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Human Versus Spatial Dimensions of Crowding Perceptions in Retail Environments: A Note on Their Measurement and Effect on Shopper Satisfaction

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Abstract

Perceived retail crowding was originally conceptualized as having two dimensions, but subsequent empirical work in marketing has treated the construct unidimensionally. This paper reports a series of lab and field studies that examine the dimensionality of the construct and its relationship to store satisfaction. Two alternative crowding measures are tested. Results suggest that perceived retail crowding has distinct human and spatial dimensions that affect satisfaction differently.

Retailers and marketing researchers alike have turned their attention toward understanding how the store environment influences shopping behaviors (see Miller, 1993; Bitner, 1992). Among the various aspects of the environment examined, retail crowding has received increased research attention (Bateson and Hui, 1992; Eroglu and Machleit, 1990; Harrell, Hutt, and Anderson, 1980; Hui and Bateson, 1991; Langer and Saegert, 1977). Research on crowding in retail environments is especially relevant to retailers because crowding can affect customer responses (such as time spent in the store, amount purchased, and satisfaction) in both positive and negative ways.

Crowding will be perceived by shoppers when the restrictive aspects of limited space are experienced (Stokols, 1972). When density (the number of people and objects in a limited space) restricts or interferes with activities, or when the amount of environmental stimuli exceeds coping capacities, feelings of crowding will be experienced. It is important to note that perceptions of crowding reside within the individual. Crowding is experienced when the environment is judged as being *dysfunctionally* dense; these judgments will vary across individuals depending on expectations, personal tolerance levels, time pressure, and shopping task (Eroglu and Harrell, 1986).

Harrell, Hutt, and Anderson's (1980) pioneering work in this area examined two dimensions of perceived retail crowding (one corresponding to a closed, confined feeling and the other to feelings of restricted movement) and found different consumer responses resulting from each dimension. While these findings implied that further research on the two types of crowding perceptions would be valuable, subsequent empirical work has treated the construct as unidimensional. A unidimensional conceptualization is inconsistent with evidence from environmental psychology that "has shown crowding and crowding stress to be multiply determined" (Stockdale, 1978, p. 218). Further, understanding of the antecedents and consequences of perceived retail crowding will be hampered if measurement procedures fail to capture the multidimensional nature of the construct.

Given the growing interest in perceived crowding among marketing researchers and the limitations of the unidimensional measures commonly used to date, we conducted a series of studies to examine the dimensionality of the perceived retail crowding construct, to assess the validity of two measures (Harrell's semantic differential scale and an original scale), and to examine the relationship between retail crowding perceptions and an important outcome – store satisfaction.

1. Study 1: Laboratory experiment

A simulation experiment was conducted to develop some initial understanding of the nature of the perceived retail crowding construct. Specifically, we considered the two dimensions of perceived crowding proposed by Harrell, Hutt, and Anderson (1980) and tested for the dimensionality of their semantic differential measure. We also created a Likert-type measure designed to tap the two dimensions. As the Likert format uses more words than the semantic differential scale to express the meaning of each scale item, it was hoped that this format would allow for a more explicit specification of the construct's domains.

1.1. Method

A videotape and written scenario were used to simulate a shopping episode as per Bateson and Hui (1992). The scenario asked subjects to imagine being in a large campus bookstore to buy several items (a book the subject has had trouble finding, a greeting card that must be mailed to a friend today, paper, and Post-It notes). To induce time pressure, the scenario also asked the subject to imagine that it is getting late in the day and that due to all the things that must be done, he or she feels considerable time pressure. Time pressure was induced in the scenario to ensure that at least a minimum level of crowding feelings would result (Eroglu and Harrell, 1986).

The three-minute videotape showed four scenes inside a large campus bookstore: a large area containing shelves and tables of book displays, a card and gift

department, several aisles of paper supplies and pens, and a checkout line. Two versions of the tape were created to manipulate retail density. The low-density version showed three or fewer shoppers in each scene; the high-density version had five or more shoppers in each scene. These levels were based on previous retail crowding research (Eroglu and Machleit, 1990).

Seventy-six undergraduate business students – forty-five men and thirty-one women – participated in the study. Their ages ranged from 20 to 38 (median age was 22).

Subjects were processed in classrooms. Treatment-group assignments were made by distributing questionnaires with group numbers on the covers. To avoid confounding classes with treatments, one group within each class was asked to "take a short break" and leave the classroom while the other group was processed. Subjects watched in silence as one version of the video (low or high density) was played on a large screen and then completed the questionnaires. After subjects were instructed not to talk with people in the next group, the second group returned, and the procedure was repeated using the other version of the videotape.

Two perceived crowding scales were used. One was the six-item seven-point semantic differential scale developed by Harrell, Hutt, and Anderson (1980). This scale contained the items: too many shoppers/few shoppers, restricts movement/allows free movement, can move at my own pace/must move at pace set by others*, crowded/uncrowded, gives an open feeling/gives a closed feeling*, and confined/spacious (items marked with an asterisk were reverse coded). While not explicitly stated in their article, we anticipated, based on the item content, that the first four items above would represent the "crowded, restricted movement" dimension and the last two items would represent the "confined, closed feeling" dimension that were present in the Harrell, Hutt, and Anderson study.

An alternative perceived crowding scale was also developed. The scale was designed to capture the two dimensions specified by Harrell, Hutt, and Anderson using a seven-point Likert scale format with the addition of a few more scale items. Because the "confined, closed feeling" dimension of the Harrell, Hutt, and Anderson scale was comprised of only two items, we included additional items to facilitate reliable representation of the dimension. Further, we felt that the Likert format would allow us to convey more explicit meanings in the scale items through the use of complete sentences rather than phrases. Our scale items were "This store seemed very crowded to me; This store was a little too busy; There wasn't much traffic in this store during my shopping trip*; There were a lot of shoppers in this store; I could move at my own pace in this store; The store seemed very spacious*; I would feel cramped shopping in this store; The store had an open feeling to it*; and This store would feel confining to shoppers" (items marked with an asterisk were reverse coded). The first five items were expected to tap the crowded, restricted movement dimension, and the last four items to represent the confined, closed feeling dimension.

To avoid possible order effects, the Harrell, Hutt, and Anderson crowding scale

preceded ours on half of the questionnaires within each treatment group. MANOVA results indicate no differences in mean values for the scale items for the two questionnaire versions. Standard multivariate tests of significance (Pillais, Hotellings, Wilks) were all nonsignificant for both the Harrell, Hutt, and Anderson scale ($p = .73$) and the Likert-type scale ($p = .45$) across questionnaire versions.

Because previous research suggests that perceived retail crowding affects satisfaction with the shopping experience, the satisfaction measure from Eroglu and Machleit (1990) was adapted for our use. The seven-point agreement items were "I would probably enjoy shopping at this store; I would probably be satisfied with my shopping experience at this store; Given the choice, I would probably *not* come back to this store*; and I would recommend this store to other people." Coefficient alpha reliability for the summed scale based on these items was .82.

As manipulation checks, subjects were asked to estimate the number of shoppers they saw in the video, and the number of shoppers that they would expect to see in the store had they actually shopped there (the less dense and more dense videos showed seven and thirty-four shoppers, respectively). These checks verified the low-/high-density manipulation. Subjects in the low-density condition estimated a mean number of 7.39 shoppers in the video compared to a mean of 24.68 for the high-density condition ($F = 109.53$, $p < .0001$). The number of people subjects would expect to see in the store also varied by density group: the low-density group expected, on average, 28.63 people; the high-density group expected 46.34 people ($F = 19.52$, $p < .0001$).

1.2. Results

Following Gerbing and Anderson's (1988) paradigm for scale development, we began with an exploratory factor analysis (Table 1). The results for the Harrell, Hutt, and Anderson scale were not entirely as expected; the "confined, closed feeling" factor included the two anticipated items, yet it also included the "restricts movement" scale item. In addition, the scale item "can move at my own pace" loaded about equally on both factors.

For our Likert-type measure, the loadings were closer to what we had expected. With one exception, the scale items loaded on the dimensions as predicted. Interestingly, consistent with the Harrell, Hutt, and Anderson scale, the exception was the item "I could move at my own pace in this store," which loaded equally on both factors. On reflection, it seems sensible that the "I could move at my own pace" item loaded about equally because movement is really a function of the level of crowding.

Confirmatory factor analysis (via LISREL VI) was performed using the results from the exploratory factor analysis as a starting point for further refining the measures (Gerbing and Anderson, 1988). For the Harrell, Hutt, and Anderson scale, the "can move at my own pace" item had high normalized residual values

Table 1. Exploratory factor analysis

Harrell, Hutt, and Anderson Scale			Likert Scale		
Item	Factor 1	Factor 2	Item	Factor 1	Factor 2
Gives an open feeling/Gives a closed feeling*	.87	.08	The store seemed very spacious.*	.92	.11
			The store had an open feeling to it.*	.90	.18
Confined/spacious	.81	.09	I would feel cramped shopping in this store.	.83	.22
Restricts movement/allows free movement	.66	.30	This store would feel confining to shoppers.	.78	.15
Crowded/uncrowded	.16	.91	This store was a little too busy.	.18	.93
Too many shoppers/few shoppers	.10	.89	There were a lot of shoppers in this store.	.02	.88
Can move at my own pace/Must move at pace set by others*	.36	.40	This store seemed very crowded to me.	.28	.84
			There wasn't much traffic in this store during my shopping trip.*	.18	.68
			I could move at my own pace in this store.*	.43	.43
Eigenvalue	2.65	1.22		4.48	1.89
Percentage of variance	44.2	20.3		49.8	21.0

*Reverse coded.

and was removed from subsequent analyses. The standardized factor loading for the crowded/uncrowded item slightly exceed 1.0 in a previous analysis, and was thus set to 1.0 for the final analysis. The fit values (χ^2 = 8.58, 5 d.f., p = .13; GFI = .96; AGFI = .84; RMSR = .062) indicate a good fit of the data to the two-dimensional model of perceived crowding. We note, however, that the final analysis produced dimensions that differ slightly in content from those presented in the Harrell, Hart, and Anderson study. Instead of their proposed dimensions of "confined, closed feeling" and "crowded, restricted movement," the item content seems to reflect "spatial" and "human" aspects of crowding.

An initial confirmatory factor analysis was conducted with our alternative Likert-type scale with the "I could move at my own pace" item specified to load on the "crowded, restricted movement" dimension. Like the Harrell, Hutt, and Anderson scale, this item had very high normalized residuals and was removed for the final analysis. The maximum likelihood factor loadings for the final analysis are shown in Table 2. Note that all scale items loaded on the anticipated dimensions. The fit values indicate a good fit of the data to the model (χ^2 = 19.36, 19 d.f., p = .43; GFI = .94; AGFI = .90; RMSR = .057). As with the Harrell, Hutt, and Anderson scale, the content of the scale items seems to reflect aspects of spatial and human crowding in the environment. This conceptualization of perceived crowding is consistent with environmental-psychological literature that suggests two underlying determinants of crowding: spatial (physical) and "social" (the number of people and their rate of social interaction) density (Rapoport, 1976).

As an additional test of the appropriateness of the two-dimensional model, we assessed discriminant validity between the dimensions using the procedures recommended by Fornell and Larcker (1981). The average variance extracted value for each factor (.89 (human) and .63 (spatial) for the Harrell, Hutt, and Anderson scale, .72 and .77 for the Likert format scale) exceeded the .50 rule-of-thumb cut-off point. Importantly, the average variance extracted values exceed the squared correlation between the dimensions (.09 for the Harrell, Hutt, and Anderson scale and .13 for the Likert-type scale). These tests indicate discriminant validity by demonstrating that more variance is attributed to the construct than to measurement error, and that the dimensions have more variance that is unique than common. Coefficient alpha values for each dimension for both the Harrell, Hutt, and Anderson and the Likert-type scales exceeded .82.

We conclude that human and spatial dimensions of perceived retail crowding can be empirically distinguished in a reliable manner using either the Harrell, Hutt, and Anderson scale or the Likert-type scale. Although both measures of retail crowding perceptions perform well based on statistical criteria, we prefer the Likert format on the basis of its content validity. The Likert format allows more explicit meanings to be conveyed through the use of complete sentences (and not adjectives or phrases). In addition, the use of four scale items in our measure of the human crowding dimension (versus two items in the Harrell measure) should allow for a more reliable estimation of the construct.

Table 2. Confirmatory factor analysis and correlation with satisfaction

	Study 1: Lab, bookstore		Study 2: Field, bookstore		Study 3			
					Kroger		K-Mart	
Scale item	"Human"	"Spatial"	"Human"	"Spatial"	"Human"	"Spatial"	"Human"	"Spatial"
This store seemed very crowded to me.	.69		.85		.88		.87	
This store was a little too busy.	.89		.91		.84		.82	
There wasn't much traffic in this store during my shopping trip.*	.84		.41		.91		.88	
There were a lot of shoppers in the store.	.95		.72		.87		.74	
The store seemed very spacious.*		.93		.77		.61		.49
I felt cramped shopping in this store.		.91		.70		.99		.96
The store had an open feeling to it.*		.87		.59		—		—
This store felt confining to shoppers.		.79		.89		.80		.59
Average variance extracted	.72	.77	.55	.56	.76	.63	.69	.50
Correlation between the factors	.36		.36		.66		.40	
Coefficient alpha reliability	.90	.93	.79	.83	.93	.86	.89	.69
Correlation with satisfaction	−.35	−.23	.01	−.28	−.07	−.38	.13	−.25
	$p < .001$	$p < .025$	$p < .443$	$p < .000$	$p < .133$	$p < .000$	$p < .078$	$p < .003$

*Reverse coded.

2. Study 2: Initial field study

The purpose of our second study was to determine if the Likert-type perceived retail crowding (PRC) scale would retain its validity in a natural setting.

2.1. Method

The study was conducted at the same campus bookstore that was used in the videotape simulation. The respondents were 140 shoppers (seventy men and seventy women) ranging in age from 18 to 63 (median age was 22). Seventy-eight percent were undergraduate students, 8 percent graduate students, and 14 percent staff or "other." Respondents were approached by surveyors as they left the main entrance of the store. To increase variability in crowding conditions, data were collected over three days at different times of the day.

2.2. Results

Confirmatory factor analysis of the eight-item measure cross-validates the human and spatial crowding factors found in the laboratory simulation. Fit statistics for the two-dimensional model indicate a good fit to the data (χ^2 = 31.72, 19 d.f., p = .03; GFI = .95; AGFI = .90; RMSR = .06). In addition, the average variance extracted values for each factor (see Table 2) exceed the squared correlation between the dimensions (.13), thereby indicating discriminant validity between the factors. The reliability of the dimensions are indicated by the coefficient alpha values of .79 and .83. These results cross-validate the laboratory simulation results in a field context.

3. Study 3: Additional field studies

The purpose of the next two data collection efforts was to examine external validity by assessing the applicability of the PRC scale for use with other shopper populations and types of retail environments.

3.1. Method

Two common retail environments were selected: a grocery store (Kroger) and a discount store (K-Mart). Respondents were 117 adult shoppers at a suburban Kroger store in a large midwestern city and 115 adult shoppers at a K-Mart in the same city. To assure variation in crowding conditions, data were collected over several days at different times of the day.

3.2. Results

Confirmatory factor analysis of the Kroger responses again supported human and spatial crowding dimensions (χ^2 = 48.86, 19 d.f., p = .000; GFI = .89; AGFI = .79; RMSR = .06). Discriminant validity is again evidenced; the average variance extracted values (see Table 2) exceed the squared correlation between the dimensions (.43). Coefficient alpha values were high (.93 and .87) for the human and spatial crowding sub-scales.

The K-Mart data, however, deviated slightly from the other studies. The confirmatory factor loading for the scale item "This store has an open feeling to it" was low (.28), and the item had high normalized residuals. Perhaps some of the shoppers interpreted the word "open" differently, such as "open for business" or "available," rather than meaning that the store had an "open, airy" feeling to it. The item was eliminated from the scale and the confirmatory factor analysis was reevaluated. This new factor model had a good fit to the data (χ^2 = 15.88, 13 d.f., p = .256; GFI = .96; AGFI = .91; RMSR = .043). As indicated by the change in chi-squared values, the fit was significantly better than when the "open feeling" scale item was included (53.48 chi-squared from first model − 15.88 = 37.6, 19-13 d.f. = 6 d.f., $p < .001$). Further, discriminant validity between the dimensions is supported; average variance extracted values of .69 and .50 exceed the squared correlation between dimensions (.16). Coefficient alpha values were .89 and .69 for the human and spatial dimensions, respectively.

Looking back at the Kroger analysis, the "open feeling" scale item had an acceptable factor loading (.69); but, when the item was eliminated from the scale, the model (χ^2 = 26.08, 13 d.f., p = .017; GFI = .93; AGFI = .85; RMSR = .045) fit significantly better than the original (change in χ^2 = 22.78, 6 d.f., $p < .001$). The correlation between the two PRC dimensions remained unchanged, and the coefficient alpha value for the three-item spatial crowding dimension was still high at .86. In conclusion, the results of Study 3 provides additional support for the validity of our perceived crowding measure and illustrate the value of the two-dimensional conceptualization of the perceived retail crowding construct in various retail contexts.

4. Relation to satisfaction

In their theoretical model of retail crowding, Eroglu and Harrell (1986) propose that higher levels of crowding will result in less satisfaction with the overall shopping experience. Dense, crowded retail environments may induce tension, confusion, or frustration, thereby leading to less favorable evaluations of the shopping experience (Eroglu and Harrell, 1986; Harrell, Hutt, and Anderson, 1980). Because such negative outcomes may stem from either or both aspects of crowding, we examined correlations in each of our data sets between the dimensions of perceived retail crowding and store satisfaction (see Table 2).

For the lab simulation, significant correlations are found between both dimensions of crowding and satisfaction such that higher levels of perceived crowding resulted in less satisfaction with the overall shopping experience. For this set of data, we observe that human crowding has more effect than spatial crowding on store satisfaction.

In the bookstore field study, the correlation between spatial crowding and satisfaction is significant but the correlation between human crowding and satisfaction is not. While the nonsignificant correlation is surprising, it supports our contention that differing effects of the two dimensions may be observed and that both dimensions should be examined in studies of retail crowding.

In designing Study 3, we wished to examine whether the lack of a human-crowding effect on satisfaction found in Study 2 could be due to some influence not addressed in the bookstore simulation (Study 1). While a number of factors affect an individual's perceptions of crowding and store satisfaction (such as type of shopping task, time pressure, and individual tolerance levels), most shoppers come to a store with some expectations about the conditions they are about to encounter (Keaveney and Hunt, 1992). Hence, we speculated that expectations about the number of shoppers an individual anticipates he or she will encounter can moderate the relationship between human crowding and store satisfaction. Such an expectation may have been missing from Study 1 since it was not an actual shopping trip.

To begin, note that the correlations between crowding and satisfaction for Study 3 exhibit the same pattern as Study 2; the correlations for human crowding are not significant while the correlations for spatial crowding are. To test for a moderating influence of expectations, subjects were categorized into one of three expectations groups: those who expected the store to be *more* crowded than it was, *about as crowded* as it was, and *less* crowded than it was. Considering the Kroger data first, for the "more crowded" ($n = 42$) and "about as crowded" ($n = 30$) groups, the correlations between perceived human crowding and satisfaction were nonsignificant ($-.13$, and $-.09$ for the two groups, respectively). However, for those who expected the store to be less crowded than it was, perceived human crowding did significantly affect satisfaction ($r = -.38$, $p < .007$). For the K-Mart data, the findings were similar: $r = .15$ ($p < .147$) and $r = -.22$ ($p < .144$) for the "more crowded" and "about as crowded" expectation groups, respectively. The relationship was significant in the "less crowded" expectation group; however, the correlation was positive ($r = .37$, $p = .012$).

While all other significant correlations between crowding and satisfaction are negative, the correlation between perceived human crowding and satisfaction is positive for K-Mart shoppers who expected the store to be less crowded than they found it to be. We speculate that the optimal level of human crowding may vary by type of retail outlet. A shopper may feel more satisfied with a discount store when there are many other shoppers because the human crowding may indicate there are good bargains to be found. Yet in a grocery store, human crowding may limit the speed with which one performs a routine shopping task. This suggests

that future research on retail crowding should look closely at the form of the relationship between human crowding and satisfaction; it may be that the relationship is curvilinear, whereby a shopper may feel uncomfortable if there are too few or too many other shoppers in the store depending on the circumstances.

5. General discussion and conclusion

Two issues were addressed in this project: the dimensionality and measurement of perceived retail crowding and its relationship to store satisfaction. With regard to the measurement issue, we recommend the four human crowding and three spatial crowding Likert-format scale items as a measure of the perceived retail crowding construct (in contrast to its previous unidimensional operationalization). The two-dimensional conceptualization of the construct has been supported empirically in these studies, and the measure provides reliable representations of the dimensions. Though we acknowledge that construct validation is a continuous, ongoing process, based on our testing we conclude that the scale appears to meet the necessary empirical conditions for a construct-valid measure.

With regard to store satisfaction, our results indicate that the relationship between perceived retail crowding and satisfaction may not be a simple, direct one. We have observed that expectations of crowding can moderate the relationship such that increased feelings of crowding affect satisfaction only when the respondents expected the store to be less crowded than it actually was. It is possible that there are other moderating or mediating variables that affect the crowding/satisfaction relationship. Given that crowding results in certain affective responses (Hui and Bateson, 1991), which, in turn, influence satisfaction (Oliver, 1993), the question then becomes whether crowding's effect on satisfaction is direct or indirect.

By distinguishing the human and spatial dimensions of perceived retail crowding, we hope to encourage and facilitate future research. Many issues await investigation. For example, human and spatial crowding may have different effects on store image. Whereas a spatially crowded store might convey a "discount" image if the merchandise is cluttered, a store with a lot of shoppers (high "human" crowding) could convey an image of an interesting or unusual store with "value" merchandise or services. Study of the differences in antecedents and consequences of the two dimensions of crowding would provide retailers with guidelines for making adjustments in store layout and atmosphere. Adjustments in store atmosphere may affect the two dimensions of crowding differently; for example, changes in music or temperature may alleviate feelings of human crowding but not spatial crowding, while changes in merchandising or floor layout might affect spatial (but not human) crowding. Another interesting question concerns the individual and combined effect of the two crowding dimensions on store image formation and shopping behaviors. Perhaps environmental designs can be devised that could enhance store image and consumer satisfaction by aiding shoppers to

adapt to human and spatial crowding in situations where these are unavoidable (such as during the holiday season when both the amount of merchandise displayed and traffic are higher than usual). In addition, future research should consider how the two dimensions may convene to shape crowding perceptions. For example, might shoppers experience less human crowding if more spacious waiting areas (such as checkout, customer service, and gift wrap areas) are provided in the store? Answers to these and other research questions should be facilitated by the use of the two-dimensional measure developed in this study.

References

Bateson, John E. G., and Michael K. Hui. (1992). "The Ecological Validity of Photographic Slides and Videotapes in Simulating the Service Encounter," *Journal of Consumer Research* 19, 271–281.

Bitner, Mary Jo. (1992). "Servicescapes: The Impact of Physical Surroundings on Customers and Employees," *Journal of Marketing* 56, 57–71.

Eroglu, Sevgin, and Gilbert D. Harrell. (1986). "Retail Crowding: Theoretical and Strategic Implications," *Journal of Retailing* 62, 346–363.

Eroglu, Sevgin, and Karen A. Machleit. (1990). "An Empirical Study of Retail Crowding: Antecedents and Consequences," *Journal of Retailing* 66, 201–221.

Fornell, Claes, and David F. Larcker. (1981). "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research* 18, 39–50.

Gerbing, David W., and James C. Anderson. (1988). "An Updated Paradigm for Scale Development Incorporating Unidimensionality and Its Assessment," *Journal of Marketing Research* 25, 186–192.

Harrell, Gilbert D., Michael D. Hutt, and James C. Anderson. (1980). "Path Analysis of Buyer Behavior Under Conditions of Crowding," *Journal of Marketing Research* 17, 45–51.

Hui, Michael K., and John E. G. Bateson. (1991). "Perceived Control and the Effects of Crowding and Consumer Choice on the Service Experience," *Journal of Marketing Research* 18, 174–184.

Keaveney, Susan M., and Kenneth A. Hunt. (1992). "Conceptualization and Operationalization of Retail Store Image: A Case of Rival Middle-Level Theories," *Journal of the Academy of Marketing Science* 20, 165–175.

Langer, Ellen J., and Susan Saegert. (1977). "Crowding and Cognitive Control," *Journal of Personality and Social Psychology* 35, 175–182.

Miller, Cyndee. (1993). "Glitzy Interiors Transform Stores into 'Destinations,' Boost Sales," *Marketing News* (August 30), 1, 6.

Oliver, Richard L. (1993). "Cognitive, Affective, and Attribute Bases of the Satisfaction Response," *Journal of Consumer Research* 20, 418–430.

Rapoport, A. (1976). "Toward a Redefinition of Density." In S. Saegert (ed.), *Crowding in Real Environments*. London: Sage.

Stockdale, J. E. (1978). "Crowding: Determinants and Effects," *Advances in Experimental and Social Psychology* 11, 197–245.

Stokols, Daniel. (1972). "On the Distinction Between Density and Crowding: Some Implications for Future Research," *Psychological Review* 79, 275–277.