TERRITORIALITY ORIENTATION, PRIVACY ORIENTATION AND LOCUS OF CONTROL AS DETERMINANTS OF THE PERCEPTION OF CROWDING

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One hundred and eleven Japanese female college students filled out questionnaires of crowding, in which each subject guessed in 12 pairs of situations with how many partners a fictitious person whose sex and age were supposed to be identical to each subject was considered to be able to share a room without feeling uncomfortable. Smaller numbers of partners meant the subject was more liable to experience crowding. Territoriality orientation, privacy orientation and locus of control were also measured by other questionnaires. Supporting three hypotheses, results indicated that those who have strong territoriality orientation, high privacy orientation or external control were more prone to experience crowding than their counterparts.

A large pile of research has been conducted in the area of human crowding within the past decade. Although a number of physical, social and personal variables were proposed as probable determinants of crowding (e.g., Rapoport, 1975), studies were rather sparsely scattered which were associated with personal antecedents of crowding.

There were some studies which attempted to investigate the effect of personality variables upon personal space (e.g., Cozby, 1973; Duke, Shaheen, & Nowicki, 1974; Edwards, 1977). Iwata (1979) demonstrated the effects of some personality measures upon the perception of crowding.

Among personality variables of the perception of crowding, those associated

with space or spatial usage were speculated to be more important than any other personality variables. Territoriality orientation and privacy orientation were among such personality variables of crowding.

Territoriality is known as animals' characteristic behavior to defend their own territories from encroaching conspecifics. According to Altman and his co-workers (Altman, 1975, p. 106), human territoriality involves the mutually exclusive use of areas and objects by persons or groups. Humans defend not only physical space they own but also jurisdiction over a variety of their personal roles and associated objects. It is probably right to argue that the desire to control this jurisdiction has identical psychological functions as does the desire to control owned space or area. In this sense, any definitions of human territoriality should include the exclusive use of both areas and objects. This exclusive use is considered to be accompanied with the sense of exclusive ownership.

Thus, in this study, territoriality was defined as the exclusive use of areas and objects by persons or groups and resultant

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sense of exclusive ownership, and territoriality orientation was defined as need for territoriality.

Based upon this delineation, it was assumed that those whose territoriality orientation is strong have more solid or definite personal space in social interactions than those whose territoriality orientation is weak. It was also assumed that crowding is more apt to arouse in high density situations when such personal space is violated than when permeable personal space is violated. This line of consideration led to the first hypothesis.

Hypothesis 1: Those whose territoriality orientation is strong are more inclined to experience crowding than those whose territoriality orientation is weak.

On the other hand, Altman (1975, p. 6) argued that privacy is a key concept in understanding transactions between environment and humans which is able to tie concepts of crowding, territoriality and personal space. In addition, Altman (1975, p. 17) pointed out that the past definitions of privacy include seclusion, withdrawal and avoidance of interaction on the one hand and control of opening or closing of the self to others and freedom of choice regarding personal accessibility on the other. Wolf and Laufer (1974) provided an empirical support to the past definitions finding that privacy carries two major meanings of controlling information and being alone.

Considering these knowledges of privacy together, privacy was defined as the state in which one himself or information associated with him is not exposed to others.

According to Altman (1975, 1976), there are two types of privacy. One is desired privacy which is one's ideal level of transactions with other people while the other is achieved privacy which is produced from actual contacts with other people in social interactions. He assumed that crowding is experienced when desired privacy is lower than achieved privacy.

This model of crowding implies that those who have high privacy orientation, i.e., need for privacy, are more vulnerable to high density situations than those who have low privacy orientation. Consequently, the second hypothesis was led as follows.

Hypothesis 2: Those who have high privacy orientation are more prone to experience crowding than those who have low privacy orientation.

The last independent variable of this study was locus of control which differentiates two types of people. While external controls are those who tend to consider that consequences of their behavior are determined by external pressures or some chances, internal controls are those who tend to consider that consequences of their behavior are highly attributable to their own behavior.

Duke and Nowicki (1972) found that external controls were more intolerant of closer interpersonal distances than internal controls. Heckel and Hiers (1977) also discovered that external controls had larger interpersonal distance as compared to internal controls. In addition, Schopler, McCallum, and Rusbult (1978, p. 232) found that in normal discussion external controls had higher level of crowding than internal controls and that in crowded and structured discussion settings external controls reduced perceived crowding but not internal controls. On the contrary, Duke et al. (1974), Baron, Mandel, Adams, and Griffen (1976), Edwards (1977) and Rodin, Solomon, and Metcalf (1978) could not find any significant relationships between locus of control and personal space or crowding. But some interactional effects of locus of control with other variables were discovered by Baron et al. (1976) and Edwards (1977).

Rodin et al. (1978) also found in two studies that those who had control over their environment were less liable to experience crowding than those who did not have such control. In addition, there

were some studies which suggest that perceived control lowers the induced level of crowding (Sherrod, 1974; Edney, Walker, & Jordan, 1976; Langer & Saegert, 1977).

Thus the present state of findings regarding the relationship between locus of control and crowding was generally consistent and then, based upon those findings cited above, the last hypothesis was set up as follows.

Hypothesis 3: External controls are more apt to experience crowding than internal controls.

The objective of this study was to demonstrate the three hypotheses listed above.

METHOD

Subjects

One hundred and eleven Japanese female undergraduates participated in this study as one of the course requirements at two psychology classes. They were freshmen, sophomores and mostly juniors.

Crowding Measures

The two questionnaires were used in this study. Details of them should be referred to Iwata (1979) and then only some necessary informations were presented below. Questionnaire I contained five pairs of situations and Questionnaire II contained seven, in both of which a fictitious person whose sex and age were anticipated to be identical to an individual subject's was supposed to share a room with other people, i.e., partners, for 10 min. Each subject was required to estimate maximum numbers of partners in respective situations with whom the fictitious person was guessed by the subject herself to be able to share the room without feeling uncomfortable. The situations differ only in partners' personal characteristics which will be presented in Table 1.

Territoriality Orientation

The strength of territoriality orientation was measured by a questionnaire of five items. Subjects were told to read instructions and descriptions of the items and to select the most suitable one among three response categories of each item. An example of the items was "Do you sit at the same seat in your classes?" and its response categories were "sit almost always", "sit occasionally" and "sit anywhere". Responses were scored from zero to two with the increasing strength of territoriality. In the case cited above, scores two, one and zero were allocated to the response categories in that order.

To investigate content validity of the items, 19 naive undergraduates were administered questionnaires in which they were presented the same definition of territoriality as was shown previously in this paper and were asked to rate the description of each item on a five-point scale in terms of the degree of how much appropriately they think the description represents the definition. Scores of one to five were assigned to ratings. Regarding higher scores over three, the larger a given score, the greater was appropriateness of its item as a measure of territoriality orientation. On the contrary, in the case of lower scores under three, the smaller a given score, the smaller was such appropriateness. Score three was the neutral point implying that a given item was neither appropriate nor inappropriate. Average rating scores of the 19 subjects were calculated for individual items. All the items scored over three and were judged to be appropriate.

To examine internal consistency among the five items, using total territoriality score, the sample of this study was divided into those whose scores were higher than the average ($\bar{X}=5.6$) and those whose scores were lower than it. These two groups were divided into three response categories, that is, high, intermediate and

TABLE 1
Maximum numbers of partners in terms of varying strength of territoriality orientation

Situations	Territoriality orientation				ts
	High Group		Low Group		
	Means	SDs	Means	SDs	
I 1. A Familiar	2.71	1.53	3.55	1.36	*
B Unfamiliar	2.35	1.17	3.05	1.76	
2. A Same ethnicity	3.06	1.25	3.60	1.67	
B Different ethnicity	1.65	0.70	2.55	1.36	**
3. A Same sex	3.18	1.55	4.00	1.78	
B Opposite sex	1.71	1.16	2.40	1.90	
4. A Adults	2.88	1.22	3.70	1.59	*
B Children	3.35	1.41	4.85	1.76	**
5. A Professors	1.59	0.71	2.65	2.11	*
B College students	3.06	1.20	4.00	1.78	*
I Total	25.26	8.32	34.45	13.89	*
II 1. A Criminals	0.39	0.61	1.05	1.64	
B Non-criminals	2.83	1.34	3.75	1.65	*
2. A Mentally retarded	0.94	0.94	1.70	1.53	*
B Normally intelligent	2.83	1.30	3.90	1.83	*
3. A Physically handicapped	1.83	1.15	2.65	1.63	*
B Physically normal	2.83	1.30	3.80	1.64	*
4. A Over 70 years old	2.50	1.34	2.95	1.64	
B Under 20 years old	3.06	1.39	4.10	1.77	*
5. A Those who are like by all	3.17	1.65	3.95	1.79	
B Those who are disliked by all	1.94	1.43	2.80	1.74	
6. A Those whose school records are good	2.61	1.38	3.75	1.92	*
B Those whose school records are bad	2.83	1.20	3.75	1.74	*
7. A Those who have feelings, ways of thinking and hobbies similar to each subject (Similar)	3.22	1.52	4.30	2.11	*
B Dissimilar	2.00	1.41	3.25	1.89	*
II Total	33.00	14.90	45.70	20.66	*

* $p < .05$, ** $p < .01$, One-tailed t -tests, $df = 36$.

low levels of territoriality orientation, for respective items and χ^2 values were calculated. All the χ^2 values were significant at the level of $p < .02$ and internal consistency of the territoriality orientation questionnaire was confirmed.

Taking data of content validity and internal consistency combined, all the items of the territoriality orientation questionnaire were judged to be appropriate.

Accordingly, the total score of them was used as an individual's territoriality orientation score.

Privacy Orientation

A questionnaire was developed consisting of five items which had short statements concerned with privacy. An example of such statements was read as follows: "I do not like myself exposed

to other people." Subjects were asked to show the degree of agreement or disagreement with each statement on a three-point scale. Responses to each item were scored from zero to two with the increasing degree of agreement with its statement. Higher scores meant greater privacy orientation.

Content validity of the five items were checked by the same procedures and subjects as described in the section of territoriality orientation. Average rating scores of the items which represented appropriateness of a given item as a measure of privacy orientation were calculated and one item could not reach the midpoint score three.

In order to check internal consistency of this questionnaire, based upon the total score of the five items, the sample of this study was divided into those whose privacy orientation was higher than the average ($\bar{X}=6.9$) and those whose privacy orientation was lower than it. These two groups were divided into three response categories for respective items and χ^2 values were calculated. The fact that all the χ^2 values were significant at the level of $p<.02$ provided an empirical evidence for internal consistency of this questionnaire.

Considering the above-mentioned information of content validity and internal consistency, one item was excluded from the final scoring of privacy orientation because it was judged to be inappropriate as a measure of privacy orientation.

Thus the strength of privacy orientation was presented in terms of the sum of the remained four item-scores.

Locus of Control

A Japanese version of Rotter's Internal-External Control Scale was used in this study which was translated into Japanese by Yoshida and Shirakashi (1975). This scale was consisted of 29 items. Each item had a pair of statement; one represented external control, while the other internal control. Subjects had to choose one statement which was more

agreeable to themselves. External responses were given score one and internal ones zero. Six were filler items among 29 items. Thus score range of this scale was from zero to 23.

Procedure

Data of this study were obtained in groups consisted of six or less subjects. Immediately after arriving at a laboratory, subjects were provided with crowding questionnaires and were told to read instructions carefully. Having understood the instructions, they were shown the room which was previously described in the section of crowding measures. The room had two 20-W daylight fluorescent lamps and a ventilator. The lamps and ventilator were turned on when the subjects were led to the room. Size of the room was 1.2 m wide, 1.2 m long and 2.17 m high.

When they became aware of the size of the room, they were provided with a slip of instruction paper. It was introduced to prevent biased responses which were supposed to be caused by demand characteristics. It was emphasized in the instruction paper that they should honestly respond to each question item without guessing what responses were anticipated by the experimenter.

After finishing up the crowding questionnaires, they were told to fill out the remaining two kinds of questionnaires and were debriefed and dismissed when they finished all. The Internal-External Control Scales were administered on the first days of two classes.

RESULTS

Based upon territoriality orientation scores, 18 subjects whose scores were eight or higher (High Territoriality Group) and 20 subjects whose scores were four or lower (Low Territoriality Group) were selected from the sample of this study. Maximum numbers of partners with

TABLE 2
Maximum numbers of partners in terms of varying strength of privacy orientation

Situations†	Privacy orientation				<i>ts</i>
	High Group		Low Group		
	Means	<i>SDs</i>	Means	<i>SDs</i>	
I 1. A	2.69	1.25	4.29	2.00	**
B	2.31	1.60	3.54	2.05	*
2. A	2.92	1.26	4.11	2.06	*
B	2.00	1.47	2.75	1.53	
3. A	2.92	1.12	4.39	2.17	*
B	1.62	1.61	2.61	1.71	*
4. A	2.77	1.24	4.21	2.08	*
B	3.77	0.83	4.71	2.27	
5. A	1.54	0.97	3.21	2.54	*
B	3.31	1.55	4.21	2.06	
I Total	25.85	11.10	38.31	17.97	*
II 1. A	0.87	1.55	0.82	1.25	
B	2.87	1.25	4.18	2.13	*
2. A	0.87	0.92	1.46	1.37	
B	3.00	1.65	4.32	2.07	*
3. A	2.00	1.69	2.71	2.09	
B	2.93	1.53	4.32	2.07	*
4. A	2.27	1.53	3.14	1.56	*
B	2.93	1.39	4.46	2.06	**
5. A	3.13	1.19	4.54	2.36	*
B	1.87	1.60	3.39	2.44	*
6. A	2.87	1.41	4.25	2.37	*
B	3.00	1.31	4.25	2.19	*
7. A	3.13	1.25	4.82	2.51	*
B	2.00	1.60	3.54	2.28	*
II Total	33.87	16.57	50.21	24.89	*

† For descriptions, see Table 1.

* $p < .05$, ** $p < .01$, One-tailed t -tests, $df = 39$ for I and 41 for II.

whom the fictitious person whose sex and age were supposed to be identical to the individual subject was guessed to be able to share the room without feeling uncomfortable were presented in Table 1 for respective situations of the two groups. As was shown in Table 1, maximum numbers of partners were significantly smaller for High Territoriality Group than for Low Territoriality Group in most of the situations. In addition, identical findings were obtained in regard

to I Total and II Total which were total scores of Questionnaires I and II respectively.

According to these findings combined, High Territoriality Group was considered to be able to share common space with significantly smaller numbers of partners without feeling uncomfortable as compared with Low Territoriality Group. Thus Hypothesis 1 was supported: Those whose territoriality orientation is strong are more inclined to experience crowding

TABLE 3
Maximum numbers of partners in terms of varying degree of locus of control

Situations†	Locus of control				ts
	External Group		Internal Group		
	Means	SDs	Means	SDs	
I 1. A	3.27	1.66	3.66	2.06	**
B	2.46	1.33	3.09	2.29	
2. A	3.12	1.03	3.78	2.21	
B	1.85	1.01	2.56	1.97	
3. A	3.39	1.36	4.06	2.26	
B	1.77	1.07	2.25	1.78	
4. A	3.04	1.25	3.56	2.29	
B	3.54	2.08	4.88	2.58	
5. A	1.73	1.04	2.63	2.62	*
B	3.35	1.23	4.00	2.10	
I Total	27.58	10.25	34.47	19.66	
II 1. A	0.59	0.89	0.88	1.48	*
B	3.22	1.22	3.84	2.20	
2. A	1.04	1.02	1.44	2.08	
B	3.33	1.36	3.91	2.23	
3. A	2.48	1.70	2.22	2.11	
B	3.33	1.36	3.91	2.19	
4. A	2.59	1.37	2.69	1.98	
B	3.48	1.50	4.16	2.48	
5. A	3.33	1.57	4.63	3.12	
B	2.07	1.36	2.50	2.59	
6. A	3.11	1.60	3.72	2.33	
B	3.11	1.37	3.63	2.27	
7. A	3.56	1.50	4.53	3.18	
B	2.04	1.32	3.16	2.44	
II Total	37.30	15.67	45.28	28.64	

† For descriptions, see Table 1.

* $p < .05$, ** $p < .01$, One-tailed t -tests, $df = 56$.

than those whose territoriality orientation is weak.

Secondly, using privacy orientation scores, 15 subjects whose scores were eight or higher (High Privacy Group) and 28 subjects whose scores were five or lower (Low Privacy Group) were drawn from the sample of this study. But data of only 13 subjects were obtained for the Questionnaire I of High Privacy Group. Maximum numbers of partners were presented in Table 2 for respective situa-

tions of these two groups. The numbers were significantly smaller for High Privacy Group than for Low Privacy Group. Again, I Total and II Total replicated the same meaningful results.

Thus these findings indicated that High Privacy Group is considered to be able to share common space with significantly smaller numbers of partners without feeling uncomfortable in comparison with Low Privacy Group. Consequently, Hypothesis 2 was supported too: Those who

have high privacy orientation are more prone to experience crowding than those who have low privacy orientation.

Lastly, 26 subjects whose scores were 15 or higher (External Control Group) and 32 subjects whose scores were nine or lower (Internal Control Group) were selected from the sample of this study in terms of the locus of control score. Table 3 showed maximum numbers of partners for respective situations of these two groups. Regarding situations which had significant results, maximum numbers of partners were smaller for External Control Group than for Internal Control Group.

Therefore, External Control Group was considered to be able to share common space but with significantly smaller numbers of partners without feeling uncomfortable in contrast to Internal Control Group. This trend was found in only four situations. Thus Hypothesis 3 was only partially supported: External controls are more apt to experience crowding than internal controls.

DISCUSSION

Hypothesis 1 was supported in over two-thirds of the situations. Hypothesis 2 was also proved in the similar overwhelming majority of the situations. On the other hand, Hypothesis 3 was demonstrated in only four situations.

These findings suggest that territoriality orientation and privacy orientation are far more essential in comparison with locus of control as determinants of the perception of crowding.

Correlation coefficients among three independent variables showed that only significant but weak relationship was obtained between territoriality orientation and locus of control ($r=.232$, $df=109$, $p<.05$) and that all the other coefficients were insignificant. This generally means that these three variables functioned independently.

Grounded on the fact that there are

generally significant effects of territoriality orientation and privacy orientation upon crowding measures, it is definitely clear that these two personality traits are crucial in understanding human spatial and territorial behavior. Yet, the effect of these two personality traits upon spatial and territorial behavior is still remained for future research.

In the end, although situational differences were discovered in the effect of territoriality orientation, privacy orientation and locus of control upon crowding measures, this study did not focus upon such differences. But the discovery implies that such situation-specific differences may exist. If such will be the case, future study should attempt to identify such situational differences.

REFERENCES

- ALTMAN, I. 1975 *The environment and social behavior: Privacy, personal space, territory, crowding*. Monterey, Calif.: Brooks/Cole.
- ALTMAN, I. 1976 Privacy: A conceptual analysis. *Environment & Behavior*, **8**, 7-29.
- BARON, R. M., MANDEL, D. R., ADAMS, C. A., & GRIFFEN, L. M. 1976 Effects of social density in university residential environments. *Journal of Personality & Social Psychology*, **34**, 434-446.
- COZBY, P. C. 1973 Effects of density, activity and personality on environmental preference. *Journal of Research in Personality*, **7**, 45-60.
- DUKE, M. P., & NOWICKI, S. 1972 A new measure and social learning model for interpersonal distance. *Journal of Experimental Research in Personality*, **6**, 119-132.
- DUKE, M. P., SHAHEEN, J., & NOWICKI, S. 1974 The determination of locus of control in a geriatric population and a subsequent test of the social learning model for interpersonal distances. *Journal of Psychology*, **86**, 277-285.
- EDNEY, J. J., WALKER, C. A., & JORDAN, N. L. 1976 Is there reactance in personal space? *Journal of Social Psychology*, **100**, 207-217.
- EDWARDS, D. J. A. 1977 Perception of crowding and personal space as a function of locus of control, arousal seeking, sex of experimenter, and sex of subject. *Journal of Psychology*, **95**, 223-229.

- HECKEL, R. V., & HIERS, J. M. 1977 Social distance and locus of control. *Journal of Clinical Psychology*, **33**, 469-471.
- IWATA, O. 1979 Selected personality traits as determinants of the perception of crowding. *Japanese Psychological Research*, **21**, 1-9.
- LANGER, E. J., & SAEGERT, S. 1977 Crowding and cognitive control. *Journal of Personality & Social Psychology*, **35**, 175-182.
- RAPOPORT, A. 1975 Toward a redefinition of density. *Environment & Behavior*, **7**, 133-158.
- RODIN, J., SOLOMON, S. K., & METCALF, J. 1978 Role of control in mediating perceptions of density. *Journal of Personality & Social Psychology*, **36**, 988-999.
- SCHOPLER, J., MCCALLUM, R., & RUSBULT, C. E. 1978 Behavioral interference and internality-externality as determinants of subject crowding. Unpublished paper, University of North Carolina, Chapel Hill. Cited in L. Berkowitz (Ed.), *Advances in experimental social psychology 11*. New York: Academic Press.
- SHERROD, D. R. 1974 Crowding, perceived control, and behavioral aftereffects. *Journal of Applied Social Psychology*, **4**, 171-186.
- WOLFE, M., & LAUFER, R. 1974 The concept of privacy in childhood and adolescence. In D. H. Carson (Ed.), *Man-environment interaction: Evaluation and applications, Part II*. Stroudsburg, Penn.: Dowden, Hutchinson and Ross.
- YOSHIDA, M., & SHIRAKASHI, S. 1975 The effects of success vs. failure and members' internal-external control on the perception of members' behavior. *Japanese Journal of Experimental Social Psychology*, **15**, 45-55. (In Japanese with English summary).

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