

Perceived retail crowding and shopping satisfaction: the role of shopping values

Sevgin A. Eroglu^{a,*}, Karen Machleit^{b,1}, Terri Feldman Barr^{c,2}

^aDepartment of Marketing, Georgia State University, University Plaza, Atlanta, GA 30303-3083, USA

^bDepartment of Marketing, University of Cincinnati, P.O. Box 210145, Cincinnati, OH 45221-0145, USA

^cDepartment of Marketing, Miami University, 200 Upham Hall, Oxford, OH 45056, USA

Received 1 August 2003; received in revised form 16 November 2003; accepted 26 January 2004

Abstract

Two studies were conducted to examine whether shopping values are affected by perceived retail crowding, and whether shopping values mediate the relationship between perceived retail crowding and shopping satisfaction. Results of the first study show that perceived retail crowding affects shopping values, albeit not very strongly. However, the effects appear to be moderated by factors such as personal tolerance for crowding, time spent shopping, shopping intention, and whether a purchase was made. Study 2 indicates that the impact of perceived crowding on shopping value is mediated by emotions experienced by the shopper. The emotions and shopping value reactions, in turn, mediate the effect of spatial crowding on shopping satisfaction. Interestingly, the results show that when these mediating variables are accounted for, human crowding *positively* affects shopping satisfaction. These findings provide support for the inverted U explanation in the general crowding literature, and suggest new avenues of future research in the context of retail crowding.

© 2004 Elsevier Inc. All rights reserved.

Keywords: Retail crowding; Shopping satisfaction; Shopping values

1. Introduction

Research on theoretical and managerial implications of retail crowding has come a long way from the introduction of the concept into the marketing literature by Harrell et al. (1980). Since then, an impressive body of theoretical (Eroglu and Harrell, 1986) and empirical studies have demonstrated the behavioral and strategic implications of this important construct. In general, two major groups of research can be identified in this stream. Studies on the antecedents of retail crowding examine factors such as perceived risk (Eroglu and Machleit, 1990), expectations (Machleit et al., 2000) and personal control (Hui and Bateson, 1991). Research on the consequences of retail crowding has mainly focused on affective responses (Hui and Bateson, 1991) and satisfaction (Eroglu and Machleit, 1990; Machleit et al., 1994; Machleit et al., 2000). In an

effort to expand the existing nomological network, this study examines an additional outcome, namely, the effects of perceived retail crowding on hedonic and utilitarian shopping values (Babin et al., 1994).

Two studies are conducted to understand the relationship between perceived retail crowding and customers' shopping values. The first focuses on establishing the existence of such a relationship and the potential moderating effects of variables previously shown to be important in the retail crowding literature. The second study places shopping values into a structural modeling framework to examine if and how they fit with other demonstrated effects of perceived retail crowding. Specifically, the mediating effects of shopping values on the established relationship between perceived retail crowding and shopping satisfaction are considered.

2. Background

2.1. What is perceived retail crowding?

Perceived crowding is a psychological state that occurs when a person's demand for space exceeds the supply

* Corresponding author. Tel.: +1-404-651-3920; fax: +1-404-651-4198.

E-mail addresses: seroglu@gsu.edu (S.A. Eroglu),

karen.machleit@uc.edu (K. Machleit), barrtf@muohio.edu (T.F. Barr).

¹ Tel.: +1-513-556-7102; fax: +1-513-556-4891.

² Tel.: +1-513-529-3096; fax: +1-513-529-1290.

(Stokols, 1972). This could be the result of physical, social, or physical factors that sensitize individuals and cause them to anticipate actual or potential problems arising from scarce space (Stockdale, 1978). It is important to note that perceived crowding is different from density—density is simply the number of people and/or objects in a space. Density is an *antecedent* of crowding perceptions, but it is only when density restricts or interferes with individuals' goals and activities that the environment will be perceived as crowded. It is for this reason that perceptions of crowding are individual in nature. Two different shoppers in the same store may perceive different levels of crowding depending on individual characteristics (e.g., personal tolerance levels for crowding) or situational constraints (e.g., shopping motive, time pressure).

Perceived retail crowding appears to be a multidimensional construct (Machleit et al., 1994) consisting of two dimensions: *human crowding perceptions*—perceptions of crowding based on the number of individuals as well as the extent of social interaction, and *spatial crowding perceptions*—crowding perceptions based on the amount of merchandise and fixtures as well as their configuration within the store. Because perceived crowding is part of the overall environment of the store, it is an important determinant of shopper satisfaction (Eroglu and Machleit, 1990; Machleit et al., 1994).

2.2. Prior research on perceived retail crowding

What is known so far about the specific effects of perceived retail crowding on shoppers? First, there are various antecedents of crowding perceptions. Density is the obvious one, but prior research has shown that factors such as time pressure, perceived risk, and shopping motive of the individual (task shopping vs. browsing) will affect perceived crowding levels (Eroglu and Machleit, 1990). It is also known that there are consequences or outcomes that result from perceptions of crowding while shopping. One consequence is that higher levels of crowding perceptions will lead shoppers to feel lower levels of positive emotions and higher levels of negative emotions while shopping (Machleit et al., 2000)—certainly an undesirable outcome from the retailer's point of view.

Probably the most important outcome to be examined thus far has been the relationship between perceived crowding and shopping satisfaction. Because satisfaction with a shopping trip has important implications for shopper repatronage intentions, understanding the specific nature of the effect of crowding on satisfaction is of interest. Researchers have found that higher levels of perceived crowding decrease shopping satisfaction (Machleit et al., 1994), but that there are moderating and mediating effects to consider. Specifically, emotions experienced while shopping mediate the effect of human crowding perceptions on shopping satisfaction such that the effect of human crowding on satisfaction “works” through the emotions experienced by

the shoppers. The effect is different, however, for spatial crowding perceptions where emotions only partially mediate the effect of spatial crowding on satisfaction. That is, there is a direct effect of spatial crowding on shopping satisfaction beyond the indirect effect that occurs via changes in emotional state (Machleit et al., 2000). Given that retailers can control the spatial configuration of the store, but not the number of shoppers in the store, it is likely that the direct effect of spatial crowding (and not human crowding) on shopping satisfaction is due to the attributions shoppers make for the source of their discomfort (e.g., the store is to blame for spatial crowding).

Other variables have been found to moderate the relationship between perceived retail crowding and shopping satisfaction. Individuals have been shown to vary on their personal tolerance levels for crowding, and for those with a high tolerance for crowding, perceived human crowding does not significantly decrease shopping satisfaction as it does for those with a low tolerance level for crowding. Furthermore, the relationship seems to vary by store type; for discount stores, the relationship between human crowding and satisfaction is nonsignificant (Machleit et al., 2000).

2.3. Research questions

Up to this point in this research stream, the focal research issue has been to understand the specific nature of the relationship between perceived retail crowding and shopping satisfaction. While progress has been made in understanding this relationship, by looking at another outcome response, shopping values, one can better understand the effects of crowding on shoppers and the process through which crowding affects satisfaction. Shopping value represents a very comprehensive assessment of the shopping experience—much more so than shopping satisfaction—and as a result, the shopping value assessment should capture more of the effects of crowding. Thus, in expanding the nomological network surrounding perceived retail crowding, two research questions provide guidance: (1) Are shopping values affected by perceived retail crowding? (2) Do shopping values mediate the relationship between perceived retail crowding and shopping satisfaction?

3. Study 1

Babin et al. (1994) introduced the concept of shopping value and illustrate the importance of the concept for consumer researchers. They specify two types of shopping values: *utilitarian value*—whether the purchase goal of the shopping trip was accomplished, and *hedonic value*—which reflects the individual's evaluation of the entertainment and experiential worth of the shopping trip (e.g., the fun, experiential part of shopping). Taken together, these two components represent a comprehensive picture of the value an individual derives from a shopping trip; indeed, the value

that a shopper takes away from the experience is amply described by these two encompassing factors. Given that crowding impedes task performance (Bell et al., 1990; Esser, 1973), which will in turn affect the value of the shopping episode, shopping value is deemed to be a construct of particular interest.

With the first research question in mind, it is hypothesized that perceived retail crowding will negatively affect shopping value. Babin et al. (1994) describe shopping value as a subjective response “characterized by consumers’ interactions with an environment” (p. 654). It is likely that the stress and discomfort created by either human or spatial crowding will decrease the ability to appreciate and enjoy a shopping trip (hedonic value). Furthermore, Babin et al. note that crowding can play a role in decreasing utilitarian value by lowering the “levels of success in accomplishing product-acquisition tasks” (p. 651). Indeed, the literature in environmental psychology is replete with examples of how crowding decreases task performance (Bell et al., 1990; Nagar and Pandey, 1987). Thus, negative relationships are hypothesized between perceived human and spatial crowding and utilitarian and hedonic shopping value.

Similar to what has been observed when examining the relationships between perceived retail crowding and shopping satisfaction, it is hypothesized that there will be moderators of the relationships between perceived crowding and shopping value. Prior research has found that personal tolerance levels for crowding, prior expectations of crowding, and store type moderate the crowding → satisfaction relationship (Machleit et al., 2000). One would also expect to find similar moderating effects when shopping value is the dependent measure of interest.

4. Method—Study 1

One hundred fifty-three adult respondents participated in Study 1. These respondents were recruited from a private school, day care centers, and a suburban parenting group as part of a fundraising activity where each group received \$2.00 per completed questionnaire. Respondents were asked to complete the questionnaire immediately after their next shopping trip (be it to any type of store, as long as the trip lasted for at least 10 minutes). To help respondents reconstruct the shopping episode in their mind, they began by answering questions about the name of the store, length of time at the store, whether they made a purchase, their shopping intention (browse or task specific), and whether they were shopping alone. The sample had a mean age of 37.1 (range = 18–78) and was 74.5% female. Most respondents reported their shopping experience at a grocery store (25.7%), followed by a hypermart (14.5%), department store (13.8%) and mall (13.8%).

Respondents completed measures of shopping satisfaction (coefficient $\alpha=.80$), perceived human crowding (coefficient $\alpha=.89$) and perceived spatial crowding (coefficient

$\alpha=.80$) (Machleit et al., 1994). The 15 item Babin et al. (1994) measure was used to measure shopping value. The hedonic dimension of the measure contained 11 scale items, and a confirmatory factor analysis including all 11 items did not have an acceptable fit (the original 4 items from the utilitarian shopping value dimension fit adequately). Using Gerbing and Anderson (1988) criteria, the 11 items were reduced to 6 and a model was obtained that adequately fit the data. [Scale items included in the hedonic dimension are the following: “I continued to shop, not because I had to, but because I wanted to,” “Compared to other things I could have done, the time spent shopping was truly enjoyable,” “I enjoyed being immersed in exciting new products,” “I enjoyed this shopping trip for its own sake, not just for the items I may have purchased,” “I had a good time because I was able to act on the ‘spur of the moment’,” and “While shopping, I was able to forget my problems.” Fit indices for the two dimension (utilitarian and hedonic shopping value) CFA were as follows: $\chi^2=50.97$, 34 *df*, $P=.031$, AGFI=.90, NFI=.93, CFI=.98, RFI=.91, RMSEA=.054. Correlation between hedonic and utilitarian shopping value was low (.09).]

5. Results—Study 1

Analysis began with an examination of the simple correlations between the variables before looking for moderating effects (see Table 1). While negative relationships between crowding and shopping value were hypothesized, note that the only significant correlation here is between spatial crowding perceptions and hedonic shopping value. This could be due to the hypothesized moderating effects that are not considered in examining these relationships.

To test for the hypothesized moderating effects, the sample was split on a number of potential moderators (similar to those examined in Machleit et al., 2000). Unfortunately, splitting the sample on these potential moderators resulted in small sample sizes in some of the groups, which made testing these effects difficult. However, some interesting patterns are found that indicate the presence of some moderating factors that need to be considered (Baron and Kenny, 1986). First, the sample was split by personal tolerance for human crowding level, high or low (measured with the items: “I avoid crowded stores,” “I can overlook a crowd if it means I can find a bargain,” “Crowded stores don’t bother me”). Here some stronger correlations are observed: for those who cannot tolerate a crowd, increased levels of human crowding perceptions negatively affect both types of shopping value, while the same correlations were nonsignificant for high-tolerance individuals. Thus, it appears that personal tolerance for crowding moderates the crowding → shopping value relationship.

Possible moderating effects of shopping intention were examined next. For those who make a purchase, there were

Table 1
Correlations between perceived crowding and shopping value

	Human	Spatial
Utilitarian	-.14	.04
Hedonic	-.09	-.28***
<i>Low personal tolerance for crowding (n = 44)</i>		
Utilitarian	-.32**	-.39***
Hedonic	-.33**	-.21
<i>High personal tolerance for crowding (n = 57)</i>		
Utilitarian	-.08	.22 *
Hedonic	.08	-.21
<i>Made a purchase (n = 124)</i>		
Utilitarian	-.05	.08
Hedonic	-.02	-.21**
<i>Did not make a purchase (n = 17)</i>		
Utilitarian	-.46 *	-.53**
Hedonic	-.62***	-.60***
<i>Less than 60 minutes (n = 53)</i>		
Utilitarian	-.34**	.45***
Hedonic	-.36***	-.38***
<i>One hour or more (n = 87)</i>		
Utilitarian	.02	.05
Hedonic	.08	.18 *
Shopping intention		
<i>Make a purchase (n = 55)</i>		
Utilitarian	-.33**	-.14
Hedonic	-.27**	-.26 *
<i>Browse (n = 18)</i>		
Utilitarian	.09	.30
Hedonic	-.04	-.35
<i>Make a purchase and browse (n = 68)</i>		
Utilitarian	-.03	.09
Hedonic	.06	-.16

* $P < .10$.

** $P < .05$.

*** $P < .01$.

strong effects of human crowding perceptions on both types of shopping value. These effects were nonsignificant for those who have browsing intentions. These findings are consistent with theory that states that blocking of goal-directed activity is what makes people more sensitive to crowding (Brehm, 1966; Stockdale, 1978).

The sample was next split into groups based on whether a purchase was made. For the small group of people that did not make a purchase (see Table 1), the correlations among both dimensions of crowding and both types of shopping values were high. One thing that is not available, though, is an understanding of the reasons why these shoppers did not make a purchase. Was it because they could not get what they wanted due to the crowding? Was it because they could not find the item, or that they did not intend to make a purchase? Future research that controls for these questions

will help to better understand the effects of this potential moderator.

Finally, the amount of time spent shopping in the store was examined as a potential moderator. The sample was split at the median (60 minutes). There exist much higher correlations in the group that was in the store less than 60 minutes. For those who were in the store a shorter amount of time, both human and spatial crowding perceptions negatively affected utilitarian and hedonic shopping evaluations. The unanswered question here is whether the shoppers left the store quickly because it was crowded? If so, they may not have accomplished the desired shopping task thus decreasing the utilitarian value, along with the hedonic enjoyment of the trip.

6. Study 2

It is possible that the weak direct effects observed between crowding and shopping value in Study 1 may be due to other intervening variables in a chain of effects. Put differently, it may be that the effect is an indirect, rather than a direct one. For example, crowding perceptions have been shown to produce emotional responses (Machleit et al., 2000), which in turn can affect shopping values (Babin et al., 1994). Examining such intervening responses will be a useful next step in better understanding the relationships. This is what Study 2 is designed to accomplish.

Fig. 1 illustrates the hypothesized sequence. It is anticipated that the emotions produced by perceptions of crowding will affect hedonic and utilitarian shopping value. Also hypothesized are positive relationships between utilitarian and hedonic value and shopping satisfaction. Indeed, Babin et al. (1994) propose that both these forms of value should influence customer satisfaction and they empirically show strong correlations of hedonic value ($r = .51$, $P < .001$) and utilitarian value ($r = .53$, $P < .001$) with satisfaction.

Prior research has demonstrated effects of perceived crowding on shopping satisfaction (Machleit et al., 1994). More recently, it was shown that emotions mediated the effect of human crowding on satisfaction but did not completely mediate the effects of spatial crowding on satisfaction (Machleit et al., 2000); a direct effect of spatial crowding perceptions on shopping satisfaction was observed even when emotions were included as a mediator. Whether emotions and hedonic and utilitarian value assessments mediate the effects of perceived crowding on satisfaction is examined here as an empirical question. Given that the hedonic and utilitarian components capture both experiential and instrumental outcomes (a reasonably “complete” assessment of the shopping trip), they may also completely capture the negative effects of crowding within the value assessments, and thus mediate the crowding \rightarrow satisfaction relationship. Yet it is possible that there may still be some direct effect of crowding on satisfaction

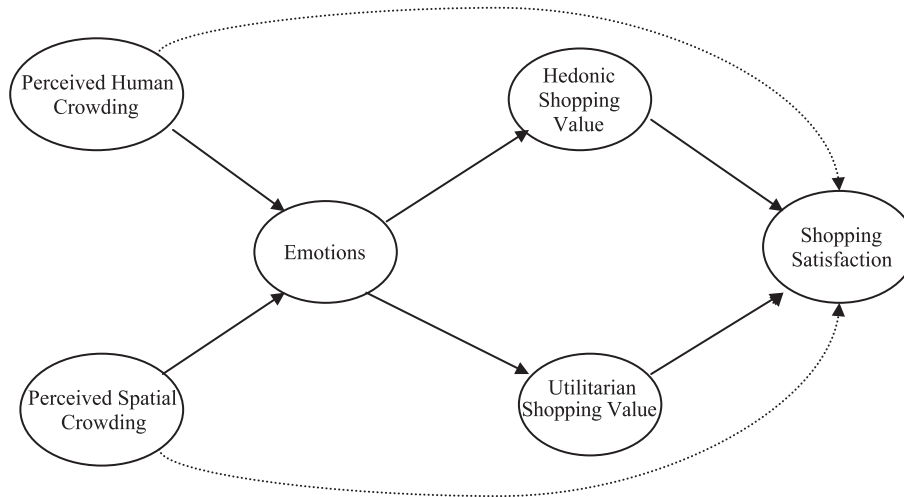


Fig. 1. Hypothesized model.

beyond the value assessments. This will be examined in the model.

7. Method—Study 2

Two hundred ninety-six young adult respondents (college students ranging in age from 19 to 35, mean of 21) participated in the study. These respondents were recruited from classes in two urban universities and received course credit for their participation. Respondents were given the questionnaire and asked to complete it immediately after their next shopping trip. Included were measures of shopping satisfaction (coefficient $\alpha=.78$), perceived human crowding (coefficient $\alpha=.92$), perceived spatial crowding (coefficient $\alpha=.79$), hedonic (coefficient $\alpha=.88$) and utilitarian (coefficient $\alpha=.74$) shopping value. Emotions experienced while shopping, selected from Izard's Differential Emotions Theory (Izard, 1977) were measured as well. Prior research shows that the Izard measure captures more of the emotional character of shopping than other emotion measures (Machleit and Eroglu, 2000). Six emotion types that have been demonstrated to be relevant to the shopping experience (Machleit and Eroglu, 2000) were selected and include the emotions joy, interest, surprise, contempt, disgust and anger. Coefficient alpha values for these emotion measures ranged from .78 to .91.

8. Results—Study 2

Lisrel 8.30 was used to estimate the model coefficients for the model hypothesized in Fig. 1. Scale items were summed and used as an indicator of each construct in the model. Error terms were set to $(1 - \alpha) \times (\text{variance})$ for each scale to account for measurement error, thereby

correcting for attenuation in the model coefficients (Anderson and Gerbing, 1988). The six emotion types were correlated, as expected, so the error terms were allowed to covary to account for this correlation rather than specifying directional relationships among the emotion types. The fit indices indicate a good fit of the data to the model ($\chi^2=10.21$, 8 *df*, $P=.25$, AGFI=.95, NFI=.99, CFI=1.0, RFI=.93, RMSEA=.028).

The model with coefficients is presented in Fig. 2. All possible links between both human and spatial crowding perceptions and the six emotion types were estimated, but for simplicity, only the significant ones appear in the Figure. Similarly, all links between the emotion types and shopping values were estimated and only the significant ones appear in the figure. The dashed lines indicate links that were not hypothesized but were significant and were necessary for model fit.

Note in Fig. 2 that there are significant effects of human and spatial crowding perceptions on the various emotion types, consistent with prior research (see Machleit et al., 2000, for explanations of the theory underlying the effects of crowding on each specific emotion type). The emotions, in turn, affect shopping values. What is interesting to note is that there are no direct effects of crowding on shopping value (when included in the model, the links are nonsignificant). Crowding perceptions appear to affect shopping value only indirectly through the emotions that are evoked.

Of note are the direct effects of some of the emotion types on shopping satisfaction. Hedonic and utilitarian shopping values do not completely mediate the effects of joy, contempt and disgust on satisfaction. It seems that the benefits of task completion and hedonic value that shopping provides are not the sole, complete determinants of satisfaction—emotion also plays a significant role to supplement these more cognitive evaluations. Indeed, satisfaction researchers note the strong effects of emotion, in addition to

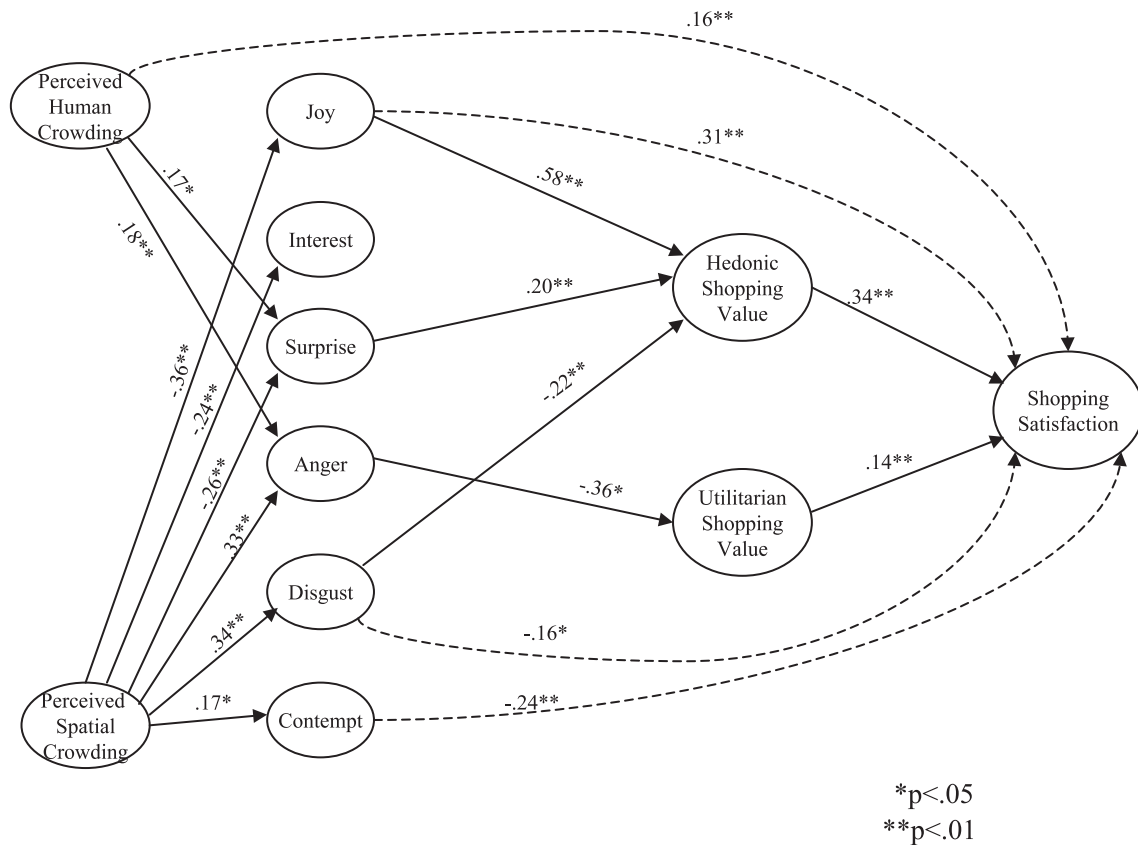


Fig. 2. Model coefficients.

evaluative reactions, in producing satisfaction outcomes (Oliver, 1993).

Finally, testing was done to see if crowding had significant, direct effects on satisfaction beyond the indirect effects via the mediating variables. Here it is found that the effect of perceived spatial crowding on satisfaction is nonsignificant. The strong effects of spatial crowding on satisfaction that have been observed in prior research appear to be mediated by the emotion and shopping value variables. What has not been observed before, however, is the direct, *positive* relationship between human crowding perceptions and shopping satisfaction. Typically, human crowding effects on satisfaction have been weak or nonexistent, yet here is a positive effect. It appears that once the negative effects of human crowding are accounted for by emotional reactions, effects on task completion and effects on hedonic enjoyment, there remains a component of human crowding that creates a positive effect of a crowd on satisfaction. Indeed, total effects of human crowding on satisfaction are positive (.12) with total effects of spatial crowding on satisfaction being negative (−.39). While positive effects of human crowding have not been observed in the retail crowding literature prior to this, there is intuitive appeal for the notion that sometimes having more people in a store is desirable. This is an important point that will be discussed in the following section.

9. Discussion and future research suggestions

The results of Study 1 show that perceived retail crowding negatively affects shopping values, albeit not strongly. However, the effects appear to be moderated by factors such as personal tolerance for crowding, time spent shopping, shopping intention and whether a purchase was made. These findings are certainly consistent with evidence in the general crowding literature. For example, both Cozby (1973) and Dooley (1974) suggested that people with relatively large personal space zones are likely to have less tolerance for crowded situations. As such, for those with high need of personal space and low tolerance for restricted space, high levels of human crowding might negatively affect their hedonic and utilitarian shopping values given that they are neither enjoying the trip nor completing a successful purchase goal. Similarly, the moderating effects of shopping intentions and purchase activity found in this study are consistent with previous studies that show a significant relationship between perceptions of crowding and disruption of one's pursuit of important activities and goals (Proshansky et al., 1970; Esser, 1973).

A particularly interesting result was observed when the amount of time spent in store was examined as a moderator. For shoppers who spent less than 60 minutes (the median cutoff point) in the store, the negative correlation between human and spatial crowding perceptions and shopping

values (both utilitarian and hedonistic) were higher than for those who stayed longer. One plausible explanation for this outcome can be found in adaptation theory (Helson, 1959), which focuses on the degree to which individuals continue to notice a stimulus over time. The process of adaptation occurs when they no longer pay attention to a stimulus because it becomes so familiar due to extended exposure to it. In this study, it is likely that shoppers who stayed longer than an hour in the crowded store environment became habituated to the situation and no longer noticed the high-density stimuli around them.

At this point, one cannot make definitive conclusions about the moderating effects of the variables examined in Study 1. However, the exploratory findings do suggest that future research is needed. Experimental research that manipulates and/or controls for the various moderating effects is called for, with the purpose of isolating the exact role that these factors play.

Study 2 indicates that the impact of perceived crowding on shopping value is mediated by the emotions experienced by the shopper. Furthermore, the emotions and shopping value reactions mediate the effect of spatial crowding on shopping satisfaction. Interestingly, however, the results show that when these mediating variables are accounted for, human crowding positively affects shopping satisfaction. While the notion that higher crowding levels can produce higher shopping satisfaction might seem counter-intuitive at first, it is not contradictory to evidence and theory in the environmental psychology literature. The concept of optimal social contact (Altman, 1975; Sundstrom, 1977) suggests that large spaces introduce feelings of isolation and results in less than optimal stimulation for subjects. Arousal theory (Berlyne, 1960; Wohlwill, 1974) contends that individuals desire and seek certain levels of arousal under certain circumstances and in certain settings. In the present shopping context, subjects might have found the high human crowding situation to be consistent with their desired level of stimulation. Put differently, there might be an inverse U relationship between crowding and satisfaction such that extremely crowded and extremely uncrowded conditions tend to generate the undesirable states of over- and underarousal, respectively.

One interesting research issue is to examine this concept of optimum crowding levels from different theoretical and strategic angles. Is there an optimum crowding level associated with retailers with different store images? For example, does the expected optimum crowdedness anticipated in an upscale department store (Neiman Marcus) differ significantly from the one that is expected and tolerated in a mass discounter such as Wal-Mart? What role, if any, do the two dimensions of human vs. spatial crowding play in determining the optimal level of crowding? If, indeed, there are preconceived customer expectations regarding crowding levels across different store types, how do retail managers measure, control and manipulate this factor as a strategic tool to improve store patronage and shopping evaluations?

Another interesting research question concerns the potential role of culture as a moderator between retail crowding and shopping values and satisfaction. Any analysis of crowding must account for the fact that crowding perceptions are not only context dependent but also culture dependent. In some cultures (e.g., a Middle Eastern bazaar) people actively seek out dense environments with high levels of physical and social density. Given that, it is curious to see how the results of this study would vary if one were to replicate it in different cultural settings in a comparative study. Also, how likely is it that even minor cultural differences such as those within a country (such as Small Town vs. Big City or East Coast vs. West Coast culture) can produce different outcomes?

This research presents the findings of two studies that aim to further our understanding of the role of perceived crowding perceptions in the overall shopper experience, particularly in relation to shopping values and evaluations. In doing so, the potential moderating and mediating effects of several individual and situational variables are discovered. More importantly, evidence to support the possible inverted U relationship between perceived retail crowding and satisfaction is presented. The findings and discussion raise a number of significant theoretical and practical issues for future research.

References

- Altman I. The environment and social behavior: privacy, personal space, territory and crowding. Monterey (CA): Brooks and Cole; 1975.
- Anderson JC, Gerbing DW. An updated paradigm for scale development incorporating unidimensionality and its assessment. *J Mark Res* 1988; 25:186–92 [May].
- Babin BJ, Darden WR, Griffin M. Work and/or fun: measuring hedonic and utilitarian shopping. *J Consum Res* 1994;20:644–56 [March].
- Baron RM, Kenny D. The moderator–mediator distinction in social psychology research: conceptual, strategic, and statistical considerations. *J Pers Soc Psychol* 1986;51:1173–82.
- Bell PA, Fisher JD, Baum A, Greene TC. Environmental psychology. Fort Worth (TX): Holt, Rinehart and Winston; 1990.
- Berlyne DE. Conflict, arousal and curiosity. New York (NY): McGraw-Hill; 1960.
- Brehm JW. A theory of psychological reactance. New York (NY): Academic Press; 1966.
- Cozby PC. Effects of density, activity, and personality on environmental preferences. *J Res Pers* 1973;7:45–60.
- Dooley BB. Crowding stress: the effects of social density on men with “close” or “far” personal space. Unpublished doctoral dissertation, University of California; 1974.
- Eroglu SA, Harrell GD. Retail crowding: theoretical and strategic implications. *J Retail* 1986;62:347–63.
- Eroglu SA, Machleit KA. An empirical study of retail crowding: antecedents and consequences. *J Retail* 1990;66:201–21 [Summer].
- Esser AH. Experience of crowding. *Represent Res Soc Psychol* 1973; 4:207–18.
- Gerbing DW, Anderson JC. An updated paradigm for scale development incorporating unidimensionality and its assessment. *J Mark Res* 1988; 25:186–92 [May].
- Harrell GD, Hutt MD, Anderson JC. Path analysis of buyer behavior under conditions of crowding. *J Mark Res* 1980;17:45–51 [February].

- Helson H. Adaptation level theory. In: Koch S, editor. *Psychology: A Study of a Science*, vol. 1. New York: Mc Graw-Hill; 1959.
- Hui MK, Bateson JEG. Perceived control and the effects of crowding and consumer choice on the service experience. *J Consum Res* 1991;18: 174–84 [September].
- Izard CE. *Human emotions*. New York: Plenum; 1977.
- Machleit KA, Eroglu SA. Describing and measuring emotional response to shopping experience. *J Bus Res* 2000;49:101–11 [August].
- Machleit KA, Kellaris JJ, Eroglu SA. Human and spatial dimensions of crowding perceptions in retail environments: a note on their measurement and effect on shoppers' satisfaction. *Mark Lett* 1994;5:183–94.
- Machleit KA, Eroglu SA, Mantel SP. Perceived retail crowding and shopping satisfaction. *J Consum Psychol* 2000;9:29–42.
- Nagar D, Pandey J. Affect and performance on cognitive task as a function of crowding and noise. *J Appl Soc Psychol* 1987;17:147–57.
- Oliver RL. Cognitive, affective, and attribute bases of the satisfaction response. *J Consum Res* 1993;20:418–30 [December].
- Proshansky HM, Ittelson WH, Rivlin LG. Freedom of choice and behavior in a physical setting. In: Proshansky HM, Ittelson WH, Rivlin LG, editors. *Environmental psychology*. New York (NY): Holt, Reinhart and Winston; 1970.
- Stockdale JE. Crowding: determinants and effects. *Adv Exp Soc Psychol* 1978;11:197–245.
- Stokols D. On the distinction between density and crowding. *Psychol Rev* 1972;79:275–7.
- Sundstrom ED. Interpersonal behavior and the physical environment. In: Wrightsman LS, editor. *Social Psychology*. 2nd ed. Monterey (CA): Brooks and Cole; 1977.
- Wohlwill JF. Human adaptation to the level of environmental stimulation. *Hum Ecol* 1974;2:127–47.