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The Impact of Residence Design on Freshman Outcomes: Dormitories Versus Suite-Style Residences

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ABSTRACT

This study was designed to measure affective, behavioural, and cognitive variables in a sample of 3159 first-year students, and to compare these variables by the type of residence building in which the student lived. Students living in suite-style buildings reported a greater sense of belonging, and higher activity levels than students living in dormitory-style buildings. Furthermore, sense of belonging was predicted by high extraversion and low conscientiousness. This suggests that introverted, conscientious students living in traditional dormitory-style buildings may be most at-risk of feeling "out-of-place" in residence.

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RÉSUMÉ

Cette étude a été crée pour évaluer les variables émotionnelles, comportementales, et cognitives dans une panel de 3159 étudiants dans leur première année d'université, et pour comparer ces variables par le type d'édifice de résidence dans laquelle les étudiantes vivaient. Etudiants vivant dans les immeubles de style suite ont rapporte un sens d'appartenance plus grand, et des niveaux plus élevées d'activité que celles qui vivait dans les immeubles de style foyer. En plus, un sens d'appartenance a été prédit par haute extraversion et des niveaux bas de conscience. Cela suggère que les étudiants introverties et consciencieux qui vivent dans les immeubles traditionnelles de style foyer seront peut-être les plus exposer à sentir « hors-de-place ».

INTRODUCTION

Predicting the academic, social, and personal success of students making the transition from secondary to post-secondary education is an important goal for educators, counselors, and institutional planners (e.g. Mathiasen, 1984). Although factors such as prior academic achievement (e.g. post-secondary entrance average) have been demonstrated to be of limited use in predicting university grades, personality variables such as extraversion and conscientiousness have been demonstrated to add uniquely to this prediction (Blickle, 1996; Shaughnessy, Stockard, Moore, & Siegel, 1994), as have environmental factors, such as living arrangements (Walker, 1935; Mathiasen, 1984; Blimling, 1989; Pascarella et al., 1993). In fact, in a study that examined personality factors and grades among first-year students, De Fruyt and Mervielde (1996) report that conscientiousness had a strong, positive association with grades (r = .35, p < .001). Further, conscientiousness has been shown to be an important predictor for institutional departure (Okun & Finch, 1998). Due to the fact that many students move away from home to attend university, the living arrangements of post-secondary students are of particular interest in studies examining the influence of personality on post-secondary achievement. Curiously, these variables are rarely assessed in concert.

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The connection between personality and adjustment to university was explored by Okun and Finch (1998) in a study that examined first-year students' scores on an inventory of the Big Five personality dimensions (agreeableness, conscientiousness, extraversion, neuroticism and openness to experience) and school persistence versus departure. These researchers report that conscientiousness exerted a direct effect on grades (r = .19, p < .001), institutional commitment (r = .29, p < .001), and institutional departure (r = -.16, p < .001). They also report that extraversion was positively related to organizational involvement (r = .15, p < .001), and indirectly through involvement, to social integration (r = .17, p < .001), and through social integration to institutional commitment (r=.41, p < .001).

Along similar lines, Gallagher (1990) examined how personality influences the appraisal of stressful academic events among first-year students. In short, when trying to predict which students would find a stressful academic event such as an exam a challenge or a threat, the author reports that people high on the personality dimension of extraversion are more likely to view a stressful event as a challenge (that is, a positive view), rather than a threat (the negative view). Taken together, then, these studies provide good evidence that personality, or at least conscientiousness and extraversion, are important factors to consider, for university administrators and planners who are trying to maximize student success. It may be more than just personality that influences students' experience and success at university.

The link between university residence environment and how people are influenced by it has been explored in depth by Moos (for example, Moos, 1979). His research examines environmental systems, which include physical settings and social climate, and personal systems, which includes personality, and the connection with student variables that include coping, adaptation, interests, and values. Moos makes a compelling case for the importance of research that thoroughly evaluates the social and environmental influences and interactions with students. He concludes, "Educational settings can and do make a difference in students' lives." (Moos, 1979, p. 273).

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In one of the earliest published studies designed to examine living arrangements and their effect on student success, Walker (1935) concluded that students living in residence halls experienced significantly greater success as compared with students living in a fraternity or private boarding house, in terms of grades, work completed, and participation in student activities. These effects have generally been replicated in more recent studies, with on-campus residence housing producing significantly better academic outcomes than off-campus student housing (Blimling, 1989). Given the current variety of residence styles, however, it is relevant to examine factors that influence the desirability of different types of on-campus housing.

Dormitory-style, or traditional, student residences refer to densely populated buildings featuring students sharing rooms with one or two others, rooms leading off one long, central corridor, and groups of about fifteen students sharing washroom and study lounge facilities on each floor of the building. Students meet in large lounges or recreation areas, and eat in cafeteria-style dining halls within the building. Alternatively, suite-style or apartment student residences offer self-contained apartments housing small groups of four students in private bedrooms, and sharing among themselves common lounge, bathroom and kitchen spaces. Dining halls may or may not be featured in these buildings. The differences between the two types of designs includes both physical elements such as the size of the shared and private spaces, supportive elements such as the number and proximity of residence staff, and the opportunities for residents spend time together and apart.

The mechanisms for assigning students to rooms or units in a particular building vary by institution and assignment is typically not random, but influenced by institutional policies and student preferences. At many universities, students are asked to produce a rank-ordered list to indicate their preference for room assignment, and assignments are done on a first-come, first-served basis. At other institutions, all students are put into a lottery system, and when their lottery number is drawn, a match is made based on their preferences and available rooms. Room assignment may also be influenced by academic achievement (e.g. students with very high incoming grades are assigned to particular buildings or floors)

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and special needs (e.g. students with dietary restrictions are assigned to buildings that feature units with cooking facilities). Whatever the particular process employed by a university to assign students to residence buildings, it may be stated that there are systematic variables that influence the assignment. In cases where students are invited to indicate building preference, they may be influenced by building variables such as the age and design of the structure or the proximity to classroom buildings.

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One salient residence design factor is crowdedness. Valins and Baum (1973) examined the psychological effects of living in "overloaded" social environments, and the detrimental effects of overcrowding. Comparing dormitory-style to suite-style residences, they reported that the interior architecture of the dormitory-style residence forces students into a detrimental level of peer interaction as compared with the suite-style residence. This increased peer interaction lead both to increased student stress, and to the development of negative stress-reducing behaviours. More recently, the role of stress in overcrowded university residences was examined in a study that evaluated on-campus housing quality and social relationships among more than 200 college students (Evans, Lepore, & Schroeder, 1996). Evans et al. (1996) demonstrated that as architectural depth (i.e. the number of spaces one must pass through to get from one room to another) increases, residents are less likely to become psychologically distressed, or to engage in social withdrawal. This suggests that we may regulate social interaction with features of the environment (e.g. doors), reducing the frequency with which we are required to minimize social interaction through the use of coping strategies. Conversely, Hill, Shaw and Devlin (1999) examined students' sense of community in suiteversus dormitory-style residences, and found that students living in the dormitory-style buildings exhibited a greater sense of community than did their counterparts living in a suite-style residence. These conflicting results only serve to emphasize the importance of examining psychological variables in conjunction with assessments of the physical space.

Along these lines, living in residence appears to have an indirect, rather than a direct, effect on student outcomes (Pike, Schroeder, & Berry, 1997), perhaps due to factors such as a sense of belonging and sense of community within the university community. First posited by Sarason

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(1974), the concept of psychological sense of community encompasses feelings of belongingness, interdependence, being needed, and identification with common values. According to McMillan and Chavis (1986), the 'sense of community' consists of three dimensions: territorial (i.e. physical space considerations), relational (i.e. physical interactions with other community members), and affective (i.e. evaluations of one's place in the community, including feelings of membership, emotional safety, and personal investment). These residence community dimensions have been proposed to have multiple connective points with student success, and a meta-analysis of the research (Blimling, 1989) indicated that social, personal, academic and physical variables may contribute to student success in a more-or-less equivalent fashion.

This sense of community, including the feelings of belongingness that are part of it, may be proposed to lead to increased peer interaction and better student outcomes within the university residence community. In fact, the idea that students living with other students will generally have better outcomes than students living with non-students, is the basis of much of the previous research (e.g. Pike et al., 1997; Whitt, Nora, Edison, Terenzini, & Pascarella, 1999). Whitt et al. (1999), for example, examined the relationship between peer interactions and cognitive outcomes during college at 23 postsecondary institutions, and reported that peer interactions were associated with greater cognitive outcomes at the end of each year of college enrolment. The researchers concluded that taking part in "educationally purposeful out-ofclass activities [has] important academic outcomes" (p. 72) and further, that the effect of peer interactions both in and out of class, "plays a particularly important role in cognitive development in the first year of college." (p. 72).

Examining the differences within groups of students provides valuable information as to the nature of these peer interactions. In a study that examined student residents' ratings of their residence halls, Allen and Maimone (1989) concluded that year of study was important in terms of both perceptions of, and satisfaction with, the residence experience.

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Specifically, first-year students rated themselves as feeling 'less involved', and 'less a part of the community' than did their upper-year counterparts. Perl and Trickett (1988), however, suggest that significant differences may exist within the first-year student group, with regards to 'personal coping style'. Students high in social exploration (those who prefer novelty and variety, and who seek out new experiences) possessed a greater awareness of campus resources and activities, had larger and more diverse social networks, had greater involvement in activities, and reported they would more likely access resources if they needed help when they were surveyed again, twelve weeks later. Using another descriptor for social exploration, Okun and Finch (1998) report that in their study of personality variables and institutional departure, students' self-reported levels of openness to experience was directly related to choosing to live in residence (r = .15, p < .001).

Keeping these factors in mind, the prediction of success, via affective, cognitive or behavioural student outcomes, may be a function of not only intra- and inter-personal variables, but also of the complex interaction between individuals, their peers in residence, and the type of shared residence accommodation. Shaughnessy et al. (1994) report that higher grades are associated with extraversion, and Perl and Trickett (1988) found that social exploration, which bears some resemblance to extraversion, is associated with feelings of social success. Although the design of the building seems to be an important factor (Hill, Shaw & Devlin, 1999; Valins & Baum, 1973), conflicting evidence exists regarding the influence of living in residence on student outcomes (Blimling, 1989). Examining a combination of personal and environmental factors such as the design of the building and personality variables with respect to affective (sense of community), behavioural (activities) and cognitive (academic success) outcomes for students seems to be the next logical step.

The current study was designed to measure differences among first year students living in residence on a university campus, in three broad domains, namely affective, behavioural and cognitive. Differences among students will be evaluated based on the type of residence building to which a student was assigned (i.e., traditional dormitory or suite style design), and relevant personality dimensions (i.e. extraversion and conscientiousness).

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METHOD

First year students living in on-campus housing accommodations were asked to complete a two-page survey addressing sense of belonging, the extent of extracurricular involvement, campus-related quality of life, and omnibus personality. A total of 3159 possible participants was broken down into a group of 2177 students living in one of three traditional, dormitory-style residences (70% of the total), while the remaining 30%, or 982, lived in one of the three suite-style residences.

The questionnaires were keyed to a unique student ID number to ensure that each student completed only one questionnaire, and to match grade information that became available later. The questionnaire was distributed over the course of a week, near the end of the first month of the academic year. The Research Ethics Board for the Review of Non-Medical Research Involving Human Subjects (NMREB) at The University of Western Ontario approved the research protocol used in this study.

The sense of belonging questionnaire was a 14-item measure, and included items such as "I really feel like I belong here" and "There is a real sense of community here". Each item was scored on a five point Likert scale ranging from 'Strongly Disagree' to 'Strongly Agree', and a student's "sense of belonging score" was computed as being the mean of his/her responses across all 14 items. The scale demonstrates high internal consistency, $\alpha = .92$. The complete text of the scale may be found in Lounsbury and Deneui (1995).

The activities questionnaire contained a list of 38 activities (both general and specific) that students might engage in on and around campus, and is adapted from the one employed by Lounsbury and Deneui (1995). This checklist is included as Appendix A. A student's "activity" score was computed as the number of checkmarks placed on the questionnaire.

The quality of life scale was a 15-item measure scored on a sevenpoint Likert scale ranging from 'Very Dissatisfied' to 'Very Satisfied.' This questionnaire assessed a student's satisfaction with aspects of campus life such as friends, social life, academic major, and academic average. A student's quality of life score was computed as the average of his/her

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responses to the items on the measure. The complete text of this scale is available from Lounsbury and Deneui (1995).

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The omnibus personality inventory consisted of 50 items drawn from the International Personality Item Pool (Goldberg, 1999), and was part of a list of items demonstrated to tap the "Big Five" personality dimensions (Goldberg, 1990). Five personality scores were computed for each participant, corresponding to the five factors of personality assessed by this measure: openness to experience ($\alpha = 0.84$), conscientiousness ($\alpha =$ 0.79), extraversion ($\alpha = 0.87$), agreeableness ($\alpha = 0.82$), and emotional stability ($\alpha = 0.86$).

RESULTS

The sample consisted of 909 questionnaire responses (159 students living in suite-style accommodations, and 750 students living in dorm-style accommodations). The response rate was, therefore, 28.8% overall, 16.2% for students living in suite-style accommodations, and 34.5% for students living in dormitory-style accommodations. Consent for disclosure of academic average was obtained from 531 students (50 students living in suite-style accommodations). Means and standard deviations (separated by type of residence) are presented in Table 1 for all variables evaluated in this study.

Wherever possible, student assignment to residence follows student preference. As it is possible that a student's choice of residence may be determined (at least in part) by personality factors, it is important to determine whether there were any significant differences between types of residence (suite versus dorm) for any of the five factors of personality. The five personality variables (extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience) were evaluated within a multivariate analysis of variance, to identify differences between residence types. The multivariate effect was not significant for this analysis, F(5,885)=0.830, and so a Bonferroni correction factor (i.e. univariate effects were conducted with a per-comparison alpha of 0.05/5 = 0.01) was employed for subsequent univariate analyses, in order to control for

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Table 1 Means (and standard deviations) for dependent variables					
`	Suite	Dorm	Total		
Sense of Belonging	3.98	3.77	3.81		
	(0.48)	(0.43)	(0.45)		
Activity Level	12.58	11.25	11.48		
	(5.44)	(5.39)	(5.42)		
Quality of Life	5.49	5.36	5.38		
	(0.85)	(0.80)	(0.81)		
Academic Average	68.06	68.98	68.89		
	(12.44)	(9.41)	(9.72)		
Extraversion	2.37	2.06	2.11		
	(1.71)	(1.75)	(1.75)		
Agreeableness	2.69	2.36	2.42		
	(1.92)	(1.98)	(1.97)		
Conscientiousness	2.34	2.06	2.11		
	(1.69)	(1.74)	(1.73)		
Emotional Stability	2.14	1.88	1.92		
	(1.55)	(1.57)	(1.57)		
Openness to Experience	2.45	2.15	2.20		
	(1.74)	(1.79)	(1.79)		

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multiple comparison bias (Hummel & Sligo, 1971). Although extraversion demonstrated a trend towards significance, t(889)=2.03, p=0.043, there were no significant differences between residence types for any of the personality dimensions.

The extent to which the community variables (sense of belonging, activity level, and quality of life) differed by residence type (suite versus dorm) was also assessed within a multivariate analysis of variance. The multivariate effect was significant for this analysis, F(3,902)=10.444, p<.001, suggesting that an optimally weighted composite of sense of belonging, activity level, and quality of life is significantly different

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between suite-style and dorm-style residences. More importantly, this significant multivariate effect suggests that it is reasonable to evaluate univariate analyses without employing a Bonferroni correction (Hummel & Sligo, 1971). There were statistically significant univariate results, for sense of belonging, t(904)=5.28, p<.001, and activity level, t(904)=2.78, p<.01. Students in suite-style residence buildings reported a higher sense of belonging (M = 3.98) than students in traditional dorm-style residence buildings (M = 3.77). There was no significant difference between residence types for quality of life, t(904)=1.79, p>.05.

To evaluate the academic effects of type of residence accommodation, an independent-samples t-test was computed to evaluate the extent to which academic average differed between residence types. No significant difference was observed between residence types.

Finally, a stepwise multiple regression analysis was undertaken to determine the best predictors of sense of belonging. Of the eight independent variables entered into the analysis (the five factors of personality, residence type, activity level, and academic average), four demonstrated significant unique contributions to sense of belonging. Overall, this prediction equation explained 10.4% of the variability in sense of belonging, R^2_{adj} =0.104, F(4,518)=16.076, p<.001. Zero order correlations for this analysis are presented in Table 2, and a summary of the model components for the multiple regression (including partial correlations) is shown in Table 3.

Table 2				
Zero order correlations with feelings of belonging				
	Sense of Belonging			
Extraversion	*0.157			
Agreeableness	*0.135			
Conscientiousness	*0.100			
Emotional Stability	*0.112			
Openness to Experience	*0.111			
Activity Level	*0.202			
Academic Average	-0.034			

* significant at p <.01

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Table 3						
Predicting sense of belonging (multiple regression summary)						
	В	Beta	Partial Correlation			
(Constant)	4.118					
Activity Level	0.016	0.193	0.197			
Residence Type	0.285	0.191	0.198			
Extraversion	0.088	0.355	0.157			
Conscientiousness	-0.071	-0.282	-0.126			

DISCUSSION

In the exploration of the ways in which personality and residence living may work together to influence student affective outcomes, the present study demonstrates the importance of considering how the young people who enter residence might be affected by living there. To be sure, there are limitations and important constraints on both the research design and the conclusions we may draw based on the results, but there does seem to be support for Moos' position, "Educational settings can and do make a difference in students' lives" (1979, p. 273).

The present study suggests several findings that may be noteworthy for institutional planning and student success. Of principal interest is the demonstration that students living in suite-style residences report a significantly higher sense of belonging. Furthermore, students living in suite-style buildings demonstrate a significantly higher activity level than their peers living in dorm-style residences. While it is possible that this significant difference is due to a sampling bias within the suite-style residence (note the significant disparity between response rates in suite-style residences and dorm-style residences), this concern is at least partially mitigated by the demonstration that no significant differences in either personality factors, or academic achievement, exist between residence types.

With regards to the sense of belonging construct, it is interesting to note its significant negative partial correlation with conscientiousness,

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coupled with its significant positive partial correlation with extraversion. Not surprisingly, sense of belonging also demonstrates a significant positive partial correlation with activity level. Congruent with the findings of previous research (Okun & Finch, 1998), this connection between extraversion and involvement in activities is important. The implication here is that the student who is predisposed to "fit in" within the residence community is, therefore, likely to be a gregarious individual who is willing to sacrifice academic achievement in favor of social activity. The extraverted student is also more likely to voice his/her opinion regarding the activities planned within residence (Goldberg, 1990, 1999), and is thus more likely to have programs targeting his/her needs.

The student population that is, therefore, most "at risk" is the group of students who are not "social risk-takers", and who are less willing to make demands on their residence programmers. Despite the fact that they appear to be demonstrating reduced feelings of belonging, they are less likely to be provided with programs that target their needs. Residence systems that offer programs targeting scholastic pursuits or self-improvement are more likely to reach the highly conscientious student experiencing reduced feelings of belonging.

One possible area of program development lies in promoting the notion of belonging to the academy, or the population of students at a learning institution, as a means of developing belongingness among the highly conscientious students. The results of this study give us good reason to believe that for this group of relatively quiet students with low activity levels, providing opportunities to get to know others with similar interests and motivation would result in improved outcomes. Activities that focus on creating a symbiotic living and learning environment where learning and academic pursuits are part of life outside the regular classroom could create a community of learners who, according to the results of this study, may be feeling left out. \triangleleft

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APPENDIX A

Activities Checklist

Place a checkmark beside each activity you plan to do in the upcoming year (check as many as apply):

- Participate in a cultural organization
- Belong to a fraternity or sorority
- Engage in volunteer work with an on-campus organization
- Participate in the Leadership and Mentorship Program (LAMP)
- Work part-time

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- Participate in an on-campus political organization
- Ask my friends for help with course-related questions or challenges
- Be a member of student government
- Attend workshops on behavioural skills such as procrastination and time management
- Participate in the Study Group Program
- Ask my professors questions outside of class
- Regularly use the campus recreation facilities
- Participate in other social organizations
- Ask my professors questions in class
- Participate in an off-campus religious organization
- Participate in the Off-Campus Dons Program
- Participate in a campus religious organization
- Participate in varsity athletics
- Participate in intramural athletics
- Participate in an ethnic organization
- Participate in an environmental organization
- Participate in volunteer work with a local community organization
- Attend workshops on academic skills topics such as writing multiple choice tests
- Participate in a hobby group/club
- Participate in academic organizations for people preparing for professional school
- Ask my friends for help with questions or challenges relating to adjusting to university
- Receive learning skills counselling
- Be a member of media staff (e.g. Gazette, yearbook, CHRW, TV Western)
- Attend Quick Tips Learning Skills presentations in my residence

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- Be a member of Residence Council
- Participate in Breakfast Clubs
- Participate in Residence Council
- Apply to be a Soph next year
- Apply to be a member of Residence Staff next year
- Attend the "Politically Incorrect Show" diversity program
- Visit my professor during his/her office hours
- Attend exam review sessions led by professors in residence
- Regularly use fitness facilities in my residence

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