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Abstract

Although previous research suggests that living on campus promotes a variety of desirable academic outcomes by enhancing students' involvement and engagement with their institutions, research on academic performance frequently ignores the possibility that different groups of students are differentially affected by their living environments. Furthermore, previous studies tend to rely on students from a few large public research universities rather than a broad range of institutions, which precludes any analysis of institutional differences in the impact of residence. Using a sample of 1st-year students from the National Postsecondary Student Aid Study (NPSAS), this study found that, for most students in most institutions, the type of residence during college does not have a significant effect on 1st-year academic performance. However, among Black students, those who live on campus have significantly higher GPAs than similar students at the same institution who live off campus with family. Among students attending liberal arts institutions, those who live on campus also have significantly higher GPAs than comparable students at the same institution who live off campus with family.

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Many college students are disengaged from the very institutions entrusted with fostering their academic development (Hu, 2002)—a disengagement marked by a lack of involvement in the myriad academic activities available at post-secondary institutions, such as language clubs, political or environmental groups, professional and preprofessional associations, honor societies, academic workshops or seminars, and formal or informal discussions with faculty members. Furthermore, some disengaged students are immersed in a hazardous student subculture characterized by excessive alcohol use (Flacks & Thomas, 1998).

While many factors influence a student's level of academic engagement, the single most important environmental factor identified in previous research is living on campus in a residence hall (Astin, 1984). Such findings were the impetus for a vast body of research examining the relationship between residence and a variety of desirable student outcomes closely linked to student engagement, such as critical thinking, persistence to graduation and academic performance. Research on the relationship between student residence and academic performance indicates that there are no differences in cumulative grade point average (GPA) between students living on campus in residence halls, off campus in private apartments, or at home with their families (Blimling, 1989). However, by focusing only on the general effects of residence, past research on academic performance ignores the possibility that different groups of students are differentially affected by their living environments. Furthermore, previous studies rely on samples of students from a few large public research universities, rather than students from a broad range of institutions, which precludes any analysis of institutional differences in the impact of residence. At different types of institutions, the residential experience is likely to differ in ways that may produce significant variation in the relationship between student residence and academic achievement.

The purpose of this study is to address both of these deficiencies by investigating the conditional effects of student residence on academic performance using a nationally representative sample of college students. In particular, we examine how the effect of college residence (on campus in residence halls, off campus in private apartments, or off campus with family) varies by race/ethnicity, gender, and a variety of institutional characteristics. Research examining how the effect of residence on GPA varies by student and institutional characteristics will aid postsecondary institutions in their efforts to create

residence environments that promote student success and will help students and their families consider the advantages and disadvantages of the many types of college residence available.

Residence, Student Involvement, and Academic Outcomes

Previous research suggests that living in a residence hall promotes a variety of desirable academic outcomes by enhancing students' involvement and engagement with their institutions (Astin, 1984; Chickering, 1971, 1974; Pascarella, 1984; Pascarella, Terenzini, & Blimling, 1994; Welty, 1976). According to student involvement theory, the academic development of students living in different residence environments varies by the extent to which they are involved in their postsecondary institutions (Astin, 1984, 1993). A highly involved student is one who "devotes considerable energy to studying, spends much time on campus, participates actively in student organizations, and interacts frequently with faculty and other students" (Astin, 1984, p. 297). Research has documented that students living on campus are more likely than those living off campus to interact with faculty, participate in extracurricular activities, and use institutional resources (Astin, 1984; Chickering, 1971, 1974; Pascarella, 1984; Pascarella et al., 1994; Welty, 1976). Living on campus in a residence hall, then, is an important environmental factor associated with increased student involvement, which in turn is a determinant of improved critical thinking ability, intellectual growth, persistence to graduation and satisfaction with college (Gellin, 2003; Pascarella, Bohr, Nora, Zusman, & Inman, 1993; Pascarella & Terenzini, 1991; Pike, 1991; Tinto, 1987; Velez, 1985).

Given the positive relationship between living on campus, student involvement, and several outcomes closely linked to academic performance, it is quite reasonable to hypothesize that students who live on campus will also earn higher GPAs than their counterparts living elsewhere. However, the weight of the evidence on this topic fails to substantiate this expectation. While a few older studies found that students living in residence halls earned slightly higher grades than those living off campus (May, 1974; Nowack & Hanson, 1985), the majority of previous research found either no differences in academic performance among residence groups or that students living off campus performed better (Grayson, 1997; Grosz & Brandt, 1969; Hountras & Brandt, 1970; Pugh & Chamberlain, 1976; Wolfe, 1993). In a meta-analysis of 21 studies examining the impact of residence on academic performance, Blimling (1989) concluded that after controlling for academic ability, students living in residence halls do not earn higher GPAs than students living at home with

parents. Furthermore, compared to students living in private off-campus apartments, there is only limited and mixed evidence suggesting that students living in residence halls perform better academically. Thus, prior research on academic performance provides no compelling evidence that a student's residence has any influence on GPA.

One possible explanation for why students living in residence halls do not perform better academically than students living off campus postulates that residence halls are primarily social settings in which students encounter more opportunities for social rather than academic involvement (Pascarella et al., 1994; Schroeder & Mable, 1994). Social involvement consists of peer socialization activities, whereas academic involvement comprises activities with a scholastic focus, such as studying with peers, interacting with faculty, or using campus resources (e.g., libraries and computers). Social involvement is certainly an important factor in the development of college students, but such activities are not likely to improve grades. In contrast, academic involvement consists of intellectually beneficial behaviors noted to have a positive influence on academic performance (Kuh & Hu, 2001; Sax, Bryant, & Harper, 2005). Consistent with this explanation, some evidence indicates that living on campus has no effect on study habits and is associated instead with more frequent participation in academically hazardous social activities, such as alcohol use (Pascarella et al., 1994; Valliant & Scanlan, 1996). As students living on campus may be exposed to a variety of potentially distracting social activities, it is not surprising that they do not necessarily earn higher grades than students living off campus who have less exposure to such activities.

Recognizing the need to provide a residential context that promotes scholastic success and to counterbalance the myriad social involvement opportunities available to students living in conventional dormitories, many postsecondary institutions have attempted to widen the scope of academic activities available in residence halls through student housing initiatives that blur the lines between residence hall and classroom. Many institutions have transformed conventional dormitories into living learning communities (LLCs), residence halls designed to promote the academic integration of students. Several common features of LLCs include on-site faculty lectures and office hours, noncredit seminars, advising office hours, cultural events, and courses attended by student housing groups. Research on LLCs indicates that, even after adjusting for precollege ability, these types of residential environments indirectly improve academic performance by fostering students' academic involvement with the institution (Pike, Schroeder, & Berry, 1997; Zheng, Saunders, Shelley, & Whalen, 2002). Such findings illustrate that residence halls, when structured appropriately, can have a positive influence on both academic involvement and performance.

With the recent and rapid spread of LLCs and similar housing initiatives (Smith, 2001), the bulk of prior research based on conventional residence halls is quickly becoming outdated, beckoning a fresh examination of residence and academic performance with more recent data.

Race/Ethnicity and Gender Differences in Student Involvement

There is evidence, albeit limited and sometimes conflicting, that suggests that different groups of students seek out different types of institutional activities that may be more or less conducive to performing well academically. First, a few studies suggest that racial minorities are generally more involved in post-secondary institutions than Whites (Hu, 2002; Kuh & Hu, 2001) and that minority students are more concerned about becoming academically integrated in an institution, whereas White students are more preoccupied with establishing friendships (Terenzini et al., 1994). For instance, Black and Latino students interact with faculty more frequently than White students (Chang, 2005; Kuh & Hu, 2001), which is a strong predictor of better academic performance for minority students (Fischer, 2007; Mayo, Murguia, & Padilla, 1995). In addition, because of extreme racial segregation, minority students (especially Black students) who live off campus with their family are more likely than comparable Whites to live in isolated, disadvantaged residential areas which may inhibit success in college. Therefore, in terms of academic performance, we expect minority students to benefit more from living on campus than comparable White students.

Second, research also suggests that men and women differ in the level and type of on-campus involvement, but evidence is mixed. Several studies focusing on students living in residence halls have found that men are more involved than women (Arboleda, Wang, Shelley, & Whalen, 2003) and that living on campus is associated with higher grades and lower levels of academic difficulty for men (Nowack & Hanson, 1985). By contrast, a number of other studies indicate that women are more involved in extracurricular activities and interact more frequently with faculty, whereas men more often engage in social activities with peers (Chapman & Pascarella, 1983; Sax et al., 2005). Moreover, there is evidence that men are more likely to fall in the extremes, being either highly engaged or completely disengaged, whereas women exhibit more moderate levels of engagement (Hu, 2002). These mixed findings make it very difficult to predict whether men or women will benefit more from living on campus, but they suggest that a gender difference may exist and that more research is needed.

Institutional Characteristics, Residence, and Academic Performance

A major limitation of previous studies on student residence and academic performance is their reliance on samples from single institutions rather than representative, multi-institutional samples. While reviewing the characteristics of the 21 studies included in his meta-analysis, Blimling (1989) noted that 77.14% of all the studies were based on large institutions classified as Carnegie-Research Universities, although the actual national proportion of these institutions was only 7.1%. Furthermore, 87.1% of the reviewed studies were based on public institutions, which accounted for only 35.8% of all U.S. institutions.

It is important to consider the effect of student residence in a variety of institution types because several institutional characteristics may be associated with student involvement and achievement. For example, students are significantly less involved at institutions classified as Carnegie-Research Universities and Carnegie-Doctoral Universities (Porter, 2006). At these research-based institutions, faculty members are more likely to devote significant proportions of time to research which negatively affects faculty-student interaction, the amount of time dedicated to teaching, and student involvement opportunities (Fairweather, 2002; Fox, 1992). In addition, student body size and institutional density (students per acre) have significant negative effects on student involvement (Porter, 2006). As institutional size increases, the number of students increases faster than the number of interaction settings, and students begin to outnumber involvement opportunities (Chickering & Reisser, 1993).

Given that institutional size and research orientation negatively affect the primary mediating factor between residence and academic performance, results from studies based exclusively on students from large public research universities should not be extrapolated to populations at other types of institutions. Furthermore, such limited samples preclude any analysis of institutional differences in the impact of residence. Previous research on institutional characteristics and student involvement suggests that certain types of postsecondary institutions, perhaps small colleges without dominant research missions, offer on-campus living environments that are more conducive to academic integration and high achievement.

Hypotheses

Previous research focusing entirely on the general effects of college residence on student outcomes has failed to account for the complex relationship between

residence environments, academic performance, and student and institutional characteristics. To address the lack of research in this area, this study investigates the effect of college residence and the extent to which it varies among both student and institutional subgroups. We first compare the grades of a national sample of college students living on campus in residence halls, off campus in private apartments, and at home with family, adjusting for student and institutional differences. Then, we compare the effect of college residence by race/ethnicity and gender. Finally, we examine whether the relationship between residence and achievement varies across a variety of different post-secondary institutions characterized by enrollment size, research orientation, 2-year versus 4-year, and public versus private control.

Several hypotheses were informed by the reviewed research. First, consistent with prior research on the general effects of residence on academic performance, we expect no overall differences between students living on campus, off campus in private apartments, or off campus with their families. If there are differences in academic performance, net of other factors, we expect on-campus students to do slightly better than those living off campus, reflecting recent student housing initiatives that merge on-campus residential and academic environments and facilitate the academic integration of students. Second, recognizing that minority students tend to be more involved in academically beneficial activities, we expect that living in a residence hall will have a greater influence on minorities, relative to comparable White students. Third, we expect to find a significant interaction between gender and residence because of differences in the patterns of involvement between male and female students. Finally, we expect the effect of living on campus to be greater among students attending institutions with smaller enrollments, institutions without a strong research orientation (relatively speaking), and institutions under private control.

Data and Method

We used data from the 1999-2000 National Postsecondary Student Aid Study (NPSAS), which targeted all students enrolled in postsecondary institutions in the United States or Puerto Rico between July 1, 1999, and June 30, 2000. NPSAS data are based on a two-stage stratified sample with an overall weighted response rate of 89%. NPSAS includes data on student demographics, academics, financial resources, family background, and institutional characteristics. These data were collected from multiple sources, including computer-assisted telephone interviews (CATI), computer-assisted personal interviews (CAPI), institutional records, the U.S. Department of Education's Central Processing System (CPS), and the Educational Testing Service (Riccobono et al., 2001).

Although NPSAS data include institutional characteristics, NPSAS does not include institutional housing information such as whether each school offers on-campus housing and whether students are required to live on campus. We obtained this information from the 2005-06 Integrated Postsecondary Education Data System (IPEDS) and merged it with NPSAS student data. We used the 2005-06 IPEDS data because that was the 1st year for which the residence requirement question was made available (although the question was first asked in 2004-05, there were extensive measurement problems in that year).

Our analytic sample was limited to students in institutions that offer on-campus housing and that do not require full-time, first-time degree/certificate-seeking students to live on campus. We further limited our analytic sample to full-time, dependent 1st-year students between the ages of 18 and 25, yielding a sample of 2,011 students in 372 institutions (see the lower panels of Tables 3 through 5 for a breakdown of the sample size by institutional control, type, and Carnegie classification). Part-time students were excluded because they are often ineligible to live on campus. Older and independent students were excluded because they are less likely to have the option to live at home with their parents. Upperclassmen were also excluded because NPSAS does not provide annual GPAs or residential histories, making it impossible to separate the effects of current residence from residence in previous years.

The main outcome of interest was academic performance, measured as each student's grade point average (GPA) and collected from both institutional records and telephone interviews. All GPAs were converted to a 4-point scale ranging from 0.00 (*F*) to 4.00 (*A*). College residence, the main explanatory variable of interest, was also obtained from both institutional records and telephone interviews. About 72% of residence data were obtained from a CATI survey item that grouped housing arrangements into seven categories: on-campus university-owned housing, off-campus university-owned housing, off-campus private apartments, off campus with parents, off campus with other relatives, fraternity/sorority house, and "some place else." When CATI residence data were unavailable, institutional financial aid records were used to populate 17% of residence data points, but these records coded student residence into only three categories: on campus, off campus with family, and off campus private. As a result, the CATI and institutional residence variables were combined into a single residence variable with four categories: on campus (reference category), off campus with family, off campus without family, and other residence (including fraternity/sorority houses, university-owned off-campus housing, and "some place else"). About 10% of residence data were missing and imputed using the multiple imputation technique described below.

In our multivariate analyses, we controlled for a number of factors likely to be associated with college grades, including students' gender, race/ethnicity, whether they reported a disability (such as a vision or hearing impairment, limited mobility, or a mental or emotional condition), whether their parents had a 4-year college degree, and whether their parents paid their tuition (none, some, or all). Race was expressed as a series of dummy variables for Black, Hispanic, and Other race, with White as the reference group. In addition, we controlled for the number of hours students worked per week as well as a measure of academic aptitude based on the students' Scholastic Aptitude Test (SAT) combined score (verbal and math). For students who had taken the American College Test (ACT) instead of the SAT, ACT composite scores were converted to an estimated SAT score using a concordance table developed by the College Entrance Examination Board (1999). Both hours worked and SAT scores were converted to standard deviation units in the multivariate analyses. Finally, we included a measure of distance from home, measured as the straight-line distance in miles between the zip code centroid for the student's permanent address and the institution address. Distance from home was included because students who live off campus with family, by definition, attend institutions that are in or near their hometowns. If students attending hometown institutions systematically avoid some of the challenges of living away from home for the first time, it is important to take in account distance from home when considering the impact of residence on grades.

We also examined the role of institutional characteristics, including institutional control (public vs. private), institution type (4-year vs. 2-year), Carnegie classification, and enrollment size. Carnegie classifications included research (Research I and II), master's (Master's I and II), liberal arts, associate's, and specialized institutions (including theological, medical, law, technological, and other specialized institutions), and enrollment size was divided into quartiles. Table 1 provides descriptive statistics for all student and institutional variables.

Although most NPSAS variables contained small amounts of missing data, a few (hours worked, disability, and amount of tuition parents paid) were missing values for about a fourth of the observations (see Table 1). As a result, missing values for all variables were estimated using multiple imputation, a technique that aims to preserve the characteristics of the data set as a whole (including dependent variables) and that is appropriate for addressing various types of missing data, both those missing completely at random (MCAR) and those missing at random (MAR; Schafer & Graham, 2002). Given the relatively small sample size, and to ensure that even small effect sizes can be detected, we constructed 20 equally plausible complete data sets from information

Table 1. Summary Statistics

	Total		On campus <i>n</i> = 1,095 (54%)		Off campus with family <i>n</i> = 564 (28%)		Off campus without family <i>n</i> = 297 (15%)		Other residence ^a <i>n</i> = 55 (3%)		Test statistics	
	M	SD	M	SD	M	SD	M	SD	M	SD	F test	χ^2
	% Imputed ^b											
Continuous variables												
GPA	3.18	2.66	0.91	2.76	0.84	2.55	0.97	2.58	0.95	2.36	0.92	9.83 ^c
SAT score	10.54	1,010	193	1,042	193	957	184	993	191	1,012	179	25.93 ^c
Hours worked per week	26.70	13.88	13.42	8.88	10.94	20.22	12.55	20.12	15.38	14.65	14.14	137.30 ^c
Distance from home	2.09	157.36	359.00	227.06	430.32	29.88	139.85	123.72	266.23	258.59	410.20	42.24 ^c
Enrollment size	0.30	12.393	11,357	12,674	11,659	11,139	10,185	12,992	11,670	16,445	13,503	5.16 ^c
Categorical variables												
Female	0.00	0.54		0.56		0.51		0.53		0.47		5.60
White	0.00	0.71		0.74		0.64		0.72		0.75		84.12 ^c
Black	0.00	0.11		0.13		0.07		0.09		0.04		84.12 ^c
Hispanic	0.00	0.08		0.05		0.15		0.08		0.09		84.12 ^c
Other race	0.00	0.10		0.08		0.13		0.11		0.13		84.12 ^c
Disability	25.85	0.09		0.08		0.10		0.10		0.13		3.94
Parents paid no tuition	26.06	0.47		0.40		0.57		0.56		0.36		62.33 ^c
Parents paid some tuition	26.06	0.23		0.27		0.18		0.21		0.20		62.33 ^c
Parents paid all tuition	26.06	0.30		0.33		0.25		0.23		0.44		62.33 ^c

(continued)

Table 1. (continued)

	Total		On campus		Off campus with family		Off campus without family		Other residence ^a		Test statistics	
	N = 2,011		n = 1,095 (54%)		n = 564 (28%)		n = 297 (15%)		n = 55 (3%)			
	M	SD	M	SD	M	SD	M	SD	M	SD	F test	χ^2
% Imputed ^b	0.00	0.45	0.56	0.35	0.51	0.60	0.60	0.40	0.40	0.40		
Parents college graduates	0.00	0.45	0.56	0.35	0.51	0.60	0.60	0.40	0.40	0.40	66.53 ^c	
Public institution	0.00	0.61	0.57	0.66	0.68	0.47	0.47	0.68	0.53	0.53	26.13 ^c	
Private institution	0.00	0.39	0.43	0.34	0.32	0.53	0.53	0.32	0.53	0.53	26.13 ^c	
2-year institution	0.00	0.18	0.09	0.27	0.29	0.36	0.36	0.29	0.36	0.36	120.95 ^c	
Research institution	0.60	0.40	0.44	0.30	0.40	0.40	0.40	0.40	0.40	0.40	163.46 ^c	
Associate's institution	0.60	0.17	0.10	0.26	0.24	0.38	0.38	0.24	0.38	0.38	163.46 ^c	
Master's institution	0.60	0.31	0.31	0.35	0.25	0.20	0.20	0.25	0.20	0.20	163.46 ^c	
Liberal arts institution	0.60	0.08	0.12	0.04	0.03	0.02	0.02	0.03	0.02	0.02	163.46 ^c	
Specialized institution	0.60	0.04	0.03	0.04	0.07	0.00	0.00	0.07	0.00	0.00	163.46 ^c	

Source: NPSAS 2000 (Riccobono et al., 2001; full-time, dependent, 18-to-25-year-old 1st-year students in institutions with on-campus housing that do not have residence requirements).

a. Other residence includes fraternity/sorority houses, university-owned off-campus housing, and "some place else."

b. Multiple imputation was used to estimate missing values. Twenty data sets were created and combined using Rubin's rule of combination.

c. Test statistics are significant at $p < .05$.

obtained from the observed data (Graham, Olchowski, & Gilreath, 2007). The imputations occurred at the individual level, rather than the school level, because individuals were the unit of analysis. All statistical analyses were repeated on each of these data sets, producing 20 sets of results that were combined using Rubin's rule of combination (Rubin, 1987).

As mentioned above, NPSAS respondents were clustered in 372 postsecondary institutions, which varied in size, type, research orientation, and other factors that could influence student academic performance, so we compared students living in different residence types within the same institutions. To compare students within the same institutions, we used fixed-effects regressions to model both the general and conditional effects of college residence on GPA, controlling for the aforementioned student characteristics.¹ Fixed-effects regression is useful for clustered data because it statistically controls for all factors that are constant across observations within a cluster (school), whether measured or not. Fixed-effects models accomplish this by using only the within-cluster variation to estimate coefficients. Thus, coefficients in a fixed-effects model can be interpreted as the within-cluster effect of a unit change in the independent variable on the dependent variable (Wooldridge, 2006). We first used a fixed-effects regression model to estimate the general effect of college residence on GPA, and then we allowed the effect of residence to vary by gender and race/ethnicity (Table 2). In addition, we used a fixed-effects regression model to estimate the effect of college residence for students in different types of institutions, including public versus private, 2-year versus 4-year, research versus others, and small versus large (Tables 3-6). Standard errors were adjusted for intracluster correlation of observations using the Huber-White robust variance estimate.

Results

All student and institutional variables are summarized in Table 1, first for the total sample of students, then by type of college residence (on campus, off campus with family, off campus without family, and other). As stated earlier, our analytic sample focused on 1st-year students 18 to 25 years old, whose parents claimed them as dependents, and who were enrolled full-time in institutions that offered on-campus housing but that did not require first-time students to live on campus. Most students in our sample lived on campus (54%), followed by off campus with family (28%), then off campus without family (15%), and very few lived in other types of residences (3%), such as fraternities/sororities or university-owned off-campus housing (see Table 1).

Table 1 also reports test statistics which show that students who lived in different types of college residences varied significantly by almost all the variables listed. Overall, students who lived on campus were more advantaged than those who did not, especially compared with those who lived with family. Those who lived on campus had higher GPAs and SAT scores, worked fewer hours per week, and were more likely to have parents who had a college degree and could pay some or all of their tuition fees. In addition, the proportion of White students living on campus was significantly larger than the proportion of White students living off campus with family; conversely, the proportion of Hispanic students living on campus was significantly smaller than the proportion of Hispanic students living off campus with family. Furthermore, compared to students who lived off campus, those who lived on campus were more likely to attend institutions that were larger, farther from home, 4-year, private, and classified as research or liberal arts institutions. In almost every measure, including academic performance, students who lived on campus were significantly more advantaged than those who did not, especially compared to those who lived off campus with family.

However, controlling for other factors expected to affect GPA, place of residence does not seem to have a significant effect on 1st-year grades for most students. Table 2 shows the results of three fixed-effects regression models predicting 1st-year GPA. Model 1 is the base model, which controlled for each student's gender, race/ethnicity, SAT score (standardized), the number of hours worked per week (standardized), disability, distance from home, and whether the students' parents had graduated from college and paid some or all of their tuition fees; Model 2 is the base model plus terms for the interaction of college residence and gender; and Model 3 is the base model plus terms for the interaction of college residence and race/ethnicity. Robust standard errors, adjusted for clustering on schools, are reported. In addition, we report an *F* test for the GPA difference between those living off campus with family and those living off campus without family, as we are interested not only in the difference between those who live on campus and those who live off campus but also in the difference between those who live off campus with and without family. Model 1 suggests that, net of other factors, place of residence during college is not a significant predictor of GPA. The factors that were associated with a higher GPA include being female or White, having a higher SAT score, working fewer hours, reporting no disabilities, and having parents with a 4-year college degree. Model 2 suggests that the insignificant effect of place of residence is the same for male and female students. However, Model 3 shows that the effect of residence varies significantly by race. The GPA difference between those living on campus and those living off campus with

Table 2. Fixed-Effects Models Predicting 1st-Year GPA, Pooled Sample

	Model 1		Model 2		Model 3	
	Coefficient	RSE ^a	Coefficient	RSE ^a	Coefficient	RSE ^a
On campus	ref		ref		ref	
Off campus with family	0.05	0.07	0.05	0.09	0.09	0.08
Off campus without family	-0.02	0.07	0.02	0.10	-0.07	0.09
Other residence ^b	-0.08	0.18	-0.06	0.26	-0.25	0.20
Female	0.24 ^c	0.05	0.25 ^c	0.06	0.25 ^c	0.05
White	ref		ref		ref	
Black	-0.19 ^c	0.08	-0.19 ^c	0.08	-0.13	0.10
Hispanic	0.07	0.11	0.07	0.11	-0.02	0.14
Other race	-0.22 ^c	0.08	-0.22 ^c	0.09	-0.27 ^c	0.12
SAT score (std)	0.30 ^c	0.03	0.30 ^c	0.03	0.30 ^c	0.03
Hours worked per week (std)	-0.10 ^c	0.03	-0.10 ^c	0.03	-0.10 ^c	0.03
Disability	-0.32 ^c	0.11	-0.32 ^c	0.11	-0.32 ^c	0.11
Distance from home	-0.03	0.03	-0.02	0.03	-0.02	0.03
Parents paid no tuition	ref		ref		ref	
Parents paid some tuition	0.02	0.07	0.02	0.07	0.02	0.07
Parents paid all tuition	0.00	0.07	0.00	0.07	0.00	0.07
Parents college graduates	0.21 ^c	0.05	0.21 ^c	0.05	0.21 ^c	0.05
Female × Off-campus with family			0.00	0.11		
Female × Off-campus without family			-0.06	0.13		
Female × Other residence			-0.04	0.38		
Black × Off-campus with family					-0.45 ^c	0.22
Black × Off-campus without family					0.19	0.25
Black × Other residence					0.61	0.61
Hispanic × Off-campus with family					0.04	0.21
Hispanic × Off-campus without family					0.40	0.23
Hispanic × Other residence					0.65	0.61

(continued)

Table 2. (continued)

	Model 1		Model 2		Model 3	
	Coefficient	RSE ^a	Coefficient	RSE ^a	Coefficient	RSE ^a
Other × Off-campus with family					0.07	0.18
Other × Off-campus without family					0.07	0.25
Other × Other residence					0.75	0.41
Constant	2.49 ^c	0.06	2.48 ^c	0.07	2.48 ^c	0.06
F test (without family – with family)	0.54		0.10		2.52	
Observations	2,011		2,011		2,011	
Clusters	372		372		372	

Source: NPSAS 2000 (Riccobono et al., 2001; full-time, dependent, 18-to-25-year-old 1st-year students in institutions with on-campus housing that do not have residence requirements).

a. Robust standard errors adjusted for intracluster correlation (Huber-White estimator).

b. Other residence includes fraternity/sorority houses, university-owned off-campus housing, and “some place else.”

c. Coefficients are significant at $p < .05$.

family is significantly greater for Blacks (0.09-0.45 = -0.36) than for Whites (0.09). Furthermore, whereas the GPAs of White students were similar across different types of residence (0.09 is not significantly different from zero), the GPAs of Black students were higher when they lived on campus, compared to similar Black students who lived off campus with family. Holding all other factors constant, the GPA of a Black student living on campus was predicted to be about 2.35 (2.48-0.13), whereas the GPA of a Black student in the same institution, but living off campus with family, was predicted to be about 1.99 (2.48 + 0.09 - 0.13 - 0.45). A direct test of this difference for Blacks showed that it is marginally significant at $p < .10$ (likely due to the small sample size of Blacks).

Tables 3 through 6 show the results of fixed-effects regression models predicting 1st-year GPA by institutional characteristics. In Table 3, we divided the analytic sample by institutional control, running separate models for students in public and private institutions (grouping private for-profit and private not-for-profit institutions). These results suggest that, for students attending either public or private institutions, there are no significant differences by place of residence, net of other factors. Interestingly, the factors that were associated with a higher GPA were different for public and private institutions.

Table 3. Fixed-Effects Models Predicting 1st-Year GPA, by Institutional Control

	Public		Private	
	Coefficient	RSE ^a	Coefficient	RSE ^a
On campus	ref		ref	
Off campus with family	0.11	0.09	-0.08	0.12
Off campus without family	0.01	0.08	-0.05	0.16
Other residence ^b	0.00	0.28	-0.18	0.22
Female	0.24 ^c	0.06	0.22 ^c	0.09
White	ref		ref	
Black	-0.25 ^c	0.11	-0.13	0.13
Hispanic	0.07	0.14	0.05	0.18
Other race	-0.30 ^c	0.10	-0.05	0.14
SAT score (std)	0.28 ^c	0.04	0.34 ^c	0.05
Hours worked per week (std)	-0.13 ^c	0.04	-0.06	0.05
Disability	-0.36 ^c	0.13	-0.25	0.16
Distance from home	-0.02	0.04	-0.03	0.04
Parents paid no tuition	ref		ref	
Parents paid some tuition	0.01	0.09	0.04	0.10
Parents paid all tuition	0.00	0.08	0.00	0.11
Parents college graduates	0.20 ^c	0.07	0.23 ^c	0.09
Constant	2.40 ^c	0.08	2.62 ^c	0.10
<i>F</i> test (without family – with family)	1.04		0.02	
Observations	1,221		790	
Clusters	205		167	

Source: NPSAS 2000 (Riccobono et al., 2001; full-time, dependent, 18-to-25-year-old 1st-year students in institutions with on-campus housing that do not have residence requirements).

a. Robust standard errors adjusted for intracluster correlation (Huber-White estimator).

b. Other residence includes fraternity/sorority houses, university-owned off-campus housing, and “some place else.”

c. Coefficients are significant at $p < .05$.

For students in public institutions, the factors that were associated with a higher GPA include being female or White, having a higher SAT score, working fewer hours, reporting no disabilities, and having parents with a 4-year college degree; but for students in private institutions, the only factors that mattered were gender, SAT score, and parents’ education. This may be due to the smaller sample size and less variation among students in private schools, but it could also be due to institutional differences.

In Table 4, we ran separate models for students in 4-year and 2-year institutions. These results were similar to those in Table 3, suggesting that, for students

Table 4. Fixed-Effects Models Predicting 1st-Year GPA, by Institution Type

	4 year		2 year	
	Coefficient	RSE ^a	Coefficient	RSE ^a
On campus	ref		ref	
Off campus with family	0.08	0.08	-0.11	0.16
Off campus without family	0.01	0.08	-0.17	0.20
Other residence ^b	-0.07	0.26	-0.20	0.20
Female	0.25 ^c	0.06	0.17	0.15
White	ref		ref	
Black	-0.13	0.10	-0.31	0.17
Hispanic	0.09	0.11	0.03	0.35
Other race	-0.23 ^c	0.09	-0.11	0.21
SAT score (std)	0.29 ^c	0.04	0.34 ^c	0.06
Hours worked per week (std)	-0.11 ^c	0.04	-0.07	0.07
Disability	-0.30 ^c	0.12	-0.38	0.21
Distance from home	-0.02	0.03	-0.06	0.06
Parents paid no tuition	ref		ref	
Parents paid some tuition	0.01	0.07	0.08	0.13
Parents paid all tuition	-0.01	0.07	0.02	0.18
Parents college graduates	0.20 ^c	0.06	0.24 ^c	0.11
Constant	2.41 ^c	0.07	2.89 ^c	0.16
<i>F</i> test (without family – with family)	0.45		0.10	
Observations	1,649		362	
Clusters	330		42	

Source: NPSAS 2000 (Riccobono et al., 2001; full-time, dependent, 18-to-25-year-old 1st-year students in institutions with on-campus housing that do not have residence requirements).

a. Robust standard errors adjusted for intracluster correlation (Huber-White estimator).

b. Other residence includes fraternity/sorority houses, university-owned off-campus housing, and “some place else.”

c. Coefficients are significant at $p < .05$.

attending either 4-year or 2-year institutions, there are no significant differences by place of residence, net of other factors. Once again, the factors that were associated with a higher GPA were different by type of institution. For students in 4-year institutions, the factors that were associated with a higher GPA include being female or White, having a higher SAT score, working fewer hours, reporting no disabilities, and having parents with a 4-year college degree; but for students in 2-year institutions, the only factors that mattered were SAT score and parents' education. Again, this could be due either to the

smaller sample size and less variation among students in 2-year schools or institutional differences.

In Table 5, we divided the analytic sample by Carnegie classification, running separate models for students in research, master's, liberal arts, and associate's institutions (the sample size for specialized institutions was too small). For students in research, master's, and associate's institutions, place of residence during college was not a significant predictor of GPA. However, for students in liberal arts institutions, there was a significant difference between students who lived on campus and those who lived off campus with family as well as those who lived in other residences such as fraternity/sorority houses. Holding all other factors constant, the GPA of a student at a liberal arts institution and living on campus was predicted to be about 2.56, whereas the GPA of a student in the same institution but living off campus with family was predicted to be about 2.07 (2.56-0.49). For students attending liberal arts institutions, living on campus seems to be the most beneficial option, at least in terms of 1st-year GPA.

Finally, in Table 6, we divided the analytic sample by institution enrollment size and found that, regardless of size, there were no significant differences by place of residence, net of other factors.

Discussion

There are several important limitations to our study, three of which we highlight here. First, although our national sample of institutions makes our study more generalizable than previous research, the institutions in our national sample vary in the extent to which living on campus is a viable option. Although we have excluded institutions that do not offer on-campus housing or that require students to live on campus, some schools may have many on-campus housing options, whereas others may have fewer or more expensive options. Through our fixed-effects models, we effectively compared students in different types of college residences within the same schools and therefore avoided comparing students from incomparable institutions. However, the students in our sample also vary in the extent to which living off campus with parents is a viable option. Although we controlled for distance from home, there may be other factors that systematically distinguish students who have the option to live with parents and those who do not, which may cause us to overestimate the negative effects of living off campus with family. For example, students who attend institutions far from home may be more ambitious or independent or better prepared—all of which not only make students more likely to live on campus but also more likely to have higher GPAs. We of course attempted to

Table 5. Fixed-Effects Models Predicting 1st-Year GPA, by Carnegie Classification

	Research		Master's		Liberal arts		Associate's	
	Coefficient	RSE ^a	Coefficient	RSE ^a	Coefficient	RSE ^a	Coefficient	RSE ^a
On campus	ref							
Off campus with family	0.16	0.12	0.09	0.14	ref	0.24	ref	0.16
Off campus without family	0.05	0.10	-0.05	0.18	-0.49 ^c	0.25	-0.03	0.20
Other residence ^b	0.22	0.25	0.00	0.42	-2.20 ^c	0.24	-0.38	0.30
Female	0.30 ^c	0.08	0.19	0.11	0.17	0.16	0.16	0.16
White	ref		ref		ref		ref	
Black	-0.13	0.14	-0.20	0.16	-0.30	0.26	-0.30	0.18
Hispanic	0.09	0.16	-0.07	0.19	0.94 ^c	0.31	0.07	0.33
Other race	-0.15	0.11	-0.47 ^c	0.18	0.19	0.27	-0.11	0.22
SAT score (std)	0.22 ^c	0.05	0.35 ^c	0.05	0.25 ^c	0.11	0.35 ^c	0.06
Hours worked per week (std)	-0.19 ^c	0.05	-0.04	0.06	-0.11	0.11	-0.07	0.07
Disability	-0.37 ^c	0.17	-0.25	0.22	-0.38	0.30	-0.39	0.25
Distance from home	-0.01	0.03	-0.02	0.06	-0.43 ^c	0.17	-0.05	0.06
Parents paid no tuition	ref		ref		ref		ref	
Parents paid some tuition	-0.02	0.10	0.10	0.15	0.02	0.18	0.09	0.13
Parents paid all tuition	-0.05	0.09	0.13	0.14	-0.10	0.18	-0.05	0.18
Parents college graduates	0.20 ^c	0.08	0.20	0.10	0.35 ^c	0.17	0.22	0.12
Constant	2.35 ^c	0.09	2.43 ^c	0.13	2.56 ^c	0.18	2.89 ^c	0.18
F test (without family – with family)	0.60		0.71		0.29		1.03	
Observations	797		624		168		343	
Clusters	125		156		35		39	

Source: NPSAS 2000 (Riccobono et al., 2001); full-time, dependent, 18-to-25-year-old 1st-year students in institutions with on-campus housing that do not have residence requirements.

a. Robust standard errors adjusted for intracluster correlation (Huber-White estimator).

b. Other residence includes fraternity/sorority houses, university-owned off-campus housing, and "some place else."

c. Coefficients are significant at $p < .05$

Table 6. Fixed-Effects Models Predicting 1st-Year GPA, by Enrollment Size Quartile

	First quartile		Second quartile		Third quartile		Fourth quartile	
	Coefficient	RSE ^a	Coefficient	RSE ^a	Coefficient	RSE ^a	Coefficient	RSE ^a
On campus	ref		ref		ref		ref	
Off campus with family	-0.09	0.14	0.06	0.16	0.03	0.14	0.18	0.15
Off campus without family	-0.13	0.16	-0.04	0.19	-0.05	0.13	0.10	0.12
Other residence ^b	-0.24	0.44	-0.43	0.33	0.02	0.23	0.26	0.28
Female	0.23	0.12	0.14	0.11	0.19	0.10	0.35 ^c	0.09
White								
Black	-0.22	0.14	-0.15	0.18	-0.39 ^c	0.19	0.05	0.15
Hispanic	0.17	0.27	-0.17	0.25	0.07	0.23	0.15	0.16
Other race	-0.03	0.17	-0.20	0.20	-0.46 ^c	0.16	-0.10	0.14
SAT score (std)	0.37 ^c	0.06	0.26 ^c	0.06	0.42 ^c	0.07	0.18 ^c	0.06
Hours worked per week (std)	-0.02	0.06	-0.06	0.07	-0.16 ^c	0.07	-0.17 ^c	0.06
Disability	-0.21	0.18	-0.43	0.25	-0.30	0.18	-0.29	0.25
Distance from home	-0.01	0.07	-0.08	0.05	0.00	0.05	0.00	0.04
Parents paid no tuition								
Parents paid some tuition	0.08	0.11	-0.07	0.14	0.04	0.16	0.02	0.11
Parents paid all tuition	0.00	0.14	-0.01	0.15	0.03	0.12	-0.03	0.12
Parents college graduates	0.22 ^c	0.10	0.23	0.12	0.16 ^c	0.10	0.23 ^c	0.10
Constant	2.69 ^c	0.12	2.60 ^c	0.14	2.45 ^c	0.13	2.30 ^c	0.11
F test (without family – with family)	0.05		0.33		0.28		0.24	
Observations	504		505		502		500	
Clusters	83		121		104		65	

Source: NIPSAS 2000 (Riccobono et al., 2001); full-time, dependent, 18-to-25-year-old 1st-year students in institutions with on-campus housing that do not have residence requirements).

a. Robust standard errors adjusted for intraclass correlation (Huber-White estimator).

b. Other residence includes fraternity/sorority houses, university-owned off-campus housing, and “some place else.”

c. Coefficients are significant at $p < .05$.

capture student differences through a variety of control variables, but unmeasured differences may bias our results. One way to address this issue would be to randomly assign students to live in different types of college residences. Needless to say, it would be extremely difficult to find a group of students willing to be assigned a place of residence on or off campus, with or without family. Furthermore, randomized trials of this type are prohibitively expensive and therefore would likely be limited to a few institutions, which in turn would limit the generalizability of the study.

Second, we do not have information about the mechanisms by which place of residence affects students' academic performance. As discussed earlier, previous research suggests that students living on campus are more likely to participate in campus activities than those who live off campus, but we do not have student activity data to show whether this is actually the mechanism at work. In particular, we do not have information about academic versus social activities, a distinction that may explain why some students benefit from living on campus while others do not.

Finally, our results are limited to full-time, dependent 1st-year students, aged 18 to 25 years. As explained earlier, we excluded part-time students because they are often ineligible to live on campus, and we excluded older and independent students because they are less likely to have the option to live at home with their parents. Although these exclusions are theoretically justifiable, our exclusion of upperclassmen is not. We limited our analytic sample to 1st-year students because of a data limitation resulting from a lack of annual GPAs or residential histories, which made it impossible to separate the effects of current residence from residence in previous years, forcing us to focus only on 1st-year students. As a result, our findings are not generalizable to students in subsequent years. It is possible that place of residence has a different effect on upperclassmen, who generally have higher GPAs than 1st-year students and who may be more mature and better able to handle the responsibility of living off campus.

With these limitations in mind, our analyses suggest that, for most students in most institutions, the type of residence during college does not seem to have a significant effect on 1st-year academic performance. However, for Black students and those attending liberal arts institutions, our findings suggest that selecting a place to live for the 1st year of college is not inconsequential, as it may have a significant impact on academic performance. Among Black students, those who live on campus in residence halls have significantly higher GPAs than similar students at the same institution who live off campus with family; and among students attending liberal arts institutions, those who live on campus also have significantly higher GPAs than comparable students at

the same institution who live off campus with family. It is important to note that the differences between those who live on campus and those who live off campus *without* family are insignificant. This suggests that, for Black students and students attending liberal arts institutions, living off campus per se does not appear to be leading to lower 1st-year grades, but rather, living with family seems to be the culprit.

Living off campus with family may be more difficult for minority students if they have more family responsibilities, fewer financial resources, and inadequate transportation to and from campus—all factors that are more likely to be present among minority students than among White students. Minority and socioeconomically disadvantaged families are also more likely to live further away from campus because racial residential segregation confines minorities to undesirable locations, housing near college campuses tends to be very expensive, and low-wage workers often trade longer work commutes for better and more spacious housing (Wang, 2003). For college students living among these families, frequent participation in activities such as studying with classmates, meeting with faculty, or working on campus can be very challenging (recall that students who live off campus work more than twice as many hours per week as those who live on campus). All of these factors combine to create a college experience that can be especially challenging for Black students who live off campus with family.

Conversely, racial minorities who live on campus may benefit more from the campus living environment because they tend to be more concerned about being academically integrated, interact with faculty more frequently, and are generally more involved in institutional activities. For Black students, the added benefits of living on campus, combined with the added costs of living off campus with family, help to explain the GPA difference between these two groups.

In addition, students in liberal arts institutions may benefit more from living on campus because these institutions, by definition, are primarily undergraduate colleges that focus on baccalaureate degree programs, award at least 40% of their degrees in liberal arts fields, and have restrictive admissions. Consistent with their emphasis on undergraduate education, liberal arts colleges are more likely to offer on-campus housing options with programs designed to promote academic integration, such as the LLCs mentioned earlier. All these reasons may explain why students attending liberal arts colleges are especially likely to benefit from living on campus, relative to similar students in the same institutions who live off campus with family.

The GPA of 1st-year students is very important for a number of subsequent outcomes. For example, a lower GPA is associated with a longer time to

graduation (Cohen-Schotanus et al., 2006), which in turn is associated with greater college debt and lower average salaries (Price, 2004). Given the significance of 1st-year GPA, it is imperative to consider all the factors that help to produce better grades, especially for students of color, who tend to have lower grades and take longer to graduate than White students (Culpepper & Davenport, 2009; Kao & Thompson, 2003). For these students, the role of college residence should not be overlooked. Recognizing that living on campus is more costly than living off campus with family, financial aid calculations should take account of the cost of living on campus, parents should encourage their children to live on campus, and high school counselors and other college advisors should inform these families of the potential benefits of living on campus. At the same time, however, these potential benefits should not be generalized to all students at all types of institutions.

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1. We also ran multilevel models using HLM. However, we decided to report fixed-effects models because they mathematically ensure that the student-level measured covariates are exogenous with respect to unmeasured institutional-level factors. That is, there is no possibility that unmeasured institutional factors have biased our within-institution estimates. This is not the case in random effects HLM.

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