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Student Residence Hall Rooms: Sense of Control, Sense of Community, Student Relationships, and Academic Achievement

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Student Residence Hall Rooms: Sense of Control, Sense of Community, Student Relationships,
and Academic Achievement

A thesis presented by

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to the Department of Psychology

in partial fulfillment of the requirements

for the degree of Bachelor of Arts

Connecticut College

New London, Connecticut,

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STUDENT RESIDENCE HALL ROOMS

Abstract

The present study investigated the effects of room amenities and rules addressing the physical space of the room on sense of control, sense of community, student relationships, and academic achievement. Participants in this study were 118 Connecticut College students (25 men, 92 women, and 1 not specified). The study indicates that different room amenities and rules may influence student residents' sense of control, sense of community, and student relationships. In addition, these may have an indirect effect on academic achievement, as academic achievement is found to be positively associated with sense of control, sense of community, and student relationships. Recommendations for institutions of higher learning include providing student residents with living arrangements that best promote sense of control and sense of community to optimize academic achievement. It is suggested that the amenities, such as an air conditioner controllable by the resident, Internet connection, a window that a resident could open, and a view to nature from the window, all of which promote sense of control and sense of community, be included in student residence hall rooms. Additional findings, limitations, and recommendations for future research are discussed.

STUDENT RESIDENCE HALL ROOMS

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STUDENT RESIDENCE HALL ROOMS

Table of Contents

Abstract.....*ii*

Acknowledgments.....*iii*

Table of Contents.....*iv*

List of Tables.....*v*

List of Figures.....*vi*

List of Appendices.....*vii*

Introduction.....1

Method.....23

Results.....32

Discussion.....47

References.....58

Appendices.....69

STUDENT RESIDENCE HALL ROOMS

List of Tables

Table 1: <i>Room Amenities Conditions</i>	28
Table 2: <i>Rules Conditions</i>	29
Table 3: <i>Means and (Standard Deviations) for Sense of Control, Sense of Community, Academic Achievement, and Student Relationships in Different Rules and Type Conditions</i>	34
Table 4: <i>Means and (Standard Deviations) of the Four Subscales of the Sense of Community Index for Each Room Amenities Type</i>	36
Table 5: <i>Means and (Standard Deviations) of Sense of Control, Academic Achievement, Student Relationships, Sense of Community, and Four Subscales of the Sense of Community Index</i>	41
Table 6: <i>Means and (Standard Deviations) of Sense of Control, Sense of Community, Academic Achievement, and Student Relationships in Different Type Conditions without Male Participants</i>	46

STUDENT RESIDENCE HALL ROOMS

List of Figures

Figure 1: *Residence hall room layout*25

STUDENT RESIDENCE HALL ROOMS

List of Appendices

Appendix A: *Informed Consent*.....69

Appendix B: *Scenario*.....70

Appendix C: *Sense of Control*.....71

Appendix D: *Sense of Control Scale*.....72

Appendix E: *Sense of Community Index*.....73

Appendix F: *Willingness to Pay and Demographics*.....74

Appendix G: *Debriefing Form*.....76

Student Residence Hall Rooms: Sense of Control, Sense of Community, Student Relationships,
and Academic Achievement

Two general types of environment are typically differentiated: the natural and the built environment. The natural environment is beneficial to human wellbeing, and exposure to natural environments can assist people in recovering from stress and mental fatigue (Kaplan, 1995; Ulrich et al., 1991). However, people spend more than 90% of their lives within buildings (Evans & McCoy, 1988). The built environment is designed and formed to a large degree by humans, and it can consist of different spatial levels, such as cities, neighborhoods, streets, buildings, and rooms. A level can be looked at individually, as an entity unto itself, but each level is a component of some larger system. With this information in mind, it is important to study the built environment and its effect on humans, and research in the field of environmental psychology has done so.

Heimstra and McFarling (1974) state that “the built environment has great potential for influencing our activities” (p. 27). They suggest that the most significant influence of a room on behavior is the purpose of the room; therefore, different types of behavior can be expected in a classroom in a school building versus in a family room in a private home. They also suggest that there are two potential factors of physical design that influence behavior; first, aspects of the built environment that must be incorporated into the design if it is to fulfill its function, such as furniture; and second, the physical attributes of a room that are not directly required by its function, such as color. Color can affect people’s perception of a room’s warmth, its spaciousness, complexity, and social status, and the nature of rooms can be changed by rearranging its furnishings (Heimstra & McFarling, 1974).

Territoriality

Managing environments and interacting with them, humans exhibit territoriality.

Territoriality is defined as “a set of behaviors and cognitions a person or group exhibits based on perceived ownership of physical space” (Bell, Greene, Fisher, & Baum, 2001, p. 276). Altman (1975) defines territorial behavior as “a self/other boundary-regulation mechanism that involves personalization of or marking of a place or object and communication that is ‘owned’ by a person or group” (p. 107). Personalization and ownership are designed to regulate social interaction and to help satisfy various social and physical motives. Therefore, people create, maintain, and highlight the boundaries of their owned space in an attempt to signal this ownership through signs, markers, and labels. These devices both signal tenancy and communicate who is welcomed and who is not, as well as what type of behavior is expected (Taylor, 1988). To mark where one territory ends and another begins, walls, hedges, fences, doors, and other physical elements are often used, and to some degree, there is an excludability of use, responsibility for, and control over activities in designated territorial spaces (Taylor, 1988).

Whereas Newman (1972) distinguishes different zones of territoriality, which include public/shared, semi-public, semi-private, and private, Altman (1975) distinguishes three types of territories: primary, secondary, and public. Primary territories, such as bedrooms and apartments, are owned and used exclusively by individuals or groups, are clearly identified as theirs by others, are controlled on a relatively permanent basis, and are central to the day-to-day lives of the occupants. Secondary territories, such as work offices and one’s typical seat in a classroom for instance, are less central, pervasive, and exclusive; they have elements of public access, as

well as some degree of control by occupants. Finally, public territories, such as waiting benches and bus seats, have a temporary quality, and almost anyone has free access and occupancy rights.

Some research provides evidence of the relationship between territorial behavior and individual and group functioning. For example, Altman and Haythorn (1967) and Altman, Taylor, and Wheeler (1971) report that members of effective groups in long-term social isolation quickly established territories for items such as chairs and beds, and areas of living space. Similarly, Sundstrom and Altman (1974) found that the breakdown of territoriality in a boys' rehabilitation setting was associated with poor group functioning. Edney and Buda (1976) report that establishment of individual territories leads to greater feelings of personal control. When territories and boundaries are not clear, there is a greater incidence of conflict, crime, and social disruption (Newman, 1972) than when boundaries are clearly established.

Newman (1972) reports strong ties between the absence of territories, sense of control, and crime rates. Through his research Newman has contributed an important concept in the literature of environmental psychology and in the topic of territoriality – defensible space. Defensible space is a model of the residential environment, which enhances residents' lives, provides security, and inhibits crime by creating a social system that defends itself from intruders. Therefore, defensible space promotes control over the environment. This finding is supported in work environments as well. Workers of an open office, in which the work locations are not clearly defined, separated, and enclosed by walls and doors, are less satisfied with their work experience, report less privacy, and report that it is harder to regulate who enters their working space, compared to those who work in an enclosed office setting (Taylor, 1988).

Personal Space

Literature distinguishes another form of “owned” space – personal space. Whereas a territory implies a geographic location, personal space is an attached, invisible boundary, which surrounds individuals and that others are not allowed to enter (Sommer, 1969). Research suggests that people are more willing to be in closer contact with others in places where they have had previous experience, because they may feel they can control their contacts in such settings. Research also suggests that men have larger personal space zones than do women, and that people generally maintain greater distance from men than from women (Altman, 1975).

Hall (1966) provides four distances of personal space: intimate, personal, social, and public. Intimate distance, in which a person can smell, touch, and kiss another person, is between 0 – 1.5 feet. Personal distance, which is between 1.5 – 4 feet, is usually observed between close friends and acquaintances in daily life, whereas social distance, which is between 4 – 12 feet, is a characteristic of business and impersonal transactions. Finally, public distance is the one between a person, usually an official or an actor, and the public, and it exceeds 12 feet.

Privacy

Altman (1975) states that personal space is a mechanism used to regulate interpersonal interaction, and to achieve a desired level of privacy. Privacy, another important concept studied in environmental psychology, is “a selective control of access to the self or to one’s group” (Altman, 1975, p. 18). Tripathi (2010) argues that privacy needs to be defined in terms of freedom to choose or restrict social interaction, and to control others’ access to information about oneself. Therefore, privacy may reflect the sense of control over the environment, or freedom of choice that an individual has in terms of choosing or restricting social interactions.

According to Westin (1967), there are four dimensions of privacy: solitude, intimacy, reserve, and anonymity. The most extreme condition of privacy, solitude, implies that people wish to be physically alone with their thoughts, free from observation by others. The second privacy state, intimacy, occurs when two individuals, who feel close to each other, separate themselves from others in order to be alone. Reserve implies that the person is actively avoiding interaction with others by creating a psychological barrier against unwanted intrusion. Finally, the last privacy state, anonymity, occurs when a person is in a public space with others present but does not expect to be recognized and interaction, if any, is casual.

Linking territoriality to privacy, Altman (1975) states that one function of territoriality is control of privacy; territorial behavior is one of several interpersonal-boundary mechanisms that act as means toward the end of some desired level of privacy. However, Edney and Buda (1976) report that having a territory is not the same thing as having privacy. Therefore, even though privacy and territory are related, as Taylor (1988) reports, territorial experiences cannot be treated merely as a subset of privacy experiences. According to Evans and McCoy (1998), the central design element influencing privacy is spatial hierarchy, meaning that the environment provides different territorial spaces ranging from places that provide solitude and intimacy, to small group meeting areas, and those that foster contact with the public.

Crowding

According to Altman (1975), privacy regulation plays a crucial role in the well-being of individuals and groups and is a major contributor to a sense of control in interior settings. If the achieved level of privacy is less than the desired privacy – when one has more interaction with others than desired – a feeling of crowding is experienced. Crowding is a psychological experience of density, which is the number of individuals per unit of area. Thus, crowding is a

perception, and not an absolute measure. Kaya and Weber (2003) report that those whose achieved privacy level was less than desired privacy felt more crowded than did either students whose level of achieved privacy was greater than what they desired or those whose privacy was optimized. Others suggest that naturally induced and prolonged exposure to high social density creates the experience of crowding and causes residents to avoid one another (Baum & Valins, 1973, 1975; Valins & Baum, 1973). Similarly, high-density rooms are judged to be less pleasant and more crowded than are low-density rooms (Rodin, Solomon, & Metcalf, 1978). When room size is perceived as larger, the feeling of privacy increases, and students feel less crowded and are more satisfied with their rooms than when room size is perceived as smaller (Kaya & Erkip, 2001). Other research on densely populated residential environments suggests that a lack of privacy can result in less satisfactory social relationships and in social withdrawal (Firestone, Lichtman, & Evans, 1980).

Walden (1981) suggests that men and women have different thresholds for feeling crowded and may employ different cognitive and behavioral mechanisms for adapting to crowded conditions, reporting that women tended to place a greater value on privacy and spent more time in the more dense rooms, compared to men who placed a lower value on privacy and spent significantly less time in the higher density dormitory rooms. Other research also points to gender differences with regard to privacy; for instance Kaya and Weber (2003) found that men report a greater desire for privacy than do women (Kaya & Weber, 2003).

Research on crowding has examined the role cognition may play in altering the perception of crowding and ameliorating some of its negative consequences, without changing actual density levels. Wener and Kaminoff (1983) found that the presence of informational signs in a correctional facility's lobby significantly reduced visitors' perceived crowding, discomfort,

anger, and confusion, as well as the time needed to complete the registration process.

Informational signs place access to information within control of the visitor. Asking someone else for help may indicate a lack of personal control over needed information; with the presence of informational signs, the number of wrong turns, requests for information, and confused gestures by visitors declines (Wener & Kaminoff, 1983). Similarly, Langer and Saegert (1977) showed that in a crowded setting, inducing cognitive control through information reduces the negative reactions and leads to improved performance. Worchel and Teddlie (1976), in another study, found that when crowded people are distracted from tending to the close proximity of other persons by the presence of attractive wall posters, they experience the environment as less crowded and perform better on verbal puzzle-solving tasks than when such posters are absent.

Research has also examined the effects of the built environment's aspects on crowding. In one such study, Baum and Davis (1980) studied student residence hall size. The authors report that residents of the long-corridor floor (40 residents sharing space) felt more crowded and reported more residential social problems over time, compared to short-corridor residents (20 residents sharing space) and modified long-corridor residents (20 residents sharing space), who reported fewer of these problems. In their study, the authors bisected one of the long-corridor floors with a three-room lounge area enclosed by unlocked doors, splitting the one group of 40 students into two groups of 20 students, reducing the number of people sharing the bathroom and hallway space. This bisection of the long-corridor floor resulted in more positive interaction on the dormitory floor, more local group development, more confidence among residents in their ability to control events in the dormitory, and less withdrawal in both residential and nonresidential settings, compared with the unaltered long-corridor floor. Residents of an altered floor, which before bisection was associated with crowding stress, described it as a positive,

uncrowded, and controllable environment after the intervention. Also, residents of the bisected floor did not complain of frequent unwanted contact or difficulty in controlling interaction, whereas residents of the unaltered floor did (Baum & Davis, 1980). This spatial modification is reminiscent of the work of Newman (1972), in terms of creating semi-private space through the introduction of the three-room lounge.

Other research has looked into the effects of architectural design on crowding. For instance, Baum, Harpin, and Valins (1975) and Baum and Valins (1975) found that students living in suites had a lower level of perceived crowding than did those living in rooms of typical double loaded corridors, and Devlin et al., 2008 found that students in suite-based residence halls have a greater level of perceived control over who enters their dorm room compared to those living in corridor-based residence halls. Similarly, Valins and Baum (1973) looked into differences between the corridor-design dormitories, in which 34 students shared a bathroom and lounge areas, and suite-design residence halls in which only 4 or 6 students shared these common spaces. The authors suggest that the interior architecture of the corridor-design residence hall, compared to that of suite-design, promotes too much unwanted interaction between residents, resulting in high levels of social stimulation and experience of crowding. Furthermore, in the laboratory setting, crowded residents from corridor-design residence halls experienced greater discomfort in the presence of strangers and manifested lower perceived crowding thresholds, compared to residents of the suite-design residence halls.

Altman (1975) proposes that a crowded person attempts to resolve discrepancies between desired and achieved privacy by either expanding new energy to achieve the level of privacy desired or by shifting the desired level of energy; and Tripathi (2010) states that sense of control is related to the discrepancy between desired and actual privacy. Therefore, crowding may be

influenced by perceived privacy regulation (Kaya & Weber, 2003). Crowding also increases the unpredictability of environments, restricts freedom, and constrains behavior, producing a sense of helplessness in effect (Sherrod & Cohen, 1979). Crowding can also be described as a reaction to perceived loss of personal control over the environment caused by density (Baron & Rodin, 1978). Research shows that high density enhances the effect of lack of control on the perception of crowding (Rodin, Solomon, & Metcalf, 1978). Other research also points out that lowered perceived control is a major cause of negative reactions to crowding (Schmidt & Keating, 1979). In a study conducted by Baum and Davis (1980), mentioned previously, during the 5th and 12th weeks of residence, compared to short-corridor and altered long-corridor residents, those in the long-corridor, besides reporting feeling more crowded, also reported less perceived control, suggesting the association between the two.

Sense of Control (Perceived Control)

One element that can reduce the effects of crowding is perceived control; crowding reactions are attributions resulting from a loss of control (Schmidt & Keating, 1979). Sherrod (1974) found that a perception of control may reduce the aftereffects of short-term laboratory crowding. In his study, subjects were exposed to either high or low-density levels. Some of the high-density subjects were informed that they were permitted to leave the crowded room whenever they choose in order to work in a less crowded room. Although no subjects left the crowded room, those with perceived control over crowding performed better on post-crowding measures of frustration tolerance than did subjects who had no control. Similarly, Schopler and Walton (1974) report that people who generally feel in control of themselves and their environments (Internals) feel less crowded in a high-density setting than do those who generally feel controlled by the environment (Externals). Moreover, Rodin, Solomon, and Metcalf (1978)

conducted an experiment in which participants, in a series of group process tasks, were initially randomly assigned to a role that gave them no control over the group's activities, control over the onset and administration of the activities, or control over their termination in either small (high density) or large (low density) rooms. The results of the study indicate that individuals with control felt significantly less crowded than did those without control.

In general, control, related to the belief one may have regarding the relationship between action or behavior and outcomes (Chavis & Wandersman, 1990), refers to the extent to which an agent can intentionally produce desired outcomes and prevent undesired ones (Skinner, Chapman, & Baltes 1988). Sense of control, also known as perceived control, is a generalized feeling that an individual, rather than chance contingencies or the actions of others, determines what happens in individual's life (Rosenthal & Wilson, 2008). Sense of control indicates individuals' perceived ability to recognize, prevent, and manage potential harm in threatening environments (Ross, 2011). Sense of control is the individual's assessment of the level of control available in a context, and incorporates both the extent to which individuals believe they can perform an action and the extent to which they believe that such an action will lead to a desired outcome or avoid an undesirable one (Skinner, 1996). Sherrod and Cohen (1979) argue that perceived control is an alterable cognitive phenomenon; the belief in one's ability to control the environment need not imply the ability to actually implement control. Perceived control may result from actual control; however, it can also result from prior control experiences, from information suggesting that control is potentially available, from self-inferences, or from any social or physical intervention that makes the environment appear more manageable or predictable. Perceived control may even be illusory, but its effects on human behavior can be significant (Sherrod & Cohen, 1979).

Research consistently shows negative effects of lack of control on human functioning. For instance, the absence of sense of control over good outcomes, over bad outcomes, or over both is associated with depression (Mirowsky & Ross, 1990). Prolonged experiences with uncontrollable environmental conditions (low sense of control) are associated with depression and learned helplessness, which is the condition of a human or animal that has learned to behave helplessly, failing to respond even though there are opportunities for it to help itself by avoiding unpleasant circumstances or by gaining positive rewards related to psychological distress (Maier & Seligman, 1976). Similarly, in a neighborhood setting, the exposure to uncontrollable, negative events and conditions in the neighborhood, such as crime, noise, vandalism, graffiti, run-down buildings, garbage, public drinking, fights, and danger decrease the sense of personal control (Geis & Ross, 1998). These events and conditions, which give cues to residents regarding the world they live in, indicate the breakdown of social control and order (Ross & Mirowsky, 2009). In such neighborhoods, residents often feel powerless to live in a clean, safe environment free from threat, harassment, and danger (Ross, 2011). Therefore, a threatening and dangerous neighborhood, undermining the sense of control, may produce anxiety, anger, and depression among the individuals who live there (Ross & Mirowsky, 2009).

Physical constraints that reduce choice or behavioral options can produce or exacerbate stress (Evans & Cohen, 1987; Glass & Singer, 1972). Insufficient spatial resources, inflexible spatial arrangements, and lack of climatic or lighting controls, all threaten individual needs to effectively interact with interior space (Hedge, 1991; Sherrod & Cohen, 1979). For instance, in correctional facilities, it is believed that much of jail vandalism is an attempt to adjust the environment in the only way possible; however, by giving inmates more control, such as giving them the ability to move chairs, control TV channels, control the temperature, and turn lights on

and off, vandalism is reduced (Wener et al., 1987). Similarly, Smith (1982) found that privacy needs among prisoners were related to a sense of control, depending on the extent of spatial restriction in the setting. In a hospital setting, lack of control is a major problem, and it can increase stress and affect wellness leading to depression passivity, elevated blood pressure, and reduced immune system functioning (Ulrich, 1991). Confusing wayfinding cues, lack of privacy, noise, lighting, lack of personal control over television, and lack of a view out a window are some of the factors, according to Ulrich (1991) that contribute to a loss of sense of control in hospitals. For instance, lack of choice of program selection creates more stress than does not having the option of TV at all. Following the work and reasoning of Devlin (2010), in work offices, lack of control can be manifested through noise, which plays a significant role in productivity and job satisfaction. Uncontrollable noise is more harmful than is continuous noise, and speech is more harmful than sounds without content in terms of efficiency. Similarly, lack of control over lighting, temperature, and poor air quality in offices is associated with stress, poor productivity, and high depression and anxiety scores (Devlin, 2010).

In contrast, perceived control is associated with a lower level of psychological distress than is the lack of such control (Rosenthal & Wilson, 2008; Schmidt, 1983). Such control can reduce depression, anxiety, alcoholism, and paranoia (Mirowsky & Ross 1983; Seeman, Seeman, & Budros 1988). Sense of control is reported to improve performance and achievement in school and on the job (Mirowsky & Ross, 1990). Along these lines, Glass and Singer (1972) report that individuals who have some perception of control over loud noises, electric shock, or frustrating bureaucracies perform better on measures of frustration tolerance and attention to detail compared to those subjects who had no perception of control, even though none of the subjects with perceived control ever actually escaped the environmental stressors. Uncontrollable

neighborhoods also undermine the sense of personal control and are found to be subjectively alienating among the residents who live there (Ross, 2011; Ross & Mirowsky, 2009). Research shows that social support and sense of personal control provide protective functions against community violence and distress (Rosenthal & Wilson, 2008). Social support is the individual's perception of having others who care and will help if needed; it is positively correlated with sense of control (Ross, 2011). Emotional social support reduces exposure to community violence and thereby reduces psychological distress; individuals who are exposed to community violence are better off if they have emotional social support than when social support is absent (Rosenthal & Wilson, 2008).

Gormley and Aiello (1982) indicate that the perception of crowding and control over the social interaction can be influenced by the nature of interpersonal relationships among students who share rooms; tripled residents who have negative interpersonal relationships with their roommates report being more bothered by crowding, than do doubled residents who express negativity towards their roommate. Students who do not get along with their roommates are less satisfied with their residence hall rooms and desire more privacy than are students who are compatible with their roommates. It is possible that positive roommate relationships in a residence hall environment can enhance individuals' sense of control over their social interactions and reduce perceptions of crowding (Kaya & Erkip, 2001). Similarly, Baum, Harpin, and Aiello (1975) suggest that members of cohesive groups feel less crowded than do those who are not members of cohesive groups in high-density dormitories. Further, Baum and Valins (1975) report that those with higher levels of perceived crowding are less willing to participate in local residential groups, and are less able to reach group consensus compared to those with lower levels of perceived crowding. Also, on crowded floors, small groups are less likely to form;

residents living there feel less successful in making friends or forming small groups on their floor, compared to those who do not live on crowded floors (Baum & Davis, 1980). It is not a surprise then that students living in high-density residence halls are less willing to help others than are those living in residence halls with lower density (Bickman et al., 1973). Thus, literature suggests that problems related to the regulation of contact with neighbors may inhibit group development and that residential design that facilitates group formation could be beneficial in reducing the probability that crowding will be experienced.

Sense of Community

Related to positive social interaction is sense of community, defined as “a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together” (McMillan & Chavis, 1986, p. 9). Sense of community is a phrase used to characterize the relationship between the individual and the social structure, and it can have a catalytic effect on participation within the community by affecting the perception of the environment, social relations, and one’s perceived control (Chavis & Wandersman, 1990). Participation in community events is seen as strictly linked to the sense of belonging to a community (Sarason, 1974), and community development process stimulates opportunities for membership, influence, mutual needs, and shared emotional ties and support (McMillan & Chavis, 1986). The stronger the sense of community, the more influence the members will feel they have on their immediate environment (McMillan & Chavis, 1986). Involvement in neighboring activities, such as residents' associations, street parties, community action groups, welcome evenings, and mothers' groups for instance, as well as school or work activities, is positively associated with sense of community (Francis, Giles-Corti, Wood, & Knuiman, 2012). Along these lines, Glynn (1981)

reports a positive relationship between sense of community and the ability to function competently in the community.

Research also suggests that the presence of high quality public spaces in local neighborhoods, regardless of whether or not they are frequently used, may be important for enhancing sense of community among residents. Sense of community is positively associated with subjective quality of parks, community shops, and schools, and is negatively associated with the subjective distance to the closest park and school, as well as to crime (Francis et al., 2012). Public spaces, such as parks and piazzas, are an element of the built environment that may foster sense of community by facilitating chance encounters between neighbors (Talen, 2000). A direct relationship is also found between sense of community and residents' use of natural and semi-developed areas, such as playgrounds and ball fields (Kearney, 2006). Other research indicates that the use of green outdoor common spaces, as well as just having a view of nature from home may predict both the strength of neighborhood social ties and the sense of community (Kearney, 2006; Kweon, Sullivan, & Wiley, 1998). Similarly, Nasar and Julian (1995) report that an easy access to common outdoor green space increases sense of community, and Kim and Kaplan (2004) report that with more natural features and shared spaces than traditional developments, new urbanist developments promote a greater sense of community. New urbanist developments are those in which the spatial layout of the neighborhoods promotes a sense of community through the use of shared semi-public spaces, such as sidewalks, and narrow setbacks from the street. Walking is thus encouraged, bringing residents into contact with one another.

Sense of community has been associated with smaller population size (Wilson & Baldassare, 1996); by decreasing group size, local group formation can be facilitated and most of

the control-relevant problems associated with crowding can be mitigated (Baum & Davis, 1980). Sense of community has also been associated with smaller residence hall size. Residence hall size is positively correlated to vandalism (Brown & Devlin, 2003), and those students living in larger residence halls find others to be less respectful of shared space and report a lower sense of community compared to those in smaller residence halls (Devlin et al., 2008). Other research on the effects of the built environment's features on the sense of community indicates that residents of low-rise residence halls are more satisfied and establish more dormitory-based friendships than do residents of high-rise residence halls (Holahan & Wilcox, 1978). Similarly, McCarthy and Saegert (1978) demonstrate that living in a high-rise building may lead to a greater feeling of crowding and other negative attitudes such as less perceived control, safety, privacy, building satisfaction, and lower quality of relationships with other residents than does living in a low-rise building. Lower sense of community can also be observed in residence halls that are organized around clusters or suites as opposed to corridor-based residence halls (Devlin et al., 2008; Hill, Shaw, & Devlin, 1999). Together with the lower scores on the sense of community measurement scale, Devlin et al. (2008) also report that students living in cluster-based residence hall kept a significantly smaller percentage of their doors open, compared to students living in corridor-based dormitories and that Housefellows (i.e., resident advisers) in the cluster-based residence hall were judged less effective in promoting a sense of community, compared to those in the corridor-based residence halls (Devlin et al., 2008). These findings may be due to the fact that not all pods/clusters are created equal; some pods for instance cut off residents efficiently with their own bathrooms, reducing the need to meet others.

Academic Achievement

The integration of students into the campus environment may influence academic achievement, defined as prominence of academic accomplishments and concerns; involved students tend to perform better academically than do uninvolved ones (Astin, 1984). The leading measures used to predict college academic achievement are high school GPA, class rank, and standardized test scores; however, Zheng, Saunders, Shelley, and Whalen (2002) found that students who declared majors in education or family and consumer science may be more motivated to perform well academically compared to those who selected other majors. The authors speculate and attribute this finding to the fact that students who select these majors may quickly adjust to the academic environment because their majors are aligned with the academic culture of the institution. The authors also report that membership in a learning community is a strong predictor of academic achievement.

Celant (2013) suggests that peer effects are a significant determinant of performance, and that they identify explanatory aspects of individual achievement, implying that academic achievement may not only be affected by personal and demographic features, but also by the effects related to the surrounding environment and to the individuals with whom a person interacts. Similarly, it is suggested that the contextual effect on students' achievement is not measured by the individual variables observed in the peers, but by peers' achievement itself; if a school class has a high performance, all its members are pulled upward, and vice versa, if a class is weak, even the achievement of the best students tends to decrease (Schneeweis & Winter-Ebmer, 2007). Literature also suggests that student living groups may have differential impact on freshman academic performance from what is predicted from their high school achievement and college entrance exam scores. Schragger (1986) compared Greek and non-Greek units and found

that they have substantially different social environments; Greek living groups, compared to non-Greek living groups, are characterized by higher involvement – the degree of commitment to the house and residents and amount of interaction and feeling in the house; higher emotional support – extent of manifest concern for others in the house and efforts to aid one another with academic and personal problems, as well as emphasis on open and honest communications; and higher academic achievement – extent to which strictly classroom and academic accomplishments and concerns are prominent in the house (all subscales from the University Residence Environment Scale; URES, developed by Moos, 1974). These results may be explained by collective orientation, sense of community, and inhibition of independent behavior that deviates from group norms, which are the characteristics of Greek communities. Others suggest that students' grade performance during college is related to their roommate's pre-college drinking behavior (Kremer & Levy, 2008).

Eggens et al. (2008) suggest that the more network members a student has, the lower the odds of delayed diploma attainment, indicating that high network density prevents students from not attaining a diploma as students may experience positive peer pressure to act in a socially desirable way. Social support can influence students' performance through student motivation; perceived social and emotional support from parents, other family members and from peers is reported to be positively related to students' motivational outcomes (Kennedy et al., 1988; Wentzel, 1999). Furthermore, literature reports that students who do well in academic achievement report more positive achievement emotions than do those who perform less well (Zhao, Cai, & Chen, 2012).

Other Factors

Whereas student residence halls can be considered both semi-public and semi-private areas, a student residence hall room can be considered a primary territory for an individual or individuals who live there during the academic year; yet, students generally associate student housing with an institutional character. The possibility for personalization of private rooms, however, is valued in order to create a sense of home, and such personalization may reduce a sense of institutionalization (Thomsen, 2007). Large size, sterility, uniformity of materials and furnishings, and restrictions on personalization options contribute to the institutional quality of buildings, and this quality may contribute to the sense of powerlessness among users (Rivlin & Wolfe, 1975). It is assumed that the degree of 'hominess' of student housing influences residential satisfaction (Clapham, 2005). Hansen and Altman (1976) report that students who drop out of college decorate significantly less than do students who stay in college through the academic year, and that over time the amount of space occupied by decorations increases. Similarly, Vinsel et al. (1980) examined the personal identity function of territoriality through examining decorations used in dormitory rooms. They found that compared to those who stayed at the university, first year students who eventually dropped out over a year later had fewer and less effective privacy mechanisms, were less satisfied with the university life, and were less active in various campus events. Although dropouts tended to decorate their rooms more than 'stayins', their decorations showed less diversity and less commitment to the university setting, and reflected attachments to their hometowns, such as high school mementos and photographs of high school scenes.

Other studies demonstrate the importance of room flexibility, which is defined as the degree to which furniture in a room can be rearranged, and report that flexible residence hall

room design encourages interpersonal interaction and is associated with more frequent room use (High & Sundstrom, 1977). Differences between rooms located on different floors in student residence halls can also be observed. Kaya and Erkip (2001) report that residents on the highest floor of the residence hall building perceive their rooms as larger than do residents of the lowest floor, demonstrating that perceived room size may vary with the floor height. Devlin et al. (1996) suggest that the higher the floor, the greater the degree of daily sunlight. They report that the degree of daily sunlight is positively correlated with the satisfaction with the view from the dorm room. Further, they suggest that the more nature one is able to view from a room window, the more satisfaction one has.

Studies on perceived room size may also vary with income; the higher the reported family income, the less space the dorm room is judged to have within respect to the student's room at home (Devlin et al., 2008). In the case of residence hall size, smaller is generally better (Brown & Devlin, 2003; Devlin, 2010; Devlin et al., 2008); however, in the case of room size, bigger might be better. When room size is perceived as larger, the feeling of privacy increases, and students feel less crowded and are more satisfied with their rooms than when room size is perceived as smaller (Kaya & Erkip, 2001). Baum and Davis (1980) report that perceived control seems not to have a major impact on evaluations of the size or the ambience of the setting; however, others report that people standing in front of the control panel in an elevator see the elevator as larger and feel less crowded than do subjects in the opposite position (Rodin, Solomon, & Metcalf, 1978).

Building design has the potential to cause stress and eventually affect human health. When the environment fits well with the functions that are to be performed there, the environment is manageable (Sherrod & Cohen, 1979), and this relationship has important

implications for human wellbeing. In terms of student residence halls and more specifically, student residence rooms, it may be important to create and provide environments that minimize stress and optimize student wellbeing.

Present Study

The present study focused on aspects of the built environment and its effect on student residents. Specifically, a single-bed residence hall room was used as a primary territory of the built environment to study these effects. In this setting, the principles of territorial functioning, as well as privacy, are supported and maximized compared to other living arrangements. The researcher focused on the effect of different room amenities and social restrictions on perceived control, sense of community, student relationships, and academic achievement. To the researcher's knowledge, no previous research that resembles the present study has been conducted.

The researcher hypothesized the following:

H1: In this study control is specifically examined from the perspective of environmental psychology, based on Evans and McCoy's (1998) definition of control, stating that it is the ability to either alter the physical environment or regulate exposure to one's surroundings. It was hypothesized that compared to those in other conditions, those in the luxurious amenities condition would have higher perceived control because it may be associated with temperature control (AC controllable by resident), which is associated with higher sense of control (Devlin, 2010; Wener et al., 1987) than would those in the other two conditions (nice; necessary). Also, this condition includes the view to nature; given that nature has a positive effect on wellbeing (Kaplan, 1995; Ulrich et al., 1991), it may have a positive effect on perceived control.

H2: Based on findings from Clapham (2005), Evans and Cohen (1987), Glass and Singer, (1972), Hansen and Altman (1976), Rivlin and Wolfe (1975), and Thomsen (2007) indicating that personalization of territories can have beneficial effects, it was hypothesized that those who are restricted in personalizing their rooms by rules would report less perceived control than would those who are not restricted by the rules to do so.

H3: Based on findings that green areas can increase the sense of community (Kearney, 2006; Kim & Kaplan, 2004; Kweon, Sullivan, & Wiley, 1998; Nasar & Julian, 1995), it was hypothesized that participants in the luxurious condition, providing a view to nature, would have higher sense of community scores compared to those in other conditions.

H4: Based on findings that sense of control is negatively related to crowding (Baum & Davis, 1980; Schmidt & Keating, 1979; Sherrod & Cohen, 1979), that sense of community is negatively related to crowding (Baum, Harpin, & Aiello, 1975; Kaya & Erkip, 2001), and that control is positively related to sense of community (Geis & Ross, 1998; Ross, 2011; Ross & Mirowsky, 2009), it was hypothesized that sense of community and sense of control would be positively associated.

H5: Building on H4, and based on the finding that sense of community was positively related to group functioning and involvement (Francis et al., 2012; Glynn, 1981; McMillan & Chavis, 1986), it was hypothesized that both sense of community and sense of control would be positively related to student relationships.

H6: Based on the findings from Astin (1984), Celant (2013), Eggens et al. (2008), Kennedy et al. (1988), Schrager (1986), and Wentzel (1999), it was hypothesized that academic achievement scores would be positively related to sense of community and student relationships.

Building on H4 and H5, it was hypothesized that sense of control would be positively related to academic achievement.

Method

Research design

In a 3 (room amenities: necessary, nice, luxurious) x 2 (rules: able to change the physical environment, not able to change the physical environment) between subjects experimental design, participants were randomly assigned to one of the conditions.

Participants

A total of 118 students (25 men, 92 women, 1 not specified) participated in the present study. The majority of the participants were Caucasian/White (73.7 %), followed by Hispanics (9.3 %), Asians (5.1 %), African Americans (4.2 %), those of other races (2.6), and those who did not indicate their race (5.1 %). According to class year, there were 42 freshman, 35 sophomores, 8 juniors, 31 seniors, and 2 who did not specify their class year. The participants were recruited from Connecticut College introductory psychology courses, and via the Connecticut College Psychology Facebook page. Participants from the introductory courses received course credit. On average, participants had the experience of living 3.14 years in a student residence hall setting.

Materials

Scenario

The same basic scenario was presented to each individual asking the student to imagine being assigned to a student residence hall room such as the one presented in the layout.

Depending on the condition, different texts indicating different room amenities and rules were presented to the participant.

Room Layout

For the purpose of this study, a single dorm room layout, containing a bed and a closet, was created to be presented to each participant (see Figure 1).

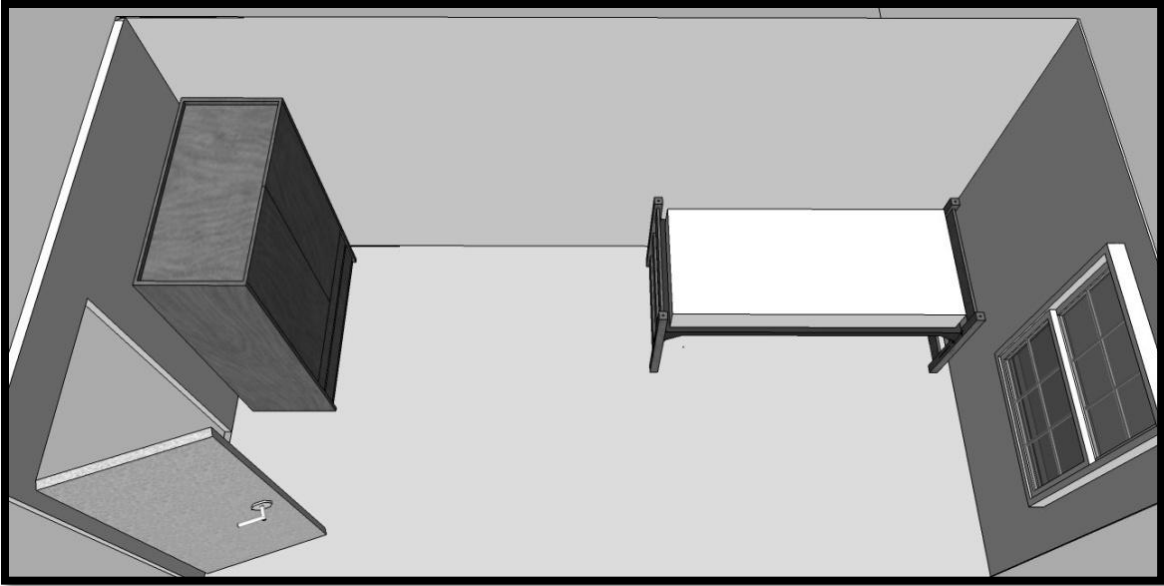


Figure 1. *Residence hall room layout*

Room amenities and rules

Following the room layout there was a text description with items relating to room amenities and rules expected to be followed while residing in the room. There were three room amenities conditions: necessary, nice, and luxurious (see Table 1). There was also another variable dealing with rules regarding changing the physical environment (see Table 2). The room amenities conditions were determined by first conducting a focus group interview and after a pilot study to receive information regarding what room items are viewed as 1) absolutely necessary, 2) not absolutely necessary but nice, and 3) would be luxurious to have. The items presented in the pilot were influenced by a focus group interview conducted with six student residence hall residents (four men and two women) at the University of Cagliari, Italy during the summer of 2012. Participants in this activity were asked to talk about four things. First, they were asked to talk about what items in their rooms they consider to be necessary, followed by what items they consider to be luxurious. Afterwards, they were asked to talk about what items they did not consider as important at first, but found important during their accommodation in the student residence hall room. Finally, they were asked to talk about what room amenities would be included in their ideal student residence hall room. In the discussion, items such as bed, desk, chair, closet, reading lamp, window, air conditioner, Ethernet/wireless connection, refrigerator, etc. were recorded. These items, together with some other items, such as view to nature, which the researcher found important to include as a result of literature review, were presented to participants of the pilot study conducted at the University of Stockholm, Sweden during the fall semester of 2012. In this pilot study 12 participants (6 Swedish students and 6 American students) grouped the room amenities items into three possible categories: 1) absolutely necessary, 2) nice but not absolutely necessary, and 3) would be luxurious to have.

Based on the frequency of support from the pilot study, as well as based on what the researcher determined from the literature to best illustrate the concept, room amenities items were placed in conditions of the present study: necessary, nice, and luxurious.

Table 1

Room Amenities Conditions

CONDITION	ROOM AMENITIES
Necessary	<ul style="list-style-type: none">• Desk• Chair• Ethernet/wireless• Window to open
Nice	<ul style="list-style-type: none">• Dresser• Book shelf• Reading lamp• Bedside table
Luxurious	<ul style="list-style-type: none">• AC controlled by resident• Fridge/freezer• 2 windows• View to nature

Table 2

Rules Conditions

CONDITION	RULES
Changing the physical environment	<ul style="list-style-type: none">• Painting of walls is not allowed• Attaching things on walls (such as taping, nailing and pinning) is not allowed• Removing the provided furniture from the room is not allowed

Perceived Control

To measure perceived control, items were adapted from scales used in other studies (Clark, 2001; Lee & Brand, 2005), and reworded to relate to residence hall rooms, changing for, instance, work area to dorm room. Also, after the pilot testing of the survey it was clear to the researcher that the present tense in which the items on the questionnaire were presented was confusing for participants who are doing an “imagine if” scenario. Therefore, verb tenses were changed to reflect this (e.g., “I could adjust, re-arrange, and re-organize my furniture in my dorm room as needed”). One of Clark’s (2001) items was changed from “I determine where I place my time and energies at work” to “I could determine where I place my belongings in my dorm room.” There were 12 items in the new Likert scale, ranging from 1, strongly disagree, to 5, strongly agree. Lee and Brand (2005) report a Cronbach’s alpha of .71, whereas Clark (2001) reports a Cronbach’s alpha of .83. The revised scale in the present study had a Cronbach’s alpha of .88, indicating high reliability.

Sense of Community

To measure sense of community, a short, revised version of the Sense of Community Index (SCI) developed by Chavis, Hogge, McMillan, and Wandersman (1986) was used. This revised scale was also used in the study by Devlin et al. (2008) in which the word “dorm” was substituted for the word “block,” and 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 their study. In addition, the wording of the questions in the present study was changed so that it measures expected/imagined sense of community. For instance, “people in this dorm do not share the same values” was changed to “people in this dorm would not share the same values.” Devlin et al. (2008) report a Cronbach’s

alpha of .745 for their revised scale. Similarly, the present study had a Cronbach's alpha of .73 for the revised scale.

Student Relationships and Academic Achievement

To measure student relationships and academic achievement, subscales of the University Residence Environment Scale (URES), developed by Moos and Gerst (1974) were used. Specifically, the Relationship dimension consisting of the Involvement and Emotional Support factors was used to measure student relationships, and the Academic Achievement factor was used to measure academic achievement. Again, the verb tenses have been changed to reflect expected measurements. Literature reports high reliability of the subscale with a Cronbach's alpha of .82 (Devlin et al., 2008). In the present study, the Academic Achievement scale had a Cronbach's alpha of .69, and the Relationship dimension had a Cronbach's alpha of .88.

Procedure

The study was created online, using SurveyMonkey. Participants were mainly recruited from introductory psychology courses at Connecticut College by placing a sign-up sheet on a bulletin board in the psychology department building. The researcher also recruited participants by posting an online link to the survey on the Connecticut College Psychology Facebook group page, asking members to participate in the study. Upon accessing the survey, participants completed the informed consent (see Appendix A) and were informed that the experiment has a goal to examine perceptions of student residence hall rooms. A scenario (see Appendix B) was presented asking participants to imagine that they had moved into the residence hall room in which they would reside for the following school year. All participants were exposed to the same layout of the student residence hall room. Depending on the experimental condition, a text providing a different number of room amenities and rules was shown. Participants in all

conditions were asked to fill out the Sense of Control (see Appendix C), Sense of Community Index (see Appendix D), and Relationships and Academic Achievement (see Appendix E) questionnaires. After that, participants were asked to answer a question regarding their willingness to pay to stay in the room for an academic year, as well as how much money they would invest for personalization and furnishing of the room during their stay (see Appendix F), and to complete the demographics section (see Appendix F). Upon completing all of the questionnaires, participants were provided with the debriefing form (see Appendix G).

Results

To evaluate the hypotheses that those in the luxurious amenities condition would have higher perceived control than would those in other room types, that those who are restricted to personalize their room by rules would have perceived control than would those not restricted by rules, and to understand the effect of the type of room amenities and rules on the four major dependent variables: sense of control, sense of community, student relationships, and academic achievement, a 3(room amenities type) x 2 (rules) MANOVA was conducted. The analysis did not indicate a significant multivariate effect for type, Wilks's Lambda = .88, $F(8, 218) = 1.78$, $p = .08$, or for rules, Wilks's Lambda = .968, $F(4, 109) = 0.92$, $p = .46$. The interaction, however, was significant, Wilks's Lambda = .87, $F(8, 218) = 1.98$, $p = .048$.

For type of room amenities, univariate tests indicated a significant difference for sense of community, $F(2, 112) = 3.19$, $p = .045$, and a difference for sense of control $F(2, 112) = 3.06$, $p = .051$. No significant differences were observed for academic achievement ($p = .11$) or student relationships ($p = .69$). For sense of community, Tukey post hoc tests indicated a significant difference between the nice and the luxurious condition ($p = .04$); those in the luxurious condition had higher scores, indicating higher sense of community, than did those in the nice

condition. No significant differences were observed between the nice and the necessary condition ($p = .32$) and between the necessary and the luxurious condition ($p = .59$). For sense of control, no significant differences in the scores were observed between the necessary and the nice condition ($p = .98$), between the necessary and the luxurious condition ($p = .12$), and between the nice and the luxurious condition ($p = .08$).

In the case of the interaction effect between type and rules, univariate tests indicated a significant interaction effect for sense of control, $F(2, 112) = 3.84, p = .02$, and no significant differences for sense of community ($p = .47$), student relationships ($p = .08$), and academic achievement ($p = .76$). Simple effects tests indicated a significant difference for sense of control between rules and no rules in the nice condition, $F(2, 112) = 10.44, p < .001$; those in the no rules condition had a higher sense of control than did those in the rules condition. No significant differences regarding rules for the necessary ($F(2, 12) = 0.24$) and the luxurious condition ($F(2, 112) = 0.06$) were observed (see Table 3 for means and standard deviations).

Table 3

Means and (Standard Deviations) for Sense of Control, Sense of Community, Academic Achievement, and student Relationships in Different Rules and Type Conditions

	Type					
	<u>Necessary</u>		<u>Nice</u>		<u>Luxurious</u>	
	<i>n</i> = 38		<i>n</i> = 40		<i>n</i> = 40	
	Rules	No rules	Rules	No rules	Rules	No rules
	<i>n</i> = 19	<i>n</i> = 19	<i>n</i> = 19	<i>n</i> = 21	<i>n</i> = 19	<i>n</i> = 21
Sense of Control	43.47 (8.24)	42.32 (5.51)	38.68 (11.68)	46.14 (5.82)	45.84 (6.18)	46.43 (4.27)
Sense of Community	7.42 (2.87)	7.47 (2.04)	5.89 (3.10)	7.29 (2.74)	7.79 (2.27)	8.19 (1.69)
Academic Achievement	3.26 (1.10)	3.53 (1.02)	2.95 (1.31)	2.86 (1.28)	3.37 (0.96)	3.33 (1.06)
Student Relationships	4.79 (3.26)	3.42 (2.69)	3.05 (3.19)	4.38 (3.10)	3.68 (2.47)	4.86 (2.85)

Ranges of the scales are: sense of control (1 – 60), sense of community (1 – 11), academic achievement (1 – 4), and student relationships (1 – 8)

To evaluate the hypothesis that participants in the luxurious condition would have higher sense of community compared to those in the other conditions, a one-way (type of room amenities) multivariate analysis of variance was conducted across the three conditions on the Sense of Community Index, as well as four subscales of the Sense of Community Index (membership, influence, reinforcement of needs, and emotional connection). The results indicated that there was no significant multivariate effect for type of room amenities on the Sense of Community Total score or on the four Sense of Community subscale scores, Wilks's $\Lambda = .906$, $F(8,224) = 1.42$, $p = .19$.

A priori hypothesis argued for the examination of the univariate findings. Univariate findings indicated a significant difference for the Sense of Community Total, $F(2, 115) = 3.06$, $p = .05$, and for reinforcement of needs, $F(2, 115) = 3.35$, $p = .04$. No significant differences for membership, $F(2, 115) = 1.49$, $p = .23$, influence, $F(2, 115) = 1.56$, $p = .21$, and emotional connection, $F(2, 115) = 1.22$, $p = .30$ were observed.

Tukey post hoc tests indicated that those in the luxurious condition scored higher on the Sense of Community Index than did those in the nice condition ($p = .04$). No significant differences were observed between the necessary and the nice condition ($p = .32$) and between the necessary and the luxurious condition ($p = .59$). Similarly, Tukey post hoc tests indicated that those in the luxurious condition scored higher on the reinforcement of needs subscale than did those in the nice condition ($p = .04$). No significant differences were observed between the necessary and the nice condition ($p = .90$) and between the necessary and the luxurious condition ($p = .12$) (see Table 4 for means and standard deviations).

Table 4

Means and (Standard Deviations) of Four Subscales of Sense of Community Index for Each Room Amenities Type

	Type		
	<u>Necessary</u>	<u>Nice</u>	<u>Luxurious</u>
	<i>n</i> = 38	<i>n</i> = 40	<i>n</i> = 40
Membership	2.00 (1.14)	1.80 (1.81)	2.23 (0.97)
Influence	2.37 (0.97)	2.03 (1.12)	2.35 (0.80)
Reinforcement of Needs	1.79 (0.99)	1.70 (0.97)	2.20 (0.79)
Emotional Connection	1.29 (0.57)	1.10 (0.55)	1.23 (0.53)
Sense of Community Total	7.45 (2.46)	6.63 (2.97)	8.00 (1.97)

Ranges of the scales are: membership (0 – 3), influence (0 – 3), reinforcement of needs (0 – 3), and emotional connection (0 – 2)

To evaluate the hypotheses regarding positive associations of the dependent variables, Pearson's correlation analyses were conducted. The results indicated a significant positive relationship between the sense of community and sense of control, $r(108) = .40, p < .001$; sense of community and student relationships, $r(108) = .66, p < .001$; sense of control and student relationships, $r(108) = .33, p < .001$; sense of community and academic achievement, $r(108) = .32, p < .001$; sense of control and academic achievement, $r(108) = .22, p = .02$; and student relationships and academic achievement, $r(108) = .37, p < .001$.

To further understand the relationships in the data, a number of additional explanatory analyses were conducted. These analyses are presented below.

To examine the relationship between the experience of having shared a room while growing up at home, and room amenities type and rules on sense of control, academic achievement, student relationships, sense of community, and the four subscales of the sense of community measurement scale (membership, influence, reinforcement of needs, and emotional connection), a 2 (experience of having shared a room) x 3 (type of room amenities) x 2 (rules) multivariate analysis of variance was employed on the eight dependent variables. The analysis indicated a significant multivariate effect for type of room amenities, Wilks's Lambda = .77, $F(14, 200) = 2.05, p = .02$, and no significant multivariate effects for the experience of having shared a room while growing up ($p = .30$) and rules ($p = .59$) on the dependent variables. No significant multivariate interaction effects were observed.

Despite the lack of multivariate findings for sharing a room or not, univariate findings indicated a significant difference for reinforcement of needs, $F(1,106) = 3.99, p = .048$; those who shared the room growing up scored lower on the measure than did those who had their own room while growing up. No significant differences were observed for membership ($p = .92$),

influence ($p = .30$), emotional connection ($p = .91$), academic achievement ($p = .13$), sense of control ($p = .47$), sense of community total ($p = .26$), and student relationships ($p = .77$) (see Table 5 for means and standard deviations).

Similar to the findings of earlier analyses, in the case of type of room amenities, univariate findings indicated a significant difference for sense of control, $F(2,106) = 5.18$, $p = .01$, membership, $F(2,106) = 3.94$, $p = .02$, influence, $F(2,106) = 3.13$, $p = .048$, reinforcement of needs, $F(2,106) = 7.23$, $p = .001$, and sense of community total, $F(2,106) = 7.79$, $p = .001$. No significant differences were observed for academic achievement ($p = .17$), student relationships ($p = .37$), and emotional connection ($p = .12$). For reinforcement of needs, Tukey post hoc tests indicated a significant difference between the nice and the luxurious condition, $p = .03$; those in the luxurious condition scored higher on the reinforcement of needs measure than did those in the nice condition. No significant differences between the necessary and the nice condition ($p = .87$), and between the necessary and the luxurious condition ($p = .11$) were observed. For sense of control, Tukey post hoc tests indicated no significant differences between the necessary and the nice condition ($p = .98$), between the necessary and the luxurious condition ($p = .12$), and between the nice and luxurious condition ($p = .07$). Similarly, for membership, Tukey post hoc tests did not indicate significant differences between the necessary and the nice condition ($p = .69$), between the necessary and the luxurious condition ($p = .63$), and between the nice and the luxurious condition ($p = .19$). Finally, for sense of community total, Tukey post hoc tests indicated a significant difference between the nice and the luxurious condition ($p = .03$), indicating that those who were in the luxurious condition had a higher sense of community than those in the necessary condition. Similar to previous observations, no differences were observed

between the necessary and the luxurious condition ($p = .58$) or between the nice and necessary condition ($p = .29$).

Despite the lack of interaction effects at the multivariate level, there were a series of interaction effects at the univariate level. For sense of control, univariate findings indicated an interaction effect between the experience of having shared a room and type of room amenities, $F(2,106) = 4.16, p = .02$, and between type of room amenities and rules, $F(2, 106) = 3.04, p = .05$. An interaction effect between type of room amenities and the experience of having shared a room while growing up was also observed for membership, $F(2,106) = 3.53, p = .03$, reinforcement of needs, $F(2,106) = 3.87, p = .02$, and for sense of community total, $F(2, 106) = 4.83, p = .01$. Univariate findings did not indicate any other interaction effects.

For sense of control, simple effects tests indicated a significant difference between rules and no rules in the nice condition, $F(2,106) = 9.98, p < .001$; those without rules had higher sense of control scores than did those who had rules restricting the personalization of the room. No significant differences between rules and no rules in the necessary condition, $F(2,106) = 0.72$ and in the luxurious condition, $F(2,106) = 0.13$, were observed. Significant differences in the sense of control scores were also observed between those who had the experience of sharing a room while growing up and those who had their own rooms in the nice condition, $F(2, 106) = 7.54, p < .001$; those who had their own room while growing up scored higher on the measure than did those who shared a room growing up. At the $p = .05$ level of significance, no differences between the two different sharing experiences were observed in the necessary ($F(2,106) = 0.84$) and the luxurious condition ($F(2, 106) = 0.51$).

For the interaction effect between the type of room amenities and the experience of having shared a room while growing up, simple effects tests indicated a significant difference in

the membership scores between having the experience of sharing the room and not having this experience in the nice condition, $F(2, 106) = 4.32, p = .05$. Those who had their own rooms while growing up had higher scores compared to those who shared a room while growing up. At the $p = .05$ level of significance, no significant differences were observed in the necessary, $F(2, 106) = 2.11$, and the luxurious condition, $F(2, 106) = 0.96$. Similarly, simple effects tests indicated a significant difference in the reinforcement of needs scores between those who had the experience of sharing a room while growing up and those who had their own room in the nice condition, $F(2, 106) = 9.83, p < .001$; those who had their own room while growing up had higher scores than those who shared a room while growing up. No significant differences were observed in the necessary, $F(2, 106) = 1.14$ and the luxurious condition, $F(2, 106) = 0.62$. Simple effects also indicated that in the nice condition, those who had their own room while growing up had significantly higher sense of community scores than those who shared a room while growing up, $F(2, 106) = 10.39, p < .001$. No differences in sense of community scores were observed between those who had their own room and those who shared a room while growing up in the necessary ($F(2, 106) = 0.14$) or in the luxurious condition ($F(2, 106) = 0.46$) (see Table 5 for means and standard deviations).

Table 5

Means and (Standard Deviations) of Sense of Control, Academic Achievement, Student Relationships, Sense of Community, and Four Subscales of the Sense of Community Index

	Type											
	<u>Necessary</u>				<u>Nice</u>				<u>Luxurious</u>			
	<u>Shared Room</u>		<u>Own Room</u>		<u>Shared Room</u>		<u>Own Room</u>		<u>Shared Room</u>		<u>Own Room</u>	
	<i>n</i> = 12		<i>n</i> = 26		<i>n</i> = 9		<i>n</i> = 31		<i>n</i> = 11		<i>n</i> = 29	
	Rules	No Rules	Rules	No rules	Rules	No Rules	Rules	No Rules	Rules	No Rules	Rules	No Rules
	<i>n</i> = 4	<i>n</i> = 8	<i>n</i> = 15	<i>n</i> = 11	<i>n</i> = 5	<i>n</i> = 4	<i>n</i> = 14	<i>n</i> = 17	<i>n</i> = 4	<i>n</i> = 7	<i>n</i> = 15	<i>n</i> = 14
Sense of Control	46.00 (3.16)	43.13 (6.70)	42.80 (9.01)	41.73 (4.71)	32.80 (11.30)	40.50 (9.47)	40.79 (11.46)	47.47 (3.97)	46.50 (3.11)	48.29 (2.63)	45.67 (6.85)	45.50 (4.70)

(Table continued)

STUDENT RESIDENCE HALL ROOMS

Academic Achievement	2.75 (1.89)	3.25 (1.39)	3.40 (0.83)	3.73 (0.65)	3.00 (1.41)	2.25 (1.50)	2.93 (1.33)	3.00 (1.22)	3.25 (0.96)	3.14 (1.46)	3.40 (0.99)	3.43 (0.85)
Student Relationships	5.00 (3.56)	3.75 (2.71)	4.73 (3.31)	3.18 (2.79)	2.40 (2.61)	3.75 (2.50)	3.29 (3.43)	3.29 (3.43)	5.75 (2.87)	4.43 (3.15)	3.13 (2.13)	5.07 (2.79)
Membership	2.75 (0.50)	2.00 (1.31)	2.20 (0.94)	1.45 (1.29)	1.00 (1.00)	1.25 (1.26)	1.71 (1.20)	2.24 (1.09)	2.75 (0.50)	2.29 (0.95)	2.00 (1.07)	2.29 (0.99)
Influence	2.00 (1.41)	2.63 (0.52)	2.33 (1.11)	2.36 (0.92)	1.40 (1.52)	1.50 (1.29)	1.86 (1.23)	2.47 (0.72)	2.75 (0.50)	2.14 (0.69)	2.33 (0.82)	2.36 (0.93)
Reinforcement of Needs	1.25 (1.26)	1.86 (0.99)	1.60 (1.12)	2.18 (0.60)	1.00 (1.00)	0.75 (0.50)	1.79 (0.89)	2.06 (0.89)	2.50 (0.58)	2.29 (0.76)	1.87 (0.92)	2.43 (0.65)
Emotional Connection	1.50 (0.58)	1.25 (0.46)	1.27 (0.70)	1.27 (0.47)	0.80 (0.45)	1.00 (0.00)	1.14 (0.53)	1.18 (0.64)	1.50 (0.58)	1.14 (0.38)	1.13 (0.64)	1.29 (0.47)
Sense of Community	7.50 (3.11)	7.75 (1.67)	7.40 (2.92)	7.27 (2.33)	4.20 (2.39)	4.50 (2.65)	6.50 (3.18)	7.94 (2.38)	9.50 (1.73)	7.86 (1.86)	7.33 (2.23)	8.36 (1.65)

Ranges of the scales are: sense of control (1 – 60), academic achievement (0 – 4), student relationships (0 – 8), membership (0 – 3), influence (0 – 3), reinforcement of needs (0 – 3), and emotional connection (0 – 2)

To investigate the effect of type of room amenities and rules on willingness to pay to stay in the room for a year and how much money one would be willing to spend to furnish and personalize the room a MANOVA was conducted. The results indicated no multivariate effect for type of room amenities, Wilks's Lambda = .95, $F(4, 168) = 1.10$, $p = .36$, and no multivariate effect for rules, Wilks's Lambda = .96, $F(2, 84) = 1.82$, $p = .17$. No multivariate interaction effect was observed.

Despite the lack of multivariate findings, in case of rules, univariate findings indicated an effect, which approached significance, for the amount of money one would be willing to spend to furnish and personalize the dorm room, $F(1, 85) = 3.68$, $p = .058$; those in the rules conditions indicated a higher amount of money dollars ($M = 526.14$, $SD = 499.70$, $n = 47$) compared to those in the no rules condition ($M = 359.00$, $SD = 366.78$, $n = 44$). For willingness to pay to stay in the room for a year, no univariate effects for rules were observed, $F(1, 85) = 0.40$, $p = .84$. In case of type of room amenities, univariate findings indicated no significant differences for willingness to pay to stay in the room, $F(2, 85) = 0.53$, $p = .59$, and no significant differences for amount of money one would invest in furnishing and personalizing the room, $F(2, 85) = 1.56$, $p = .22$.

Another MANOVA was conducted to study the relationship of estimated annual family income and gender on willingness to pay to stay in the room and the amount of money one would be willing to pay to furnish and personalize the room. The results indicated no significant multivariate effects for both annual income, Wilks's Lambda = .88, $F(10, 160) = 1.15$, $p = .41$, and gender, Wilks's Lambda = .94, $F(2, 80) = 2.60$, $p = .08$; however, this multivariate effect for gender approached significance. The interaction effect was not significant.

Univariate findings, however, indicated a significant difference in the amount of money one would invest in furnishing and personalizing the room for gender, $F(1, 81) = 5.26, p = .02$; men were willing to invest more money in dollars ($M = 610.48, SD = 108.82, n = 18$) compared to women ($M = 377.95, SD = 54.14, n = 73$). Between gender, no differences were observed in the willingness to pay to stay in the room for a year, $F(1, 81) = 0.10, p = .76$. In case of income, no differences were observed for willingness to pay to stay in the room for a year $F(5, 81) = 1.13, p = .35$ or the amount of money one would invest in furnishing and personalizing the room, $F(5, 81) = 0.99, p = .43$. Income categories were: \$0 – 60,000, \$60,001 – 90,000, \$90,001 – 180,000, \$180,001 – 210,000, greater than \$210,000, and “do not know.”

Given that the number of male participants was much smaller than the number of female participants, 25 and 92 respectfully, men were excluded from the following analysis. A 3(type of room amenities) x 2(rules) MANOVA was employed on sense of control, sense of community, student relationships, and academic achievement. The results did not indicate a significant multivariate effect for type of room amenities, Wilks’s Lambda = .86, $F(8, 166) = 1.64, p = .12$ and for rules, Wilks’s Lambda = .94, $F(4, 83) = 1.41, p = .24$. The multivariate interaction effect between type of room amenities and rules was observed, Wilks’s Lambda = .84, $F(8, 166) = 1.96, p = .05$.

Despite the lack of multivariate findings, in the case of type of room amenities, univariate findings indicated a significant difference in sense of community, $F(2, 86) = 3.43, p = .04$, and no significant differences for sense of control, $F(2, 86) = 2.20, p = .12$, student relationships, $F(2, 86) = 0.75, p = .48$, and academic achievement, $F(2, 86) = 1.40, p = .25$. In the case of rules, univariate findings indicated a difference in sense of control, $F(1, 86) = 4.27, p = .04$; those who were not restricted by rules had a higher sense of control compared with those who were

restricted to change the physical aspect of their room by rules. No differences for rules were observed in sense of community, $F(1, 86) = 0.94, p = .34$, student relationships, $F(1, 86) = 0.01, p = .91$, and academic achievement, $F(1, 86) = 0.00, p = .96$.

Tukey post hoc tests indicated a significant difference in the sense of community scores between the nice and the luxurious condition ($p = .03$); those in the luxurious condition had higher scores on the Sense of Community Index compared to those in the nice condition. No differences were observed between the necessary and the luxurious condition ($p = .79$) and between the necessary and the nice condition ($p = .17$).

At the univariate level, significant interaction effects between type of room amenities and rules were observed for sense of control $F(2, 92) = 4.88, p = .01$, and for student relationships, $F(2, 92) = 3.68, p = .03$. An interaction effect, which approached significance, was observed for sense of community, $F(2, 92) = 2.88, p = .06$. Similar to previous analyses, simple effects tests indicated that in the nice condition, those not restricted by rules to personalize had significantly higher sense of control compared to those who were restricted by rules to personalize $F(2, 86) = 14.34, p < .001$. No differences between rules and no rules were observed in the necessary ($F(2, 86) = 0.26$) and in the luxurious condition ($F(2, 86) = 0.22$). Those in the necessary condition with rules reported significantly higher scores on the student relationships scale compared to those in the necessary condition without rules, $F(2, 86) = 4.27, p < .05$. No differences in student relationship scores were observed between those who were restricted by rules and those who were not restricted by rules to personalize the room in the nice condition ($F(2, 86) = 2.99$) and in the luxurious condition ($F(2, 86) = 0.13$) (see Table 6 for means and standard deviations).

Table 6

Means and (Standard Deviations) of Sense of Control, Sense of Community, Academic Achievement, and Student Relationships in Different Type Conditions without Male Participants

	Type					
	<u>Necessary</u>		<u>Nice</u>		<u>Luxurious</u>	
	<i>n</i> = 27		<i>n</i> = 32		<i>n</i> = 33	
	Rules	No rules	Rules	No rules	Rules	No rules
	<i>n</i> = 11	<i>n</i> = 16	<i>n</i> = 17	<i>n</i> = 15	<i>n</i> = 17	<i>n</i> = 16
Sense of Control	43.54 (9.92)	42.06 (5.89)	37.65 (11.64)	47.66 (3.75)	45.53 (6.42)	46.75 (4.16)
Sense of Community	8.36 (2.54)	7.25 (2.08)	5.59 (3.10)	7.60 (2.61)	7.82 (2.40)	8.43 (1.86)
Academic Achievement	3.36 (1.29)	3.50 (1.09)	2.82 (1.33)	3.07 (1.16)	3.47 (0.94)	3.12 (1.15)
Student Relationships	5.64 (3.26)	3.25 (2.86)	2.59 (3.02)	4.40 (3.18)	3.82 (2.57)	4.19 (2.90)

Ranges of the scales are: sense of control (1 – 60), sense of community (1 – 11), student relationships (1 – 8), and academic achievement (1 – 4)

Discussion

This study examined the effects of room amenities and social restrictions, regarding changing the physical environment of the dormitory room, on sense of control, sense of community, student relationships, and academic achievement. Six hypotheses were tested.

First, it was hypothesized that compared to those in other conditions, those in the luxurious amenities condition would score higher on the perceived control measure. Results indicated no support for the hypothesis, as no significant differences were observed between the necessary, the nice, and the luxurious condition. The scores on the Sense of Control scale do, however, suggest that those in the luxurious condition had a higher sense of perceived control compared to those in the other two conditions. Unfortunately, the number of participants was too small, decreasing the statistical power and the chances of observing significant results.

Second, it was hypothesized that those who were restricted in personalizing their rooms by rules would report less perceived control than would those not restricted by the rules to personalize. When data were analyzed using both men and women, the hypothesis was not supported; however, when only female participants were included, due to the small number of male participants, the results indicated that those who were not restricted by the rules to personalize had a higher sense of control. This finding suggests that rules restricting the personalization of the room, such as not allowing the painting of the walls, not allowing the attachment of things to walls by taping, nailing, or pinning, and not allowing residents to remove the provided furniture from the room, may diminish residents' sense of control. This finding relates to those of Clapham (2005), Evans and Cohen (1987), Glass and Singer, (1972), Hansen and Altman (1976), Rivlin and Wolfe (1975), and Thomsen (2007) indicating that personalization of territories and the ability to do so may increase perceived control.

Connecting the first two hypotheses, and analyzing the effects of room amenities and rules on sense of control, an interaction effect between the type of room amenities and rules was observed in the nice condition; those who were not restricted by the rules to personalize their rooms had a significantly higher sense of control compared to those who had rules restricting the personalization. In the other two conditions, the necessary and the luxurious, having rules or not having them had no effect on the sense of control scores. This pattern may imply that there is something about the room amenities in both of these conditions that may promote sense of control. Devlin (2010) and Wener et al. (1987) suggest that their ability to control temperature increases the sense of control. Similarly, Kaplan (1995) and Ulrich et al. (1991) suggest that a view to nature has a positive effect on wellbeing. It can be argued that the luxurious condition provides both of these aspects, with the AC controlled by the resident, providing the ability to control temperature, and with the window with a view to nature. The present study might suggest that these amenities might diminish the negative effect of rules on sense of control. Similarly, it may be argued that having a window that opens, as well as having an Ethernet/wireless access, provided in the necessary condition, can have a similar effect, diminishing the negative effect of restrictive rules on sense of control. Sense of control scores were virtually the same when there were no rules in the nice and the luxurious condition (refer to Table 2); however, when there were rules restricting personalization, sense of control scores dropped significantly in the nice condition. In addition to a bed and a closet, which all three conditions shared, the nice condition included a dresser, a book shelf, a reading lamp, and a bedside table. It may be argued that these items have little ability to promote a sense of control when the rules restricting the personalization of the room are introduced.

The third hypothesis predicted that participants in the luxurious condition would have higher sense of community scores compared to those in other conditions. The hypothesis was supported; those in the luxurious condition had significantly higher scores on the Sense of Community Index compared to those in the nice condition and compared to those in the necessary condition; however, this difference between the scores in the luxurious and the necessary condition was not significant at the .05 alpha level. When the Sense of Community Index was broken down into its four subscales (Membership, Influence, Reinforcement of Needs, and Emotional Connection), significant differences between the Reinforcement of Needs scores were observed between the luxurious and the nice condition; those in the luxurious condition scored higher, indicating a higher feeling of reward for participating in the community. As was the case for the Sense of Community Index, Reinforcement of Needs scores in the luxurious condition were also higher than those in the necessary condition; however, this difference was not significant at the customary alpha level. The other three subscale scores of the Sense of Community Index were not different across conditions. The finding that the amenities, one of them being a window with the view to nature in the luxurious condition, may promote a greater sense of community relates to previous literature, which suggests that the use of green areas, as well as a view to nature, can increase the sense of community (Kearney, 2006; Kim & Kaplan, 2004; Kweon et al., 1998; Nasar & Julian, 1995). This finding relates and adds to the finding that a view to nature from a residence hall room may be beneficial in students' well being (Devlin et al., 1996). At Connecticut College, for example, there are many instances of rooms that have views to parking lots, dining hall dumpsters, other buildings and walls, and even no views at all, as is the case of basement rooms. It may be hard to change the existing layouts of buildings and views that they provide, but providing adequate views, especially those to nature wherever

possible, may be an important consideration for future student residence hall construction. Even though the difference in the sense of community scores was not significant between the necessary and the nice condition, those in the necessary condition had a higher feeling of sense of community than did those in the nice condition. Looking into the amenities provided by the necessary condition, it may be inferred that the Internet access provided by the Ethernet/wireless connection promotes a sense of community as people can contact one another using online methods. One might refute this argument by stating that that many people today have smart phones, with fast Internet connections, giving them the ability to stay connected with others wherever they go; however, computer use and communication with others using personal computers might be considered important by people, and it should not be disregarded. Thus, the Internet access in the necessary condition might have a positive effect on the sense of community.

The fourth hypothesis predicted that sense of community and sense of control would be positively associated. The hypothesis was supported; Pearson correlation results indicated a significant positive association between the two variables. This finding is consistent with the previous literature that states that control is positively related to sense of community (Geis & Ross, 1998; Ross, 2011; Ross & Mirowsky, 2009).

The fifth hypothesis predicted that both sense of community and sense of control would be positively related to student relationships. The hypothesis was supported; Pearson correlation results indicated a significant positive difference between sense of control and student relationships, and between sense of community and student relationships. Previous literature indicates that sense of community is positively related to group functioning and involvement (Francis et al., 2012; Glynn, 1981; McMillan & Chavis, 1986). The finding that sense of control

and sense of community are related to student relationships is consistent with these findings. As is true of all findings that deal with correlation, causation cannot be assumed. Thus, the direction of the causality is unknown. It may, however, be beneficial to provide college student residents with living environments that promote both sense of control and sense of community in order to increase the quality of student relationships, categorized by a higher feeling of friendship and more open and honest communication.

Finally, it was hypothesized that academic achievement scores would be positively related to sense of community, sense of control, and student relationships. The hypothesis was supported; Pearson correlation indicated a significant positive relationship between sense of community and academic achievement, between sense of control and academic achievement, and between student relationships and academic achievement. These findings relate to those observed by Astin (1984), Celant (2013), Eggens et al. (2008), Kennedy et al. (1988), Schragger (1986), and Wentzel (1999), indicating that social support, sense of community, and student relationships have a positive effect on academic achievement. In this study, perceived control was also associated with academic achievement, indicating that those with higher sense of control expect greater academic outcomes than do those with a lower sense of control. For competitive colleges and universities, it is in the best interest to be categorized as places of high academic achievement. Prestigious college and university institutions have highly motivated students attend the school in the first place; however, as previous literature suggests, peer effects are prevalent in affecting academic achievement. In order for colleges to promote good learning environments, they intuitively need to employ good professors and provide good academic buildings and learning environments. This study may suggest that it may also be beneficial to provide students with residential environments that promote sense of control, as well as sense of

community and good relationship-building opportunities, as positive peer effects and social support may be effective in promoting higher aspirations and academic achievement.

The study included additional analyses beyond those needed to evaluate the six stated hypotheses. The effect of having shared a room or not having shared a room while growing up was also evaluated. Again, the nice condition differed compared to the luxurious and the necessary condition; there was an interaction effect between having shared a room while growing up and type of room amenities in the nice condition, and this interaction was not observed in other conditions. Those who shared a room while growing up indicated a lower sense of control than did those who had their own room while growing up. Similarly, those who had their own room while growing up indicated a higher sense of community than did those who shared a room while growing up. This pattern may be due to the fact that the room presented in the layout was a single room. Therefore, those who had their own room while growing up were used to having their own space, and thus their sense of control and sense of community in an environment like that of the single room in the layout is optimized compared to those who shared a room while growing up. Those who shared a room while growing up might be used to sharing a room and thus experience a lower sense of community and a lower sense of control compared to those who had their own room while growing up. Interestingly, this difference is only observed in the nice condition; in the luxurious and in the necessary conditions, having shared a room while growing up or having one's own room while growing up did not make a difference for sense of control and sense of community scores. As noted previously, the nice condition might not provide the room amenities that promote sense of control and sense of community, diminishing the effects of having shared a room on sense of community and sense of control,

whereas the luxurious and the necessary conditions may provide room amenities that promote a sense of community and a sense of control.

Another two aspects that were looked into in this study were the willingness to pay to stay in the room for an academic year and the willingness to pay to furnish and personalize the room during one's stay in it. The results indicated that there were no differences in the willingness to pay to stay in the room across conditions for type and rules; however, those who were restricted to personalize the room by rules indicated that they would be willing to spend more money to furnish and personalize the room than were those who were not restricted in that way. The finding that those who are restricted to personalize their rooms by rules are willing to pay more money to personalize and furnish the room than are those who are not restricted by rules to personalize might be counterintuitive upon first consideration, as rules provide restrictions regarding the personalization of the room. For instance, nothing can be attached to walls. However, those who had rules restricting the personalization, as noted earlier, had a lower sense of control compared to those who were not restricted by the rules to personalize. To compensate for the lack of control, these individuals, who are prevented by rules from personalizing their rooms, might attempt to spend more money on furniture other than wall decorations that would personalize their living environment and increase their sense of control. Decorating walls with pictures is found to be effective in personalizing environments (Hansen & Altman, 1976; Vinsel et al., 1980), and this method of personalization, including photographs and posters, is a lot less expensive than buying furniture. The present study may suggest that those who are restricted from personalizing their walls might be willing to buy more expensive furniture in order to personalize their living environment, as they are unable to personalize via the less expensive wall method. The results also indicate that men are willing to spend more

money to personalize than women are. The researcher speculates and suggests that this may be due to the fact that men might have different items in mind for personalization, and that these items might be more expensive compared to those that women would buy. The researcher also speculates that it may be possible that women tend to come to school with more furniture than men do, suggesting that they need to buy a smaller number of items and spend less money on new furniture than men do.

The results of the study also suggest that in the necessary condition, compared to those who were not restricted by the rules to personalize, those who were restricted by the rules to personalize their rooms had higher scores on the student relationships dimension, indicating a higher sense of interaction and friendship in the residence hall. This finding may suggest that those in the necessary condition, with the rules restricting their ability to personalize the room, might spend less time socializing with their friends in their rooms. The necessary condition has basic room amenities items, such as a chair, a desk, Internet access and a window to open in addition to a bed and a closet, found in the other two conditions. These items, together with the rules restricting the personalization of the room, may promote a different approach to room use compared to that of the other conditions. It may be possible that residents of this basic room would spend a minimal amount of time in their rooms, using it for activities such as sleep and studying, spending more time socializing outside the room. However, these are just researcher's speculations.

Summary and Recommendations

The present study indicates that different room amenities and rules can have an effect on student residents' sense of control, sense of community, and student relationships. In addition,

these may have an indirect effect on academic achievement, as academic achievement is found to be positively associated with sense of control, sense of community, and student relationships.

The findings of the present study suggest it may be beneficial for institutions to provide such living arrangements that best promote sense of control and sense of community. Both sense of community and sense of control may have a positive influence on student relationships, indicating a higher sense of friendship. These positive relationships and friendships may further influence collective academic achievement through peer effects and social support, increasing the overall academic success of the college. Furthermore, given that sense of control can have positive effects on human wellbeing, and because it is well known that students experience high levels of stress during their college careers, providing environments that promote sense of control may prove to have a positive influence not only on individuals' health, wellbeing, and academic achievement, but also on the institution's reputation as a whole.

Limitations

The fact that the hypotheses stated in this study were generally supported, as well as the fact that other findings, which were not initially hypothesized were observed, make the present study valuable in advancing the current literature; however, the study did have a number of limitations that should be addressed in future research.

One of the major limitations of the study was the relatively small number of participants for the number of conditions. This issue made some of the analyses impossible to conduct. For instance, a factorial multivariate analysis of variance studying the effects of type, rules, and gender on any of the dependent variables was impossible to conduct due to the low number of participants provided in each cell. Also, the small number of participants decreased the statistical power, lowering the chances of observing significant differences. In addition to this issue, the

number of male participants was too low; there were 92 women and only 25 men in the study. Other issues included the design of the study; talking to participants after the study, the researcher learned that some of the participants experienced confusion looking at the picture of the layout and reading the text providing the information regarding the additional room amenities items. Visual displays of the differences between the three types of rooms might have worked better.

Future Research

Suggestions for future research include conducting a similar experimental design with a larger number of participants. This approach would increase the statistical power as well as chances of observing significant differences. Also, some changes in the room layout design could be made. For instance, the layout of the room could be designed so that it visually captures as many of the room amenities it provides as possible. For example, in addition to a bed and a closet, presented visually in the current study, the layout of the necessary condition might include visual representations of other items such as a desk and a chair. Also, in the present study, participants were asked to indicate how much money they would spend to personalize and furnish their dorm room, but they were not asked on what items they would spend their money. Looking at the type of items people would spend their money on when furnishing the room may be beneficial. This information would have the potential to further investigate the gender difference observed in this study, indicating that men are willing to spend more money on personalizing and furnishing their rooms, and answer why they are willing to pay more. The information regarding the types of items people would buy to personalize their rooms could also be beneficial for academic institutions, which would have the possibility of including these items in their residence hall rooms as defaults. Furthermore, future research should attempt to look into

all possible combinations of different conditions. Therefore, conditions should be created combining the necessary and the nice condition, the necessary and the luxurious condition, the nice and luxurious condition and the nice, the necessary, and the luxurious condition. Looking into all of these combinations may provide more information regarding what room amenities items, and what combinations of items best promote sense of control and sense of community. This information would give insight into the optimum student residence room environment that best promotes sense of control, sense of community, student relationships, and academic achievement.

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Appendix A: Informed Consent

I hereby consent to participate in Boris Jeremic's research on perceptions of residence hall rooms.

I understand that this research will involve completing a number of surveys provided by the experimenter.

While I understand that the direct benefits of this research to society are not known, I have been told that it will help researchers learn more about perceptions of residence hall rooms.

I understand that this study will take no more than 15 minutes to complete.

I have been told that there are no known risks or discomforts related to participating in this research.

I have been told that Boris Jeremic can be contacted by email: bjeric@conncoll.edu

I understand that I may decline to answer any questions as I see fit, and that I may withdraw from the study without penalty at any time.

I understand that all information will be identified with a code number and NOT my name.

I have been advised that I may contact the researcher who will answer any questions that I may have about the purposes and procedures of this study.

I understand that this study is not meant to gather information about specific individuals and that my responses will be combined with other participants' data for the purpose of statistical analyses.

I consent to publication of the study results as long as the identity of all participants is protected.

I understand that this research has been approved by the Connecticut College Human Subjects Institutional Review Board (IRB).

Concerns about any aspect of this study may be addressed to Professor Jason Nier, Chairperson of the Connecticut College IRB (janie@conncoll.edu).

I am at least 18 years of age, and I have read these explanations and assurances and voluntarily consent to participate in this research about student residence hall rooms.

By clicking here I signify that I agree to participate:

Appendix B: Scenario

Consider the following scenario:

You are assigned to live in a student residence hall room, such as the one presented in the layout, for an academic year.

-PRESENT LAYOUT-

In addition to the items presented in the layout the room also includes the following items:

-PRESENT ITEMS BASED ON ROOM AMENITIES CONDITION-

You are expected to follow the following rules during your stay in the student residence hall room:

-PRESENT RULES BASED ON RULES CONDITION-

Based on your perceptions of this room, please fill out the following:

-PRESENT QUESTIONNAIRES-

Appendix C: Sense of Control Scale

	Strongly disagree	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Strongly agree
1. I would determine the organization/appearance of my dorm room.	1	2	3	4	5
2. I could personalize my dorm room.	1	2	3	4	5
3. I could adjust, re-arrange, and re-organize my furniture in my dorm room as needed.	1	2	3	4	5
4. I could control the physical features of my dorm room.	1	2	3	4	5
5. There are choices I could make about the physical features of my dorm room.	1	2	3	4	5
6. I would be able to control my environment.	1	2	3	4	5
7. The college/university would have a complete control over my dorm room during my stay in it.	1	2	3	4	5
8. Others would direct my activities in my dorm room.	1	2	3	4	5
9. I could choose what I do in my dorm room.	1	2	3	4	5
10. I would be in charge of the activities in my dorm room.	1	2	3	4	5
11. I would determine where I place my belongings in my dorm room.	1	2	3	4	5
12. I would have a say in what goes on in my room.	1	2	3	4	5

Appendix D: Sense of Community Index

1. I think my dorm would be a good place for me to live.	T	F
2. People in this dorm would not share the same values.	T	F
3. My neighbors and I would want the same things from the dorm.	T	F
4. I would be able to recognize most of the people who live in my dorm.	T	F
5. I would feel at home in this dorm.	T	F
6. Very few of my neighbors would know me.	T	F
7. I would care about what my neighbors think of my actions.	T	F
8. I would have no influence over what this dorm is like.	T	F
9. If there were a problem in this dorm, people who live here would be able to get it solved.	T	F
10. It would be very important to me to live in this particular dorm.	T	F
11. People in this dorm would generally not get along with each other.	T	F

Appendix E: URES Subscales (Involvement, Emotional Support, Academic Achievement)

1. There would be a feeling of unity and cohesion in this residence hall/dorm.	T	F
2. People here would be concerned with helping and supporting one another.	T	F
3. People around here would hardly ever seem to be studying.	T	F
4. Very few things around here would arouse much excitement or interest.	T	F
5. Around here people would tend to hide their feelings from one another.	T	F
6. Around here studies would be secondary to most activities.	T	F
7. In this residence hall/dorm there would be a strong feeling of belongingness.	T	F
8. Trying to understand the feelings of others would be considered important by most people in this residence hall/dorm.	T	F
9. People here would work hard to get top grades.	T	F
10. Most people here would have a strong sense of loyalty toward the house.	T	F
11. People here would try to make others feel secure.	T	F
12. Most people here would consider studies as very important in college	T	F

Involvement is measured with items 1, 4, 7, 10; Emotional Support is measured with items 2, 5, 8, 11; Academic Achievement is measured with items 3, 6, 9, 12.

Appendix F: Willingness to Pay and Demographics

What is the maximum amount of money you would be willing to pay to live in a room like the one presented in the layout for an academic year?

*(values are in US dollars)

How much money would you invest on furnishing and personalizing this room during your stay?
_____ (please write an amount in US dollars)

Please give us some of your personal information:

1. Gender: _____
2. Age: _____
3. Race/Ethnicity: _____
4. Class year:
 - a) Freshman (1st year)
 - b) Sophomore (2nd year)
 - c) Junior (3rd year)
 - d) Senior (4th)
 - e) Other, please specify _____
5. Major: _____
6. Number of years you lived in a student dormitory (can include boarding school):
 - a. Less than one year
 - b. One year
 - c. Two years
 - d. Three years
 - e. Four years
 - f. More than four years
7. Do you currently live in a student dormitory?
 - a. Yes
 - b. No
8. With how many people are you currently sharing a room:
 - a. None
 - b. 1

- c. 2
 - d. 3
 - e. More than 3
9. Growing up, did you share a room or did you have your own room at home (circle one):
- a. Shared
 - b. Had my own room
10. If you shared the room,
- a. How many people did you share it with?
 - b. For how many years
 - c. How old were you?
11. Where do you currently live on campus/what dorm? _____
12. Estimated annual family income (circle one):
- a. \$0-30,000
 - b. \$30,001 – 60,000
 - c. \$60,001 – 90,000
 - d. \$90,001 – 120,000
 - e. 120,001 – 150,000
 - f. 150,001 – 180,000
 - g. 180,001 – 210,000
 - h. Greater than 210,000
 - i. Do not know

Appendix G: Debriefing Form

Thank you for participating in this research dealing with student residence hall rooms. In this research, we are looking into the effect of different room amenities and rules regarding room use on perceived control, sense of community, student relationships, and academic achievement. Participants in this study included students from Connecticut College as well as those from the University of Stockholm.

Previous research on perceived control has suggested that increasing patients' sense of control in hospitals may promote well being and make hospitalization experience easier to deal with (Ulrich, 1991). Similarly, increasing inmates' sense of control in correctional facilities, through giving inmates the ability to move chairs, control TV channels, control the temperature, and turn lights on and off, has been associated with decreased vandalism (Wener et al., 1987). Other research has looked into neighborhood settings and found that exposure to uncontrollable, negative events and conditions in the neighborhood, such as crime, noise, vandalism, graffiti, garbage, fights, and danger decrease sense of personal control (Geis & Ross 1998), leading to negative feelings of residents and their perceived powerlessness to live in a clean, safe environment free from threat, harassment, and danger (Ross, 2011).

The present research builds on previous research on perceived control in the environment and studies perceived control and its relation to sense of community, student relationships, and academic achievement. To the researcher's knowledge, no previous research has been done that resembles the present one.

If you are interested in this topic and want to read the literature in this area, feel free to contact Boris Jeremic (bjeric@conncoll.edu).

You can contact the chair of the IRB, Jason Nier (janie@conncoll.edu), if you have any questions or concerns about the manner in which this study was conducted.

Listed below are four sources you may want to consult to learn more about this topic:
Geis, K. J., & Ross C. E. (1998). A new look at urban alienation: The effect of neighborhood disorder on perceived powerlessness. *Social Psychology Quarterly*, 61, 232–246. doi: 10.2307/2787110

Ross C. E. (2011). Collective threat, trust, and sense of personal control. *Journal of Health and Social Behavior*, 52, 287–296. doi: 10.1177/0022146511404558

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Wener, R., Frazier, W., & Farbstein, J. (1987, June). Building better jails. *Psychology Today*, 21, 40-44, 48-49.