A Study of How Parental Involvement in Homeschooling Differs by Grade-Level

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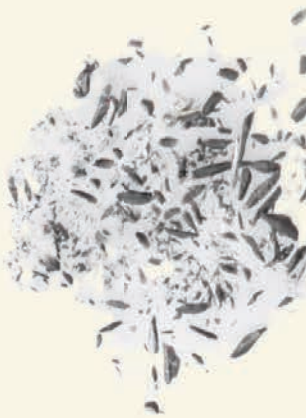
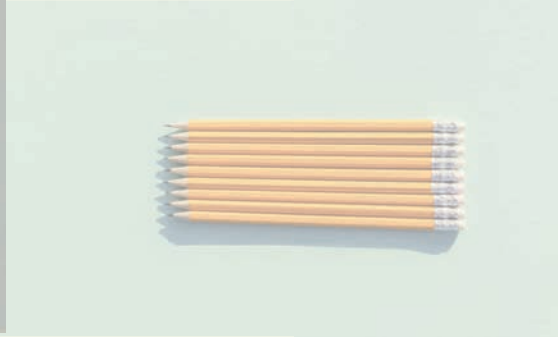
Executive Summary

This study examines how homeschool instruction differs by grade level. It does so by using logistic and OLS regression to analyze two waves of the National Household Education Survey and the resulting sample of almost 1,000 respondents throughout the United States. Results indicate despite an increase in the number of programs, resources, and networks available to homeschool families, homeschooling is still very much learning at home directed or overseen by someone at home. Use of instructional sources outside the home is infrequent overall, but students in middle and high school grades are more likely to use the internet for instruction. Indeed, methods of instruction and curricular sources used by homeschoolers suggest the learning of those in middle and high school grades may be guided less directly by parents than in the elementary grades. Finally, working homeschool parents of children in all grade levels are more likely to find an external instructional replacement when their involvement is reduced by work.





A Study of How Parental Involvement in Homeschooling Differs by Grade-Level

This study examines how homeschool instruction differs by grade level. Although research on homeschooling has increased in recent years, there remain large gaps in our knowledge of how parents go about homeschooling their children (Anthony & Burroughs, 2012; Carpenter & Gann, 2016; Gann & Carpenter, 2019). This has led to calls for more research on this topic, with a particular focus on how parental involvement differs over children's development (Carpenter & Gann, 2016; Gann & Carpenter, 2019). Studies on non-homeschool children have considered differences in parental involvement by grade level (Catsambis & Garland, 1997; Núñez et al., 2015), but the same focus with homeschool children is almost entirely absent.

This study responds to that call and does so with an unusual feature—a large, multi-year, nationally representative sample. As Hodge, Salas-Wright, and Vaughn (2017) note, most of the existing studies on homeschooling—particularly those relevant to this report—are characterized by small unrepresentative samples. In contrast, this study analyzes two waves of the National Household Education Survey (NHES) and the resulting sample of almost 1,000 respondents throughout the United States.

The report also provides information important to the larger educational and policy community. The relationship between public school districts and homeschools is dynamic and evolving (Montes, 2006). Some homeschooled families receive curricular materials, attend classes, and participate in extracurricular activities via the public schools. Therefore, homeschooling is not necessarily a phenomenon apart from or against public schooling; rather it is an educational approach that runs parallel to and increasingly interacts with public schools. Understanding how homeschool parental involvement and instruction changes over age/grade levels can provide to public schools important information that can be used to understand what types of resources may be requested by their homeschool community.

Background

As Carpenter and Gann (2016) note, for many years, homeschooling was perceived as a homogenous instructional method with little understanding of what occurred on a day-to-day basis. Recently, however, scholarship has begun to show significant diversity in how homeschooling parents educate their children. Parents use multiple activities and methods, depending on student needs and interests (Anthony & Burroughs, 2012; Bachman & Dierking, 2011; Boschee & Boschee, 2011; Gann & Carpenter, 2019), and a single student may have three to five different methods of receiving instruction for different courses they are taking (Carpenter & Gann, 2016).

Self-study (Anthony & Burroughs, 2012; Carpenter & Gann, 2016) using textbooks and printed curricula (Boschee & Boschee, 2011; Hanna, 2012) has long been ubiquitous in homeschooling, but technology is now just as common, if not more so. Technology takes the form of computer generated programs (Hanna, 2012; Sabol, 2018), online access, and internet-delivered courses (Anthony & Burroughs, 2012; Boschee & Boschee, 2011; Carpenter & Gann, 2016; Gann & Carpenter, 2019; Sabol, 2018).

Also popular are trips to public libraries (Boschee & Boschee, 2011), museums (Gann & Carpenter, 2019; Hanna, 2012; Sabol, 2018), and public presentations at universities (Gann & Carpenter, 2019). In recent years, dual enrollment at community colleges (Anthony & Burroughs, 2012) has grown in use, as has the use of public school resources, such as science equipment, maps/atlases, trade books, calculators, and projectors (Hanna, 2012).

Contrary to conventional impressions, some research suggests most formal instruction comes from outside sources, such as online courses, co-ops, or tutors (Carpenter & Gann, 2016). In fact, multiple authors assert homeschool co-ops are among the most common forms of instructional methods among homeschool families (Anthony & Burroughs, 2012; Gann & Carpenter, 2018, 2019; Hodge et al., 2017; Sabol, 2018). A co-op is a group of parents who gather to collectively teach courses. These courses can range from typical school subjects, such as math or science, to electives. Often, co-op teachers are homeschooling parents or community members. To many parents, the co-op is an integral part of the homeschooling process and helps parents overcome the inability to teach all courses or provide extracurricular activities for their children (Anthony, 2015). Some studies find tutors are also commonly used to provide instruction for homeschool students, usually through scheduled weekly meetings (Carpenter & Gann, 2016; Hanna, 2012). Tutors provide instruction, schedule readings and assignments, and offer forms of assessment for students.

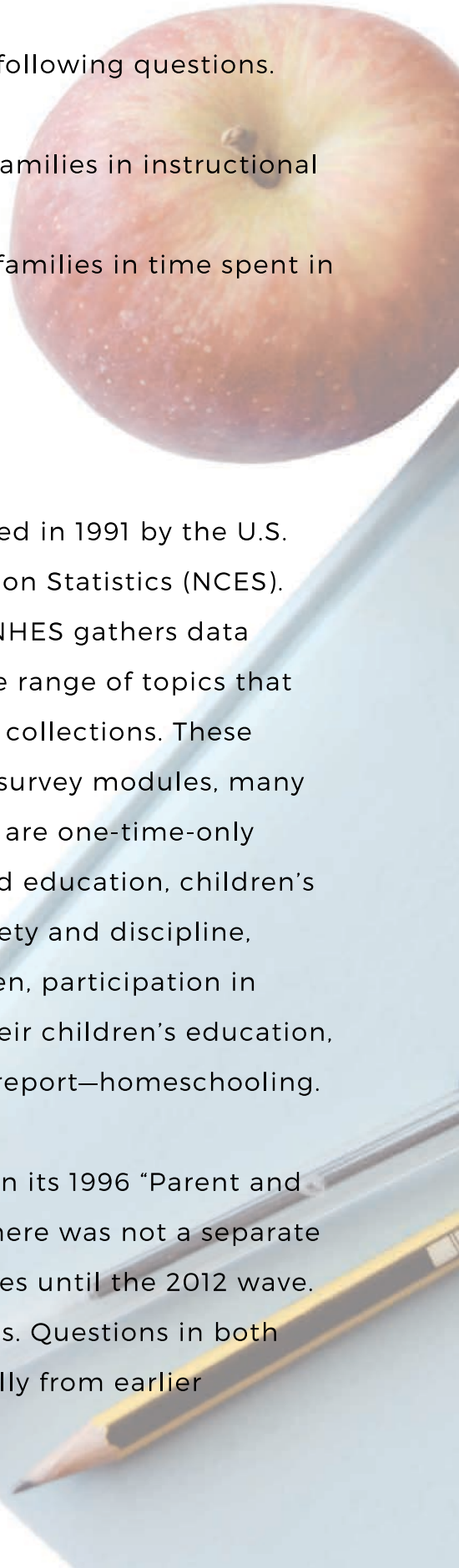
Just as instructional methods are diverse, so, too, are curricular materials, ranging from traditional texts to state standards (Boschee & Boschee, 2011) to no guiding curriculum at all, often called “unschooling” (Boschee & Boschee, 2011; Gann & Carpenter, 2019; Hodge et al., 2017). Indeed, according to Hanna (2012), more than 70 publishers currently supply various kinds of materials, available in bookstores or online. Popular providers include, among others, Calvert School, Christian Liberty Academy, Rod and Staff, Alpha Omega, A Beka, and Family Centered Learning Alternatives. Online, parents may access almost limitless resources, printed materials, or curricular support. Homeschooling vendors and suppliers have even tailored materials to accommodate individual motivations or philosophical ideologies. Such materials are also available to unschoolers, to the extent students wish to access them. Parents in the unschooling subculture typically deemphasize parental involvement and structure (Gray & Riley, 2013). Rather, unschoolers encourage their children to experiment and pursue their own interests with minimal parental monitoring.

The literature discussed above provides helpful insight into the wide range of instructional activities that occur among homeschoolers, but little of this literature examines differences based on age/grade levels. And those that do only mention differences cursorily as part of case studies. For example, in their case study of several homeschool families, Anthony and Burroughs (2012) described how mothers typically provided direct instruction to their younger children while leaving the older children to study independently. Doing so was partly because younger children required greater intervention but also because the parents in the study wanted to foster among their children a sense of responsibility and independence. Similar trends were noted in other studies (Carpenter & Gann, 2016; Kunzman & Gaither, 2013).

Methods

In light of such a dearth, this study was guided by the following questions.

1. Is there a significant difference among homeschool families in instructional methods and materials based on grade levels?
2. Is there a significant difference among homeschool families in time spent in school based on grade levels?



Data

Data for the study came from the NHES, a survey created in 1991 by the U.S. Department of Education's National Center for Education Statistics (NCES). Unlike NCES's school-based and institutional surveys, NHES gathers data directly from households in the U.S. It addresses a wide range of topics that cannot be studied efficiently through other NCES data collections. These topics are addressed through a series of issue-specific survey modules, many of which are repeated on a rotating basis, while others are one-time-only collections. The topics include early childhood care and education, children's readiness for school, parents' perceptions of school safety and discipline, before- and after-school activities of school-age children, participation in adult and career education, parents' involvement in their children's education, school choice, civic involvement, and the topic of this report—homeschooling.

NHES began asking questions about homeschooling on its 1996 "Parent and Family Involvement in Education" questionnaire, but there was not a separate module of questions specifically for homeschool families until the 2012 wave. This study used the 2012 and 2016 homeschool datasets. Questions in both waves were almost identical, but they differ substantially from earlier questionnaires (i.e., pre-2012).

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The total sample size was 949 across both waves. Table 1 includes education and work status for parents in the sample. A little more than a third of parents held at least a bachelor's degree. As for work status, 50% of Parent 1 respondents (usually mothers) were employed for pay or were self-employed, while almost 80% of the second parents were employed for pay or were self-employed.

Table 1: Parent Education and Work Status

	Parent 1	Parent 2
	Highest Education	
8th grade or less	4.3	5.4
High school, but no diploma	5.4	6.3
High school diploma or equivalent	16.5	18.7
Vocational diploma after high school	5.6	4.2
Some college, but no degree	20.7	16.6
Associate's degree (AA, AS)	10.4	9.6
Bachelor's degree (BA, BS)	20.3	20.1
Some graduate/professional education	4.7	4.5
Master's degree (MA, MS)	8.6	10.9
Doctorate degree (PhD, EdD)	1.5	1.4
Professional degree beyond bachelor's	1.9	2.4
	Work Status	
Employed for pay or income	38.0	65.0
Self-employed	12.1	14.6
Unemployed or out of work	4.7	3.8
Full-time student	0.1	0.1
Stay at home parent	35.8	11.0
Retired	2.8	2.2
Disabled or unable to work	6.3	3.2

Table 2 includes the household income for the sample. A little more than 54% of the sample reported incomes greater than $50,000. For comparison, the 2016 median household income in the United States was $57,000 (Guzman, 2017).

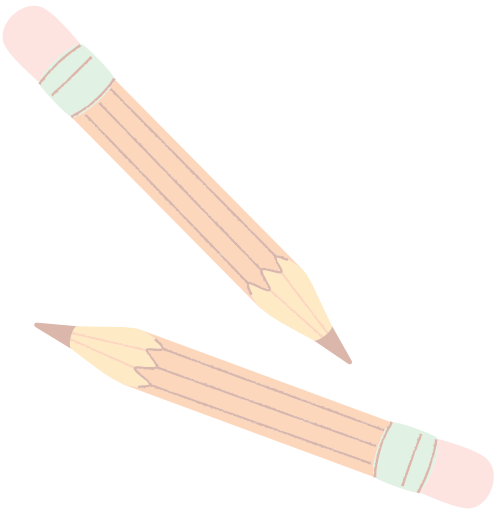
Table 2: Household Income

	Percent
0 to 10,000	6.3
10,001 to 20,000	9.2
20,001 to 30,000	10.5
30,001 to 40,000	9.4
40,001 to 50,000	10.1
50,001 to 60,000	8.6
60,001 to 75,000	11.9
75,001 to 100,000	15.8
100,001 to 150,000	11.4
150,001 or more	6.7

The homeschool children represented in the sample were overwhelmingly White, as displayed in Table 3. The next largest group were Hispanic students, followed by Black students. Among students, slightly more were female than male.

Table 3: Student Characteristics

	Percent
Spanish, Hispanic, or Latino	18.9
American Indian	3.8
Asian	3.7
Black	9.5
Hawaiian or Pacific Islander	0.7
White	83.4
Hispanic - race not reported	9.9
Male	48.7
Female	51.3



Variables

For research question 1, instructional methods and materials were measured by the following constructs.

- Use of a tutor
- Use of a homeschool co-op
- Attendance at a public or private school or college/university
- Teaching style used to homeschool
- Sources of curriculum
- Courses taken online

Each of these represented a dependent variable in the analyses. Table 4 lists the specific items from the survey relevant to each.

For research question 2, time spent was measured by the number of hours per day spent homeschooling. Prior research finds most homeschoolers spend four to six hours a day in school (Boschee & Boschee, 2011), but no prior studies appear to disaggregate by age or grade levels.

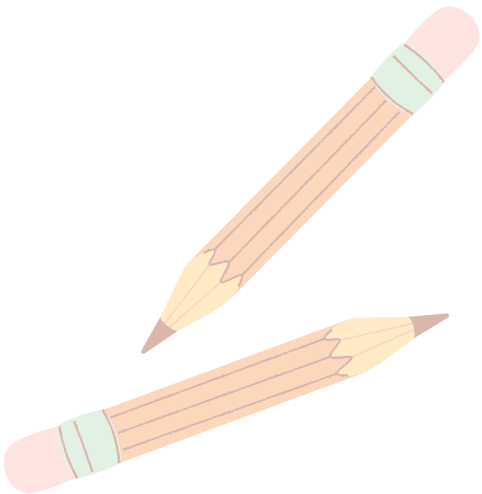
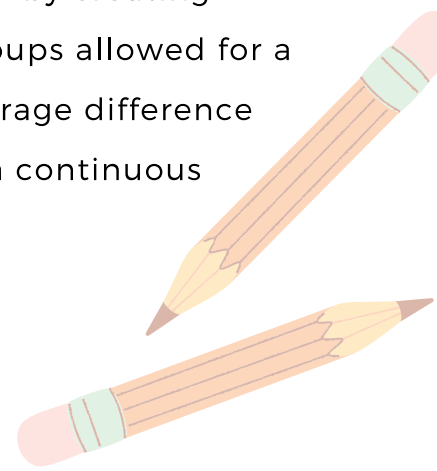


Table 4: Study Dependent Variables

Questions/Variables	Scale
Homeschool instruction by tutor	yes/no
Homeschool instruction by homeschool group	yes/no
Homeschool instruction at public or private school or university	yes/no
Hours spent in public or private school	continuous
Homeschool teaching style	formal/informal
Homeschool curriculum source - library	yes/no
Homeschool curriculum source - homeschool catalog	yes/no
Homeschool curriculum source - educational publisher	yes/no
Homeschool curriculum source - homeschooling organization	yes/no
Homeschool curriculum source - church	yes/no
Homeschool curriculum source - public school	yes/no
Homeschool curriculum source - private school	yes/no
Homeschool curriculum source - bookstore	yes/no
Homeschool curriculum source - websites	yes/no
Internet homeschool instruction	yes/no
Hours per day homeschooling	continuous

The independent variable was grade level. The questionnaire gathered this in a continuous scale, but the analyses below used a version of the variable transformed into grade-level groups. Of course, homeschoolers are not necessarily tied to traditional grade levels, but the NHES questionnaire asked respondents to identify the grade students would be in were they enrolled in a brick-and-mortar school. Montes (2006) studied differences in reasons for homeschooling based on grade level, separating the sample into K-3 and 4-8 grade-level groups. This study generally followed that model by creating three groups: K-5, 6-8, and 9-12. Coding the variable into groups allowed for a more precise examination of differences, rather than an average difference that would have been generated with grades measured as a continuous variable.



Also consistent with Montes (2006), analyses controlled for parental education, employment status, and household income and child race/ethnicity and sex. Table 5 lists the covariates and their respective scales as used in the analyses.

Table 5: Covariates Used in the Analyses

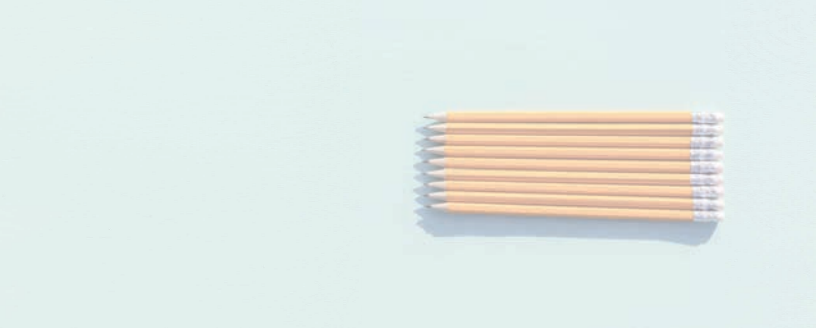
Variable	Scale
Child race	white=1/person of color=0
Child sex	male=1/female=2
First parent/guardian highest grade level completed	ordinal
First parent/guardian employment status	working for pay/not working for pay
Second parent/guardian highest grade level completed	ordinal
Second parent/guardian employment status	working for pay/not working for pay
Total household income	ordinal
Survey year	2012=0/2016=1

Analyses

Data were analyzed using either logistic or OLS regression, as appropriate for the dependent variable. The general model took the form:

$$Y = \beta_0 + \beta_1(\text{grade level}) + \beta_2(\text{white}) + \beta_3(\text{sex}) + \beta_4(\text{parent 1 educ}) + \beta_5(\text{parent 2 educ}) + \beta_6(\text{parent 1 working}) + \beta_7(\text{parent 2 working}) + \beta_8(\text{income}) + \beta_9(\text{year})$$

Of the dependent variables listed in Table 4, two of them—"Hours spent in public or private school" and "Hours per day homeschooling"—were analyzed using OLS regression. The remaining variables in Table 4 were analyzed using logistic regression. In the analysis, "grade level" was represented by the aforementioned grade-level groups (elementary, middle, and high) in dummy codes with elementary as the reference.



Results

Beginning with descriptive statistics, Table 6 indicates the percentage of participants by grade level and overall who responded “yes” to each of the dependent variable questions. As the “Total” column illustrates, only a minority of families access instruction by others outside their homes, at least as measured by tutor, homeschool group, public/private school, or internet. The most popular of the four options measured is instruction via the internet, but the others are not far behind in frequency of use. To be clear, these questions are not measuring the percentage of time spent in any of these options. These measure the percentage of families that use these methods. Moreover, the choices are not exclusive. Respondents can use any or all these options.

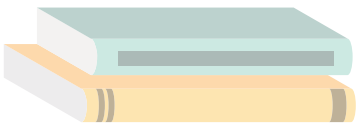
To the extent these instructional options are used, they are not used equally across grade levels. Middle and high school students use almost all these options more than elementary students. The only option used more by elementary students is homeschool groups. The option used with the greatest frequency is internet instruction by high schoolers.

Table 6: Outside Instruction and Curricular Sources by Grade-Level

	Elementary	Middle	High	Total
Instruction by tutor	21.70%	26.00%	28.00%	25.50%
Instruction by homeschool group	34.20%	30.70%	28.50%	30.90%
Instruction at public or private school or university	26.80%	23.70%	34.00%	29.30%
Instruction via internet	18.50%	35.80%	42.30%	33.00%
Curriculum source - library	77.60%	71.60%	60.30%	68.60%
Curriculum source - homeschool catalog	73.80%	67.90%	48.20%	61.10%
Curriculum source - educational publisher	59.10%	50.70%	37.50%	47.60%
Curriculum source - homeschooling organization	50.80%	45.10%	42.00%	45.60%
Curriculum source - church	42.20%	31.20%	25.70%	32.30%
Curriculum source - public school	24.30%	23.70%	30.90%	27.10%
Curriculum source - private school	8.60%	11.20%	11.60%	10.50%
Curriculum source - bookstore	77.00%	67.90%	58.40%	66.70%
Curriculum source - websites	74.40%	71.20%	68.40%	71.00%
Style of teaching				
Formal	83.40%	86.50%	82.40%	83.70%
Informal	16.60%	13.50%	17.60%	16.30%

Note: Numbers represent the percentage responding “yes” to the questions.

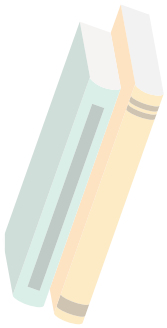
As for curricular sources, overall the internet is most frequently used, followed closely by bookstores and libraries. Least frequently used are public and private schools. Although the internet appears to be used similarly across grade levels, there are notable grade-level differences for other sources. Homeschool catalogs, educational publishers, bookstores, and churches are used substantially more often for elementary grades than high school. In fact, almost all the sources are used more often in the elementary grades than middle or high school. The only exceptions are public and private schools.



Turning to style of teaching, the overwhelming percentage of respondents use formal rather than informal methods of teaching. High school grades slightly more often use informal teaching styles. Curiously, formal teaching styles are used most often in middle grades. This trend differs from those generally present in Table 6, where grade-level trends tend to be straight-linear slopes between elementary and high school grades.

Table 7: Hours Spent in Public/Private School and in Homeschooling

	Hours/week spent in public or private school		Hours per day homeschooling	
	Mean	SD	Mean	SD
Elementary	17.02	14.21	4.26	2.07
Middle	15.41	14.24	4.79	1.94
High	16.29	13.65	4.80	1.97
Total	16.35	13.89	4.62	2.01



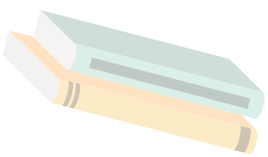
Although there are notable differences in outside instructional options and curricular sources by grade level, the differences in hours per day homeschooling or hours per week spent in public or private school appear trivial. Students in older grades spend slightly more time on homeschooling per day, but elementary students who receive instruction in a public or private school spend a little more time in such environments.

When subjected to regression analyses, many of the differences present in Tables 6 and 7 appear statistically significant. Table 8 includes regression results just for the grade variables. Full results, including covariates, are included in the appendix.

Table 8: Regression Results

		Coeff.	se	p	Exp(B)
Instruction by tutor	**Middle**	**0.59**	**0.30**	**0.05**	**1.81**
	High	**0.56**	**0.27**	**0.04**	**1.75**
Instruction by homeschool group	Middle	0.03	0.29	0.93	1.03
	High	**0.55**	**0.22**	**0.01**	**1.74**
Instruction at public/private school or university	Middle	-0.48	0.35	0.17	0.62
	High	0.10	0.27	0.71	1.10
Internet homeschool instruction	**Middle**	**0.95**	**0.28**	**0.00**	**2.57**
	High	**1.11**	**0.26**	**0.00**	**3.04**
Curriculum source - library	Middle	-0.47	0.32	0.14	0.62
	High	**-1.22**	**0.26**	**0.00**	**0.29**
Curriculum source - homeschool catalog	**Middle**	**-0.68**	**0.31**	**0.03**	**0.51**
	High	**-1.32**	**0.27**	**0.00**	**0.27**
Curriculum source - educational publisher	Middle	-0.05	0.27	0.86	0.95
	High	**-0.49**	**0.24**	**0.04**	**0.61**
Curriculum source - homeschooling org	Middle	-0.38	0.27	0.15	0.68
	High	**-0.43**	**0.23**	**0.06**	**0.65**
Curriculum source - church	**Middle**	**-0.49**	**0.28**	**0.08**	**0.61**
	High	**-0.85**	**0.24**	**0.00**	**0.43**
Curriculum source - public school	Middle	-0.03	0.34	0.92	0.97
	High	0.16	0.27	0.54	1.18
Curriculum source - private school	Middle	0.36	0.40	0.37	1.43
	High	**1.10**	**0.35**	**0.00**	**3.00**
Curriculum source - bookstore	**Middle**	**-0.59**	**0.30**	**0.05**	**0.55**
	High	**-0.97**	**0.26**	**0.00**	**0.38**
Curriculum source - websites	Middle	-0.11	0.33	0.73	0.89
	High	-0.26	0.28	0.35	0.77
Style of teaching	Middle	0.19	0.37	0.61	1.21
	High	-0.36	0.32	0.26	0.70
Hours spent in public or private school	Middle	-1.54	3.25	0.64	
	High	0.37	2.68	0.89	
Hours per day homeschooling	**Middle**	**0.80**	**0.24**	**0.00**	
	High	**1.04**	**0.21**	**0.00**	

Notes: Significant difference in bold. Elementary is the reference for all comparisons. Full results in the appendix.



Beginning with outside instruction, students in upper grades are significantly more likely to receive such instruction, with the exception being public/private schools. There is also no difference between elementary and middle grades in the likelihood of receiving instruction from a homeschool group. The coefficients are almost always larger for high school compared to middle school, confirming the aforementioned straight-linear trend among the grades. The exception is use of a tutor, where middle grades are slightly more likely than high school grades to use such an option.

For curricular options, middle and high school grades generally see less use than elementary grades. Across almost all the sources, regression coefficients are negative for middle and high school grades. The one exception with statistical significance is private school. Those in high school grades are three times more likely than those in elementary grades to use curriculum from private schools. Of note, there are no significant differences in the use of the internet or public schools as curricular sources.

There are also no significant differences in teaching style or time spent in public or private schools. The latter may seem contradictory to the finding about private schools as a curricular source for high school grades, but the questions measure two different things. Just because someone uses private schools as a curricular source does not necessarily mean they receive instruction in or from a private school. Finally, the number of hours per day spent homeschooling is significantly different for older grades compared to elementary. Those in middle and high school grades spend more time than those in elementary, but the differences are small.

Although the covariates were not of primary interest in this research, it is nonetheless interesting to note the results of one of them—working for pay or self-employed, hereafter simply called “working.”

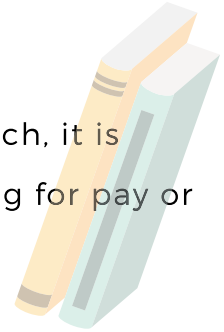


Table 9 presents the results of the working variable for the instruction dependent measures, which are the measures for which working was either frequently significant or approaching significant. When parent 1, who carries most of the responsibility of homeschooling, works, there is an increased likelihood of accessing instruction through tutors, public/private schools, and the internet. The trend is similar when parent 2 works. When parent 1 works, less time per day—about a half an hour—is spent homeschooling. Moreover, both parents working is related to a decreased likelihood of using formal teaching styles.

Such results suggest, not surprisingly, homeschool instructional decisions are partly influenced by parental capacity for involvement. And this does not differ based on the student's grade level. In a secondary analysis, I interacted the parent 1 working variable with the grade level variables to determine if the effect of parent 1 working status on instructional method differed based on student grade-level. Perhaps, for example, parents of high school students are even more likely to rely on internet instruction, as compared to working parents of elementary students. Results indicate working status does not change grade-level differences (see Tables A17-A23 in the appendix). For example, the increased use of the internet for instruction in middle and high school grades is the same despite a parent's working status.

Table 9: Effects of Parental Working Status on Instructional Methods

	P1 working				P2 working			
	Coeff.	**se**	**p**	**Exp(B)**	**Coeff.**	**se**	**p**	**Exp(B)**
Tutor	0.48	0.25	0.06	1.62	0.20	0.30	0.51	1.22
Homeschool group	-0.03	0.22	0.88	0.97	-0.27	0.28	0.33	0.76
Public/private school	0.68	0.26	0.01	1.97	0.66	0.34	0.05	1.94
Teaching style	-0.53	0.31	0.09	0.59	-0.82	0.45	0.07	0.44
Internet instruction	0.72	0.23	0.00	2.06	0.49	0.28	0.08	1.62
Hours/week pub/pri schl	1.46	2.45	0.55		-1.22	4.02	0.76	
Hours/day homeschool	-0.34	0.20	0.08		-0.10	0.22	0.66	

Note: Results taken from the tables in the appendix.

Discussion

Homeschooling was once practiced by a small minority of families in the United States—only 1.7% of children were homeschooled in 1999 (Bielick, 2008; Bielick et al., 2001)—but it has now grown to approximately 3% of school-aged children (National Center for Education Statistics, n.d.). Yet, compared to what is known about other forms of parental involvement, details about how parents educate their children at home is sparse. This report provides a unique look at instructional methods and curricular sources in homeschools, with a focus on how those differ by grade levels.

Results indicate homeschooling is still very much learning at home directed or overseen by someone at home. Contrary to prior research (Anthony, 2015; Carpenter & Gann, 2016)—mostly small case studies—this report finds the percentages of families accessing instruction by others outside the home is small. Prior research suggested homeschool co-ops were popular among homeschool families (Anthony & Burroughs, 2012; Gann & Carpenter, 2018, 2019; Hodge et al., 2017; Sabol, 2018), but data from homeschoolers in the NHES indicate only about a third of families use co-ops for instruction.

There is, of course, a difference between receiving instruction from co-ops and being involved in co-ops in other ways. Yet, NHES data indicate a little less than a third of respondents participate in homeschool groups at all, although this differs by grade level. A little more than 45% of those in elementary grades participate in homeschool groups, but involvement falls to 33.5% in middle and 23% in high school grades. So, while the percentage of families using co-ops for instruction is not trivial, it does not appear to be nearly as ubiquitous as conventionally believed.

The method of instruction with the greatest difference by grade was via the internet. Those in middle and high school grades were, respectively, 2.5 times and three times more likely to receive instruction over the internet as compared to those in elementary grades. Such results suggest younger children receive more direct instruction from parents, while older children receive comparably less. This is consistent with prior case studies that found older homeschool children were more likely to work independently of parents (Anthony, 2015; Carpenter & Gann, 2016).

This may also explain at least some of the trends present in the curricular sources used by participants in this sample. Those in middle and high school grades generally saw less use of bookstores, catalogs, publishers, and other similar sources. Combined with the instruction results, this suggests the learning of those in middle and high school grades may be guided less directly by parents than in the elementary grades.

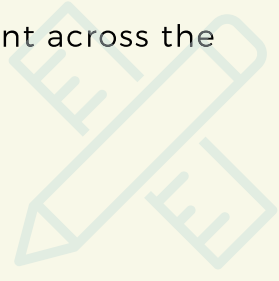
Turning to implications, a non-trivial percentage of homeschool children receive some instruction in traditional school settings and increasingly from public cyber and charter schools (Huerta & González, 2004). In Colorado, for example, approximately a dozen traditional public and charter schools, plus a number of private schools, offer programs for homeschool families (Colorado Department of Education, n.d.). For school districts (and other educational providers) interested in serving the homeschool community, these results suggest the greater demand may be at middle and high school grades and via internet courses.

It may also come from parents who either want or need to work. It was somewhat surprising to find so many homeschool parents work, particularly parents who have the greater day-to-day teaching responsibilities. But results above indicate working homeschool parents of children in all grade levels are more likely to find an instructional replacement when their involvement is reduced by work. Although the likelihood of choosing less parentally-engaged, informal models of instruction (i.e., unschooling) increases among working parents, the likelihood of finding a formal replacement—such as a school or tutor—is even greater.

A final implication is a question and a call for further research. Are homeschool parents engaged enough with middle and high school students academically? It is reasonable to expect older children can generally function more independently and homeschool parents often seek to develop their children into independent learners (Anthony & Burroughs, 2012; Gann & Carpenter, 2018), but could middle and high school homeschool students benefit from more engaged parents? If so, what form would that take?

Even if parents engage in less direct instruction with older children, perhaps the engagement takes the form of more closely monitoring their children's work, setting high standards and expectations, holding children accountable, and in the process, discussing with their children what they are learning, which engages parents in their children's studies without the didacticism common with younger learners. In research on high school students in traditional schools, such at-home parental involvement is related to more advanced academic pursuits by students (Catsambis, 2001), interest in and perceived importance of learning, and how hard students work in class (Shumow et al., 2011). Moreover, Núñez et al. (2015) found the relationship between parental homework involvement and academic achievement is stronger in middle and high school than in elementary school, suggesting older students may benefit from more but different involvement.

Or perhaps the engagement takes the form of looking for and facilitating expansive learning opportunities outside the home or homeschool co-op that transcend the ubiquitous libraries, museums, and science teams, opportunities such as internships, academic camps, youth symphonies, learning to fly airplanes (Aircraft Owners and Pilots Association, n.d.), serving as legislative pages (National Conference of State Legislatures, 2019), or volunteering at nonprofits, to name just a few. In addition to finding and facilitating such opportunities, meaningful parental involvement would also include helping children process such experiences into explicit learning. Research on what parental engagement looks like with older children and the relationship between such engagement and academic and social outcomes could be particularly enlightening and a useful extension of this first look into the diversity of homeschool parental involvement across the developmental life of their children.



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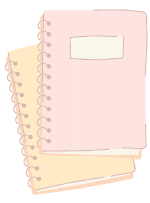

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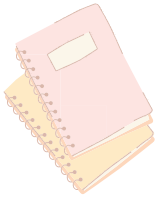

Appendix

Table A1: Full Regression Results for Instruction by Tutor

	Coeff.	se	p	Exp(B)
(Intercept)	**-1.42**	**0.77**	**0.07**	**0.24**
White	**-0.94**	**0.40**	**0.02**	**0.39**
Sex	**0.22**	**0.23**	**0.34**	**1.24**
P1Educ	**-0.02**	**0.06**	**0.72**	**0.98**
P2Educ	**0.04**	**0.06**	**0.51**	**1.04**
P1working	**0.48**	**0.25**	**0.06**	**1.62**
P2working	**0.20**	**0.30**	**0.51**	**1.22**
Income	**0.03**	**0.06**	**0.65**	**1.03**
Year of survey	**-0.21**	**0.24**	**0.37**	**0.81**
Middle	**0.59**	**0.30**	**0.05**	**1.81**
High	**0.56**	**0.27**	**0.04**	**1.75**

Table A2: Full Regression Results for Instruction by Homeschool Group

	Coeff.	se	p	Exp(B)
(Intercept)	**-0.94**	**0.66**	**0.16**	**0.39**
White	**-0.31**	**0.31**	**0.32**	**0.74**
Sex	**0.04**	**0.21**	**0.87**	**1.04**
P1Educ	**0.04**	**0.06**	**0.49**	**1.04**
P2Educ	**0.11**	**0.06**	**0.05**	**1.12**
P1working	**-0.03**	**0.22**	**0.88**	**0.97**
P2working	**-0.27**	**0.28**	**0.33**	**0.76**
Income	**-0.02**	**0.05**	**0.73**	**0.98**
Year of survey	**-0.26**	**0.21**	**0.23**	**0.77**
Middle	**0.03**	**0.29**	**0.93**	**1.03**
High	**0.55**	**0.22**	**0.01**	**1.74**

Table A3: Full Regression Results for Instruction at Public or Private School or University

	Coeff.	se	p	Exp(B)
(Intercept)	**-2.34**	**0.80**	**0.00**	**0.10**
White	**0.88**	**0.32**	**0.01**	**2.40**
Sex	**0.40**	**0.24**	**0.10**	**1.50**
P1Educ	**-0.17**	**0.07**	**0.01**	**0.85**
P2Educ	**-0.04**	**0.06**	**0.50**	**0.96**
P1working	**0.68**	**0.26**	**0.01**	**1.97**
P2working	**0.66**	**0.34**	**0.05**	**1.94**
Income	**-0.05**	**0.05**	**0.31**	**0.95**
Year of survey	**0.09**	**0.24**	**0.70**	**1.10**
Middle	**-0.48**	**0.35**	**0.17**	**0.62**
High	**0.10**	**0.27**	**0.71**	**1.10**

Table A4: Full Regression Results for Style of Teaching

	Coeff.	se	p	Exp(B)
(Intercept)	**2.39**	**1.02**	**0.02**	**10.91**
White	**-0.60**	**0.36**	**0.10**	**0.55**
Sex	**0.15**	**0.28**	**0.59**	**1.16**
P1Educ	**0.00**	**0.08**	**0.98**	**1.00**
P2Educ	**-0.04**	**0.06**	**0.50**	**0.96**
P1working	**-0.53**	**0.31**	**0.09**	**0.59**
P2working	**-0.82**	**0.45**	**0.07**	**0.44**
Income	**0.20**	**0.07**	**0.00**	**1.22**
Year of survey	**-0.05**	**0.28**	**0.87**	**0.96**
Middle	**0.19**	**0.37**	**0.61**	**1.21**
High	**-0.36**	**0.32**	**0.26**	**0.70**

Note: For the dependent measure, informal is the reference.

Table A5: Full Regression Results for Curriculum Source - Library

	Coeff.	se	p	Exp(B)
(Intercept)	**0.15**	**0.76**	**0.85**	**1.16**
White	**0.52**	**0.34**	**0.12**	**1.68**
Sex	**-0.20**	**0.23**	**0.38**	**0.82**
P1Educ	**0.16**	**0.07**	**0.02**	**1.17**
P2Educ	**0.11**	**0.06**	**0.06**	**1.12**
P1working	**-0.34**	**0.24**	**0.16**	**0.71**
P2working	**-0.17**	**0.30**	**0.57**	**0.85**
Income	**0.02**	**0.05**	**0.73**	**1.02**
Year of survey	**0.07**	**0.23**	**0.78**	**1.07**
Middle	**-0.47**	**0.32**	**0.14**	**0.62**
High	**-1.22**	**0.26**	**0.00**	**0.29**

Table A6: Full Regression Results for Curriculum Source - Homeschool Catalog

	Coeff.	se	p	Exp(B)
(Intercept)	**1.23**	**0.69**	**0.08**	**3.41**
White	**-0.81**	**0.34**	**0.02**	**0.45**
Sex	**0.12**	**0.23**	**0.60**	**1.13**
P1Educ	**0.06**	**0.06**	**0.38**	**1.06**
P2Educ	**0.14**	**0.06**	**0.02**	**1.15**
P1working	**-0.76**	**0.25**	**0.00**	**0.47**
P2working	**-0.35**	**0.29**	**0.22**	**0.70**
Income	**0.15**	**0.05**	**0.00**	**1.16**
Year of survey	**-0.34**	**0.22**	**0.12**	**0.71**
Middle	**-0.68**	**0.31**	**0.03**	**0.51**
High	**-1.32**	**0.27**	**0.00**	**0.27**

Table A7: Full Regression Results for Curriculum Source - Educational Publisher

	Coeff.	se	p	Exp(B)
(Intercept)	**-0.90**	**0.61**	**0.14**	**0.41**
White	**-0.34**	**0.32**	**0.29**	**0.72**
Sex	**-0.20**	**0.21**	**0.35**	**0.82**
P1Educ	**0.12**	**0.06**	**0.04**	**1.13**
P2Educ	**0.05**	**0.06**	**0.38**	**1.05**
P1working	**-0.21**	**0.22**	**0.34**	**0.81**
P2working	**0.23**	**0.26**	**0.38**	**1.25**
Income	**0.15**	**0.05**	**0.00**	**1.17**
Year of survey	**-0.19**	**0.21**	**0.37**	**0.83**
Middle	**-0.05**	**0.27**	**0.86**	**0.95**
High	**-0.49**	**0.24**	**0.04**	**0.61**

Table A8: Full Regression Results for Curriculum Source - Homeschooling Organization

	Coeff.	se	p	Exp(B)
(Intercept)	**-0.72**	**0.62**	**0.25**	**0.49**
White	**-0.23**	**0.32**	**0.48**	**0.80**
Sex	**0.39**	**0.20**	**0.05**	**1.48**
P1Educ	**-0.04**	**0.06**	**0.53**	**0.96**
P2Educ	**0.11**	**0.05**	**0.04**	**1.12**
P1working	**-0.15**	**0.21**	**0.47**	**0.86**
P2working	**0.00**	**0.26**	**0.99**	**1.00**
Income	**0.03**	**0.05**	**0.59**	**1.03**
Year of survey	**0.10**	**0.20**	**0.63**	**1.10**
Middle	**-0.38**	**0.27**	**0.15**	**0.68**
High	**-0.43**	**0.23**	**0.06**	**0.65**

Table A9: Full Regression Results for Curriculum Source - Church

	Coeff.	se	p	Exp(B)
(Intercept)	**-0.39**	**0.63**	**0.53**	**0.68**
White	**0.24**	**0.34**	**0.48**	**1.27**
Sex	**-0.33**	**0.21**	**0.12**	**0.72**
P1Educ	**0.02**	**0.06**	**0.78**	**1.02**
P2Educ	**0.15**	**0.06**	**0.01**	**1.16**
P1working	**-0.54**	**0.23**	**0.02**	**0.59**
P2working	**-0.09**	**0.29**	**0.76**	**0.92**
Income	**0.00**	**0.05**	**0.99**	**1.00**
Year of survey	**-0.13**	**0.21**	**0.53**	**0.88**
Middle	**-0.49**	**0.28**	**0.08**	**0.61**
High	**-0.85**	**0.24**	**0.00**	**0.43**

Table A10: Full Regression Results for Curriculum Source - Public School

	Coeff.	se	p	Exp(B)
(Intercept)	**-1.06**	**0.78**	**0.17**	**0.35**
White	**0.64**	**0.34**	**0.06**	**1.89**
Sex	**-0.15**	**0.24**	**0.53**	**0.86**
P1Educ	**-0.11**	**0.07**	**0.09**	**0.89**
P2Educ	**-0.10**	**0.06**	**0.08**	**0.91**
P1working	**-0.08**	**0.27**	**0.78**	**0.93**
P2working	**0.22**	**0.35**	**0.53**	**1.24**
Income	**-0.01**	**0.05**	**0.86**	**0.99**
Year of survey	**0.38**	**0.24**	**0.11**	**1.46**
Middle	**-0.03**	**0.34**	**0.92**	**0.97**
High	**0.16**	**0.27**	**0.54**	**1.18**

Table A11: Full Regression Results for Curriculum Source - Private School

	Coeff.	se	p	Exp(B)
(Intercept)	**-1.55**	**1.05**	**0.14**	**0.21**
White	**-1.31**	**0.55**	**0.02**	**0.27**
Sex	**-0.04**	**0.31**	**0.89**	**0.96**
P1Educ	**0.00**	**0.09**	**0.98**	**1.00**
P2Educ	**-0.05**	**0.07**	**0.51**	**0.95**
P1working	**0.11**	**0.31**	**0.72**	**1.12**
P2working	**-0.34**	**0.39**	**0.39**	**0.71**
Income	**0.16**	**0.08**	**0.04**	**1.17**
Year of survey	**-0.42**	**0.30**	**0.16**	**0.66**
Middle	**0.36**	**0.40**	**0.37**	**1.43**
High	**1.10**	**0.35**	**0.00**	**3.00**

Table A12: Full Regression Results for Curriculum Source - Bookstore

	Coeff.	se	p	Exp(B)
(Intercept)	**0.31**	**0.69**	**0.65**	**1.37**
White	**0.09**	**0.33**	**0.79**	**1.09**
Sex	**-0.47**	**0.23**	**0.04**	**0.62**
P1Educ	**0.23**	**0.06**	**0.00**	**1.26**
P2Educ	**0.07**	**0.05**	**0.23**	**1.07**
P1working	**-0.23**	**0.23**	**0.32**	**0.80**
P2working	**0.25**	**0.28**	**0.37**	**1.28**
Income	**0.01**	**0.05**	**0.78**	**1.01**
Year of survey	**0.14**	**0.23**	**0.53**	**1.15**
Middle	**-0.59**	**0.30**	**0.05**	**0.55**
High	**-0.97**	**0.26**	**0.00**	**0.38**

Table A13: Full Regression Results for Curriculum Source - Websites

	Coeff.	se	p	Exp(B)
(Intercept)	**0.70**	**0.71**	**0.32**	**2.02**
White	**0.03**	**0.34**	**0.93**	**1.03**
Sex	**-0.50**	**0.25**	**0.05**	**0.61**
P1Educ	**0.17**	**0.08**	**0.02**	**1.19**
P2Educ	**0.15**	**0.08**	**0.06**	**1.16**
P1working	**-0.07**	**0.25**	**0.78**	**0.93**
P2working	**0.02**	**0.31**	**0.94**	**1.02**
Income	**-0.02**	**0.05**	**0.71**	**0.98**
Year of survey	**-0.44**	**0.25**	**0.08**	**0.64**
Middle	**-0.11**	**0.33**	**0.73**	**0.89**
High	**-0.26**	**0.28**	**0.35**	**0.77**

Table A14: Full Regression Results for Internet Homeschool Instruction

	Coeff.	se	p	Exp(B)
(Intercept)	**-3.47**	**0.70**	**0.00**	**0.03**
White	**0.30**	**0.31**	**0.34**	**1.34**
Sex	**0.00**	**0.21**	**1.00**	**1.00**
P1Educ	**0.08**	**0.06**	**0.16**	**1.09**
P2Educ	**-0.03**	**0.06**	**0.65**	**0.98**
P1working	**0.72**	**0.23**	**0.00**	**2.06**
P2working	**0.49**	**0.28**	**0.08**	**1.62**
Income	**0.06**	**0.05**	**0.26**	**1.06**
Year of survey	**-0.01**	**0.21**	**0.96**	**0.99**
Middle	**0.95**	**0.28**	**0.00**	**2.57**
High	**1.11**	**0.26**	**0.00**	**3.04**

Table A15: Full Regression Results for Hours Spent in Public or Private School

	Coeff.	se	p
(Intercept)	**18.91**	**7.84**	**0.02**
White	**1.81**	**3.06**	**0.55**
Sex	**-1.42**	**2.22**	**0.52**
P1Educ	**0.35**	**0.64**	**0.59**
P2Educ	**-0.02**	**0.61**	**0.98**
P1working	**1.46**	**2.45**	**0.55**
P2working	**-1.22**	**4.02**	**0.76**
Income	**-1.33**	**0.60**	**0.03**
Year of survey	**6.00**	**2.55**	**0.02**
Middle	**-1.54**	**3.25**	**0.64**
High	**0.37**	**2.68**	**0.89**

Table A16: Full Regression Results for Hours per Day Homeschooling

	Coeff.	se	p
(Intercept)	**2.89**	**0.61**	**0.00**
White	**-0.17**	**0.31**	**0.59**
Sex	**0.38**	**0.18**	**0.03**
P1Educ	**0.17**	**0.05**	**0.00**
P2Educ	**0.06**	**0.05**	**0.16**
P1working	**-0.34**	**0.20**	**0.08**
P2working	**-0.10**	**0.22**	**0.66**
Income	**-0.03**	**0.04**	**0.44**
Year of survey	**-0.07**	**0.17**	**0.69**
Middle	**0.80**	**0.24**	**0.00**
High	**1.04**	**0.21**	**0.00**

Table A17: Full Regression Results for Instruction by Tutor with Work Interactions

	Coeff.	se	p	Exp(B)
(Intercept)	**-1.33**	**0.79**	**0.09**	**0.26**
middle	**0.15**	**0.43**	**0.72**	**1.16**
high	**0.78**	**0.37**	**0.03**	**2.19**
White	**-0.97**	**0.39**	**0.01**	**0.38**
Sex	**0.26**	**0.22**	**0.25**	**1.29**
P1 educ	**-0.03**	**0.06**	**0.65**	**0.97**
P2 educ	**0.04**	**0.06**	**0.47**	**1.04**
P1 working	**0.38**	**0.40**	**0.34**	**1.46**
P2 working	**0.15**	**0.30**	**0.61**	**1.16**
Income	**0.03**	**0.06**	**0.65**	**1.03**
Year	**-0.23**	**0.24**	**0.34**	**0.80**
WorkXmiddle	**0.91**	**0.60**	**0.13**	**2.49**
WorkXhigh	**-0.44**	**0.52**	**0.40**	**0.65**

Table A18: Full Regression Results for Instruction by Homeschool Group with Work Interactions

	Coeff.	se	p	Exp(B)
(Intercept)	**-0.88**	**0.67**	**0.19**	**0.41**
middle	**-0.11**	**0.39**	**0.79**	**0.90**
high	**0.50**	**0.32**	**0.12**	**1.64**
White	**-0.31**	**0.31**	**0.32**	**0.74**
Sex	**0.05**	**0.21**	**0.82**	**1.05**
P1 educ	**0.04**	**0.06**	**0.49**	**1.04**
P2 educ	**0.11**	**0.06**	**0.05**	**1.12**
P1 working	**-0.16**	**0.32**	**0.62**	**0.86**
P2 working	**-0.28**	**0.27**	**0.30**	**0.75**
Income	**-0.02**	**0.05**	**0.70**	**0.98**
Year	**-0.26**	**0.21**	**0.23**	**0.78**
WorkXmiddle	**0.32**	**0.57**	**0.57**	**1.38**
WorkXhigh	**0.13**	**0.46**	**0.77**	**1.14**

Table A19: Full Regression Results for Instruction by Public/Private School with Work Interactions

	Coeff.	se	p	Exp(B)
(Intercept)	**-2.631**	**0.781**	**0.001**	**0.072**
middle	**0.015**	**0.471**	**0.975**	**1.015**
high	**0.456**	**0.397**	**0.251**	**1.578**
White	**0.901**	**0.308**	**0.004**	**2.462**
Sex	**0.373**	**0.24**	**0.121**	**1.452**
P1 educ	**-0.16**	**0.064**	**0.013**	**0.852**
P2 educ	**-0.044**	**0.057**	**0.44**	**0.957**
P1 working	**1.129**	**0.39**	**0.004**	**3.093**
P2 working	**0.703**	**0.336**	**0.037**	**2.019**
Income	**-0.046**	**0.051**	**0.365**	**0.955**
Year	**0.087**	**0.237**	**0.713**	**1.091**
WorkXmiddle	**-1.055**	**0.686**	**0.124**	**0.348**
WorkXhigh	**-0.68**	**0.508**	**0.181**	**0.506**

Table A20: Full Regression Results for Instruction via Internet with Work Interactions

	Coeff.	se	p	Exp(B)
(Intercept)	**-3.29**	**0.73**	**0.00**	**0.04**
middle	**0.41**	**0.40**	**0.30**	**1.51**
high	**1.11**	**0.37**	**0.00**	**3.03**
White	**0.29**	**0.32**	**0.35**	**1.34**
Sex	**0.03**	**0.21**	**0.88**	**1.03**
P1 educ	**0.08**	**0.06**	**0.18**	**1.08**
P2 educ	**-0.02**	**0.06**	**0.69**	**0.98**
P1 working	**0.42**	**0.41**	**0.32**	**1.52**
P2 working	**0.44**	**0.27**	**0.11**	**1.55**
Income	**0.06**	**0.05**	**0.29**	**1.06**
Year	**-0.01**	**0.21**	**0.95**	**0.99**
WorkXmiddle	**1.06**	**0.58**	**0.07**	**2.89**
WorkXhigh	**0.02**	**0.50**	**0.97**	**1.02**

Table A21: Full Regression Results for Style of Teaching with Work Interactions

	Coeff.	se	p	Exp(B)
(Intercept)	**2.67**	**0.98**	**0.01**	**14.36**
middle	**-0.28**	**0.49**	**0.57**	**0.76**
high	**-0.75**	**0.41**	**0.06**	**0.47**
White	**-0.62**	**0.35**	**0.08**	**0.54**
Sex	**0.19**	**0.28**	**0.50**	**1.21**
P1 educ	**-0.01**	**0.08**	**0.95**	**1.00**
P2 educ	**-0.04**	**0.06**	**0.52**	**0.96**
P1 working	**-0.99**	**0.48**	**0.04**	**0.37**
P2 working	**-0.86**	**0.44**	**0.05**	**0.43**
Income	**0.19**	**0.07**	**0.00**	**1.21**
Year	**-0.04**	**0.28**	**0.88**	**0.96**
WorkXmiddle	**0.96**	**0.70**	**0.17**	**2.61**
WorkXhigh	**0.74**	**0.60**	**0.22**	**2.10**

Note: For the dependent measure, informal is the reference.

Table A22: Full Regression Results for Time in Public/Private School with Work Interactions

	Coeff.	se	p
(Intercept)	**19.76**	**7.57**	**0.01**
middle	**-2.91**	**3.97**	**0.46**
high	**-0.48**	**4.03**	**0.91**
White	**1.90**	**3.09**	**0.54**
Sex	**-1.47**	**2.23**	**0.51**
P1 educ	**0.30**	**0.64**	**0.64**
P2 educ	**0.02**	**0.63**	**0.98**
P1 working	**0.45**	**3.97**	**0.91**
P2 working	**-1.33**	**4.02**	**0.74**
Income	**-1.34**	**0.59**	**0.03**
Year	**5.90**	**2.53**	**0.02**
WorkXmiddle	**2.75**	**5.99**	**0.65**
WorkXhigh	**1.35**	**5.33**	**0.80**

Table A23: Full Regression Results for Hours per Day Homeschooling with Work Interactions

	Coeff.	se	p
(Intercept)	**2.88**	**0.60**	**0.00**
middle	**0.78**	**0.30**	**0.01**
high	**1.07**	**0.28**	**0.00**
White	**-0.17**	**0.31**	**0.59**
Sex	**0.38**	**0.18**	**0.03**
P1 educ	**0.17**	**0.05**	**0.00**
P2 educ	**0.06**	**0.05**	**0.16**
P1 working	**-0.33**	**0.30**	**0.28**
P2 working	**-0.10**	**0.22**	**0.64**
Income	**-0.03**	**0.04**	**0.44**
Year	**-0.07**	**0.17**	**0.69**
WorkXmiddle	**0.04**	**0.49**	**0.93**
WorkXhigh	**-0.07**	**0.38**	**0.86**