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Danger, Mystery, and Environmental Preference

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ABSTRACT: The possibility of a connection among high mystery, perceived danger, and depressed preference for certain categories of environments was investigated. Past research had suggested that urban alleys and narrow canyons would exhibit such a pattern. Comparison categories, chosen to be high in mystery and low in perceived danger, were urban and nonurban nature (that is, field-and-forest settings within urban or nonurban environments), respectively. Preference ratings were obtained for settings from each of the four categories. The settings were also rated by independent raters for six predictor variables: mystery, physical danger, social danger, shadow, nature, and vertical depth. The major findings were that danger was a negative predictor of preference and mystery was a positive predictor. There was no evidence that high mystery was involved in depressed preference ratings for any of the environmental categories investigated. The distinction between physical and social danger proved useful, with only social danger related (negatively) to preference.

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Mystery **refers to those features** of an environment that promise more to be seen if one could walk deeper into the environment. Curving pathways and partial concealment (by foliage, shadow, and other sources of screening) are major contributors to mystery. For a more detailed analysis of the physical features contributing to mystery, see Gimblett et al. (1985). As defined here, the concept of mystery as a determinant of environmental preference was introduced by the Kaplans (S. Kaplan, 1987; Kaplan and Kaplan, 1978, 1982) although the term had been used earlier to describe somewhat different concepts by Hubbard and Kimball (1917), Lynch (1960), and Cullen (1961). In their informational model of environmental preference, the Kaplans viewed mystery as a factor that would maintain interest and involvement in a setting. The result would be increased preference for the setting and, ultimately, greater exploration and useful knowledge. Indeed, many empirical studies have confirmed the positive relationship between mystery and preference for natural environments (e.g., Herzog, 1984, 1985, 1987; R. Kaplan, 1973; Ulrich, 1977; Woodcock, 1982) and for urban nature (Herzog et al., 1982). The role of mystery in urban settings devoid of natural elements is much less clear.

Recently, Herzog (1987) reported two apparent exceptions to the general pattern of positive relationships between mystery and preference. The two exceptions were urban alleys and deep narrow canyons. In both cases, the mean rating for the category was relatively high for mystery and low for preference, while within the category mystery and preference were negatively correlated. The correlations may be suspect since they were based on samples of four and eight settings for alleys and canyons, respectively. However, it is the category means that are most intriguing. Categories high in mystery and low in preference are rare, especially for natural environments. It should be noted that the depression in mean preference was much more pronounced for alleys than for narrow canyons.

To explain these findings, Herzog invoked the concept of perceived danger, which, under the name "hazard," plays an important role in Appleton's (1975, 1984) prospect-refuge theory. According to Appleton, extreme and immediate environmental hazards evoke fear and avoidance. (Mild hazards, on the other hand, are fascinating and attractive.) Incorporating this notion, Herzog suggested that for certain environmental categories, mystery is part of a package that evokes a sense of immediate danger and thereby depresses preference, overriding the more typical effect of mystery, enhanced preference. Suggested components of the proposed package were high mystery, low spaciousness, a very close vantage point, and knowledge of what can happen in the setting. Herzog further proposed that the relevant knowledge, which triggers the perceived danger, is different for the two categories of urban alleys and narrow canyons. For alleys the danger is primarily from a social source ("I could get mugged"), while for canyons it stems from a physical source ("It's deep, and I could fall into it"). Although the empirical literature suggesting a linkage among mystery, danger, and preference in certain settings is sparse, Schroeder and Anderson's (1984) study of the evaluation of urban recreation sites can be interpreted as an example.

The purpose of the study described in this article was to test the proposed linkage between perceived danger and depressed preference in environments high in mystery. The first step was to select relevant environmental categories. Given the preceding discussion, two obvious candidates were urban alleys and narrow canyons. Two suitable comparison categories were needed, each high in mystery and low in perceived danger, one urban and one nonurban. We decided to use urban nature (urban areas high in foliage and other forms of vegetation) as the comparison category for urban alleys. Urban nature has been shown to be high in both mystery and preference (Herzog et al., 1982), and it was a reasonably good bet that it would be low in perceived

danger. As a comparison category for narrow canyons, we opted for nonurban nature, which refers to nonurban field-and-forest environments of the kind investigated by Herzog (1984). These settings, especially the ones featuring large trees, were relatively high in both mystery and preference. Again, there is little reason to suppose that such settings would be seen as dangerous.

These four categories (urban alleys, urban nature, narrow canyons, nonurban nature) can be conceptualized as varying along two dimensions. One is the degree to which each is *Urban,* its values being high (urban alleys, urban nature) and low (narrow canyons, nonurban nature). The other dimension of variation is the degree of *Perceived Danger* associated with each category, also with values of high (alleys and canyons) and low (urban and nonurban nature). Thus, for purposes of data analysis and hypothesis statements, this study may be viewed as a two-way factorial design. This allows us to be very specific in stating predictions. On the negative side, since random assignment of scenes was not possible, some confounding of variables was inevitable. Thus, in attempting to create the differences in perceived danger necessary to test the theory, we also created parallel differences in degree of vegetation. Such confounding seems unavoidable in environmental preference research where category changes are typically accompanied by systematic changes in a number of potentially relevant variables. Fortunately, if confounding variables can be identified in advance and measured, their effects can be partialled out in the data analysis.

The second step in designing the study was to select rating variables. *Preference* headed the list as the major criterion variable of the study. Following the theoretical discussion above, two perceived danger variables were assessed, *physical danger* (that which stems from the physical structure of the setting) and *social danger* (that which stems from a human source). *Mystery* was included to determine if all categories were identical and at least

moderately high on this variable. In addition, should the settings differ substantially in mystery it would be possible to assess whether mystery and danger could predict preference independently. *Nature* (the amount of plant life, vegetation, leaves, trees) was assessed to determine if the suspected differences in vegetation across categories were perceptible and to provide a basis for partialling out their effects. Finally, *vertical depth* (perceived distance to the lowest point in the setting) and *shadow* (prominence of shadows in the setting) were assessed to determine whether they were legitimate predictors of preference in their own right as opposed to being simply components of danger or mystery.

In terms of the two-way factorial design described above, the major hypothesis was that there would be an interaction of the Urban and Perceived-Danger variables on preference ratings. Specifically, preference was expected to be depressed in the high-danger categories, but more so for alleys than for canyons. This prediction follows from the research literature (Herzog, 1984, 1987; Herzog et al., 1982). Furthermore, since danger is viewed as the salient variable determining preference differences across these high-mystery categories, the predicted interaction was expected to hold after variables such as mystery, nature, vertical depth, and shadow were controlled statistically.

The intent of the study was to create categories roughly equal in mystery. Should that goal fail, or if there were substantial intracategory variation in mystery, an important issue would be the relative roles of mystery and danger in predicting preference. Since the theory is that when a sense of danger is evoked it overrides other considerations, it was expected that the hypothesis about perceived danger would hold even in the presence of substantial variation in mystery and independent of such variation. As to the parallel question of whether mystery would predict preference independently from perceived danger, there was no

prior hypothesis. However, the research literature suggests that it would be unwise to bet against mystery.

Finally, the proposed distinction between physical and social danger led to the expectation of an interaction of the Urban and Perceived-Danger variables on ratings of both physical and social danger. Specifically, the difference between the high- and low-Perceived-Danger categories was expected to be greater for the nonurban categories when physical danger was rated but greater for the urban categories when social danger was rated. Both types of rated danger were expected to play a significant role in predicting preference.

METHOD

PARTICIPANTS

The sample consisted of 253 undergraduate students, 157 females and 96 males, at Grand Valley State University. The students received extra course credit for participation. Twenty-seven sessions of from 2 to 20 participants were conducted.

STIMULI

The settings consisted of 40 color slides of urban and natural environments. Four environmental categories were each represented by 10 slides. The categories were Urban Nature, Nonurban Nature, Urban Alleys, and Narrow Canyons. Some of the slides within each category had been used in previous research featuring similar categories. Thus eight of the Urban-Nature slides and three of the Urban-Alley slides were borrowed from the Urban-Nature and Alley-Factory categories, respectively, of Herzog et al. (1982). Six of the Nonurban Nature slides came from the Large Trees and Unconcealed Vantage Point categories of

Herzog (1984). Five of the Narrow Canyons slides came from the Narrow Canyons category of Herzog (1987). The remaining slides were selected from the senior author's extensive collection of environmental slides. The criterion for selection was that each setting be a clear exemplar of its category in the authors' judgment.

PROCEDURE

Participants rated each of the 40 settings on one of seven variables. All ratings used a five-point scale ranging from 1 = "not at all" to 5 = "a great deal." There were six predictor variables: mystery, physical danger, social danger, shadow, nature, and vertical depth. *Mystery* was defined as the extent to which "the environment depicted promises more to be seen if you could walk deeper into it. Does the environment seem to invite you to enter more deeply into it and thereby learn more?" *Physical danger* was the extent to which the environment "contains the potential for danger from a nonliving source . . . a high potential for danger because of its physical structure alone." *Social danger* was the extent to which the environment "contains the potential for danger from a human source." *Shadow* was the extent to which "shadows are important or dominant in the environment depicted." *Nature* was "how much plant life, vegetation, leaves, trees there are in the environment depicted." *Vertical depth* was "how deep is the lowest point in the environment depicted. To what extent does the environment depicted give the impression that 'it's a long way to the bottom'?" The criterion variable, *preference,* was defined as "how much you like the environment depicted, for whatever reason."

Sessions proceeded as follows. First, five sample slides were rated to help participants get used to the task and the rating scale. Then participants rated 45 slides, the first three and the last two of which were considered filler slides. The remaining 40 slides yielded the data for analysis. Each

group rated the settings on only one of the variables of the study. Viewing time was 15 s for each setting.

The 40 relevant slides were presented in one of three orders. One-third of the groups rating each variable received each order of slide presentation. One order was generated randomly with the constraint that none of the four environmental categories could appear on successive presentations. The second presentation order was the reverse of the first order, and the third presentation order was derived by interchanging the halves of the first order.

To achieve a minimum sample or 25 raters for each predictor variable required three sessions per variable. To achieve a much larger sample for preference, necessary for the factor analysis described below, required nine sessions. Order of variables rated across sessions was haphazard with these exceptions: Each third of the sessions used a different order of slide presentation, and within each third of the sessions preference was rated three times and each predictor variable once. Final sample sizes were 95 for preference, 28 each for mystery and physical danger, 27 for nature, and 25 for each of the remaining three variables.

ANALYSIS

To evaluate reliability of measurement for each variable, final samples were divided into half samples, and mean ratings for each setting were computed on the basis of each half sample. The two sets of 40 mean-per-setting scores were then intercorrelated for each variable. The resultant correlation was corrected by the Spearman-Brown formula to yield a split-half reliability coefficient for each variable.

To discover whether the four environmental categories of the theoretical analysis were in fact embodied in the preference ratings of participants, those ratings were analyzed by nonmetric factor analysis, specifically the Guttman-Lingoes Smallest Space Analysis III (SSA-III) (Lingoes, 1972). SSA-III is a nonmetric version of principal-axes

factor analysis. It uses squared multiple correlations in the diagonal of the input correlation matrix and a varimax rotation of the final solution. The procedure finds a solution of the user-specified dimensionality that best fits the rank order of the original correlation matrix rather than the more stringent linear transformation of the original correlations required by metric factor analysis. Proponents of nonmetric analysis argue that more stable solutions in fewer dimensions can be found. For the present data, a four-dimensional solution was examined.

To evaluate the hypotheses of the study, two types of scores were computed as raw data for analysis. The first, a category score, was simply the mean rating for all settings making up a category. Thus, for each rating variable, every participant had a category score for each of the four environmental categories. The second type of score was a setting score, the mean for each setting based on all participants who rated each variable. Thus, for each rating variable, every setting had a setting score. Two analyses of variance were carried out for each rating variable. The first used category scores as the dependent variable, and the second used setting scores. The first analysis allows conclusions to be generalized to the population of participants, the second analysis to the population of settings. For both analyses, the independent variables were Urban and Perceived Danger, each with values of high and low. Since the research hypotheses are directional predictions with $df = 1$, tabled F -ratio probabilities were halved for these hypotheses. All effects other than the research hypotheses were tested using unadjusted probabilities. Significant interactions were explored further by the Tukey-B test (Wike, 1971) with Cicchetti's (1972) modification for interaction tables. For all tests of inference, we accept as statistically significant only effects with $p < .05$ in both category-score and setting-score analyses. For setting scores, we also performed a multivariate analysis of vari-

ance on all six of the predictor variables as a set. The multivariate test statistics provide further protection against Type I errors. Such an analysis was not possible for category scores.

Two kinds of additional analyses were carried out on setting scores. First, to better understand how the variables of the study worked together, a multiple-regression analysis was performed on the entire set of 40 settings with preference as the criterion variable. Predictor variables were the six rated predictor variables and three vectors representing the main effects of the Urban and Perceived-Danger variables and their interaction. In a stepwise analysis, the rated predictors were entered first as a block of variables followed by the three vectors representing the Urban and Perceived-Danger variables. Second, prediction of preference within each of the four environmental categories was assessed by examining the simple correlations between the rated predictor variables and preference and also the simple correlations among the rated predictor variables. This approach was necessary because with only 10 settings per category, multiple-regression analysis was not feasible.

RESULTS

RELIABILITY OF MEASUREMENT

The Spearman-Brown reliability coefficients for the rating variables ranged from .64 for mystery to .99 for nature. All exceeded .90 except for social danger (.85) and mystery (.64). Even the latter two exceeded the minimum acceptable reliability for basic research of .50 suggested by Guilford (1954) and Nunnally (1967). Thus reliability of measurement met or exceeded conventional standards.

Figure 1: Scene from the Urban Nature Category

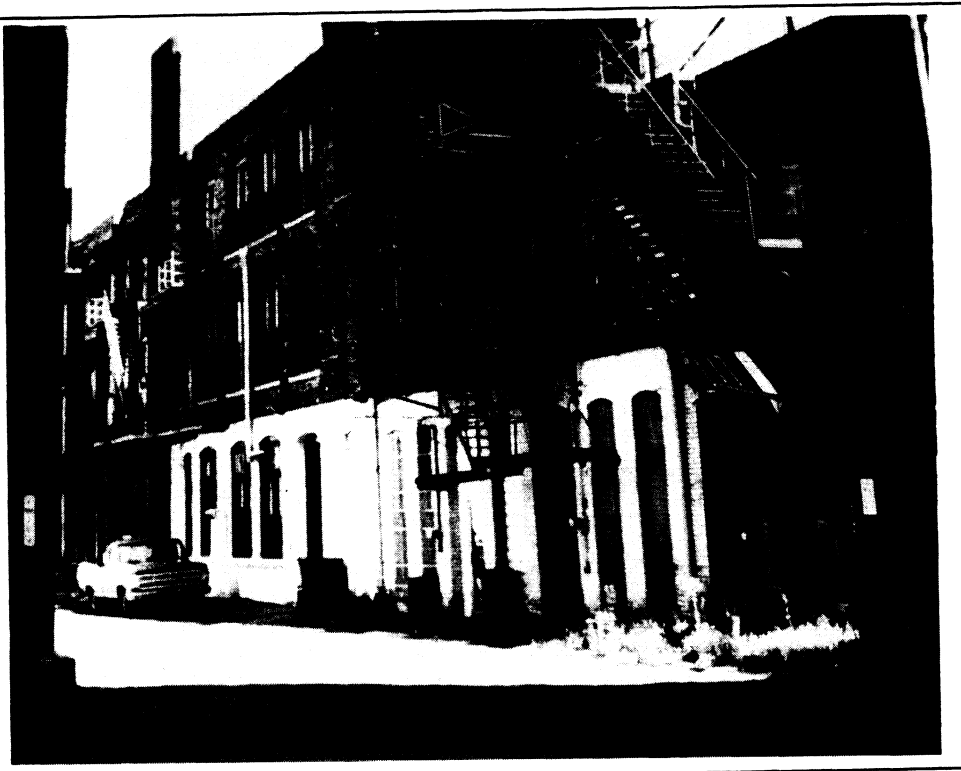

Figure 2: Scene from the Urban Alleys Category

Figure 3: Scene from the Nonurban Nature Category

ENVIRONMENTAL CATEGORIES

The four-dimensional solution of the nonmetric factor analysis (Smallest Space Analysis III) of preference ratings yielded communalities ranging from .36 to .68. For descriptive purposes, dimensional or category composition was

Figure 4: Scene from the Narrow Canyons Category

determined by including all settings with a factor loading greater than |.40| on one dimension only. With this criterion, all 40 settings were categorized as we had assumed a priori. Sample scenes from each category are presented in Figures 1 through 4.

MAJOR FINDINGS

Table 1 presents means and standard deviations of both category and setting scores for all seven rating variables as a function of Urban and Perceived-Danger values. The means for the two types of scores are identical. Table 2 presents analysis of variance summaries for each rating variable and for both types of scores. For the setting scores, a multivariate analysis of variance was performed, as described in the Analysis section. All multivariate test statistics (Pillai, Hotelling, Wilks) were significant at $p <$ .001 for both main effects, Urban and Perceived Danger, and their interaction.

Accepting as significant only effects with $p < .05$ in both the category- and setting-score analyses, note that the major hypothesis of the study, an interaction of the Urban and Perceived-Danger variables on preference ratings, was supported. However, the Tukey-B test revealed that the form of the interaction was not exactly as specified. Although the predicted depression in preference for alleys did occur, preference for canyons, relative to nonurban nature, was not depressed.

Table 3 summarizes the multiple-regression analysis performed on the setting scores with preference as the criterion variable. From the right half of the table, note that the interaction of the Urban and Perceived-Danger variables on preference remained significant even after all six of the rated predictor variables were included in the analysis as covariates. Thus, as predicted, the interaction is robust.

The attempt to create categories equal in mystery failed. As the results in Tables 1 and 2 indicate, the main effect of Perceived Danger on rated mystery was significant, with high Perceived Danger associated with lower mystery ratings. Moreover, there was sufficient variation in mystery ratings across settings (ranging from average ratings of 2.32 to 3.79) to make the role of mystery well worth exploring. The regression results in Table 3 reveal that

TABLE 1

Means and Standard Deviations (in Parentheses, for Category Scores, Left, and Setting Scores, Right) as a Function of Urban and Perceived-Danger Values for Each Rating Variable

		Perceived Danger		
		Low	High	Mean
	Preference	3.68 (0.74,0.23)	3.60 (0.97,0.31)	3.64
	Mystery	3.38 (0.70,0.20)	2.77 (0.95,0.29)	3.08
	Physical Danger	2.06 (0.71,0.22)	4.35 (0.78,0.14)	3.20
Low	Social Danger	2.26 (1.01,0.25)	2.90 (1.27,0.19)	2.58
	Shadow	3.58 (0.46,1.06)	2.73 (0.62,0.87)	3.16
	Nature	4.46 (0.37,0.34)	3.08 (0.97,0.42)	3.77
	Vertical Depth	2.46 (0.51,0.29)	4.46 (0.51,0.19)	3.46
		Nonurban Nature	Canyons	
Urban		---	---	
		Urban Nature	Alleys	
	Preference	3.22 (0.68,0.30)	1.69 (0.69,0.26)	2.46
	Mystery	3.23 (0.83,0.35)	3.02 (0.82,0.34)	3.12
	Physical Danger	1.48 (0.48,0.19)	2.67 (0.64,0.40)	2.08
High	Social Danger	1.97 (0.81,0.17)	3.21 (0.94,0.29)	2.59
	Shadow	3.38 (0.50,0.65)	3.30 (0.57,0.74)	3.34
	Nature	3.47 (0.51,0.45)	1.29 (0.16,0.34)	2.38
	Vertical Depth	2.52 (0.84,0.31)	2.57 (0.71,0.43)	2.55
	Preference	3.45	2.65	
	Mystery	3.30	2.90	
	Physical Danger	1.77	3.51	
Mean	Social Danger	2.12	3.06	
	Shadow	3.48	3.02	
	Nature	3.96	2.18	
	Vertical Depth	2.49	3.51	

TABLE 2
Analysis of Variance Summaries for Each Rating Variable as a Function of Urban and Perceived-Danger Values

		Urban(U)		Perceived Danger(D)		UxD	
	df	F	p	F	p	F	p
Category Scores							
Preference	1,94	175.06	.000	84.12	.000	158.11	.000
Mystery	1,27	.06	.808	8.78	.006	2.20	.150
Physical Danger	1,27	80.55	.000	324.13	.000	24.29	.000
Social Danger	1,24	.00	.957	22.45	.000	3.40	.077
Shadow	1,24	5.48	.028	20.76	.000	13.89	.001
Nature	1,26	134.91	.000	223.56	.000	19.21	.000
Vertical Depth	1,24	43.41	.000	120.63	.000	105.73	.000
Setting Scores							
Preference	1,36	183.83	.000	84.40	.000	68.46	.000
Mystery	1,36	.32	.578	18.25	.000	4.40	.043
Physical Danger	1,36	192.88	.000	457.61	.000	45.37	.000
Social Danger	1,36	.04	.847	171.45	.000	17.62	.000
Shadow	1,36	.50	.485	3.03	.090	2.07	.159
Nature	1,36	127.31	.000	207.25	.000	10.64	.002
Vertical Depth	1,36	82.90	.000	104.51	.000	95.73	.000

mystery was a significant positive predictor of preference, its relationship to preference independent from those of all other predictors, categorical or rated.

Finally, the predictions involving *physical* and *social* danger received partial support. The results in Tables 1 and 2, plus the supplemental Tukey-B tests, revealed that the predicted interaction of Urban and Perceived Danger occurred for both variables. Specifically, the difference between the high- and low-Perceived-Danger categories was greater for the nonurban categories when physical danger was rated but greater for the urban categories when social

TABLE 3
Multiple-Regression Analysis Summary Results: Regression Weights (B), F-Ratios (F), Significance Levels (p), and Squared Multiple Correlations (R-Sq)

	All Scenes (N = 40)			All Scenes (N = 40)		
Variable	B	F	p	B	F	p
Mystery	.42	10.90	.002	.40	11.80	.002
Physical Danger	.18	2.59	.117	-.12	.41	.525
Social Danger	-.56	12.03	.002	-.25	1.48	.234
Shadow	.08	3.24	.081	.06	2.29	.141
Nature	.43	76.58	.000	.23	6.02	.020
Vertical Depth	.40	17.78	.000	.29	6.58	.016
Urban(U)				-.39	7.36	.011
Perceived Danger(D)				.03	.05	.828
UxD				.22	4.71	.038
R-Sq		.94			.96	
p		.00			.00	

danger was rated. However, as shown in Table 3, only social danger was a significant (negative) predictor of preference in the regression analysis, and then only when the category vectors were not included in the analysis.

ADDITIONAL FINDINGS

The analyses of variance yielded additional significant effects besides those mentioned above. The main effect of Perceived Danger was significant in both analyses for preference, physical danger, social danger, and vertical depth. For preference, the low-danger mean was greater; for the other variables, the high-danger mean was greater. The main effect of Urban was significant in both analyses

for preference, physical danger, nature, and vertical depth. In each instance, the nonurban mean was greater. Significant interactions between Urban and Perceived Danger occurred for the nature and vertical-depth ratings. The Tukey-B tests showed that the nonurban categories received higher nature ratings than the urban categories, but the difference was more pronounced for the high-Perceived-Danger categories (canyons versus alleys). For vertical depth, canyons received much higher ratings than the other categories, causing the interaction.

In addition to the results reported earlier, the regression analysis also revealed that nature and vertical depth were significant positive predictors of preference. This result occurred regardless of whether or not category effects were included in the analysis. Thus, these variables predict preference quite apart from any relationship they may have with mystery, danger, or any of the other variables included in this study.

Since there were not enough settings for multiple-regression analysis within each of the four environmental categories, simple correlations between variables were examined. Only correlations significant at $p < .05$ are reported. Mystery correlated positively with preference for both urban nature ($r = .77$) and canyons ($r = .74$). In addition, vertical depth correlated positively with preference for canyons ($r = .79$). For Alleys, both physical danger ($r = -.74$) and social danger ($r = -.78$) correlated negatively with preference. For nonurban nature, there were no significant correlations between rated predictor variables and preference. Among the six rated predictor variables, there were positive correlations between the two danger variables for urban nature ($r = .82$), nonurban nature ($r = .90$), and alleys ($r = .71$), but not for canyons ($r = -.06$). Mystery correlated positively with vertical depth for canyons ($r = .70$). Finally, nature correlated negatively with both shadow ($r = -.71$) and vertical depth ($r = .79$) for the nonurban nature category.

DISCUSSION

The theory motivating this study was that for certain environmental categories, including urban alleys and narrow canyons, mystery is part of a cognitive package including perceived danger, the net effect of which is to depress preference. It was further proposed that the perceived danger is primarily social for alleys and physical for narrow canyons. The broader issues raised by the study concern the capacity of danger and mystery, separately and jointly, to predict preference and their relationship to each other. How do the results of the study bear on these issues?

First, danger is negatively related to preference. As a manipulated variable, the main effect of danger was significant, with high-danger categories least preferred. Moreover, the predicted interaction involving danger was also significant, with the depression in preference for high-danger categories more pronounced for urban than nonurban categories. Indeed, for nonurban settings, the high-danger category (canyons) showed no depression in preference. As a rated variable, danger was also negatively related to preference in the stage of the regression analysis involving only the rated predictor variables.

Second, the type of danger makes a difference. Although both physical and social danger were rated highest in the predicted categories (narrow canyons and alleys, respectively), only social danger predicted preference in the regression analysis. That social danger did not survive as a significant predictor when category vectors were added to the analysis indicates that the predictive power of social danger was primarily associated with category differences in social danger. Thus the most plausible interpretation of the results involving rated danger is that social danger contributed to the depressed preference for alleys, as predicted, whereas very high physical danger did not lead

to depressed preference for canyons, contrary to prediction. The tentative conclusion, pending replication, is that social danger seems to be the more potent of the two types in its impact on preference.

Third, mystery is positively related to preference. Mystery was a positive predictor of preference in the regression analysis, regardless of whether or not category effects had been included, and it correlated positively with preference within all four categories, significantly so in two cases (urban nature and narrow canyons). Thus past findings of a negative relationship between mystery and preference, at either inter- or intracategory levels, were not replicated. On the contrary, the present results represent a strong confirmation of the generally positive relationship between mystery and preference noted in the introduction.

Fourth, there is a negative relationship between danger and mystery. As a manipulated variable, the main effect of danger on rated mystery was significant, with the high-danger categories rated lowest in mystery. Across all 40 settings, mean mystery ratings were negatively correlated with mean ratings of both physical danger ($r = -.57$) and social danger ($r = -.42$), $p < .01$ in each case. There were no consistent trends for intracategory correlations between danger and mystery.

Fifth, although danger and mystery are related, there is evidence that each can predict preference independently. The evidence is clearest for mystery, which was a significant predictor of preference in both stages of the stepwise regression. Thus the capacity of mystery to predict preference was independent of its relationship with any of the rated predictors (including physical and social danger) or the categorical predictors (including Perceived Danger). For danger, the first stage of the regression analysis showed that the capacity of social danger to predict preference was independent of its relationship with any of the rated predictors (including mystery). The failure of social danger to survive as a significant predictor in the

second stage of the regression analysis was discussed above. Note that the main effect of Perceived Danger, the manipulated version of danger, also did not survive the second stage of the regression analysis, whereas its interaction with the Urban variable did survive as significant. It is quite possible that with four of the nine predictor variables involving danger in one form or another, the redundancy among these predictors reduced their ability to predict independently. Thus it is all the more remarkable that the interaction vector, heavily influenced by the dramatic reduction in preference for alleys, remained significant in the final analysis. As noted earlier, there is reason to believe that social danger contributed to the depressed preference for alleys.

Sixth, there is no evidence from this study that high mystery combines with high danger to depress preference. Although high danger was implicated in depressed preference, high mystery had the opposite effect. The categories that were supposed to be high in both danger and mystery (alleys and narrow canyons) turned out to be high only in danger. It remains to be seen whether one can find settings high in both mystery and danger but unconfounded by extreme values on other relevant variables. For the present, it appears that high mystery is not a necessary part of the cognitive package proposed by Herzog (1987) to account for depressed preference for urban alleys and narrow canyons. Furthermore, narrow canyons do not reliably exhibit depressed preference.

Finally, what about the remaining variables investigated in this study? The second manipulated variable, the degree to which each setting was Urban, exhibited a strong main effect on preference that survived the inclusion of the rated predictors in the regression analysis. Nonurban settings were preferred over urban settings, replicating the results of Kaplan et al. (1972).

Of the remaining rated predictors, shadow was unrelated to preference in any of the analyses. This finding is consis-

tent with the assertion by Gimblett et al. (1985) that shadow is a component of mystery and therefore would not be expected to predict preference independently of mystery. Nature and vertical depth were strong positive predictors of preference in both stages of the stepwise regression. Category differences in nature ratings exactly paralleled preference differences, suggesting that the extremely low nature content of alleys may have contributed to their depressed preference. However, as noted earlier, the disproportionate preference reduction for alleys, as embodied in the interaction of the Urban and Perceived-Danger variables, remained significant in the last stage of the stepwise regression. Therefore, the interaction effect was independent of rated nature as well as rated mystery. Moreover, as noted above, the regression analysis also indicated that the predictive power of social danger was independent from that of nature. Thus the exceptional dislike for alleys probably has many causes: perception of social danger, low nature content, and the effects of other variables not yet identified. Meanwhile, vertical depth emerged as a significant predictor of preference in its own right and not merely as a component of mystery or danger. However, it should be noted that for canyons, the only category within which vertical depth correlated significantly with preference, it also correlated significantly with mystery. Thus, before making too much of the status of vertical depth as an independent predictor of preference, that status probably should be investigated further.

In conclusion, this study has shown that both danger and mystery predict preference, the former negatively and the latter positively. Moreover, the capacity of each variable to predict preference is independent of its relationship to the other variable or to several additional variables assessed in the study. Contrary to the theory motivating the study, there is no evidence that the combination of high mystery and high danger is especially potent in depressing preference ratings. There is evidence that a distinction between social

danger and physical danger is useful and that only the former is related (negatively) to preference. Since danger as a predictor of environmental preference has not been extensively investigated, the conclusions offered here regarding danger should be considered tentative. The usefulness of the variable as an empirical predictor has been clearly demonstrated. However, it is equally clear that a rich agenda exists for future research into the dynamics of perceived environmental danger.

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