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Residence Hall Architecture and Sense of Community

Everything Old Is New Again

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This study of almost 600 students examines the relationship between sense of community and college dormitory architecture on the campus of a small residential liberal arts college in the Northeast. Respondents of all class years completed an online survey that included the Sense of Community Index and the Relationship dimension of the University Residence Environment Scale. Students also rated architectural characteristics about their dorms and provided background information. Results indicate significant differences in sense of community related to dormitory design, in particular a lower sense of community in dorms that are organized around clusters or suites. At the same time, these units in clusters are judged to be more positive in terms of basic architectural components, including thermal comfort, adequacy of bathrooms, and storage. Results are discussed in terms of recommendations to enhance a sense of community through design.

Keywords: *residence hall design; sense of community; college students*

The relationship of the architecture of residence halls to a variety of variables, from perceptions of crowding to student satisfaction, is one of many research topics that seem to surge and recede in interest. A number of studies examining college residence halls were conducted in the 1970s, yet

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comparatively little research has appeared in the ensuing three decades. An entire issue of the journal *Environment and Behavior* was devoted to the topic of student housing in 1973 (Heilweil, 1973a). Much of the early research focused on the relationship between the type of room arrangement (suite vs. corridor) or building height (low-rise vs. high-rise) and perceptions of crowding.

In Heilweil's (1973a) introduction to the *Environment and Behavior* issue on student housing he stated that the building trend at that time was toward suites, and that suites reflected an emphasis on encouraging social climates of "smallness, intimacy, and support" (p. 376). At the same time, he recognized that there were multiple explanations for this trend. Ironically, the trend toward suites and living-learning clusters Heilweil emphasized 30 years ago (1973b) is mirrored in much of the current construction of student housing ("Officials believe new housing," 2005; Siegal, 2004).

One reason for the lack of interest in research on student housing over the last 30 years may simply be financial. Research opportunities in environmental psychology are often created through building projects, and the construction of student housing is typically related to enrollment. This nation is now experiencing a growth in the number of individuals attending college. Rayasam (2005, para. 20) reports, "Higher education enrollment nationwide is expected to grow 13.3 percent from 2001 to 2010, according to the Rosen Consulting Group." Furthermore, although residence halls that were built in the 1960s and 1970s were solidly constructed, changes in student and family expectations have put pressure on college administrators to provide more amenities (some would say luxury) in student housing (Rayasam, 2005; Tibbitts, 2005). In an article commenting on the upgrading and amenities that students expect, Fernandez (2004) quips, "Sharing bedrooms? Primitive. Community-style showers? Barbaric" (para. 3).

Many housing administrators feel the pressure to meet these increasing student expectations with regard to personal space. The current research project reexamines the issue of corridor versus cluster or suite housing at an institution where the renovation of housing units is under way. The research provides the opportunity to compare the relative importance of housing layout with other design features, such as exterior architectural style and interior amenities, as these factors relate to sense of community. Why sense of community? Recent articles about the design of college student housing (Biliczky, 2005; McKee, 2005; Miller, 2005) emphasize the importance of community and the need to provide social space, even along corridors, to enhance the opportunity for students to interact with one another. Among other concerns, administrators worry that students spend too much time alone in their rooms with technology.

Previous Research: A Summary

Before introducing the current research, it is important to review what we have learned from the earlier research on college student housing design. In terms of housing for students, the merit of corridors versus other arrangements (typically suites) as those arrangements relate to crowding received a good deal of emphasis in this early research. For example, Baum, Harpin, and Valins (1975) looked at a layout in which rooms opened off of corridors versus being arranged in suites. Students living in suites had a lower level of perceived crowding than did those living in rooms off of typical double-loaded corridors. Corridor-based housing does not have the kind of ready-made spatial organization that suites provide; because of this, residents of corridor-based housing may have a harder time forming social groups within the dorm. Other researchers have also noted that sense of community may be related to the design of the environment (Riger & Lavrakas, 1981; Zaff & Devlin, 1998). Sense of community itself has been related to social interaction (McMillan & Chavis, 1986; Moos, 1976; Unger & Wandersman, 1982, 1983, 1985).

In other research (Baum & Valins, 1977; Valins & Baum, 1973), dorms with corridor designs were judged to have too many residents on the floor with whom to interact, and students who resided on such corridors were more likely to consider their dorms crowded. One question the current research readdresses is whether corridors are necessarily negative when they are arranged around large shared common facilities, such as bathrooms.

Although negative outcomes seem to be associated more frequently with corridor than suite designs, suites create their own challenges for living arrangements (Corbett, 1973; Sommer, 1968). Corbett's research questioned whether suites may be more inviting in atmosphere than are rooms opening off of double-loaded corridors, which had been characterized as "unpopular, uninviting, institutional in atmosphere, and even unsafe" (Corbett, p. 413), although Sommer's research had suggested less satisfaction with four-person suites than with the typical two-person rooms in the same residence halls. In Corbett's primarily qualitative research, both rooms and suites (two bedrooms with a shared living room) opening onto double-loaded corridors were compared. Respondents were asked to list the advantages and disadvantages associated with living in suites. Most of the advantages of suites focused on physical characteristics (e.g., opportunity for different kinds of activities and privacy), whereas most disadvantages centered on the interpersonal aspects (e.g., dealing with many different personalities).

Other research has questioned the superiority of clusters of rooms in suites or pods in fostering positive interpersonal relationships, in particular

sense of community. In research using two dorms (one based on corridor design, one renovated into clusters) within the same interconnected complex of six dorms—nicknamed The Plex—Hill, Shaw, and Devlin (1999) demonstrated some advantages of the corridor-based design over the cluster-based design. The dorm designed around clusters of rooms, or pods, approximately five per floor each with a shared bathroom, had a lower sense of community than did the dorm with a corridor design with rooms opening off of a complete rectangle with a large shared bathroom in the center of the floor. Students in the corridor dorm had significantly higher scores on the Sense of Community Index (SCI) and on the Involvement scale of the University Residence Environment Scale. The Involvement scale indicates "the degree of commitment to the house and residents; amount of interaction and feeling of friendship in the house" (Moos, 1988, p. 6). Usually it is the long double-loaded corridors in dormitories (and other kinds of housing) that produce negative results (e.g., perceptions of being crowded) in terms of social interaction (Baum & Davis, 1980) and lower sense of community, but the Hill et al. (1999) research suggests that such outcomes need not occur.

Functional Design Features

A second focus of the present study is functional design features. With the current emphasis on providing more amenities in residence halls, design features are important to examine. A number of studies have looked at particular design features as well as the maintenance of the building itself. For example, some research has been done on the reactions to apartments in a poor state of repair (called the "green uglies") that were primarily occupied by students. "Not a single one of the 31 items in the questionnaire came out in the good or excellent category," reported Ankele and Sommer (1973, p. 508). These apartment units were remodeled, which consisted of a complete interior and exterior painting, new carpets, new mailboxes, a new building facade, and a new exterior laundry. Ironically, there was little change in the rated quality of the social life after these improvements. The main attraction continued to be the low rent relative to other residence options available to students.

An important study relative to the current research is work by Davis and Roizen (1970), because specific architectural factors were examined, as was the overall layout of the dorm. In discussing their results, Davis and Roizen argued that the specific design features mattered far less in student satisfaction than did the particular building type and its overall gestalt. The present

study asks what students think of design features in the current climate of increased expectations for student housing.

The Davis and Roizen (1970) study was large; it included 950 students, residing in 43 dorms spread across eight campuses. The authors indicate that the 43 dorms included "conventional long corridor dorms, suites, apartments, and two housing complexes . . . which could best be termed irregular" (p. 30). The variables were examined individually rather than through factor analysis, but a given architectural feature in isolation had little relationship to overall student satisfaction. The authors state that "the best predictor of overall student satisfaction turned out to be residence hall types" (p. 29). In general, those living in conventional dorms were not satisfied (fewer than 10% were). "Gripes about specific features are quite independent of overall satisfaction" (p. 34). The authors point to the role of symbolism, what the building represents to students, its overall gestalt, as the best predictor of satisfaction. Nevertheless, certain behavioral outcomes related to design features were noted. Students from conventional dorms were most bothered by issues of noise (quiet) and comfort control and least bothered by the opportunity to develop friends and sociability. In contrast, close to 70% of apartment residents were dissatisfied with the opportunity to develop friendships. The current research built on Davis and Roizen by incorporating their 25 design variables (e.g., privacy and storage space) but approaching the meaning of those variables through factor analysis.

The Present Study

The current study builds on a tradition of research that began more than 30 years ago. It advances our understanding of the relationships between architecture and perception in a number of ways. First, it asks whether the current emphasis on suite or cluster design in residence halls necessarily leads to positive outcomes in terms of sense of community. It challenges what might be called "the myth of the suite." If suites or groups of rooms bring people together through the layout of space, is sense of community more likely to develop through those layouts than in places students ostensibly do not want, such as large communal bathrooms? Second, it questions the early argument of Davis and Roizen that the architect is not well served by addressing individual student complaints and gripes about design elements.

To take into consideration variables that might be related to sense of community and the ratings of functional variables, the residence halls in this study were divided into categories based on size (three categories) and architectural types (four categories). In other research (Brown & Devlin, 2003), dorm size

has been positively correlated to vandalism (arguably indicating little sense of community), and thus may be an important variable to incorporate.

Size Categories

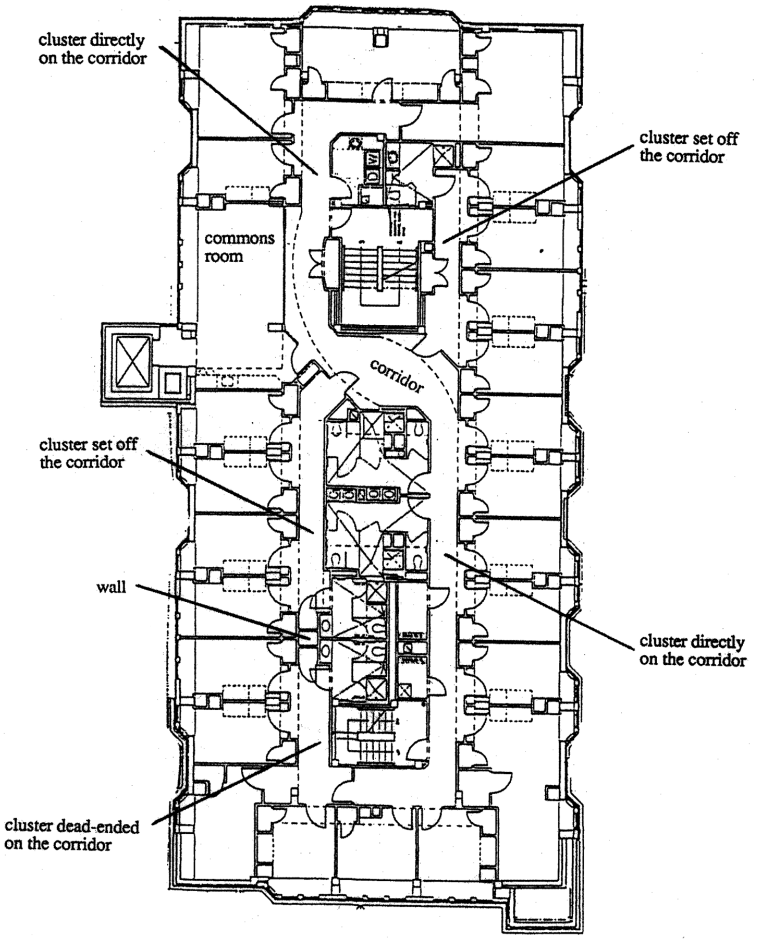
In the spring 2006 semester, 1,704 students resided on the campus in this study, according to the Office of Student Life records. For the purposes of evaluating the hypotheses, the 24 residences in this study were categorized into three size groups. The first group, *small*, included 2 cooperative dorms, one of 25 and the other of 27 people; 10 students housed in the infirmary; 12 students residing in a house; 7 students residing in another house; and 55 students housed in a row of 11 apartment units, with 5 people per unit. The second size group, *medium*, consisted of 8 dorms, which varied in capacity from 48 to 81. Located in a complex of 6 interconnected dorms (in total called The Plex), 2 of these dorms were organized around clusters of rooms, hereafter called the Cluster Plex (housing 75 and 76 students); 6 could be classified as traditional freestanding dorms and housed 48, 55, 57, 66, 69, and 81 students. The third group, *large*, consisted of 10 dorms, 2 organized around corridors in the Plex, hereafter called the Corridor Plex (93 and 97 students); two in the Cluster Plex (92 and 106 students); and 6 in traditional freestanding dorms (102, 103, 105, 111, 114, and 118 students). This campus has no fraternities or sororities.

Style Categories

A second set of categories was created to reflect the varying architectural characteristics and living layouts. The four types were (a) Specialty Housing, which consisted of the 6 residences in the *small* size category; (b) Traditional architecture, which consisted of the 12 freestanding dorms on central campus that were primarily built in a Gothic style with rooms off of double-loaded corridors; (c) the 4 dorms in the Cluster Plex that emphasized clusters or pods (small groups of rooms that share a common corridor and a common bathroom) and (d) the 2 dorms in the Corridor Plex, which had dorm rooms arranged along the perimeter of a single-loaded corridor, in a complete rectangle, around a central shared bathroom in the core.

There is no typical floor plan for the diverse residences in Specialty Housing. What the Traditional dorms have in common is a central double-loaded corridor. Some of the dorms are shaped like a *T* with one wing at an end; others are shaped like a capital *I* with short wings at each end; still others are just a long corridor. A floor plan of the Cluster Plex might have five clusters (both on and off the corridor). A floor plan of the Corridor Plex

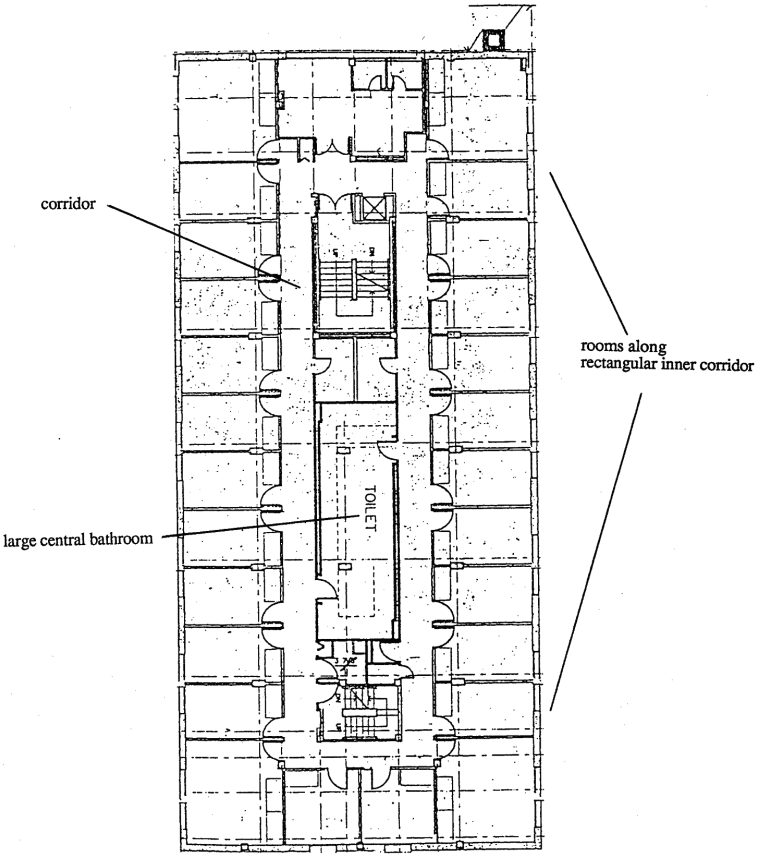
Figure 1
Floor Plan of Cluster Plex (large)



Source: Hill, Shaw and Devlin (1999).Reprinted by permission of the Environmental Design Research Association.

looks like a racetrack with rooms around the perimeter. The floor plan of a Cluster Plex dorm (large; see Figure 1) and a Corridor Plex dorm (large; see Figure 2) are provided for comparison.

Figure 2
Floor Plan of Corridor Plex (large)



Source: Hill, Shaw and Devlin (1999).Reprinted by permission of the Environmental Design Research Association.

Hypotheses

Hypothesis 1: Students in Specialty Housing, Traditional style dorms, and the Corridor Plex would rate sense of community higher than would those in the Cluster Plex. This hypothesis was based on previous research (Hill et al., 1999) showing that one of the Cluster Plex dorms was rated lower in sense of community than was one of the Corridor Plex dorms. It was

also based on the expectation that sense of community would be fostered in Specialty Housing because of its smaller size and shared interests and that the corridors in Traditional housing would foster sense of community, contrary to some of the literature.

Hypothesis 2: Students in smaller dorms would rate sense of community higher than would those in larger dorms. This hypothesis was based on previous research (Brown & Devlin, 2003) linking dorm size with such variables as vandalism, arguably a threat to sense of community.

Hypothesis 3: Students in Specialty Housing and the Traditional dorms would rate the architectural factors more positively than would those in both the Corridor and Cluster Plex dorms.

Hypothesis 4: Students in the Cluster Plex dorms would rate the architectural factors more positively than would those in the Corridor Plex dorms. Hypotheses 4 and 5 are related to previous research indicating that students typically chose the Plex near the bottom in the annual housing lottery, and the expectation that the renovation of the Cluster Plex would be linked to more positive ratings of architectural variables than was true for the Corridor Plex.

Hypothesis 5: Students in larger dorms would rate the architectural characteristics less positively than would those in smaller dorms. This hypothesis is linked to the previous research cited in Hypothesis 2 that relates dorm size and vandalism, and the expectation that students in larger dorms would lave less control over such variables as noise and privacy than would those in smaller dorms.

Method

Participants

The participants for the five major analyses in this online research varied from 553 to 610. For class year, their representation for the major analyses was 30.0% freshmen, 26.2% sophomores, 21.1% juniors, and 22.6% seniors. The gender breakdown for the major analyses was 70% women and 30% men. The participants were students at a small residential liberal arts college in the Northeast. Overall, 813 clicked “ok” to acknowledge the informed consent material and begin the survey, but an average of 584 (the average of the five major analyses) answered most of the questions. The number of participants for each analysis varied depending on the number of items the participants answered. The survey was sent to 1,790 students (the number of e-mails sent minus those surveys that were returned as undeliverable). The response rate was thus approximately 33% using 584 as the numerator. The response rate varied from a high of 57.1% in one of the small dorms

to a low of 16.4%, also in another of the small dorms. The average response rate for the three sizes of dorms was small, 36%; medium, 42%; and large, 34%.

Instruments

The survey was composed of three sections: two scales dealing with a sense of community; a section of questions asking participants to rate the physical characteristics of the spaces; and a section of questions about the background and demographic characteristics of the respondents, including some questions that assessed sense of community. In addition, students were asked to rate the meaning of the quality of space using 20 bipolar semantic differentials. Because of space limitations in this article and the less directly interpretable nature of the semantic differential data, these data are not included here.

Sense of community. Sense of community was measured with the short version of the SCI (Chavis, Hogge, McMillan, & Wandersman, 1986). Where the word "block" appeared in the original instrument, the word "dorm" was substituted in this research. Furthermore, one of the 12 items, "I expect to live on this block for a long time" was eliminated because it did not make sense in the present study. The Cronbach's alpha for this revised instrument was .745.

A second index was the Relationship dimension of the University Residence Environment Scale (Moos & Gerst, 1974). The Relationship dimension consists of the Involvement and Emotional Support factors. The factor Involvement expresses "the degree of commitment to the house and residents; amount of interaction and feeling of friendship in the house" (Moos & Gerst, p. 6). Emotional Support is "the amount of concern for others in the house; effort to aid one another with academic and personal problems; emphasis on open and honest communication" (Moos & Gerst, p. 6). In this study, the Cronbach's alpha of the Relationship dimension was .82.

Architectural characteristics. The second section of the questionnaire focused on more specific environmental characteristics. Students were asked: "Please rate your current dorm on the following characteristics." These 26 specific design characteristics were rated on 9-point scales from 1 = *poor* to 9 = *excellent*: hominess, privacy, storage space, size, flexibility, quietness, suitability for studying, suitability for sleeping, individuality, sociability, lighting, book storage space, desktop space, windows, seclusion, suitability for relaxation, modernness, aesthetic appeal, effort of staff

required for cleaning, adequacy of cooling and heating, freedom to alter appearance of room, opportunity to develop friends, comfort control, academic atmosphere, bathroom facilities, and bathroom ventilation. These items were taken from the items in Davis and Roizen (1970) with these alterations: "effort required for cleaning" was changed to "effort of staff required for cleaning," and ventilation was changed to "bathroom ventilation." The modification produced 26 rather than 25 factors (bathroom facilities and ventilation were one item in Davis and Roizen). In the Davis and Roizen research, participants were asked to rate the extent to which the students' housing currently had the quality of each characteristic, on a 5-point scale from minimum to maximum.

Background information. Following these ratings, students provided background information about themselves and answered questions about dorm life. Background questions included class year, gender, age, and best estimate of family's total income last year (in 14 categories, from less than $10,000 to $250,000 or more). Questions dealing with dorm life included an estimate of the amount of money the student had spent furnishing and/or decorating his or her dorm room this year (from $0 to $500 or more, in 10 categories), the number of friends with whom the student had moved, the percentage of people in the dorm the student knew before moving in, and three comparisons with the student's room at home. Students were asked, (a) "Compared to your room at home, does your dorm room have . . . 1 = *more space* to 7 = *less space?*"; (b) "Compared to your room at home, what is the level of control you have over who enters your dorm room? . . . 1 = *more control over who enters than at home* to 7 = *less control over who enters than at home*"; and (c) "Compared to your room at home, how much control do you have over personalizing your dorm room? . . . 1 = *more control over personalizing than at home* to 7 = *less control over personalizing than at home*."

To better understand the extent of trust and respect for others in the dorm, students were asked, "To what extent has noise been a problem in your dorm this year?" from 1 = *not at all a problem* to 7 = *a major problem*. Students were asked, "Please rate the degree to which people in your dorm are respectful of the shared space that dorm residents use (e.g., laundry facilities, bathrooms)," from 1 = *not at all respectful* to 7 = *very respectful*. Students were also asked to rank their Housefellow's effectiveness in creating a sense of community in their dorm, from 1 = *not at all effective* to 7 = *very effective*. A Housefellow is a residential adviser for the entire dorm and is a senior at the college who was selected for the position through a competitive process.

Also, students were asked the following question: "If you strategically selected the Old Plex [Corridor Plex] as one of your top 4 dorm choices, did you do so strategically to gain priority for the next housing lottery?" As is the case at many institutions, students who "suffer through" living in what is perceived to be an undesirable dorm receive preference in the next year's housing selection lottery. Students were also asked in which choice (2nd, 8th, 12th, etc.) of dorm they currently resided.

As indices of trust, people were also asked, "On your floor, about what percentage of people keep their doors open when they're inside and not asleep?" (Choices were provided in deciles.) Students were also asked, "In your dorm as a whole, about what percentage of people keep their doors open when inside and not asleep?" Again, choices were provided in deciles. In addition, because sense of community may be related to the friends one has in the dorm, students were asked (a) whether people moved with friends (yes/no), (b) the number of friends with whom people moved, and (c) the percentage of people students knew in the dorm before they moved in.

Procedure

The survey was administered online for a 2-week period in the spring of 2006 via SurveyMonkey.com. Surveys were sent to 1,790 students (the number of e-mails sent minus those that were returned as undeliverable). An incentive of pizzas for the entire residence hall was offered for the large and small dorms with the greatest level of participation. The heading for the survey was "Dormitory Architecture and Student Satisfaction." An introductory paragraph stated, "This survey will help us better understand the relationships between architecture and student satisfaction with residential life. Before the final Plex dorms are renovated, it is important to assess the degree to which dorms of different designs are related to aspects of student satisfaction. By putting an "X" in the box below, you are indicating that you agree to participate in this survey."

A number of questions that were judged less central to the hypotheses of this article and would have increased the article's length are not included here. In addition to the semantic differentials mentioned earlier, these questions include the student's age; whether the student had design training; whether the person had a part-time job at school this year and, if so, how many hours per week on average the student worked; where the student lived freshman, sophomore, junior, and senior years; and the student's top four choices in the last housing lottery. It was felt that the question asking the rank of the student's current housing choice (2nd, 8th, etc.), which was

included in the analyses here, was more important than the student's residential history and addressed the information sought in the top four housing choices question.

Results

To manage the number of variables rated, a factor analysis involving the 26 architectural characteristics was conducted.

Architectural Characteristics

The 26 characteristics were subjected to a principal components analysis with varimax rotation ($N = 553$). The analysis yielded four factors with an eigenvalue greater than 1.0. Three variables were eliminated that either did not load at .40 or greater or loaded .40 or greater on more than one factor. The remaining 23 items loaded on four factors that were labeled: Flexible, Quiet, Comfort, and Storage. Flexible contained seven characteristics and accounted for 36.6% of the variance: hominess, flexibility, individuality, sociability, aesthetic appeal, freedom to alter, and opportunity to develop friends. The second factor, Quiet, accounted for 11.8% of the variance and included six characteristics: privacy, quietness, suitability for studying, suitability for sleeping, seclusion, and academic atmosphere. The third variable, Comfort, accounted for 6.3% of the variance and included seven items: lighting, windows, modernness, adequacy of cooling and heating, comfort control, bathroom facilities, and bathroom ventilation. The fourth factor, Storage, accounted for 4.4% of the variance and included three characteristics: storage space, book storage space, and desktop space.

Sense of Community: SCI and Relationship Scales

To evaluate the hypothesis that students in Specialty Housing, Traditional style dorms, and the Corridor Plex would rate sense of community higher than would those in the Cluster Plex and that students in smaller dorms would rate sense of community higher than would those in larger dorms, a multivariate analysis of variance was conducted using the SCI and the Relationship dimension of the University Residence Environment Scale as the dependent variables and dorm size and dorm style categories as the quasi-independent variables (fixed factors). The multivariate analysis for dorm size was not significant, Wilks's lambda = .997, $F(2, 581) = 0.77$,

$p = .462$. Thus, the hypothesis that smaller dorms would have a greater sense of community than would larger dorms was not supported as a main effect. However, the multivariate effect for dorm style was significant, Wilks's lambda = .819, $F(4, 1162) = 30.41$, $p < .001$; as was the interaction between dorm size and dorm style, Wilks's lambda = .970, $F(2, 581) = 9.03$, $p < .001$.

For the interaction between dorm style and dorm size regarding sense of community, univariate analyses indicated significant effects for both SCI total, $F(1, 582) = 10.08$, $p = .002$, and Relationship, $F(1, 582) = 17.90$, $p < .001$. For SCI total, simple effects follow-up tests indicated that a third (5 of 15) of the contrasts were not significant. The conclusion that the Cluster Plex dorms were significantly lower in sense of community had been indicated by the Tukey post hoc tests following main effects for both SCI total, $F(2, 582) = 25.17$, $p < .001$, and the Relationship dimension, $F(2, 582) = 56.65$, $p < .001$. But this finding about the Cluster Plex dorms is tempered by size. Dorm size makes a difference in the sense that it disrupts the finding that the Cluster Plex was lowest in terms of the SCI total. In the large dorms, the significant difference between the Cluster Plex and the Corridor Plex on the SCI total disappears.

For Relationship, simple effects follow-up tests followed a similar but not identical pattern of six nonsignificant contrasts. For the Relationship dimension, the large size Corridor and Cluster Plexes did differ significantly from one another, but the Traditional (large) did not differ from either Corridor or Cluster Plex in the large category. Thus again, size makes a difference in the large dorm category in that it disrupts the finding that the Cluster Plex is significantly lower. Although the Cluster Plex is lower than the Corridor Plex (large), it is not significantly lower than the Traditional (large). Table 1 provides means and standard deviations for the SCI and Relationship variables.

Sense of Community: Noise, Shared Space, and Housefellow Effectiveness

Three other variables related to sense of community were analyzed in a separate multivariate analysis of variance. These were the variables dealing with Noise as a problem, respectfulness of Shared Space, and the Housefellow's effectiveness in creating a sense of community. The quasi-independent variables were again dorm size and dorm style categories. The multivariate analyses were significant for dorm size, Wilks's lambda = .967, $F(3, 602) = 6.86$, $p < .001$; for style categories, Wilks's lambda = .929, $F(6, 1204) = 7.50$, $p < .001$; and for the interaction of size and style categories, Wilks's lambda = .982, $F(3, 602) = 3.64$, $p = .013$.

Table 1
Sense of Community Factors: Means and Standard Deviations (in parentheses) of Dorm Size, Dorm Style, and Interactions

	Small (n = 38)	Medium (n = 212)	Large (n = 338)
SCI total	8.29 (2.49)	8.18 (2.59)	7.86 (2.42)
Relations	5.50 (2.54)	5.16 (2.59)	4.68 (2.53)

	SH (n = 38)	Trad. (n = 378)	Corr. Plex (n = 62)	Cluster Plex (n = 110)
SCI total	8.29 (2.49)	8.41 (2.34)	7.69 (2.49)	6.69 (2.52)
Relations	5.50 (2.54)	5.35 (2.39)	5.48 (2.16)	2.85 (2.39)

	Small	Medium		Large		
	SH (n = 38)	Trad. (n = 162)	Clus. Plex (n = 50)	Trad. (n = 216)	Corr. Plex (n = 62)	Clus. Plex (n = 60)
SCI total	8.29 (2.49)	8.80 (2.28)	6.16 (2.52)	8.11 (2.35)	7.69 (2.49)	7.12 (2.46)
Relations	5.50 (2.54)	6.03 (2.10)	2.34 (1.94)	4.84 (2.48)	5.48 (2.16)	3.28 (2.56)

Note: SCI = Sense of Community Index; Relations = Relationship dimension of the University Residence Environment Scale; SH = Specialty Housing; Trad. = Traditional housing; Clus. Plex = Cluster Plex; Corr. Plex = Corridor Plex. SCI total range from 0 (*low*) to 11 (*high*). Relationship scores range from 0 (*low*) to 8 (*high*).

For the interaction between dorm size and style, univariate analyses indicated a significant finding for Shared Space, $F(1, 604) = 6.33$, $p = .012$; neither the interaction for Noise, $F(1, 604) = 1.95$, $p = .163$, nor for Housefellow, $F(1, 604) = 2.61$, $p = .107$, was significant. Simple effects follow-up tests indicated that seven contrasts were significant for Shared Space. The main effect for dorm size for Shared Space, $F(1, 604) = 8.06$, $p = .005$, had indicated that in large dorms, students reported that others were less respectful of shared space than was true in the other two dorm size categories, which did not differ from one another. For dorm style for Shared Space, post hoc tests for the main effect that had approached significance, $F(2, 604) = 2.55$, $p = .079$, had indicated that people in the Corridor Plex were judged less respectful of Shared Space than in the other architectural categories. The simple effects tests suggest that where the finding for the Corridor Plex (lower rating) broke down for Shared Space is that the Traditional and Corridor Plex were not significantly different for this variable. Table 2

Table 2
Noise, Space, and Housefellow Factors: Means and Standard Deviations (in parentheses) of Dorm Size, Dorm Style, and Interactions

	Small (n = 37)	Medium (n = 222)	Large (n = 351)
Noise	3.08 (1.82)	2.88 (1.50)	3.68 (1.66)
S.Space	5.14 (1.48)	4.97 (1.45)	4.36 (1.64)
H.Fellow	4.03 (1.76)	4.83 (1.65)	4.60 (1.80)

	SH (n = 37)	Trad. (n = 391)	Corr. Plex (n = 62)	Cluster Plex (n = 120)
Noise	3.08 (1.82)	3.39 (1.63)	3.76 (1.83)	3.12 (1.63)
S.Space	5.14 (1.48)	4.62 (1.58)	4.06 (1.72)	4.80 (1.54)
H.Fellow	4.03 (1.76)	4.85 (1.70)	5.10 (1.81)	3.93 (1.67)

	Small	Medium		Large		
	SH (n = 37)	Trad. (n = 168)	Clus. Plex (n = 54)	Trad. (n = 223)	Corr. Plex (n = 62)	Clus. Plex (n = 66)
Noise	3.08 (1.82)	2.88 (1.47)	2.89 (1.59)	3.77 (1.65)	3.76 (1.83)	3.30 (1.47)
S.Space	5.14 (1.48)	5.04 (1.42)	4.76 (1.52)	4.30 (1.61)	4.06 (1.72)	4.83 (1.56)
H.Fellow	4.03 (1.76)	4.98 (1.63)	4.37 (1.65)	4.76 (1.75)	5.10 (1.81)	3.58 (1.61)

Note: S.Space = Shared Space; H.Fellow = Housefellow; SH = Specialty Housing; Trad. = Traditional Housing; Clus. Plex = Cluster Plex; Corr. Plex = Corridor Plex. Noise rated on a scale where 1 = *not at all a problem* to 7 = *a major problem.* Shared Space rated on a scale where 1 = *not at all respectful* to 7 = *very respectful.* Housefellow rated on a scale where 1 = *not at all effective* to 7 = *very effective.*

provides the means and standard deviations for the Noise, Shared Space, and Housefellow effectiveness variables.

For dorm size, univariate analyses indicated significant findings for Noise, $F(1, 604) = 14.83$, $p < .001$, and for Housefellow's effectiveness in creating a sense of community, $F(1, 604) = 8.06$, $p = .005$, in addition to the finding for Shared Space previously reported. Tukey post hoc tests indicated that Noise was considered more of a problem in the large than in the medium dorm category. For Housefellow effectiveness, the Housefellow was rated as less effective in the small-size dorms (Specialty Housing) than in the medium-size dorms.

For style category, univariate analyses indicated significant findings for Housefellow's effectiveness, $F(2, 604) = 16.88$, $p < .001$; the Noise variable

was not significant, $F(2, 604) = 1.18$, $p = .308$, and the Shared Space variable approached significance, as previously reported. The Housefellow was considered less effective in Specialty Housing than in either the Traditional or Corridor Plex categories. The Housefellow was also considered less effective in the Cluster Plex than in the Traditional category, and the Housefellow was considered less effective in the Cluster Plex than in the Corridor Plex.

Sense of Community and Trust

As another way to investigate the sense of community in the dorm, two questions were asked about keeping doors open: "On your floor, about what percentage of people keep their doors open when they're inside and not asleep?" and "In your dorm as a whole, about what percentage of people keep their doors open when inside and not asleep?" The response options were in deciles. In the multivariate analysis of variance to examine these two questions as dependent variables, dorm style and dorm size were again used as the fixed factors. The MANOVA revealed a multivariate effect for dorm size, Wilks's lambda = .989, $F(2, 568) = 3.14$, $p = .044$; a multivariate effect for dorm style, Wilks's lambda = .940, $F(4, 1136) = 8.90$, $p < .001$; and a multivariate interaction effect, Wilks's lambda = .989, $F(2, 568) = 3.03$, $p = .049$.

For the interaction of dorm size and style, there was a significant finding for dorm floor, $F(1, 569) = 6.01$, $p = .014$, and for dorm as a whole, $F(1, 569) = 4.44$, $p = .035$. Simple effects follow-up tests for the interaction effect for the floor question indicated that four contrasts were not significant. The pattern that the small dorms kept the largest percentage of doors open on the floor, followed by the large, with the medium the lowest had been established by the main effect for floor with regard to dorm size, $F(1, 569) = 6.17$, $p = .013$. With regard to dorm style, $F(2, 569) = 12.63$, $p < .001$, Tukey post hoc tests had indicated that the residents of the Cluster Plex kept a significantly smaller percentage of their doors open than did residents of the other dorm styles, and that Specialty Housing residents kept more doors open than did residents of Traditional housing. The simple effects findings suggest a disruption of those patterns because the Corridor Plex, a large dorm, is more positive on this dimension in keeping more doors open (and not significantly different in that regard from Specialty Housing), and the Traditional makes up some ground; that is, it is more positive than its category placement would suggest in the main effect (see Table 3 for means and standard deviations).

Simple effects follow-up tests for the interaction effect for the dorm as a whole question indicated six contrasts that were not significant. The main

Table 3
Floor and Dorm Doors Open Trust Variables: Means and Standard Deviations (in parentheses) of Dorm Size, Dorm Style, and Interactions

	Small (n = 34)	Medium (n = 213)	Large (n = 328)
Floor	4.38 (3.64)	2.68 (2.24)	3.17 (2.37)
Dorm	4.06 (3.46)	2.91 (2.06)	3.33 (2.08)

	SH (n = 34)	Trad. (n = 366)	Corr. Plex (n = 57)	Cluster Plex (n = 118)
Floor	4.38 (3.64)	3.13 (2.38)	3.93 (2.22)	2.04 (1.09)
Dorm	4.06 (3.46)	3.37 (2.11)	3.98 (1.91)	2.15 (1.71)

	Small	Medium		Large		
	SH (n = 34)	Trad. (n = 158)	Clus. Plex (n = 55)	Trad. (n = 208)	Corr. Plex (n = 57)	Clus. Plex (n = 63)
Floor	4.38 (3.64)	3.13 (2.41)	1.38 (0.73)	3.13 (2.37)	3.93 (2.22)	2.62 (2.37)
Dorm	4.06 (3.46)	3.35 (2.15)	1.64 (0.97)	3.37 (2.08)	3.98 (1.91)	2.60 (2.07)

Note: SH = Specialty Housing; Trad. = Traditional Housing; Clus. Plex = Cluster Plex; Corr. Plex = Corridor Plex. Floor and Dorm Doors Open variables rated in decile percentages; the higher the number, the greater the percentage of doors open.

effect for the dorm doors open question, $F(1, 569) = 4.84$, $p = .028$, had indicated that small dorms kept a higher percentage of their doors open than did medium-size dorms, and that, with regard to dorm style, the Cluster Plex had a significantly lower percentage of the doors on the floor open than did the other three categories, $F(2, 569) = 17.79$, $p < .001$. Simple effects follow-up tests indicated that among the six nonsignificant contrasts, this pattern breaks down in that Specialty Housing (small) is not significantly different with respect to the percentage of doors open in the dorm than is Traditional (medium). Also, Traditional (medium) and Cluster Plex (medium) are significantly different from one another, indicating variability within the medium category. What does not break down is the conclusion that the Cluster Plex keeps a smaller percentage of doors open in the dorm. The only change is that the Cluster Plex medium and large sizes are significantly different, with the medium Cluster Plex having the lowest percentage of doors open in the dorm.

Sense of Community and Friends

In any correlational study, there is always the problem of mediating variables that may provide an alternative explanation to the results. With regard to sense of community, questions that might be asked are (a) whether people moved with friends (yes/no), (b) the number of friends with whom people moved, and (c) the percentage of people students knew in the dorm before they moved in. Students were asked these three questions. In analyzing the responses to these questions, freshmen were excluded because the questions do not apply to their situation.

Two chi squares analyzed whether students had moved with friends. One used dorm size as the second dimension; the other used dorm style as the second dimension. The chi square for dorm size was significant, χ^2 (4, N = 430) = 26.73, $p < .001$, as was the chi square for dorm style, χ^2(6, N = 430) = 22.86, $p < .001$. For dorm style, the analysis showed that a greater percentage of students moved with friends in the large dorms (69.5%) than was true in the other categories (53.2% medium and 51.4% small). Each category had some missing data (10.8% small, 2.6% medium, and 0.4% large). For architectural style, the analysis showed that a greater percentage of students in the Corridor Plex (75.6%) and the Cluster Plex (69.2%) moved with friends than was true for the Traditional (58.5%) and the Specialty Housing (51.4%) dorms. Three categories had some missing data (Specialty Housing 10.8%, Traditional 1.2%, Cluster Plex 1.9%).

Using the number of friends with whom people moved and the percentage of people in the dorm they knew before moving in as dependent variables, multivariate analysis of variance using dorm size and dorm style as the fixed factors revealed no significant multivariate effects for dorm size, Wilks's lambda = .995, F(2, 260) = 0.71, p = .491; nor for dorm style, Wilks's lambda = .973, F(4, 520) = 1.82, p = .124; nor for their interaction, Wilks's lambda = .988, F(2, 260) =1.58, p = .209. Of the people who indicated that they had moved with friends, the mean number of friends with whom people moved was 2.32 (SD = 1.36; N = 267). The mean decile percentage people knew before moving into the dorm was 3.27 (SD = 2.09; N = 267), which is closest to the 21-30% category (1 = less than 10%, 2 = 10-20%, 3 = 21-30%, 4 = 31-40%, and so on). Neither a correlation of the number of friends with whom one moved and the SCI total, r(262) = 0.94, p = .130, nor a correlation between the Relationship dimension and the number of friends with whom one moved, r(256) = .065, p = .301, was significant. However, the correlation between the SCI total and the percentage of people one knew before moving into the dorm was significant, r(418) = .378, $p < .001$, as was

the correlation between the Relationship dimension and the same percentage question, $r(414) = .339$, $p < .001$.

Sense of Community and Housing Choices

Another alternative hypothesis that was explored was whether students in dorms of different architectural styles differed in whether they lived in the dorm of their choice (or close to their first choice). To examine that possibility, an analysis of variance was conducted with dorm size and dorm style as the fixed factors and the choice of the dorm in which the student currently resided (2nd, 8th, 12th, etc.) as the dependent variable. The analysis showed no main effect for dorm size, $F(1, 385) = 1.07$, $p = .303$. There was a main effect for dorm style, $F(2, 385) = 23.18$, $p < .001$; and a significant interaction effect, $F(1, 385) = 3.89$, $p = .049$.

The simple effects test moderated the finding that the choice for those in the medium-sized dorms was more preferred than in either of the other two sizes. This moderation occurred because within the medium-sized dorm, the Traditional was significantly more preferred than was the Cluster Plex. This moderation disrupted the pattern that had been indicated by significant Tukey post hoc tests after a nonsignificant main effect for size. Also, the Cluster Plex (medium) was not significantly different from either the Corridor Plex (large) or the Cluster Plex (large). Essentially, the finding that those in the medium size had a more preferred dorm choice comes from those in the Traditional category. Those in the Traditional medium category had a mean of 1.67 ($SD = 1.37$, $n = 96$), whereas those in the Cluster Plex medium category had a mean of 5.14 ($SD = 5.00$, $n = 44$). Those in the Traditional large had a mean of 3.01 ($SD = 2.66$, $n = 140$); those in the Cluster Plex large had a mean of 4.72 ($SD = 4.22$, $n = 46$). The Corridor Plex mean (large category only) was 5.61 ($SD = 4.67$, $n = 36$), and the Specialty Housing mean (small category only) was 5.24 ($SD = 6.38$, $n = 29$).

Correlations between the current dorm choice and both SCI total and the Relationship dimension were significant (including the classes of 2006, 2007, and 2008). For the SCI total, the value was $r(388) = -.401$, $p < .001$; for the Relationship dimension the value was $r(384) = -.349$, $p < .001$. In both instances the more preferred (lower numerical value) the choice, the higher the sense of community.

Another alternative hypothesis for the sense of community findings related to dorm style might be whether people chose a less popular dorm to gain an advantage in the subsequent year's housing lottery and perhaps were less unhappy (knowing that they would move to a better dorm next year)

than would otherwise have been the case. A total of 211 people responded to a question about whether they had selected the Corridor Plex for a strategic advantage in a subsequent lottery; 84.4% said "no," 15.6% said "yes." Limiting the analysis to those who were currently residing in the Corridor Plex, a MANOVA indicated no difference in either the SCI total or the Relationship dimension and whether students had strategically selected the Corridor Plex ($n = 14$) or not ($n = 18$), Wilks's lambda = .988, $F(4, 116) = 0.68$, $p = .954$. The p values for the SCI total and Relationship dimension were .934 and .894, respectively.

Summary of Support for Sense of Community Hypotheses

As predicted, a trend was established that the Cluster Plex was lower in sense of community, as measured by the SCI and the Relationship dimension, than was true for the other architectural style types, although this conclusion was tempered by dorm size. Also, as expected, larger dorms tended to be lower in sense of community than were smaller dorms. The lower percentage of open doors in the Cluster Plex also supports the lower sense of community in the Cluster Plex. Noise and Shared Space tend to be greater problems in larger dorms, and Shared Space is also a problem of the Corridor Plex and for large Traditional dorms. The Housefellows in the Cluster Plex category were judged less effective in promoting sense of community than was true for the other architectural types, but the Housefellows in Specialty Housing were also judged to be less effective in promoting sense of community, a finding that was not anticipated.

Ratings of Architectural Characteristics

To reduce the possibility of Type I error, a number of hypotheses related to architectural characteristics were evaluated in a single multivariate analysis of variance. These hypotheses were that students in the Traditional dorms and Specialty Housing would rate the architectural factors more positively than would those in the Corridor or Cluster Plex dorms because previous research and students' choices in the housing lottery had suggested that the Plex was disliked. A related hypothesis was that those in the Cluster Plex dorms would rate these factors higher than would those in the Corridor Plex dorms because of the lack of renovation of the Corridor Plex. A third hypothesis was that those in larger dorms would rate these characteristics lower than would those in smaller dorms related to previous work on the greater extent of vandalism in larger dorms, and the expectation

that students in larger dorms would experience more noise and less privacy, among other conditions, than would those in smaller dorms. The MANOVA used the four architectural factors (Flexible, Quiet, Comfort, and Storage) as the dependent variables and the three dorm sizes and the four dorm style types as the quasi-independent variables (fixed factors). The items composing the factors had been rated on a scale where 1 = *poor* to 9 = *excellent*.

The MANOVA indicated a significant multivariate effect for the size of the dorm, Wilks's lambda = .944, $F(4, 544) = 8.14$, $p < .001$, and a significant multivariate effect for the dorm style categories, Wilks's lambda = .463, $F(8, 1088) = 63.89$, $p < .001$. There were no multivariate interaction effects, Wilks's lambda = .990, $F(4, 544) = 1.36$, $p = .245$. For the dorm size, univariate analyses indicated significant differences only on the Quiet factor, $F(1, 547) = 23.18$, $p < .001$. The other three factors showed no significant effects: Flexible, $F(1,547) = 0.07$, $p = .798$; Comfort, $F(1, 547) = 0.41$, $p = .524$; Storage, $F(1, 547) = 1.78$, $p = .184$. Table 4 provides the means and standard deviations for these factors.

For the Quiet factor, Tukey post hoc analyses indicated that the medium dorm category had the most positive ratings, which were significantly higher than either of the other two size categories. The hypothesis that smaller dorms would receive higher ratings was only partially supported for the Quiet factor because, although the medium-size dorms were also rated more positively than were the large dorms, the medium-size dorms were rated more favorably than were the small dorms, which was not predicted.

Although the univariate analysis was not significant, post hoc tests also indicated significant differences on the Comfort variable. Each size was significantly different from the others. The smallest size category had the most negative rating, followed by the largest size, with the medium size again yielding the most positive rating for this factor. Again, the hypothesis that the smaller dorms would have the most positive ratings was only partially supported, with the medium having more positive ratings than the large dorms but not more than the small.

In summary, there was no support for the hypotheses involving the other two factors, Flexible and Storage, with regard to dorm size, and there was only partial support for hypotheses surrounding the other two factors, Quiet and Comfort, for dorm size.

For the dorm architectural categories, univariate analyses indicated significant differences on all four factors: Flexible, $F(1, 547) = 54.75$, $p < .001$; Quiet, $F(1, 547) = 19.72$, $p < .001$; Comfort, $F(1, 547) = 93.30$, $p < .001$; and Storage, $F(1, 547) = 3.60$, $p = .028$.

Table 4
Ratings of Architectural Factors: Means and Standard Deviations (in parentheses) of Dorm Size and Dorm Style Categories

	Small (n = 36)	Medium (n = 196)	Large (n = 321)
Flexible	5.47 (2.27)	5.72 (1.75)	5.52 (1.65)
Quiet	5.09 (2.06)	6.35 (1.51)	5.19 (1.54)
Comfort	4.06 (2.20)	5.37 (1.54)	4.74 (1.72)
Storage	4.81 (2.79)	5.08 (1.83)	4.71 (1.85)

	SH (n = 36)	Trad. (n = 349)	Corr. Plex (n = 59)	Cluster Plex (n = 109)
Flexible	5.47 (2.27)	6.09 (1.52)	4.90 (1.47)	4.38 (1.58)
Quiet	5.09 (2.06)	5.68 (1.59)	4.23 (1.24)	6.20 (1.48)
Comfort	4.06 (2.20)	4.89 (1.44)	2.98 (1.15)	6.35 (1.42)
Storage	4.81 (2.79)	4.82 (1.90)	4.28 (1.46)	5.23 (1.79)

Note: SH = Specialty Housing; Trad. = Traditional Housing; Corr. Plex = Corridor Plex. Ratings are on a scale where 1 = *poor* to 9 = *excellent*

For Flexible, Tukey post hoc analyses indicated that Specialty Housing and Cluster Plex were significantly different from each other and that Traditional was significantly different from both the Cluster Plex and the Corridor Plex. Specialty Housing was higher (more positive) than the Cluster Plex, partially supporting the hypothesis. Traditional was higher than both types of Plex housing, supporting the hypothesis; Traditional was the highest for this factor, overall. But the hypothesis that Specialty Housing would also be rated more positively than would the Corridor Plex and that the Cluster Plex would be rated more positively than would the Corridor Plex was not supported for Flexible.

For Quiet, Tukey post hoc analyses indicated that Specialty Housing was rated lower than the Cluster Plex but higher than the Corridor Plex; Traditional was also rated lower than the Cluster Plex but higher than the Corridor Plex. The Cluster Plex was rated higher than the Corridor Plex. For Quiet, overall, the least positive rating was for the Corridor Plex, and the most positive for the Cluster Plex. Thus, the hypothesis that the Cluster Plex would be rated more positively than the Corridor Plex was supported, as was the hypothesis that Traditional and Specialty Housing would be rated higher than the Corridor Plex, but there was a lack of support for the

hypothesis that Traditional and Specialty Housing also would be rated more positively than would the Cluster Plex.

For Comfort, Tukey post hoc analyses indicated that each type was significantly different from each other type. The Corridor Plex had the lowest ratings, followed by Specialty Housing, then Traditional, with the Cluster Plex receiving the highest ratings. For Storage, Tukey post hoc analyses indicated only one difference: The Corridor and Cluster Plex differed from one another, with the Cluster Plex rated more positively.

In summary, Traditional housing is viewed as the most Flexible. The Cluster Plex does well on the Comfort, Quiet, and Storage factors; it receives the highest ratings on those variables.

Dorm Decoration Purchases, Comparisons to Home, and Income

Although it was not a specific hypothesis of this study, the researchers were interested to see whether students might spend more money on particular kinds of dorm styles to "spruce them up." When income was used as a covariate in the univariate analysis with dorm size, dorm style, and gender as the fixed factors, income was a significant covariate in the analyses, and none of the other main effects or interactions was significant. A correlation between the best estimate of the family's total income last year (14 categories) and the amount of money students said they had spent furnishing and/or redecorating their room this year (10 categories) was significant, Spearman's $rho(511) = .299$, $p < .001$. The median category for amount of money spent was Category 5, \$150-199, and the mode was Category 4, \$100-149 ($N = 622$). Income, rather than dorm size or architectural style, was related to the amount of money students spent decorating and/or furnishing their room.

Given the recent emphasis in the media on the trend to provide amenities to students in dormitories and the argument that students of this generation have been more likely to have their own rooms at home, a series of questions was asked to compare their current dorm room with their room at home. By including these questions, it might be possible to see the relationship of previous experience at home to their current dorm. If students differ by dorm size or type in their home experience, it would be harder to make a case for the role of dorm characteristics in the ratings of sense of community and the architectural features of the dorm. To address previous experience at home, students were asked to respond to three questions comparing their room at home to their dorm room in terms of space, level of

control over who enters, and level of control over personalization. In this multivariate analysis, these three questions were used as the dependent variables, and dorm size and dorm style were used as the fixed variables, with income as a covariate. The analysis indicated a significant effect for income, Wilks's lambda = .971, $F(3, 494) = 4.99$, $p = .002$; a significant multivariate effect for dorm size, Wilks's lambda = .983, $F(3, 494) = 2.93$, $p = .033$; and a significant multivariate effect for dorm style, Wilks's lambda = .965, $F(6, 988) = 2.92$, $p = .008$. The interaction effect was not significant, Wilks's lambda = .994, $F(3, 494) = 0.98$, $p = .402$.

Univariate tests indicated that income was significant only with regard to the first question, dealing with the amount of space in the dorm room as compared to home, $F(1, 496) = 14.70$, $p < .001$. The higher the reported family income, the less space the dorm room was judged to have in comparison to the student's room at home.

Univariate tests for the size dorm variable were significant only for this same space comparison question, $F(1, 496) = 7.45$, $p = .007$. Although mediated by income, the findings suggest that those in the large dorms judged their rooms to be smaller than their rooms at home (see Table 5 for means and standard deviations). With regard to architectural style, the only significant univariate finding was the second question, dealing with the level of control over who enters the dorm room in comparison to the control of the room at home, $F(2, 496) = 8.35$, $p < .001$. Higher values indicate less control than at home. The means suggest that students in the Cluster Plex feel that they have a greater level of control relative to their room at home than do those in the other types of dorms.

To enable the reader to better synthesize the findings reported here, a summary table of the dorm characteristics has been provided (see Table 6).

Discussion

The purpose of this correlational research was to reexamine a number of findings that relate to student housing and sense of community: (a) that rooms that are clustered in pods are related to higher sense of community than are rooms along a corridor and (b) that large shared spaces such as group bathrooms are related to lower sense of community. The second portion of the study dealt with students' ratings of architectural variables to see if sense of community might exist even where students rated other aspects of their living situation as less than ideal. The variety of housing at one college provides an opportunity to look at sense of community as it relates to

Table 5
Home and Dorm Comparisons: Means and Standard Deviations (in parentheses) of Dorm Size and Style Categories, with Income as a Covariate

	Small (n = 32)	Medium (n = 183)	Large (n = 288)	
Space	4.63 (2.41)	4.84 (1.92)	5.39 (1.57)	
Enter	3.91 (1.91)	3.75 (1.86)	4.05 (1.87)	
Personalize	3.84 (2.06)	4.26 (1.81)	4.20 (1.71)	
	SH (n = 32)	Trad. (n = 319)	Corr. Plex (n = 55)	Cluster Plex (n = 97)
Space	4.63 (2.41)	5.13 (1.67)	5.58 (1.55)	5.09 (1.99)
Enter	3.91 (1.91)	4.12 (1.85)	4.07 (1.85)	3.24 (1.80)
Personalize	3.84 (2.06)	4.24 (1.74)	4.20 (1.72)	4.18 (1.79)

Note: SH = Specialty Housing. Trad. = Traditional Housing; Corr. Plex = Corridor Plex. For amount of dorm room space, scale is from 1 = *more than at home* to 7 = *less than at home*. For level of control over entering, scale is from 1 = *more than at home* to 7 = *less than at home*. For control over personalizing dorm room, scale is from 1 = *more than at home* to 7 = *less than at home*.

residence halls that range from traditional dorms of classic architecture to modern dorms that interconnect, some of which have been renovated around clusters, whereas others remain in their original corridor-based layout. These original dorms have corridors that extend the entire perimeter of the residence hall floor, like a racetrack.

Sense of Community

In this study, sense of community was examined from a variety of perspectives. These perspectives included two standardized measures, the SCI and the Relationship dimension of the University Residence Environment Scale. Aspects of sense of community also included participants' estimates of the percentage of people leaving their doors open on their dorm floor and in the dorm as a whole; the extent to which noise had been a problem in the dorm, arguably a reflection of whether people were considerate of one another or not; the extent to which people were respectful of shared space in the dorm; and the extent to which the Housefellow was effective in fostering a sense of community in the dorm. This multipronged approach

Table 6
Dormitory Housing Profiles

	Small	Medium		Large		
	SH	Trad.	Clus. Plex	Trad.	Corr. Plex	Clus. Plex
SCI total	higher	higher	lower	higher	middle	middle
Rel.dim	higher	higher	lower	middle	higher	lower
Noise (smaller vs. greater problem)						
	smaller	smaller	smaller	greater	greater	medium
Shared space (less vs. more respectful)						
	more	more	more	less	less	medium
Housefellow Effectiveness (less vs. more effective)						
	less	more	less	more	more	less
Doors Open on Floor (lower vs. higher percentage)						
	higher	middle	lower	middle	higher	lower
Doors Open in Dorm (lower vs. higher percentage)						
	higher	middle	lower	middle	higher	lower
Flexibility	better	better	worse	better	middle	worse
Quiet	middle	better	better	middle	worse	better
Comfort	worse	middle	better	middle	worse	better
Storage	middle	middle	better	middle	worse	better

Note: SCI = Sense of Community Index; Rel.dim. = Relationship dimension of the University Residence Environment Scale; SH = Specialty Housing; Trad. = Traditional housing; Clus. Plex = Cluster Plex; Corr. Plex = Corridor Plex.

enabled us to look at a fuller picture of behaviors related to sense of community.

What picture emerges of sense of community? These comments will focus on the Cluster Plex, because when it was renovated, its new design reflected architectural trends likely to be seen in newer dorms elsewhere. Furthermore, one of the central questions of this study was whether suites or clusters, as reflected in the Cluster Plex housing in this study, were related to a greater sense of community than one would find in dorms with traditional corridors. What the findings may suggest is that there is a trend for the layout of the Cluster Plex, with its emphasis on clusters or pods, to be related to a lower sense of community on these established measures, but that size of the dorm is a mediating factor. What is clear is that dorms in the Specialty Housing category (small-size dorms) fare well with regard to this aspect of sense of community as do Traditional dorms, in general. Thus, one can make a case that sense of community can develop out of the design of traditional corridors.

What happens when we add the next three variables to the picture (Noise, Shared Space, and Housefellow effectiveness)? The Cluster Plex does not fare well with regard to Housefellow effectiveness; the effectiveness of Housefellows in creating a sense of community was judged to be lower in the Cluster Plex than in the Traditional dorms, and also lower than in the Corridor Plex. Somewhat surprisingly, Housefellows were considered less effective in the Specialty Housing than in either the Traditional Housing or the Corridor Plex. One explanation for this finding about Specialty Housing is that two of the Housefellows assigned to Specialty Housing do not actually live in the particular house with those students. Also, because there are many apartments represented in the Specialty Housing category, students may spend less time together as a whole and it may be difficult for the Housefellow to pull people together for activities.

The fact that the Housefellows are rated more effective in the Corridor Plex dorms with their race track design than in the Cluster Plex may reflect the ease with which it is possible to interact with other students because there is more commonly shared space. So, with the standardized measures and the Housefellow effectiveness measure, the Cluster Plex dorms do not appear to work as well as one might want. If we next examine the issue of trust as reflected in the percentage of doors left open on the floor and in the dorm as a whole, the Cluster Plex again emerges as less positive on this variable, if keeping your doors open reflects a willingness to engage with others.

In summary, if we take as a whole the findings from the variables that assessed sense of community, a reasonable picture emerges that there are some problems with aspects of the Cluster Plex that are related to a lower sense of community. The findings seem particularly striking with regard to the reported percentage of doors open on the floor and in the dorm as a whole.

This research demonstrates that corridors are not necessarily negative for social interaction, and in fact, that the design is related to fostering a greater sense of community than was true for students in a residential design based on clusters of rooms. The current research stands in contrast to early research by Baum et al. (1975) in which residents of corridor-based housing were not thought to engage in groups based on proximity in the residence hall. When designers and planners want to build a sense of community, corridor-based housing may have a role, and suites are not without their own challenges. In Corbett's research on suites (1973), one of the disadvantages mentioned was having to deal with many different personalities, which students may be forced to do when a limited number of people are sharing a sectioned area. A number of things may happen in suites as they relate to sense of community. It is possible that different temperaments may

not mix well, and it is also possible that the spatial segregation in suites leads residents to be less well integrated in the dorm as a *whole*, leading to less overall sense of community. That kind of intergroup isolation was evident in an early study dealing with closed cubicles in military barracks (Blake, Rhead, Wedge, & Mouton, 1956). On many campuses, students moving into suites "block together" and already know one another, which reduces the likelihood that different temperaments would not mix well. At the same time, these students may not be close friends with or even necessarily know students in adjacent suites. This possibility tends to reinforce the interpretation that students in suites may be less well integrated into the dorm as a whole than are students who are not grouped in clusters.

As an alternative explanation for this interpretation, one might ask whether moving with friends and having more friends in the dorm might have made a difference in sense of community. It is the case that those in the Corridor Plex had the highest percentage of those responding to the moving with friends question, but those in the Cluster Plex also had a high percentage relative to those in both Traditional and Specialty Housing. Thus, moving with friends may contribute to a sense of community, as may be the case in the Corridor Plex, but it cannot then explain why the sense of community in the Cluster Plex is relatively low, given that almost 70% of those students responding in the Cluster Plex said they moved with friends. Also, among upperclassmen who said that they moved with friends (freshmen were excluded from the moving with friends questions), there was no significant difference in the number of friends with whom they moved across size or dorm style types. Nor were there significant differences across dorm size or style type in the percentage of people who lived in the dorm that residents knew before they moved in. The percentage of people one knew before moving into the dorm was positively related to both the SCI total and the Relationship dimension, but the number of friends with whom one moved was not. Overall then, knowing people may help in creating a sense of community, but there were no group differences across dorm size or style type in the percentages of people students knew before moving into the dorm. Thus, it appears unlikely that moving with friends, the number of friends with whom one moves, and the percentage of people one knows before moving into the dorm can adequately explain the variability in the sense of community that developed in dorms of different architectural style types in this study.

The findings dealing with how close students were to being in the dorm of their choice and sense of community show an overall relationship between both SCI total and the Relationship dimension and the dorm choice; the more

preferred (closer to first choice) the dorm choice, the higher the sense of community. However, if you look specifically at dorm types, a different picture emerges. For the Traditional dorms this relationship exists, but not for Specialty Housing. Although students reported relatively high sense of community in Specialty Housing, they were, on average, in their fifth choice dorms. Thus, one cannot make solid generalizations about the relationship.

In summary, from the point of view of sense of community, the renovated Cluster Plex design seems to work less well than conventional dorms with typical corridors or even than the Corridor Plex. We now move to the role of architectural characteristics to see if this pattern involving the Cluster Plex continues.

Architectural Characteristics

In earlier research (Devlin et al., 1996), it was demonstrated that the Plex (Corridor and Cluster considered as one category) was least preferred as an ideal dorm, and that students' least preferred view of campus was of a Plex dorm, followed by a parking lot with a garbage dumpster in it! A question addressed in this study is whether the reconfiguration of a number of Plex dorms into clusters is related to positive evaluations by students of the architectural characteristics of their dormitory environment. As we have seen in the previous section, it is not the case that such reconfiguration is necessarily related to positive sense of community. Is the rearrangement of space (as well as concurrent upgrading) related to other qualities of residence halls?

In this study, reconfiguration was related to other aspects of college housing, but it should be acknowledged that the change in layout to clusters co-occurred with upgrading (e.g., a new heating, ventilation, and air conditioning [HVAC] system) that is often part of redesign. The Cluster Plex dorms are rated positively on the Quiet, Comfort, and Storage factors. Thus, it does seem that reconfiguration and upgrading is related to some positive gains. Quiet emphasizes privacy, seclusion, quietness, suitability for studying and sleeping, and academic atmosphere. Related to privacy and seclusion, students in the Cluster Plex also reported a greater level of control over who enters their dorm room (compared to their room at home) than was true for students in the other architectural categories. In a sense, the Cluster Plex dorms excel on the variables that may challenge creating a sense of community. The Cluster Plex also scored well on Comfort, which emphasizes temperature control, bathrooms, lighting, windows, and modernness. The

Cluster Plex was also viewed positively on the Storage factor, which covers book storage, desk storage, and storage in general. Thus, in terms of what one might call functional needs, the Cluster Plex scores well.

It is the Traditional dorms, however, that are rated highest on Flexibility. Flexibility is a category that encompasses a number of variables, from hominess, aesthetic appeal, and freedom to alter, to sociability and the opportunity to make friends. Both Traditional and Specialty Housing are perceived higher on this factor than are either the Cluster Plex or the Corridor Plex. This finding is related to the work of Davis and Roizen (1970) in that apartment residents, which one could relate to suite design (close contact with a limited number of people), were dissatisfied with their opportunity to make friendships, which was not the case for students in conventional dorms in the Davis and Roizen study. To the extent that residents of conventional dorms in the Davis and Roizen study were happy with their dorms at all, they were least unhappy with the opportunity to develop friends and sociability. Here, conventional dorms, as represented by the Traditional category, score well on the Flexible factor, a variable that relates to sociability and the opportunity for friendships to form.

The finding that Traditional dorms were higher on the Flexible factor also relates to Corbett's work (1973) in that suites may create interpersonal challenges. Here, the patterns for architectural variables reinforce the findings for sense of community. Arguably, it is the Flexible architectural factor that most closely parallels the content of the sense of community scales through the emphasis on sociability and freedom to make friends. Although the Cluster Plex does well on what one might call meeting basic needs such as HVAC and storage, students do not see the Cluster Plex as promoting sociability and friendship formation.

Study Limitations

A major limitation in any study of this sort is the correlational nature of the research. Students were not randomly assigned to condition, even as freshmen, because freshmen are generally excluded from Specialty Housing. Any conclusions reached here must be presented as relationships, not cause and effect. By asking a variety of questions beyond the standardized scales for sense of community, we have tried to provide multiple assessments of a concept to see if the pattern of findings holds across variables. Yet the residence halls in this study differ beyond the size and style classifications that have been used (for example, their distance from a central dining hall,

whether they have dorm themes or have substance-free floors, and how recently they have been upgraded), and any conclusions or recommendations must recognize that variables not addressed in this study may also in part account for the findings.

It is also the case that although the number of participants for the study is reasonably large, the return rate still represents only about a third of the population. Moreover, the respondents are more likely to be women than is true at the college as a whole. For those who reside on campus, the breakdown by gender (Office of Student Life data) is 59.3% women to 40.7% men, so there are more respondents who are women (70%) in this study than in the college population overall. Typically, women are more likely to comply with requests to volunteer for research (Rosenthal & Rosnow, 1975). Only one of the analyses in this study (regarding the amount of money spent on room decoration) used gender as a fixed factor, but certainly the views in this study are more representative of women than of men. The breakdown by class year in the sample versus in the actual Office of Student Life figures from the college is fairly close. The percentages are on campus first, then sample: seniors (25.3 % vs. 22.6%); juniors (19.6% vs. 21.1%); sophomores (26.2% vs. 26.2%); and freshmen (28.7% vs. 30%). Thus the proportions of students responding to the survey reflect the campus proportions by class year.

Recommendations

The study demonstrates that cluster housing that has been upgraded is related to higher student ratings of basic dorm functions, such as thermal comfort, adequate bathroom facilities, and room storage, than is true for dorms that have not been upgraded. At the same time, creating small pockets of students in pods or suite-like clusters appears related to a lower sense of community. Colleges might want to take a second look at the current emphasis on suite and cluster design. The traditional corridor design appears to offer opportunities for friendship formation among a larger base of dorm residents than may be the case for clusters and suites. Overall, because sense of community as measured by the SCI total and Relationship dimension is positively related to the percentage of people students knew in the dorm before moving in, Student Life administrators may want to create ways to bring students together before the fall term begins. In the spring term after the housing selections are completed, activities could be arranged for students who are assigned to the same dorm. Perhaps they could get a “head start” on building a sense of community.

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