without the structure provided by adults and the time frame of

school. However, although older students report doing more homework, the findings of this study reveal that doing homework alone is less intrinsically rewarding, and not associated with better academic performance, which was actually tied to doing homework with family members and peers. Leone and Richards conclude that education, in the end, is “designed to socialize children to become productive contributors to society” (pp. 531-532). Natriello & McDill (1986) have also demonstrated the positive influence of social interactions on homework. According to their data, while teachers’, parents’ and peers’ standards all have positive and significant effects on the time students spend on homework, peers’ standards have the largest influence.

Conversely, other studies have found that high-achievers, in general, prefer to do homework by themselves and not with peers (at best, with adult figures), compared to low-achievers (Leone & Richards, 1989; Hong, 2000). Therefore, although research is inconclusive in this respect, social interactions seem to be powerful mediators of the homework/academic achievement relationship in some instances.

Identifying the Optimal Amount of Homework

The above discussion can easily lead to a question that has been much discussed in the homework-achievement debate: what is the optimal amount of homework that the students should have? Alternatively, how much time should students spend on homework?

It is important to note that time doing homework should not be taken as an absolute indicator of the amount of homework that the students have, since levels of cognitive ability and motivation can significantly influence the time a student needs to complete his/her homework (see *Cognitive Ability and Homework Time*). As Cooper (1989) points out, few studies separate both factors. In his research review, Cooper found 9 studies that allowed for a charting of academic performance as a function of homework time. While the progress line was flat in young children, achievement continued to improve with more homework until assignments lasted between 1 and 2 hours a night for junior high school students. Beyond that time, homework was no longer associated with higher achievement. For high school students, the progress line continued to increase through the highest point on the measured scales, more than 2 hours. In addition, in the second set of studies that Cooper analyzed, the majority indicated that students who did more homework had better achievement outcomes. This relationship held true across elementary, middle, and high school grade levels, although the correlation increased as the grade levels went up.

De Jong et al. (2000), in their study of 1,394 Dutch students, obtained similar results. They even claimed that "teachers giving less homework are less effective" (p. 152). They caution, however, that this finding applies mainly to teachers who give

relatively small amounts of homework, although they're not specific regarding the size of such "small amount".

Since the impact of homework on academic achievement seems to be lower in younger students (see *Age and Grade Level*), researchers have argued that no specific ideal amount of time can be suggested across the different grade levels. Cooper et al. (2006), for example, suggest that the optimal amount of homework for high school students may be 1½ to 2½ hours per night, and less for younger students. In a more recent article, Cooper (2010) asserted that research is consistent with the '10-minute rule,' or about 10 minutes of homework each night for each grade (20 minutes for second grade, 50 minutes for fifth grade, and so on), in line with The National PTA and the National Education Association's recommendations.

Additionally, Trautwein (2002, 2007) indicated that homework time shouldn't be confused with other school-related activities, which are often self-reported by students as homework time and have been included in some studies as such. In a study of the effects of in-school versus out-of-school homework on high school students, Keith, Diamond-Hallam & Fine (2004) concluded that homework completed at home had a greater impact on grades and achievement test scores than homework completed in school (in after-school programs, study halls, etc.).

One of the outcomes of the No Child Left Behind Act of 2001 (NCLB) has been the creation of a number of federal- and state-funded after-school programs that provide academic assistance, such as homework help, for low-performing students. The literature on the relationship between homework completed out of school and academic achievement has not been systematically examined, although some scholars have examined the academic impact of such programs. Cosden et al. (2001), for example, analyzed ten studies that evaluated the educational potential of after-school homework-

assistance programs. While only two of the studies showed improvement in the academic achievement of the students, most of them noted improvements in behavioral skills, such as increased academic motivation and improved work habits, which may indirectly impact achievement (see next section, *Other Factors Related to Homework*, for studies reporting similar results). Another study on the 21st Century Community Learning Centers program, which provides homework assistance across the different subject areas, did not find any connection between providing structured time for homework completion and academic performance (James-Burdumy et al., 2005).

Other Factors Related to Homework

Homework has been found to be related to other nonacademic positive factors. For example, Cooper et al. (1998) sustain that, although older students benefit more academically from homework than young children, homework helps young students develop effective study habits, which is likely to have long-term academic benefits. Good homework habits also entail more positive academic attitudes, and an increased sense of responsibility toward learning (Cooper & Valentine, 2001) and self-efficacy (Zimmerman & Kistantas, 2005).

Corno and Xu (2004), calling homework the “job of childhood”, suggest that it may develop an aptitude for gainful employment in students. In their study, they discovered that homework helped third graders learn responsibility and develop time-management and job-management skills. The students participating in their study also learned how to overcome their unwillingness to do homework, and to adjust their concentration to the demands of a specific assignment, which the authors deem essential skills that they will need in their future jobs.

Homework has also been reported to negatively impact students’ attitudes toward school (Chen and Stevenson, 1989). Bryan (1995) argues that academic activities remain rewarding for only so long, and children may become overexposed to academic tasks. Similarly, homework may take away leisure time and community activities, and not be as varied or useful as work done in class (Warton, 2001; Coutts, 2004).

Overall, these findings suggest that the benefits of moderate use homework in factors other than academic achievement (e.g., the development of good study habits) outweigh its disadvantages.

Discussion and Implications for Practice and Education Policy

Homework has remained a controversial issue for more than a century, and the debate continues today, perhaps stronger than ever. Most research suggests regular homework habits do have academic benefits for students of all ages; however, the benefits seem to be more significant in older students; for young children, although not readily apparent, the benefits are evident nonetheless.

Most research studying the relationship between homework and academic achievement has heavily relied on its outcome in test scores, GPA or grades as a measure of reliability. However, as some researchers have pointed out, the benefits of establishing homework habits in the early ages transcend its direct impact on scores, as it helps young students develop effective study habits that will likely entail academic gains as they advance in the educational system (Cooper et al., 1998; Hong, 2000; Cosden et al., 2001), and even in their work life (Corno and Xu, 2004). For younger students, thus, the amount of homework may not be as important as the fact that they bring home some kind of activity that helps develop their personal responsibility and establish routines.

The importance of the amount and type of homework appears to increase for students in the upper grades in terms of academic performance (primarily measured through grades, test scores and GPA). In addition, since postsecondary education requires solid independent study and management habits outside of class, facilitating the practice of such skills in the primary and secondary levels seems to be a reasonable and advisable decision for policymakers, school administrators and teachers, regardless of the effects of homework on academic achievement.

In regards to the relationship between homework and cognitive ability, it is worth mentioning that most of the research that has studied this connection has found that,

although homework seems to be beneficial for students of all cognitive levels, low performing students and students with learning disabilities seem to be those who mostly benefit from homework. Accordingly, even though research hasn't clearly determined whether high-performing students do more homework or doing more homework enable students to perform better, the additional time to practice skills under the supervision of a parent seems to be a successful method for meeting the learning needs of these students.

Another important factor to be taken into account, especially for teachers, is the role of homework for students of different socioeconomic groups. Students from low income households may not benefit from homework as much as those from more affluent families, as their access to places that promote positive learning attitudes and behaviors and to resources is limited. For this reason, homework associated with high achievement may simply reflect that high achieving students are more likely to be of higher socioeconomic status. The teacher's role, thus, is essential to counteract the impact of SES. An educator must be conscious of their students' backgrounds and hold high expectations and aspirations for every student, regardless of their race/ethnicity or social class. It is the responsibility of the teachers to provide their students with enough time, resources and assistance to complete their homework, especially for those who need it the most. Ensuring that all students get homework of high quality and providing them with feedback and encouragement are best practices to follow in today's heterogeneous education system.

Similarly, students give crucial importance to their own characteristic styles and learning preferences, and achieve better when their actual classroom environment is as similar as possible to that preferred by them (Hong, 2000). Hence, teachers are to keep their students motivated to maximize their academic performance, getting to know their learning styles and preferences to the extent possible. In this regard, some researchers

(e.g. Cooper et al., 1998) have warned that lengthy homework assignments can undermine student motivation. Therefore, giving students excessive homework might lead to fatigue and reduce their motivation. Although determining the right amount of homework might not be an easy task (see pp. 19-21), it is advisable that teachers give homework judiciously and moderately, and reflect on their homework-giving habits regularly, with the aim of finding a balance between their students' motivation, self-regulatory habits and academic performance.

Parental support and high aspirations are also positively related to academic achievement. In fact, research has shown that the correlation between homework and academic achievement is closely tied to the parents' attitudes toward homework. It is important to note that, in many cases, a negative academic success / homework association is the result of a lack of parents' interest in the types of school-sanctioned activities that are sent home, or their lack of school-based knowledge, rather than negative attitudes toward homework. In other cases, parents' inability to assist their children with homework is a result of their socioeconomic status (McDermott, Goldman, and Varenne 1984). Thus, if teachers are unaware of the relationship between parent beliefs and student homework performance, their assessment of the value of homework assignments may be misguided. Along these lines, collaboration between parents and teachers is of especial importance. Teachers who establish an open line of communication with their students' parents, set up clear goals and involve them in the homework process are most likely to improve the parents' attitudes and, ultimately, the productivity of the time their children spend doing homework, as well as their academic performance (Weinstein & Mignano, 1993).

Although the existent research on homework has extensively studied the relationship between homework on academic achievement and covered many of its

implications, there are numerous gaps remaining. First, most studies have been carried out in the United States. Only two of the investigations reviewed examined students from other nations. Exploring the effects of homework on academic achievement in different countries, educational systems, learning styles and cultures may lead to more reliable findings.

Second, many of the variables used are based on student self-report, reducing the reliability of a large number of existing investigations. Future investigations should measure homework based on a composite, rather than on a single item. Similarly, research investigating homework as related to academic achievement has relied heavily on the student's results in test scores, GPA or grades. Other outcomes, such as study habits, motivation and use of cognitive strategies should also be included in the assessment of this relationship, especially when examining students in the lower grades.

On the other hand, most studies have focused exclusively on a single grade level or content area, generally reading and math, which may decrease the generalizability and validity of their results. Future research might include students of various ability levels and sex, as well as different amounts of homework, in order to shed light on the optimal amount of homework that students should have, probably one of the most controversial areas of this body of research.

Finally, most of the parents' survey responses come from middle- and upper-class White families, which means that low-income families and families from minority groups and are often underrepresented. Future research investigating parents' responses in families for whom homework is more difficult to attend to is needed, since those families who respond are more likely to be actively involved in their children's education. In addition, having into account the many forms that parent support can take, it is possible that there needs to be more research done to fully understand the

relationship between homework and parent engagement in schooling with marginalized communities who have been traditionally underserved in US schools.

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