Store atmosphere and purchasing behavior

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Store Atmosphere and Purchasing Behavior

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This study extends the Donovan and Rossiter (1982) study which introduced the Mehrabian-Russell (M-R) environmental psychology model into the store atmosphere literature. Donovan and Rossiter's study was exploratory in that student subjects were used and intentions rather than shopping behavior were measured. The present study uses a broader sample of shoppers, measures emotions during the shopping experience rather than before or after, and records the effects on actual shopping behavior. The 1982 study found that experienced pleasantness of the in-store environment was a significant predictor of willingness to spend time in the store and intentions to spend more money than originally planned. This finding was extended behaviorally in the new study: pleasure, as rated five minutes into the shopping duration was a significant predictor of extra time spent in the store and actual incremental spending. Arousal was found to vary in its effects across the two studies and bears further investigation. The effects of the emotional factors of pleasure and arousal were shown to be additional to cognitive factors such as variety and quality of merchandise, price specialing and value for money. The practical significance for retailers is that emotional responses induced by the store environment can affect the time and money that consumers spend in the store.

In an earlier paper in this journal, Donovan and Rossiter (1982) introduced the Mehrabian-Russell (M-R) environmental psychology model to the study of store atmosphere. Since that time, a number of researchers have applied the M-R model to store environment studies (e.g.,

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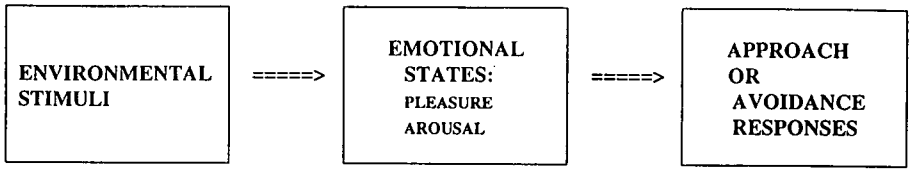

Figure 1. **Modified Mehrabian-Russell Model**

Anderson 1986; Buckley 1987; Golden and Zimmer 1986; Sherman and Smith 1987; Dawson, Bloch and Ridgway 1990), including the effects on store behavior of in-store factors such as music (Yalch and Spangenberg 1990; Milliman 1986) and color (Bellizzi and Hite 1992). The M-R model also experienced a revival in other areas of consumer research involving the study of emotions (e.g., Holbrook, Chestnut, Oliva and Greenleaf 1984; Havlena and Holbrook 1986). Its applications have included advertising (Pavlechak, Antil and Munch 1988; Olney, Holbrook and Batra 1991), voter preference (Christ 1985), and the duration of consumption experience (Holbrook and Gardner 1993). However, none of these studies has strictly followed the methodology and analyses of the M-R model as proposed by Donovan and Rossiter (1982). The present study is a direct follow-up and extension of our earlier study.

The M-R model, discussed at length in our earlier paper, is based on the Stimulus-Organism-Response (S-O-R) paradigm, relating features of the environment (S) to approach-avoidance behaviors (R) within the environment, mediated by the individual's emotional states (O) aroused by the environment (these emotional states may be attenuated or enhanced by individual personality traits such as Zuckerman's Sensation-Seeking Scale: see Grossbart, Mittelstaedt, Curtis and Rogers 1975). The M-R model proposes a general measure of S, the environment, in terms of *information rate*, a measure of novelty and complexity, but focuses mainly on the O-R aspects of the model. Mehrabian and Russell (1974) proposed that three basic emotional states (acronym PAD) mediate approach-avoidance behaviors in any environment: pleasure-displeasure; arousal-non arousal; and dominance-submissiveness. They hypothesized that pleasure would be significantly related to approach-avoidance measures overall, and that arousal would have an interactive (multiplicative drive-like) effect with pleasantness such that arousal would be positively related to approach behaviors in pleasant environments, but negatively related in unpleasant environments. They also hypothesized that dominance would be positively related to approach behaviors, but, for theoretical reasons (Russell and Pratt 1980) as well as lack of empirical support (e.g., in our earlier study), the dominance dimension usually has been deleted in studies using the M-R model. The modified model is summarized in Figure 1.

The Donovan and Rossiter (1982) Study

Donovan and Rossiter (1982) introduced eight measures of store-relevant approach-avoidance behaviors. They showed that respondents' ratings on the PAD instrument of their

emotions within the store environment upon entering the store significantly predicted approach-avoidance measures such as liking of the store, enjoyment of shopping in the store, willingness to spend time in the store, willingness to explore the environment, feelings of friendliness to others, willingness to return, and likelihood of spending more money than intended. Over the various approach-avoidance measures, the proportion of variance accounted for by the PAD ratings ranged from a high of 50% for affect measures (liking, enjoyment, willingness to return) to a low of 12% for their single-item *spend* measure.

Pleasure was a significant predictor over all measures, including the retailer-relevant measure of respondents' likelihood of overspending. Arousal was a significant predictor only of affiliation measures (e.g., friendly to others). However, as predicted by the M-R model, when pleasant and unpleasant environments were analyzed separately, arousal was a significant predictor of a composite approach-avoidance score in pleasant environments. Not unexpectedly, there were insufficient unpleasant environments to adequately test the hypothesized pleasure-arousal interaction in unpleasant environments. As noted, dominance was not significantly related to any of the approach-avoidance measures and is omitted from the M-R model in the present study.

Donovan and Rossiter's study was exploratory in two respects: student subjects were used, and attitudes and intentions rather than shopping *behavior* were measured. A number of studies since, using actual shoppers in the shopping situation, have attempted to relate emotional states experienced in the store to behavioral measures of unplanned spending and extra time spent in the store. However, most have used *post*-measures only, both of emotions experienced while shopping and of unplanned spending and unplanned time spent in the store (Sherman and Smith 1987; Dawson et al. 1990; Yalch and Spangenberg 1990). These studies have relied on *recall* of emotions experienced while shopping, emotions which we argued in our earlier paper may be quite transient and which we now argue may be modified or replaced by post-purchase emotions associated with purchase per se. Similarly, post-only measurement of the behavioral dependent variables, unplanned spending and extra time spent in the store, may be subject to memory error and post hoc attributions.

Other studies utilizing the M-R model or the store-related approach-avoidance behaviors suggested by Donovan and Rossiter either have used student subjects (e.g., Anderson 1986; Bellizzi and Hite 1992), or have not applied the model as outlined by Donovan and Rossiter. For example, Sherman and Smith (1986) used a single "mood" measure summed across the three PAD dimensions. Bellizzi and Hite (1992) compared the PAD dimensions for various color environments, but did not relate the dimensions to Donovan and Rossiter's approach-avoidance measures; and Yalch and Spangenberg (1990) compared unplanned spending and unplanned time for different types of music, but did not use their PAD measures to predict these dependent variables. Furthermore, with the exception of Anderson (1986), most of the above-mentioned studies have not assessed the contribution of emotional factors relative to cognitive factors, and have not explored the hypothesized P × A interaction in pleasant versus unpleasant environments.

In addition, none of the studies applying the M-R model has screened shoppers for familiarity with the store. This means that self-selection effects may have operated in that those familiar with the store may have experienced pre-conditioned emotional approach or avoidance responses that would override or even obviate the emotions induced by the store's atmosphere.

Extending the Donovan and Rossiter Study to Actual Purchasing Behavior

This study follows the methodological analyses of the Donovan and Rossiter study but extends that study by measuring the Mehrabian-Russell emotions *during* the shopping experience and relating these mood states to *pre-measures* of estimated spending and time to be spent in the store compared to *post-measures* of actual spending and actual time spent in the store Also, by restricting the sample to shoppers relatively unfamiliar with the stores chosen for the study, this study attempted to obtain a sufficient sub-sample of unpleasant environments (i.e., respondents whose experience within the store was unpleasant) so as to test the arousal *x* pleasantness interaction.

The study further looks at the extent to which the M-R emotions predict the dependent variables *independently* of cognitive factors. Cognitive factors (here we mean respondents' perceptions of merchandise quality, variety, specialing, and value for money) could potentially be a cause of in-store emotional states and it seems central to the M-R model to show that explanatory power is added by measuring emotions.

Hypotheses

Following Mehrabian and Russell (1974) and Donovan and Rossiter (1982), it was hypothesized that:

H1: *Pleasure experienced within the store would be positively correlated with unplanned time spent in the store and unplanned purchasing*;

H2: *Arousal would be positively correlated with unplanned time and purchasing in pleasant environments (i.e., for those reporting pleasant experiences), but inversely correlated in unpleasant environments.*

It was further hypothesized that:

H3: *The emotional variables of pleasure and arousal experienced in the store would contribute to extra time spent in the store and unplanned spending independently of the cognitive variables of perceived merchandise quality, variety, specials, and value for money.*

METHOD

Sample

Female shoppers were approached at random at two discount department stores located near each other in a low-to-middle socioeconomic neighborhood. Only persons in the age

range 18–35 years were included (to reduce the heterogeneity of the sample). Also, to minimize self-selection effects, only persons relatively unfamiliar with the store were eligible for selection (those who had not visited the store in the past three months). A total of 60 shoppers, 30 at each store, took part in the study.

Procedure

Potential respondents were intercepted immediately upon entering the store. Eligible respondents who agreed to participate were asked to estimate the time they expected to spend in the store and the amount of money they expected to spend. The time respondents began shopping in the store was noted. After five minutes, respondents were approached and asked to rate their feelings on a 12-item semantic differential scale measuring Mehrabian and Russell's pleasure and arousal dimensions.

At the conclusion of shopping, the time respondents reached the checkout counter was recorded. On leaving the store, respondents were asked how much money they spent and were asked to rate the influence on their purchasing behavior in the store of four cognitive factors known to influence in-store purchasing (Buckley 1991): value for money, quality of merchandise, variety of merchandise, and price specialing (i.e., temporary 'sale' price reductions). Several other measures were taken that were not relevant to this study and are not reported here.

RESULTS

Computation of Extra Time in Store and Unplanned Purchasing

Because actual and forecast times and expenditures varied widely across individual shoppers, and to give a clear classification of unplanned time and unplanned spending, respondents' time and expenditure differences (between actual and forecast) were standardized into broad trichotomous categories (–1, 0, +1), as follows, where the n's are the resulting cell sizes. For unplanned (or extra) time, if the actual time was 5 or more minutes *less* than forecast, –1 (n = 19); if the actual time was *within* –5 or +10 minutes of forecast, 0 (n = 30); and if the actual time was 10 or more minutes *greater* than forecast, +1 (n = 11). Unplanned purchasing was standardized by calculating the percentage difference between the shopper's forecast and actual dollar expenditure as follows. If the actual expenditure was more than 10% *less* than forecast, –1 (n = 14); if the actual expenditure was *within* plus or minus 10% of forecast, 0 (N = 24); if actual expenditure was more than 10% *greater* than forecast, +1 (N = 22). The distributions of extra time and unplanned spending were similar across both stores and therefore were combined for analysis. The correlation between extra time and unplanned spending was $r = .29$, which can be described as moderate, and thus we report the results for both dependent measures. Extra time may lead to extra expenditure or extra expenditure may take extra time. However, the moderate correlation suggests that it is possible to spend more money per unit time without increasing total time in the store.

Factor Analysis of Pleasure-Arousal Scales

Factor analysis (Principal Components) of the 12 pleasure and arousal items yielded three factors with Eigenvalues greater than 1.0. These accounted for 34.9%, 22.1%, and 8.5%, respectively, of the variance. In the (Varimax-rotated) factor solution, Factor 1 consisted solely of the six pleasure items, while the six arousal items loaded on Factors 2 and 3. Given the low proportion of variance accounted for by the third dimension and the expected dimensionality of the scales, the rotated solution of the first two factors also was examined and is shown in Table 1. The two-factor rotated solution showed a clear demarcation between the pleasure and arousal items consistent with expectations of the M-R model and with the Donovan and Rossiter (1982) factor analysis results. The two-factor solution therefore was retained for the present analysis.

Consistent with the two-factor solution, each respondent was given a pleasure and arousal score by computing her total score on the six pleasure items and total score on the six arousal items. Straightforward unweighted sums were used rather than factor scores because of the similarity of the loadings of each item. Coefficient alpha estimates for the pleasure score and arousal score were .88 and .77, which indicate acceptable reliability.

Regression Analysis Results

Pleasure, Arousal and Extra Time, Unplanned Spending. Table 2 shows the regression of the two dependent variables, extra time and unplanned spending, on the pleasure and arousal measures. Pleasure is a significant predictor of both extra time spent in the store and unplanned spending. This result confirms **H1**. Arousal approaches significance ($p < .10$) for unplanned spending, but is in the *negative* direction, i.e., the greater the experienced arousal,

TABLE 1

Factor Loadings of Pleasure-Arousal Scales: Two-Factor Solution

	FACTOR 1:	*FACTOR 2:*
Happy-unhappy	**.81**	.05
Pleased-annoyed	**.79**	.18
Satisfied-dissatisfied	**.67**	–.08
Contented-melancholic	**.85**	.12
Hopeful-despairing	**.61**	.13
Relaxed-bored	**.69**	.10
Frenzied-sluggish	–.01	**.73**
Jittery-dull	.05	**.59**
Aroused-unaroused	.28	**.69**
Stimulated-relaxed	.05	**.60**
Excited-calm	– .08.	**.68**
Wideawake-sleepy	.18	.41

TABLE 2

Beta Coefficients for the Pleasure and Arousal Measures Used to Predict Extra Time and Unplanned Spending: Total Sample and Pleasant and Unpleasant Environments

	TOTAL SAMPLE		*PLEASANT ENVIRONMENTS*		*UNPLEASANT ENVIRONMENTS*	
	Extra Time	*Unplanned Spending*	*Extra Time*	*Unplanned Spending*	*Extra Extra*	*Unplanned Spending*
Pleasure	.30**	.36***	.36**	.51***	–.21	.09
Arousal	.12*	–.21*	.04	–.19	.16	–.46*
Multiple R	.35**	.37***	.38**	.47***	.26	.48
Adjusted R^2	.09	.11	.10	.18	.00	.07
F	3.93	4.60	3.47	5.94	0.37	1.46

Notes: *p < .10
**p < .05
***p < .01

the *less* money spent than anticipated. However the interpretation of this result is subject to examination below of the predicted interaction in **H2**.

The proportions of variance accounted for by pleasure and arousal in predicting extra time and unplanned spending (9% and 11%), although statistically significant (F = 3.93, 4.60 respectively), are quite low. However, the 11% result for *actual* unplanned spending is only marginally less than the 12% proportion of variance accounted for in predicting *intention* (likelihood of overspending) in the Donovan and Rossiter (1982) study. Furthermore, in a real world situation, small percentage increases in behavior by many customers can yield substantial dollar increases in both turnover and profits.

Pleasure, Arousal and Extra Time, Unplanned Spending: Pleasant versus Unpleasant Environments. According to the Mehrabian-Russell model, arousal is hypothesized to interact conditionally with pleasure: in pleasant environments, arousal should be positively correlated with the dependent measures, while the inverse should hold in unpleasant environments. Donovan and Rossiter (1982) found support for this hypothesis only for pleasant environments. However, the major difficulty in testing this hypothesis is that retailers obviously avoid creating unpleasant environments. In our earlier study, only 20 of 66 stores were rated as neutral or unpleasant. In this study, only 15 of the 60 respondents reported a neutral or negative score on the pleasure scale, despite our screening of respondents for familiarity with the store.

Table 2 shows the regression of pleasure and arousal as predictors of extra time and unplanned spending in pleasant and unpleasant environments. Pleasure is significantly related to extra time and unplanned spending in pleasant environments, but not in unpleasant environments, findings which replicate our earlier study. Arousal was not significant in pleasant environments, which fails to replicate the Donovan and Rossiter (1982) study. However, arousal was in the hypothesized direction of higher arousal depressing unplanned

TABLE 3

Beta Coefficients for Cognitive Variables Predicting Extra Time and Unplanned Spending

	Extra Time	*Unplanned Spending*
Quality	.21	−.18
Variety	−.29**	−.37***
Specialing	.07	.21*
Value for money	−.02	.17
Multiple R	.33	.49***
Adjusted R2	.05	.18
F	1.72	4.34

Notes: *p < .10
**p < .05
***p < .01
Two-tailed tests as directionality was not predicted.

spending in unpleasant environments, thus obtaining a result that was predicted but not found in the earlier study. We address this result further in the discussion.

Cognitive Variables and Extra Time, Unplanned Spending. Tables 3 and 4 show the regression of extra time and unplanned purchasing on the cognitive variables excluding and including, respectively, the emotional variables. Adding the emotional variables to the cognitive variables' prediction of extra time, increases the variance accounted for from (a

TABLE 4

Beta Coefficients for the Cognitive Variables, Emotional Variables and Predicting Extra Time and Unplanned Spending

	Extra Time	*Unplanned Spending*
Pleasure	.38***	.43***
Arousal	.15	−.18*
Quality	.26*	−.14
Variety	−.37***	−.42***
Specialing	.14	.26**
Value for money	−.09	.16
Multiple R	.54***	.65***
Adjusted R^2	.21	.35
F	3.63	6.40

Notes: *p < .10
**p < .05
***p < .01
Two-tailed tests were used for consistency with Table 3's results.

nonsignificant) 5% (F = 1.72) to (a significant) 21% (F = 3.62), and to the prediction of unplanned spending, from 18% (F = 4.34) to 35% (F = 6.40) (both significant). Overall, comparing Tables 2 and 3, emotional factors appear more important for extra time spent in the store, whereas the cognitive factors appear slightly more important than emotional factors for unplanned spending. Multiple regressions of the four cognitive variables on the emotional variables, pleasure and arousal, yielded an adjusted R^2 of .00, confirming the independent contribution of the emotional and cognitive factors. **H3** therefore is clearly confirmed.

Although not specifically hypothesized, the results for the cognitive variables themselves are of interest. The reported influence of variety on purchasing was found to be negatively correlated with extra time spent in the store and unplanned purchasing: that is, those for whom variety was an important influence on their purchasing behavior spent less time in the store and less money than anticipated. This is consistent with the merchandising within discount department stores, i.e., a wide range of product categories, but a limited range *within* product categories in keeping with the limited (low) price range of the stores' positioning. As might be expected, those influenced by price specialing were more likely to overspend (but not spend extra time in the store). Value-for-money was not related to either extra time or unplanned spending. Quality approached significance for extra time only when the emotional dimensions were included in the analysis (Table 4).

CONCLUSIONS

There are a number of important conclusions that can be drawn from this follow-up study. Overall, the results reinforce the conclusion by Donovan and Rossiter, and others, that the M-R model (in its modified form using only the pleasure and arousal dimensions) is useful for the study of store behavior. The present study demonstrates that shoppers' emotional states within the store predict actual purchase behavior—not just attitudes or intentions. Moreover, the contribution of the emotional variables to store behavior is independent of cognitive variables such as perceptions of quality and price.

More specifically, pleasure induced by store environments appears to be a strong cause of consumers spending extra time in the store and spending more money than intended. Following the M-R model, we also expected that arousal induced by the store environment would intensify pleasure or displeasure such that time and spending behaviour would be increased in pleasant environments and decreased in unpleasant environments. We observed the "positive" part of this relationship (with intentions rather than behavior) in our earlier study but not in this one; and we observed the "negative" part in the present study but not the earlier one. Whether or not the "whole" relationship is observed would seem to depend on the particular type of stores included in the study. Our earlier study used a wide range of store types and included stores with which respondents may have been familiar, which may have produced a positive store environment bias. The present study employed only discount department stores, which may not be as relatively pleasant as the full-line department stores, boutiques, craft shops and other stores in the earlier study, and *also* screened out respondents who were regular shoppers at the stores, which may have produced a negative store environment bias.

In any event, we believe the "bi-directional" aspect of arousal and pleasure in the M-R model is worth pursuing. Holbrook and Gardner (1993) found clear evidence of its operation in a study of music listening. If valid, the arousal and pleasure hypothesis suggests that retailers should attempt to intensify arousal by adding upbeat music, bright colors, etc., if their store is perceived as pleasant. On the other hand, the model and our results suggest that retailers should attempt to dampen arousal if their store is perceived as unpleasant (such as a medical center). The interaction is theoretically interesting and may be practically important.

Several of the six arousal items from the M-R measure also may require further investigation for their applicability in retail store environment studies. Anecdotal feedback from shoppers suggested that some had difficulty relating the items aroused-unaroused, jittery-dull, and frenzied-sluggish to feelings experienced while shopping. Respondent confusion may have led to our failure to observe an unambiguous arousal factor. Some adaptation of Russell's Affect Grid (Russell, Weiss and Mendelsohn 1989) may be an alternative way to measure the two main emotional states but as it stands, the grid requires several minutes of training, which would not be feasible in a field study such as this one.

We have assumed that pleasure and arousal are induced, in the store, by the store environment. However, as Dawson et al. (1990) pointed out in their study, assessment of feeling states within the store environment may reflect feeling states brought *to* the environment rather than induced *by* the environment. No doubt emotions measured in the store reflect some combination of these. Future studies should measure the pleasure and arousal dimensions prior to entering the store as well as some time after entering the store. Related to prior emotions, and a potential problem with using unplanned spending as a dependent variable, is the paradoxical finding that unplanned spending may result from a desire to alleviate negative emotions (O'Guinn and Faber 1989) as well as being the result of positive emotions (Weinberg and Bottwald 1982). In other words, people may have various negatively-originated or positively-originated motives (Rossiter and Percy 1987; Rossiter, Percy and Donovan 1993) for overspending. Further classification of the relationship between shopping motives and emotional states is evidently needed.

Also, we have focused on overspending as the main monetary outcome of store atmosphere. This seems appropriate for new or occasional shoppers at the store. But for repeat shoppers, it could be that total spending is more relevant. Prior conditioning due to stores' atmospheres could lead to long-term selection or avoidance of the stores themselves, and therefore affect decisions about total expenditure allocation between stores.

This study confirms that pleasantness experienced within a retail store environment can have a significant influence on purchase. The most important directions for future research include: (1) determining just what constitutes a pleasant environment, and for retailers, how to cost-effectively implement such an environment; (2) further exploration of the "bi-directional" effect of pleasure and arousal; and (3) exploring the nature of the relationship between merchandising and atmosphere effects. Although this study found that merchandising perceptions and emotional responses independently contributed to extra time and unplanned purchasing, we studied only one type of store environment—discount department stores. It seems possible that these factors could interact, particularly in other types of stores.

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