

## Social Density, Interpersonal Relationships, and Residential Crowding Stress<sup>1</sup>

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Research has suggested that tripled rooms may be characterized by a coalition of two roommate(s) and a third, left-out roommate (i.e., the isolate) who is more vulnerable to crowding and control-related problems. The present study sought (1) to confirm the existence of two person coalitions in tripled rooms and (2) to further explore the mediating effects of interpersonal relationships on crowding stress and related problems. Thirty intact groups of roommates from doubled rooms ( $n = 60$ ) and 39 intact groups of roommates from tripled rooms ( $n = 117$ ) completed a set of surveys concerned with residential experiences. Results suggested that crowding stress previously associated with tripled residential settings may be mediated by interpersonal relationships; tripled residents who had negative interpersonal relationships with their roommates reported being more bothered by crowding, at both the beginning and end of the semester, than doubled residents who expressed negativity towards their roommate. Satisfaction with privacy was also influenced not only by the number of people with whom a resident shared a room, but also by the nature of the resident's interpersonal relationships with his/her roommate(s). Data also suggest that control-related problems may be a direct outcome of poor interpersonal relationships among inhabitants. Results also indicated that only a small percentage of tripled rooms were characterized by reciprocal, two person coalitions.

Recent studies of residential crowding have stressed the role of perceived control over one's environment in the experience of crowding stress. Specifically, the inability to regulate social interactions (e.g., Baum & Valins, 1977; McCarthy & Saegert, 1979), lack of control over events in the residential setting (e.g., Baum, Aiello, & Calesnick, 1978), and difficulty maintaining desired levels of privacy (e.g., Baron, Mandel, Adams, & Griffen, 1976) have been

associated with the experience of crowding stress. As a social experience, however, crowding is also influenced by an individual's relationship with others (e.g., family members, roommates). Stokols (1972) has emphasized the need to conceptualize crowding as a group phenomenon and preliminary research suggests that group processes may influence one's control over his/her environment and thus mediate the experience of crowding (e.g., Aiello, Baum, & Gormley, 1981; Baum, Harpins, & Valins, 1975; Baum, Shapiro, Murray, & Wideman, 1979).

Research has provided substantial evidence concerning the aversiveness of residential crowding in a variety of situations (e.g., prisons, family dwellings, college dormitories; cf. Aiello & Baum, 1979). Since high density may produce different effects in various residential settings, it is important to consider the nature of the residential environment when studying the effects of long-term crowding. The nature of the residential setting influences not only the types of relationships that develop among inhabitants, but also the types of personal needs and goals which are relevant (Stokols, 1972). The majority of research dealing with residential crowding has focused on the effects of high social density in dormitory settings. Crowding in a college dormitory usually involves resource scarcity (i.e., limited resources such as space) and congestion (i.e., blockage of a goal which occurs when a number of people attempt to use a limited resource) (Karlin, Epstein, & Aiello, 1978). The effects of residential crowding in dormitories should vary depending on the nature of the relationship which develops among roommates. Scarce resources and congestion may promote negative relationships among roommates and consequently lead to crowding and related problems.

Research on residential crowding in dormitory settings has demonstrated a number of consequences of high social density including crowding, negative affect, withdrawal from social interactions, and unwillingness to help others (e.g., Baum & Valins, 1977; Bickman, Teger, Gabriele, McLaughlin, Berger, & Sunaday, 1973). For example, Aiello, Epstein, and Karlin (Note 1) found that tripled students (i.e., three students housed in a room intended for two) felt more crowded, experienced greater stress-related arousal, and were less satisfied with their residential environments than students residing in double rooms. Results also indicated that tripled women, since they spent more time in their rooms, reported feeling more crowded and were more negative toward their rooms than tripled men. In addition, tripled women were found to be in poorer health. Subsequent research by Baron et al. (1976) revealed similar effects of tripling. Residents of tripled rooms expressed greater feelings of crowding, perceived less control over activities, expressed more negative interpersonal attitudes, and more negativity towards their rooms. Results further indicated that triples have problems achieving privacy and establishing and maintaining control over their rooms.

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Recently, investigators (Aiello et al., 1981; Baum et al., 1975, 1979; Baum & Valins, 1977) have begun to investigate the role of group phenomena in mediating the experience of crowding and loss of personal control. Baum and Valins (1977) compared corridor dormitory residents, who shared common facilities with more than 30 students, and residents of suite-design dormitories, who shared common facilities with four to six other people. Large residential groups, fostered by the architectural design of long corridor dormitories, were associated with crowding, negative affect, and withdrawal from social interactions. Residents of suite-design dormitories, which promoted the formation of cohesive and cooperative groups, did not experience crowding or related problems. Furthermore, when small groups were formed within larger residential groups, the problems associated with high density were ameliorated (Baum et al., 1975). Thus, studies suggest that group processes may influence crowding and related problems.

Two additional studies further explored the role of group formation in mediating the experience of crowding (Aiello et al., 1981; Baum et al., 1979). Whereas the studies discussed above focused on within-structure density (e.g., people per floor, people per building), Baum et al. (1979) and Aiello et al. (1981) focused on within-unit density (e.g., people per room). Baum et al. (1979) asked students from dormitories housing two or three persons per bedroom to participate in the study. It should be noted that since rooms housing three students were larger than those accommodating two residents, spatial inadequacy was not a factor in this investigation. Given the tendency for triads to divide into a coalition of two members against the third in laboratory situations (e.g., Caplow, 1956), Baum et al. predicted that coalitions would form in tripled dormitory rooms. A combination of survey, observational, and laboratory techniques was utilized to study the formation of two person coalitions in tripled rooms.

Results indicated that approximately one-third of the tripled residents indicated that "their roommates left them out of things." Based on this data, Baum et al. inferred that the majority of tripled rooms were characterized by a coalition of two roommates and a third roommate who felt left out of activities (i.e., the isolate). Since intact groups of tripled residents were not studied in this investigation, it was not possible to determine if tripled rooms were in fact characterized by two person coalitions. Those who felt excluded by their roommates were more negative and vulnerable to problems in the dormitory than triples who perceived themselves as included by their roommates. Results also indicated that tripled residents who felt excluded reported feeling more crowded and indicated that they had less control over activities in their rooms than doubled residents or tripled residents who did not feel left out. Presumably, tripled students who were excluded by their roommates suffered the most because they were not able to escape the adverseness of the environment by forming a supportive relationship with their roommates.

Aiello and his associates (1981) further investigated the effects of group formation on crowding and control-related problems. Residents of tripled and doubled rooms, which were of comparable physical size, completed a survey concerned with their experiences in the dormitory. Consistent with the finding of Baum et al. (1979), almost one-third of the tripled residents (31%) reported that they felt left out by their roommates, suggesting that two person coalition may have formed in the majority of tripled rooms. Results also indicated that tripled residents who felt left out by their roommates were more vulnerable to crowding and experienced more control-related problems. In addition, results supported the notion that women, because they spend more time in their rooms, experience more crowding stress than men.

Data suggest that much of within-structure (Baum et al., 1975; Baum & Valins, 1977) and within-unit crowding stress (Aiello et al., 1981; Baum et al., 1979) is mediated by group formation. Crowding due to high within-structure residential density can be conceptualized as resulting from a lack of control over social interaction (Baum & Valins, 1977). Research has shown that when architectural variables foster the formation of small cohesive residential group crowding stress can be ameliorated (e.g., Baum et al., 1975). Baum and Valins (1977) postulate that group formation is an influential component of control over social experiences. The structure provided by a group reinforces the ability of individual members to regulate their social interactions. Crowding stress due to high within-unit density has been shown to be associated with lack of control over activities in the room, such as decoration of the room and regulation of visitors (Aiello et al., 1981; Baron et al., 1971; Baum et al., 1979). Triples who felt included in activities by their roommates reported having more control over activities in their rooms and hence experienced less crowding stress.

The present study was designed to further explore the role of group processes in the experience of residential crowding stress. The investigation had two primary purposes: (1) to confirm the existence of coalitions in tripled rooms and (2) to investigate how the nature of relationships among roommates influences crowding and related problems. Although data from previous studies (Aiello et al., 1981; Baum et al., 1979) suggest that coalitions develop in tripled rooms, there is only limited evidence to support this assumption (Baum et al., 1979). Intact groups of residents were studied in the present investigation in order to collect more complete information regarding the extent of two person coalition formation in tripled rooms. While previous research has relied on the dimension of inclusion/exclusion (i.e., whether or not residents felt left out of things by their roommates) as the primary indicator of the nature of a resident's relationship with his/her roommate(s), other aspects of roommate's relationships (e.g., how well they coordinate the use of the room) may also be related to crowding and related problems.

More detailed information concerning the nature of roommates' relationships was collected in the present study in order to examine the mediating effects of interpersonal relationships on residential crowding stress.

Since data were gathered at several points during the course of the semester, the following questions were addressed: (1) How does a resident's initial feelings towards his/her roommate(s) affect crowding and related problems during the beginning of the semester? and (2) Do changes in one's evaluation of his/her roommate(s) result in concomitant changes in crowding stress and related problems? (3) How does a resident's evaluation of his/her roommate(s) affect crowding stress and other problems after living under high social density conditions for an extended period of time? It was predicted that one's evaluation of his/her roommate(s) would affect crowding stress, satisfaction with privacy, control over room activities and investment in living quarters. Residents of tripled rooms, who have negative interpersonal relationships with their roommates, were expected to experience greater crowding stress and related problems than residents of doubled rooms, who have a negative interpersonal relationship with their roommate. It was expected that changes in one's evaluation of his/her roommate(s) would result in concomitant changes in crowding stress and associated problems.

### Method

#### Participants

Male and female first year and transfer students residing in college dormitories at a northeastern university during the fall semester of 1980 participated in this study. A lottery system was employed to randomly assign students to rooms. Rooms housing two and three students were of identical size. Potential subjects were sampled during the first 2 weeks of the semester and invited to fill out a questionnaire concerned with their impressions of college life. Students were informed at this time that they would be asked to complete two additional surveys during the course of the semester: a short questionnaire during the sixth week of the semester and a final questionnaire during the tenth week of residence. During the initial contact, subjects were also informed that those who completed the study would be provided with a chance to win three prizes which would be given away at the end of the semester. Only students who agreed to fill out all three surveys were included in the study.

Since the present investigation was aimed at studying intact groups of doubled and tripled residents, only subjects whose roommate(s) had also participated in the study were included in the investigation. One hundred and seventy-seven students participated in all three phases of the study; 30 intact groups of roommates from doubled rooms ( $n = 60$ ) and 39 intact groups of

roommates from tripled rooms ( $n = 117$ ). Ninety-three of the subjects were male and 84 were female.

#### Questionnaire

Students completed similar questionnaires during the first and tenth weeks of residence. Both surveys contained several 5-point scales assessing students' feelings about the college, faculty, other students, their residence, and how they spent their time. Students were also presented with a list of statements about their roommate(s) and were asked to indicate the extent to which they agreed with each statement. Students residing in tripled rooms were instructed to complete these items separately for each roommate. Several items also required students to assess how much control they have over events within their dormitory rooms. Students were also asked to indicate the degree to which they were bothered by 10 general problems (e.g., noise, people in hallway, room condition) during the past week. The survey administered during the sixth week of the semester contained five items relating to interpersonal relationships among roommates (e.g., "Do you feel your roommate includes you in things he/she does?").

### Results

#### Coalition Development

The development of coalitions in tripled rooms was measured by asking residents if they felt that their roommates often left them out of various activities. Unlike previous studies (Aiello et al., 1981; Baum et al., 1979), however, subjects were asked to respond separately for each roommate and reciprocal data were gathered from all members of the room so that more complete information regarding the extent of two person coalition formation could be derived.

A fourth of the 117 tripled residents reported at the tenth week of residence that they were excluded by one roommate ( $n = 29$ ) and 9% ( $n = 11$ ) indicated that they were excluded by both of their roommates. These findings are consistent with previous investigations (Aiello et al., 1981; Baum et al., 1979), which report that approximately 30% of tripled residents felt left out by their roommates. Only a small percentage of tripled residents (9%), however, can be classified as "isolates" (i.e., excluded by both roommates). Given the nature of the data collected by Baum et al. (1979) and Aiello et al. (1981), it is not possible to determine if residents in their studies felt left out by one or both roommates, only the latter being "true isolates."

Previous researchers (Aiello et al., 1981; Baum et al., 1979) have suggested that the majority of tripled rooms may be characterized by coalitions; however,

the results of the present investigation do not support this hypothesis. Only 10.3% of the tripled rooms ( $n = 4$ ) were characterized by a coalition of two roommates and a isolate.<sup>3</sup> The coalition type which occurred most frequently was the tripled alliance; in 43.6% of the tripled rooms, all roommates indicated that they felt included by both roommates. However, over 40% of the rooms could not be classified as a specific coalition type since the responses of one or more roommates were conflicting (i.e., Roommate A felt included by Roommate B, however, Roommate B did not feel included by Roommate A).

#### *Nature of Roommate Relationship*

As noted above, subjects rated their roommate(s) on a series of 5-point scales at the beginning and end of the study. In order to derive an index which would characterize the nature of one's perceived relationship with his/her roommate(s), responses to nine items dealing with roommates were entered into a factor analysis. The responses of tripled students for one of their roommates were randomly selected to be included in the analysis. This was done in order to prevent data gathered from tripled residents from disproportionately contributing to the analysis. Separate factor analyses were conducted for data collected during the first and final administrations. One prominent cluster emerged in both analyses. Results of these analyses were used to construct an index of how a resident perceives his/her roommate(s) evaluation of roommate(s) index.<sup>4</sup> Responses of tripled students for each roommate were combined into one overall index, which was adjusted to be equivalent with the evaluation index used with doubled students. Respondents evaluated

<sup>3</sup>This finding has been confirmed with an independent sample of tripled residents ( $n = 60$ ) who were studied during the seventh and eighth weeks of residence. Slightly over one-third of the tripled students indicated that they were excluded by one roommate (36.6;  $n = 22$ ) and 18.3% indicated that they were excluded by both roommates ( $n = 11$ ). Although more tripled residents in this sample reported feeling excluded by their roommate(s), only a small percentage of those residing in tripled rooms could be classified as isolates. Furthermore, only 5% of the tripled rooms ( $n = 4$ ) were characterized by a coalition of two roommates and a third, left-out roommate. The majority of tripled rooms could not be classified as a specific coalition type since the responses of one or more roommates were not congruent.

<sup>4</sup>The actual items and factor loadings were: (1) I like to confide in my roommate (.77); (2) I like my room better when my roommate is not around (.78); (3) I am quite compatible with my roommate (.86); (4) I am closer friends with my roommate than others in the hall (.81); (5) I think my roommate and I have a lot in common in terms of interests (e.g., sports, shopping) (.83); (6) I feel my roommate and I have similar personalities (.84); (7) I like to spend time with my roommate (.92); (8) At this point in time, how much do you like your roommate (.87); and (9) How well do you coordinate the use of the room

.. ( .99) Tripled residents responded separately for each roommate.

their roommate(s) significantly more positively at the beginning of the study ( $\bar{X} = 2.36$ ) than at the end of the study ( $\bar{X} = 2.51$ ) ( $t(1,176) = -3.71, p < .001$ ).

#### *Dependent Measures*

In order to group the individual questionnaire items into interpretable clusters, a number of factor analyses, with varimax rotations, were performed. Results of these analyses were used to create the following scales:

- (1) *Privacy scale.* This scale was used as an indicator of the residents' satisfaction with privacy in his/her room.
- (2) *Escape scale.* The escape scale was a two-item scale which measured the extent the resident desired to "get away from everyone."
- (3) *Perceived control of room.* This scale was composed of responses to two items in which residents rated the extent their rooms were controllable and predictable.
- (4) *Control-related room problems.* Responses to five items dealing with control over activities in one's room were combined to form an index of control-related room problems.
- (5) *Control-related territoriality.* This scale was comprised of responses to three items—two which were related to territoriality and the third which dealt with control.

#### *Data Analysis Procedure*

Hierarchical multiple regression analysis was the primary statistical technique used to evaluate the data. The analysis was designed to assess the impact of the following variables on crowding and related problems: (a) sex (coded 0 = female; 1 = male); (b) social density (coded 0 = doubled; 1 = tripled); and (c) evaluation of roommate(s) (coded as value of scale described above; 1 = positive). For each dependent variable, a baseline regression equation was formed with the above variables. Then, the set of interaction terms, which were formed by multiplying the appropriate variables (i.e., sex by social density; sex by evaluation; social density by evaluation), was added to the baseline equation and the significance of each term was tested against the baseline using a standard  $R^2$  increment test (Cohen & Cohen, 1975). Separate hierarchical regression analyses were conducted for data gathered at the beginning (Time 1) and end of the semester (Time 2). Since there was a significant difference between residents' evaluation of their roommate(s) at the beginning and end of the semester, a resident's evaluation of his/her roommate(s) at Time 1 was utilized in analyses of data collected at Time 1. Similarly, analyses involving data collected during the tenth week of residence (Time 2) were performed utilizing a resident's evaluation of his/her roommate(s) at Time 2.

In order to examine the effects of changes in one's evaluation of his/her roommate(s) on changes in crowding and related measures, regression analyses

TABLE 1

SUMMARY OF REGRESSION ANALYSES FOR TIME 1 DATA—NET MAIN EFFECTS OF SOCIAL DENSITY, SEX, AND EVALUATION OF ROOMMATE(S)

Measure <sup>1</sup>	Social density	Sex	Evaluation roommate(s)	R <sup>2</sup>	F
Extent room crowded	-1.02 <sup>b</sup>	.33	-.24 <sup>a</sup>	.14	9.31 <sup>b</sup>
Degree bothered crowding	-.32	-.15	-.22	.05	3.17 <sup>a</sup>
Escape	.05	.23	-.42 <sup>b</sup>	.09	5.50 <sup>b</sup>
Privacy	.20	-.12	.46 <sup>b</sup>	.25	19.53 <sup>b</sup>
Perceived control	.13	.08	.25 <sup>b</sup>	.08	4.82 <sup>b</sup>
Control-related problems	-.03	-.01	-.22 <sup>b</sup>	.06	3.80 <sup>a</sup>
Control-related territoriality	-.01	-.22 <sup>a</sup>	.21 <sup>b</sup>	.08	4.80 <sup>b</sup>
Purchase furnishings	-.28	.20	.46 <sup>b</sup>	.10	6.70 <sup>b</sup>
Time spent fixing room	.35	.47 <sup>a</sup>	-.04	.07	4.80 <sup>b</sup>

<sup>1</sup> Scale values ranged from 1 to 5. Lower values are more reflective of variable label listed.

<sup>a</sup>  $p < .05$ .

<sup>b</sup>  $p < .01$ .

utilizing change scores for both evaluation of roommate(s) and dependent measures were performed. Only net main effects were tested in these later regression analyses because of extreme multicollinearity between main effect and interactive terms.

#### Analysis of Time 1 Data

*Net main effects of social density, sex, and evaluation.* Table 1 contains a summary of the net main effects of social density, sex, and evaluation of roommate(s) on data gathered at the beginning of the study. As can be seen in Table 1, social density significantly affected the degree to which residents perceived their rooms as crowded. Students residing in tripled rooms reported their rooms were more crowded ( $\bar{X} = 3.5$ ) than those residing in doubled rooms ( $\bar{X} = 2.57$ ). As indicated in Table 1, the nature of one's relationship with his/her roommate(s) was significantly related to crowding and control-related measures. The more positive a resident's evaluation of his/her roommate(s), the less crowded they perceived their room and the less likely they were to report being bothered by crowding. Positive evaluation of one's roommate(s) was also significantly related to greater perceived control over one's room, fewer control-related problems, and a greater sense of control-related territoriality. In addition, residents who positively evaluated their roommate(s)

TABLE 2

SIGNIFICANT MEDIATING EFFECTS OF EVALUATION OF ROOMMATE(S) ON RELATIONSHIP OF CROWDING STRESS TO SOCIAL DENSITY

Measure	Effect when:		Significance of interaction
	Doubled	Tripled	
Extent room crowded	-.12	.57	$p < .05$
Degree bothered by crowding	.11	.40	$p < .10$

*Note.* Entries in this table are estimated regression coefficients within each level of social density net of all other variables. The regression coefficients express unit changes in the depending measure which result from a one unit change in the mediating variable, evaluation of roommate(s).

were more satisfied with their privacy and expressed less of a desire to "get away from everyone." Data collected during this early period in the semester also indicated that residents who positively evaluated their fellow inhabitant were more likely to purchase common room furnishings. It should be noted that females spent more time fixing up their rooms ( $\bar{X} = 2.85$ ) than male ( $\bar{X} = 3.44$ ), although this effect is qualified by an interaction with social density (which will be discussed below).

*Interactive effects.* Analyses revealed significant social density by evaluation of roommate(s) interactions for two indices of crowding stress: (1) extent room was perceived as crowded and (2) degree bothered by feeling crowded. As noted in Table 2, tripled residents who had negative evaluations of the roommates experienced a greater degree of crowding stress than doubled residents who expressed negativity towards their roommate. Negative interpersonal relationships had more pronounced effects of crowding stress under high social density conditions.

A significant sex by social density interaction was noted for the amount of time a resident spent fixing up his/her room. Females who resided in doubled rooms spent more time fixing up their rooms ( $\bar{X} = 2.50$ ) than their counterparts in tripled rooms ( $\bar{X} = 3.19$ ). Males spent similar amounts of time decorating their rooms regardless of whether they resided in doubled ( $\bar{X} = 3.56$ ) or tripled rooms ( $\bar{X} = 3.40$ ).

#### Analysis of Change

Change in evaluation of roommate(s) was significantly related to change in satisfaction with privacy ( $b = .56$ ,  $p < .001$ ), control-related problems ( $b$

TABLE 3

SUMMARY OF REGRESSION ANALYSES FOR TIME 2 DATA—NET MAIN EFFECTS OF SOCIAL DENSITY, SEX, AND EVALUATION OF ROOMMATE(S)

Measure <sup>1</sup>	Social density	Sex	Evaluation roommate(s)	R <sup>2</sup>	F
Extent room crowded	-.95 <sup>b</sup>	-.24	-.10	.16	10.99 <sup>b</sup>
Degree bothered crowding	-.23	-.16	-.23 <sup>a</sup>	.06	3.41 <sup>a</sup>
Escape	-.11	.07	-.28 <sup>b</sup>	.07	4.37 <sup>b</sup>
Privacy	.37 <sup>b</sup>	-.07	.51 <sup>b</sup>	.40	37.65 <sup>b</sup>
Perceived control	.03	.05	.38 <sup>b</sup>	.14	9.69 <sup>b</sup>
Control-related problems	-.18	-.08	-.31 <sup>b</sup>	.11	7.02 <sup>b</sup>
Control-related territoriality	.01	-.01	.26 <sup>b</sup>	.14	9.99 <sup>b</sup>
Purchase furnishings	-.03	-.04	.74 <sup>a</sup>	.23	17.34 <sup>b</sup>
Time spent fixing room	.18	.15	.22 <sup>a</sup>	.04	2.65

<sup>1</sup> Scale values ranged from 1 to 5. Lower values are more reflective of variable label listed.

<sup>a</sup>  $p < .05$ .

<sup>b</sup>  $p < .01$ .

-.49,  $p < .001$ ), control-related territoriality ( $b = .25$ ,  $p < .01$ ), and degree to which roommates purchase common room furnishings ( $b = .52$ ,  $p < .01$ ). Residents who evaluated their roommate(s) more negatively during the course of the study became less satisfied with their privacy, reported increasing control-related problems, and a decreased sense of control-related territoriality. In addition, residents who became more negative about their roommate(s) tended to purchase fewer common room furnishings during the course of the semester.

#### Analysis of Time 2 Data

*Net main effects of social density, sex, and evaluation.* A summary of the net main effects of social density, sex, and evaluation of roommate(s) on data gathered during the final stage of the study is contained in Table 3. As can be seen in Table 3, social density was significantly related to perceived room crowding and satisfaction with privacy. As findings from the beginning of the semester indicated, residents of tripled rooms reported that their rooms were more crowded ( $\bar{X} = 2.55$ ) than those residing in doubled rooms ( $\bar{X} = 3.59$ ). Tripled residents were also less satisfied with their privacy ( $\bar{X} = 2.29$ ) than doubled residents ( $\bar{X} = 2.75$ ).

As shown in Table 3, the nature of one's relationship with his/her roommate(s) was significantly related to perception of room as crowded and several

control-related measures. The more positive a resident's evaluation of his/her roommate(s), the less he/she was bothered by crowding. As noted at Time positive interpersonal attitudes were also significantly related to greater perceived control over one's room, fewer control-related problems, and a greater sense of control-related territoriality. In addition, residents who had positive evaluations of their roommate(s) reported greater satisfaction with their privacy and expressed less of a desire to "get away from everyone." These later results also parallel findings noted at the beginning of the semester. No significant main effects for sex were found.

*Interactive effects.* Analyses revealed a marginally significant social density by evaluation of roommate(s) interaction for an index of crowding stress ( $F(1,170) = 3.72$ ,  $p < .10$ ). As noted above, tripled residents perceived their rooms were more crowded than residents of doubled rooms. A negative evaluation of one's roommate(s) intensified the degree to which a resident was bothered by crowding, such that tripled residents who had negative evaluations of their roommates tended to be more bothered by crowding than double residents who had a negative evaluation of their roommate.

#### Discussion

The results of the present study clearly indicate that an individual's residential experience is strongly influenced by the nature of the relationship he/she develops with his/her roommate(s). As found in previous investigation (e.g., Aiello et al., Note 1; Baron et al., 1976), high within-unit residential density was associated with greater crowding stress, less satisfaction with privacy, and greater negativity towards the residential living situation. However, the findings of the present study strongly suggest that crowding stress and privacy satisfaction are also affected by the nature of the interpersonal relationships among those who share rooms. In addition, the nature of a resident's interpersonal relationship with his/her roommate(s) was found to exert a powerful influence on control over the residential environment. In fact, data from the present study suggest that some of the control-related problems previously associated with crowding may be more directly attributed to poor interpersonal relationships among roommate(s).

Findings from the present study suggest that crowding stress commonly associated with tripled residential settings may be mediated by interpersonal relationships. Data indicated that room density and the nature of the relationships among roommate(s) interactively affect the degree to which a resident is bothered by crowding. Tripled residents, who had negative interpersonal relationships with their roommates, reported being more bothered by crowding than residents of doubled rooms, who expressed negativity towards the

roommate. These findings were obtained at the beginning of the semester as well as during the tenth week of residence.

Satisfaction with privacy was influenced both by the number of people with whom a resident shared a room and by the nature of the residents' interpersonal relationships with his/her roommate(s). Consistent with the findings of previous studies, students residing in tripled rooms were less satisfied with their privacy (e.g., Baron et al., 1976) at the tenth week of residence. Additionally, the findings of the present study also indicated that residents who expressed negativity towards their roommate(s) were less satisfied with their privacy than students who evaluated their roommate(s) more positively. Clearly, both social density and the nature of the relationships among residents influence privacy satisfaction.

As noted above, the findings of the present study strongly indicate that some of the control-related problems previously associated with crowding stress due to high room density may be more plausibly attributed to the nature of the relationship among those who share rooms. Data clearly demonstrate that the nature of a resident's interpersonal relationships with his/her roommate(s) strongly affects perception of control over the room, control-related territoriality, and control over activities in the room. As compared with residents who evaluated their roommate(s) positively, residents who characterized their interpersonal relationships with their roommate(s) as negative perceived their rooms as less controllable, reported more problems controlling activities in their rooms, and had less of a sense of control-related territoriality. These findings were obtained both at the first and tenth weeks of residence. In addition, results indicated that residents who evaluated their roommate(s) more negatively during the course of the semester reported increased control-related problems in their rooms.

One aspect of roommates' interpersonal relationships that was investigated in the present study was the degree to which a resident was able to coordinate the use of the room with his/her roommate(s). Poor interpersonal relationships with one's roommate(s) were characterized, in part, by difficulty in coordinating the use of the residential living space. Thus, the findings of the present study suggest that residents who expressed negativity towards their roommate(s) may not have been able to coordinate the use of the room with their roommate(s) and hence experienced control-related problems. The incidence of control-related problems was similar among residents of doubled and tripled rooms; thus the present findings suggest that control-related problems may be a more direct outcome of poor interpersonal relationships among those who share rooms. Since there was a high attrition rate in the present study, due to the stringent requirement that all roommates repeatedly participate in the study, the sample may be selective. Hence, the finding that control-related problems previously associated with crowding are more directly related

to interpersonal relationships among roommate(s) needs to be confirmed in future research.

One of the purposes of the present investigation was to confirm the existence of coalitions in tripled residential settings. Results of the present study do not support the proposition that two person coalitions invariably form in tripled rooms. At the tenth week of residence, only a small percentage of tripled rooms were characterized by a coalition of two roommates and a third, left-out roommate (i.e., the isolate).

Overall, the findings of the present study suggest that high room density and poor interpersonal relationships among residents may produce dissatisfaction with privacy and consequently crowding stress. Research on residential crowding has done little to examine the strategies people use to cope with the problems resulting from living in high density situations. Case studies of tripled dormitory residents who have positive interpersonal relationships with their roommates may begin to uncover successful coping strategies for adapting to high density environments. Individual as well as group variables, which may influence the nature of interpersonal relationships among residents, should be explored in future research.

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# Reference Note

1. Aiello, J. R., Epstein, Y. M., & Karlin, R. A. *Field experimental research on human crowding*. Paper presented at the meeting of the Eastern Psychological Association Convention, New York City, April, 1975.