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PATTERNS OF OVERLAP IN OPINION LEADERSHIP AND INTEREST FOR SELECTED CATEGORIES OF PURCHASING ACTIVITY

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This paper reports an analysis of overlap in opinion leadership for seven categories of purchasing activity. The question of whether there are "generalized" opinion leaders for these categories is investigated by comparing the amount of overlap actually observed with that which would be expected by chance under the assumption that opinion leadership in one area is independent of that in any other. The similarity between patterns of overlap in opinion leadership and the patterns of interrelationships among measures of housewives' interest in the same areas is also briefly examined.

BACKGROUND AND PURPOSE

Interest in the question of whether the sphere of influence of opinion leaders encompasses a broad range of activities or, instead, tends to be quite specialized or limited can be traced back to the early empirical research on personal influence carried out by sociologists.[1] In one of the pioneering studies in this field, Merton used the terms "monomorphic" and "polymorphic" to distinguish between opinion leaders who exerted influence in a "single narrowly defined area" and those who were influential with respect to a variety of subjects including apparently unrelated ones.[2] Recently the matter of "general" versus "specific" opinion leaders has received some attention in the consumer behavior literature. What stimulated this interest was the appearance of a paper by Marcus and Bauer[3] which set forth a re-analysis

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[1]For brief reviews of this literature, see Everett M. Rogers, Diffusion of Innovations (New York: Free Press, 1962), pp. 236-237. and Herbert F. Lionberger, Adoption of New Ideas and Practices (Ames, Iowa: Iowa State University Press, 1960), pp. 64-66.

[2]Robert K. Merton, "Patterns of Influence: A Study of Interpersonal Influence and Communications Behavior in a Local Community," in Paul F. Lazarsfeld and Frank N. Stanton, eds., Communications Research, 1948-49 (New York: Harper, 1949), pp. 180-219.

[3]Alan S. Marcus and Raymond A. Bauer, "Yes: There Are Generalized Opinion Leaders," Public Opinion Quarterly, Vol. 28, No. 4 (Winter, 1964), pp. 628-63

of data from Katz and Lazarsfeld's now classic study of personal influence in the realms of marketing, fashion, and public affairs.[4] In their original work, Katz and Lazarsfeld reached the conclusion that the amount of overlap they observed in opinion leadership between pairs of the aforementioned areas did not differ significantly from what would be expected by chance if opinion leadership in these areas was mutually independent.[5] Although some evidence of generalized opinion leadership exists in the rural sociological literature,[6] the notion that there is little overlap in opinion leadership was frequently repeated in reviews of the mass communications literature and seems to have been generally accepted.[7] It wasn't until nearly ten years after the publication of Katz and Lazarsfeld's monograph that Marcus and Bauer detected a conceptual error in Katz and Lazarsfeld's calculations of the amount of overlap to be expected under the independence assumption. Correcting the error, Marcus and Bauer went on to show that the Katz and Lazarsfeld data were consistent with the concept of generalized opinion leadership.

Since the publication of Marcus and Bauer's paper, four studies dealing with the question of overlap in opinion leadership for various facets of consumers' behavior have come to the attention of the present writers. However, these four studies have not produced identical conclusions concerning the matter of whether or not opinion leadership is generalized. In fact, the results have been evenly split: two report significant amounts of overlap and two do not.

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[4] Elihu Katz and Paul F. Lazarsfeld, Personal Influence (Glencoe, Ill.: Free Press, 1955).

[5] Ibid., pp. 332-334.

[6] See, for example, Charles R. Wright, Mass Communication (New York: Random House, 1959), p. 64; Joseph T. Klapper, The Effects of Mass Communication (Glencoe, Ill.: Free Press, 1960), p. 33; and Melvin L. De Fleur, Theories of Mass Communication (New York: McKay, 1966), p. 133.

[7] Rogers, loc.cit. and Lionberger, loc.cit.

In the first of these studies, Silk administered one of the questions from Katz and Lazarsfeld's two item self-designating opinion leadership scale to a sample of 177 adults for each of five dental hygiene products and services (dentist, electric toothbrush, mouthwash, toothpaste, and regular toothbrush).[8] Using Marcus and Bauer's procedures, he found no clear indication of significant amounts of overlap for any combination of opinion leaders in two, three, four, or all five of these areas. Robertson and Myers used peer ratings to identify opinion leaders for appliances, clothing, and food among 95 housewives who consitituted the membership of twenty informal neighborhood groups.[9] None of the pairwise correlations between the opinion leadership scores for these products was significantly different from zero--a result that again suggested monomorphic opinion leadership. In another study, the same authors measured opinion leadership for a variety of topics by a single self-designating item included in a mail questionnaire to which 246 housewives responded.[10] Of the twelve areas studied, ten were clearly related to purchasing and/or consumption activities (home entertainment, household furnishings, household appliances, home upkeep, recreation and travel, women's clothing, medical care, personal care, cooking and foods, and automobiles). As in their previous study, Myers and Robertson considered only two area overlap and report correlations between the opinion leadership measures for all possible pairs of areas. The forty-five pairwise correlation coefficients calculated for the ten areas mentioned above ranged from .05 to .49 and forty were significant at the .05 level or beyond.[11] Myers and Robertson concluded that a certain amount of "real" overlap exists between some but not all areas.

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[8]Alvin J. Silk, "Overlap Among Self-Designated Opinion Leaders: A Study of Selected Dental Products and Services," Journal of Marketing Research, Vol. 3, No. 3 (Aug., 1966), pp. 255-259.

[9]Thomas S. Robertson and James H. Myers, "Personality Correlates of Opinion Leadership and Innovative Buying Behavior," Journal of Marketing Research, Vol. 6, No. 2 (May, 1969), pp. 164-168. Also see, Thomas S. Robertson, "The Effect of the Informal Group Upon Member Innovative Behavior," in Robert L. King, ed., Marketing and the New Science of Planning (1968 Fall Conference Proceedings, Series No. 28; Chicago: American Marketing Association, 1968), pp. 334-340.

[10]James H. Myers and Thomas S. Robertson, "Dimensions of Opinion Leadership," unpublished manuscript, no date.

The final study concerned with the overlap question to be mentioned here is that due to King and Summers.[12] It is particularly noteworthy because of its scope. Here again, opinion leaders were identified by the self-designating technique but this time the measure was the total score for a seven item scale (a modification of an instrument developed previously by Rogers and Cartano)[13] rather than the response to a single question--the latter method being that employed by Silk and by Myers and Robertson in their second study. A sample of 976 homemakers were asked to respond to the scale for each of six product categories (packaged food products, women's clothing fashions, household cleansers and detergents, cosmetics and personal grooming aids, large appliances, and small appliances). King and Summers investigated overlap by first intercorrelating the opinion leadership scale total scores for all possible pairs of the six product categories. The fifteen correlation coefficients ranged from .191 to .656 and all were statistically significant. As well, they used the Marcus and Bauer technique to compare the amount of overlap observed for all possible combinations of two through all six product categories with the amount expected under the assumption that opinion leadership in one category is independent of that in any other. King and Summers report that the differences between the observed and expected amounts of overlap were statistically significant for each of the fifty-seven possible overlap comparisons and concluded that overlap is "common." They also note the "opinion leadership overlap is highest between product categories which involve similar

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[11] The significance of product-moment correlation coefficients may not be a satisfactory test of overlap if, as seems likely, the marginal distributions of the opinion leadership scores are markedly skewed.

[12] Charles W. King and John O. Summers, "Generalized Opinion Leadership in Consumer Products: Some Preliminary Findings," Working Paper No. 224, Institute for Research in the Behavioral, Economic, and Management Sciences, Krannert Graduate School of Industrial Administration, Purdue University, January, 1969.

[13] Everett M. Rogers and David G. Cartano, "Methods of Measuring Opinion Leadership." Public Opinion Quarterly, Vol. 26, No. 3 (Fall, 1962), pp. 435-441

constellations of interests."[14] Apparently they did not measure interest directly but instead inferred it from the nature of the product categories. However their observation makes good sense inasmuch as previous research has suggested that interest is a necessary (but not sufficient) condition for opinion leadership. Katz and Lazarsfeld not only found that opinion leaders were more interested in the areas where they exerted influence than were non-leaders but these authors also report that "this greater interest results in leadership primarily when one associates with others who are also interested."[15] All of this would seem to imply that the stronger the correlation in consumer interest between areas, then the greater the amount of overlap in opinion leadership we should expect to observe between the same areas. In short, the nature of interest patterns may be one of the important factors that serves to determine what constitutes the sphere of influence of opinion leaders.

The present paper sets forth the results of an analysis of some fresh data bearing on the issue of how general or specific opinion leadership is across seven categories of purchasing activity. We focus first on the relationship between interest and opinion leadership for pairs of these categories. Following King and Summers suggestion that opinion leadership will overlap where interest overlaps, we examine whether the pattern of interrelationships between opinion leadership for these areas corresponds to the manner in which interest in them is interrelated. We then consider multiple-area opinion leadership and compare the number of persons identified as opinion leaders in all possible combinations of two or more categories with the number expected if all categories of opinion leaders were independent of one another.

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[14] King and Summers, op.cit., p. 27.

[15] Katz and Lazarsfeld, op. cit., p. 326.

METHOD

The data utilized in this study were obtained from 931 housewives who were members of MRCA's national consumer panel in the Spring of 1960.[16] As part of a larger investigation of media habits,[17] measures of self-designated opinion leadership and interest were obtained for several topics including seven categories of purchasing activity studied here and listed in Table 1.

TABLE 1

CATEGORIES OF PURCHASING ACTIVITY

Abbreviation*	Topic**
H	Household Work: new applicances, shortcuts or improved methods of cleaning and doing other household chores, etc.
A	Automobiles: new car styles, foreign cars, how to maintain cars, etc.
B	Buying Food: new types of food, how to find good buys, best brands, etc.
P	Preparing Food: recipes, menus, new ways of using food, etc.
C	Clothes: new styles in clothing, how to shop for clothes, etc.
D	Health: new medicines and drugs, proper nutrition, keeping well, etc.
F	Furnishing a Home: how to shop for new furniture, latest styles in home furnishings, new decorating ideas, etc.

*Symbol used in later tables.

**Exact wording used in questionnaire.

The following are the questions used to measure interest and opinion leadership:

> Compared with most other women you know, how actively interested would you say you are in this topic?

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[16] The authors are indebted to Dr. I. J. Abrams of MRCA for making these data available at nominal cost.

[17] See, A Study of the Magazine Market: Part II (New York: Magazine Advertising Bureau, no date). Elihu Katz and Peter Rossi served as consultants on the project.

> Compared with most other women you know, how likely are you to be asked for your ideas or your advice on this topic?

For each question, respondents were asked to check one of three response categories: "I am AS interested," "I am LESS interested," "I am MORE interested." The second of the above questions is one of two items that Katz and Lazarsfeld used to identify opinion leaders. It has been used in other studies of personal influence[18] and evidence exists concerning its reliability and validity.[19] This question is also used as one of the items in the Rogers-Cartano opinion leadership scale and responses to it have been found to correlate strongly with the total score for the entire Rogers-Cartano scale.[20]

RESULTS

Interest and Opinion Leadership

We begin by examining the relationship between interest and opinion leadership for each category of purchasing activity separately. Given the nature of these measures (three-point scales), Goodman and Kruskal's "gamma" was selected as the measure of association appropriate for use here.[21] Table 2 shows the values of this statistic calculated from the 3 x 3 contingency tables formed by cross-tabulating the interest and opinion leadership items. As has been observed in past studies, we find a strong association between these two variables for each of the seven categories studied.

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[18] See, for example, Herbert I. Abelson and W. Donald Rugg, "Self-Designating Influentiality and Activity," Public Opinion Quarterly, Vol. 22, No. 4 (Winter, 1959), pp. 566-567.

[19] Katz and Lazarsfeld, op. cit., pp. 146-161 and 374-377.

[20] One of the authors (Silk) administered the Rogers-Cartano scale to a sample of 177 adults with reference to dental products and found that the association (Goodman and Kruskal's gamma) between the response to the above question and the scale total score to be .903.

[21] Leo A. Goodman and William H. Kruskal, "Measures of Association for Cross-Classifications," Journal of the American Statistical Association, Vol. 49, No. 268 (Dec., 1954), pp. 732-764.

TABLE 2

ASSOCIATION BETWEEN OPINION LEADERSHIP AND INTEREST

Category of Purchasing Activity	Association* (Gamma)
Household Work	.674
Automobiles	.892
Buying Food	.695
Preparing Food	.795
Clothes	.767
Health	.590
Furnishing a Home	.783

*All the above associations are significant at the .001 level as determined by the value of the Chi Square statistic calculated for each of the 3 x 3 contingency tables upon which the Gamma coefficients are based.

Of greater concern here however, is the extent to which housewives' interest in these areas is intercorrelated and also, the degree to which opinion leadership is interrelated. Table 3 presents the matrix of pairwise gammas calculated for the interest scores.

TABLE 3

ASSOCIATIONS AMONG CATEGORIES OF INTEREST
(Gammas)

	H	A	B	P	C	D	F
H	-						
A	.187	-					
B	.674	.204	-				
P	.633	.085*	.760	-			
C	.488	.180	.399	.323	-		
D	.455	.198	.535	.353	.289	-	
F	.619	.252	.472	.396	.665	.344	-

*Chi Square statistic for corresponding 3 x 3 contingency table not significant at the.05 level. All other associations reported above were found to be significant at the .05 level or beyond.

There appears to be some general tendency for housewives who are interested in one of these areas to be interested in others as well--the gammas are all positive and only the association between interest in "automobiles" and interest in "preparing food" is not statistically significant at the .05 level as evaluated by the Chi Square test. However, the gamma values vary a good deal, from .085 to .760, indicating what one would expect--namely, that there is some clustering of interests in these areas.

In an effort to develop an understanding of the structure of these interrelationships, we applied a simple clustering technique to the matrix of gammas shown in Table 3. The method used is one developed by McQuitty.[22] The basic idea here is to group these interest categories into clusters so that each area within a cluster is more strongly associated with every other area included in the same cluster than with areas in different clusters. Figure 1 summarizes the results of the cluster analysis for the interest scores. The seven categories of purchasing activity are represented by points on the horizontal axis. The scale on the vertical axis corresponds to magnitude of association (gamma). Lines connecting the interest categories indicate how they were grouped to form clusters by the McQuitty technique and in what order. The height of these lines reflects the smallest amount of association observed between any two areas included in a cluster. To illustrate, consider the cluster BPHD in Figure 1. There are six pairwise associations between these four interest categories. If one looks up these coefficients in Table 3 and compares them, it will be found that the smallest (BD) has a value of .353. This is the value used to plot the vertical position of BPHD and is the figure given in parentheses next to the cluster label in Figure 1. The McQuitty technique

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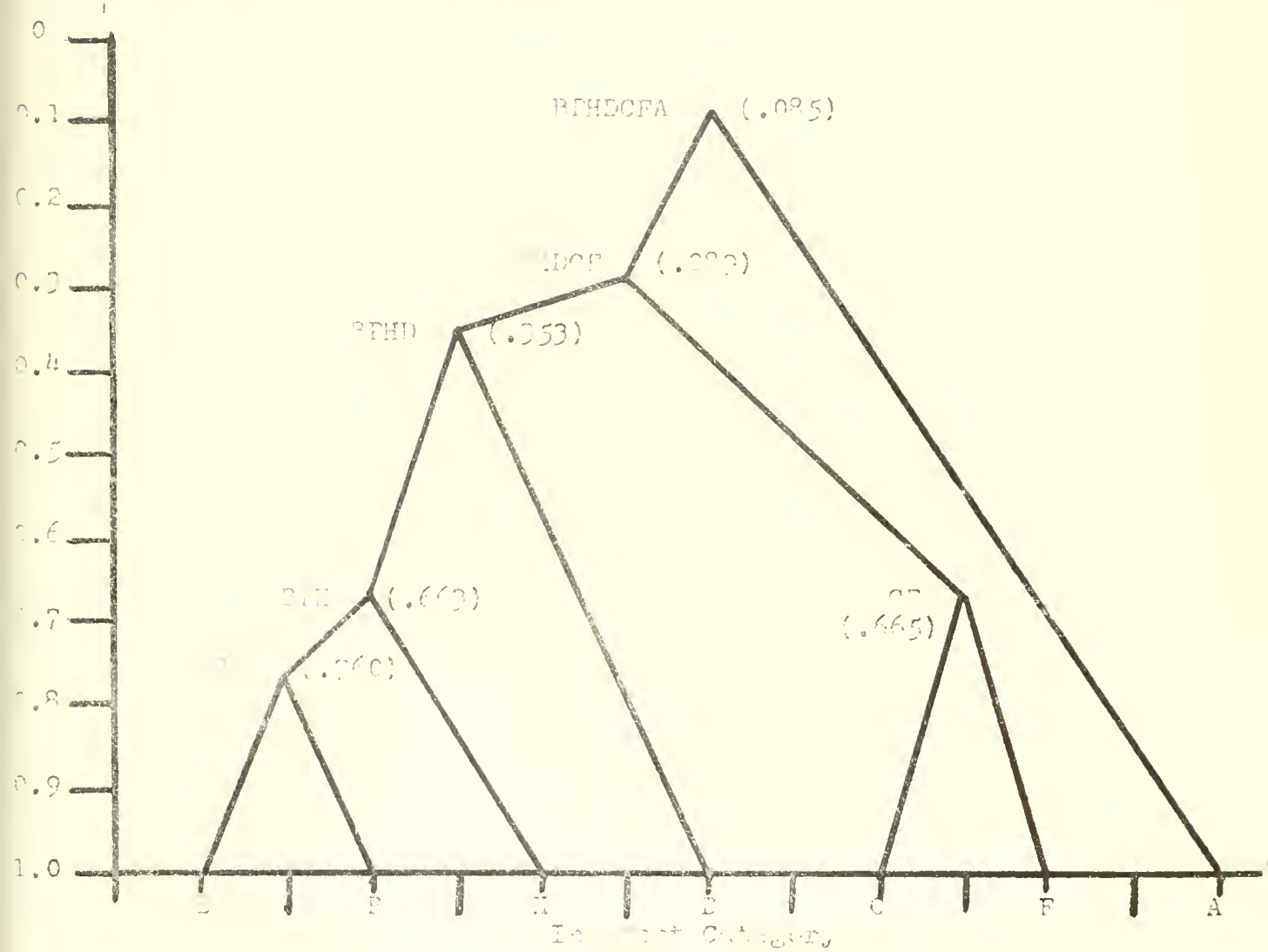
[22] Louis L. McQuitty, "Hierarchical Syndrome Analysis," Educational and Psychological Measurement, Vol. 20, No. 2 (Summer, 1960), pp. 293-304. The replacement version was applied here.

is such that the first cluster is formed by the pair of categories most highly intercorrelated (largest gamma). The final cluster always contains all the categories and the lowest gamma in the entire matrix is obviously the minimum correlation within it.

Figure 1

CLUSTER ANALYSIS OF ASSOCIATIONS (.'s) AMONG INTEREST CATEGORIES



The structure of interests depicted in Figure 1 contains no surprises. Interest in automobiles seems to stand apart from interest in the other six areas which are matters generally thought of as falling more within the female domain. The gammas in Table 3 involving automobiles are the lowest in the entire matrix. Interest in the routine tasks of the homemaker ("housework," "buying and preparing food") cluster together quite tightly as does interest in "clothes and "furnishing a home," both of which involve the elements of fashion and socially visible taste. Interest in the "health" category is slightly more allied with interest in the routine tasks of the homemaker than with interest in fashion items.

Specifying the number of clusters that exist in these data and putting interpretative labels on them are matters of less interest here than is the question of whether these patterns of interest bear any ressemblance to patterns of opinion leadership for the same areas. In order to begin to make some such comparisons, we intercorrelated the measures of opinion leadership for the seven categories. The resulting matrix of gammas is shown in Table 4.

TABLE 4

ASSOCIATIONS AMONG CATEGORIES OF OPINION LEADERS
(Gammas)

	H	A	B	P	C	D	F
H	-						
A	.420	-					
B	.711	.282	-				
P	.682	.109*	.786	-			
C	.442	.350	.390	.389	-		
D	.476	.428	.535	.391	.462	-	
F	.642	.450	.489	.475	.693	.522	-

*Chi Square statistic for corresponding 3 x 3 contingency table not significant at .05 level ($p < .20$). All other associations reported above were found to be significant beyond the .001 level by the Chi Square test.

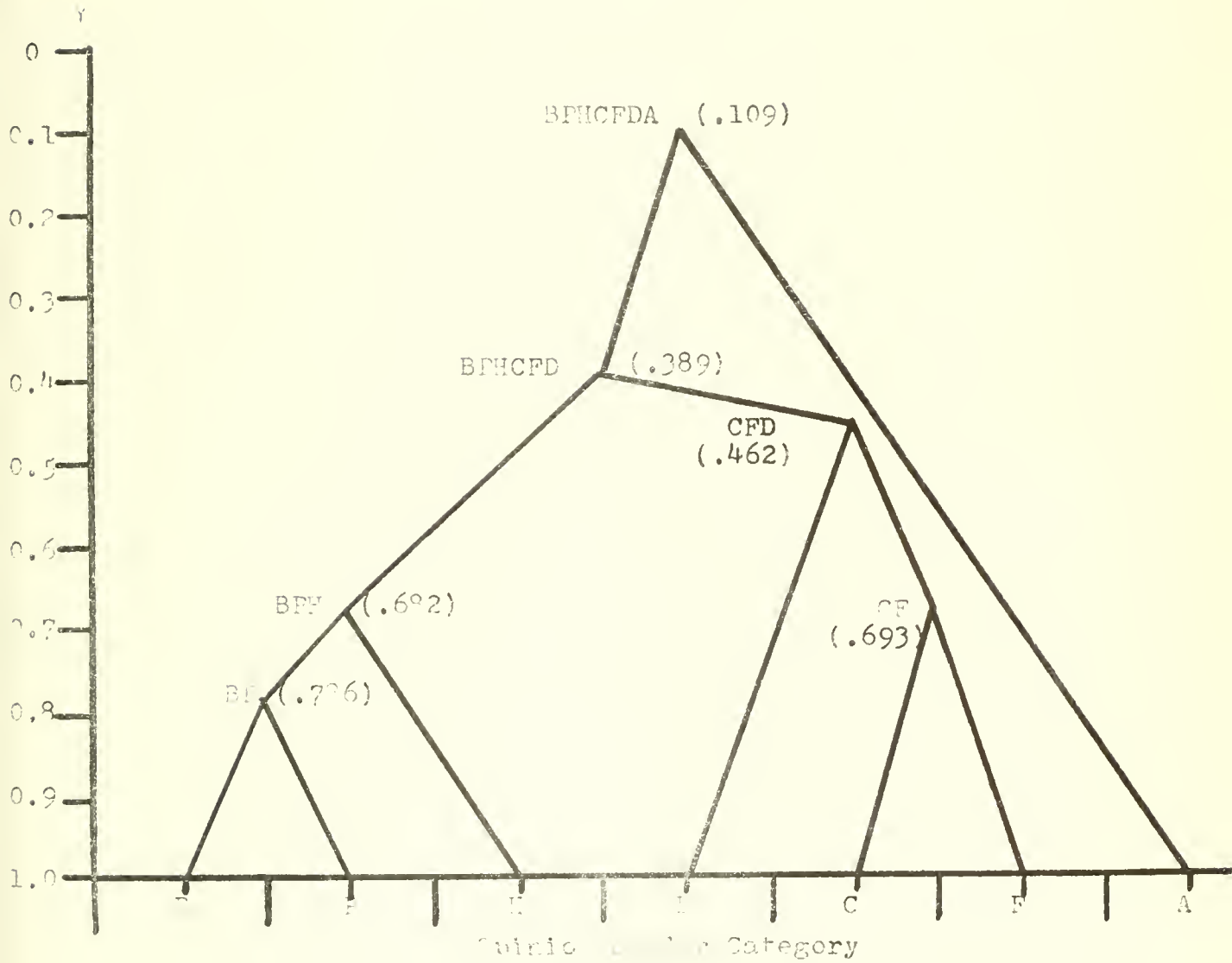
These coefficients are very similar to those obtained for the interest scores. All are positive and all are statistically significant (.001 level) except for the association between "automobiles" and "purchasing food." Recall that the association between interest in these latter two areas was also non-significant. The gammas varied from a low of .109 to a high of .786, essentially the same range as those observed for the interest scores. Furthermore, the Spearman rank order correlation between the twenty-one pairs of interest and opinion leadership gammas is .852 (significant at the .01 level, 1 tail test) indicating that the greater the association between interest in two areas, the greater the association between opinion leadership in the areas.

The matrix of gammas for opinion leadership was also cluster analyzed. Figure 2 shows the results. A visual comparison of Figures 1 and 2 readily indicates that the cluster structure of opinion leadership is almost identical to that found for interest. There is one major discrepancy between them and that is the "health" category. Whereas for the interest scores, "health" combines with "buying" and "preparing food" and "household work," in the case of opinion leadership the "health" category enters into the "clothes" and "home furnishings" cluster.

The fact that the cluster structures for interest and opinion leadership were found to closely parallel one another is consistent with King and Summers suggestion that overlap in opinion leadership will be highest between product categories having "common" interest dimensions. An alternative interpretation that might be put forth is that this similarity in cluster structure is something of a statistical artifact. Given that the interest and opinion leadership questions were worded in the same fashion and repeated for each of several topical categories, response set or shared methods variance might have produced a built-in-correlation among these measures. Such a problem is possible but it is worth noting that in a previous study, dichotomous responses to the

Figure 2

CLUSTER ANALYSIS OF ASSOCIATIONS (γ's) AMONG CATEGORIES OF OPINION LEADERS



opinion leadership study used here were not found to be related to a measure of "yea-saying" or acquiescent response set.[23]

Overlap in Opinion Leadership

In the preceding section, we were concerned with relationships involving interest and opinion leadership for pairs of areas. Here, we investigate whether there is a tendency for opinion leadership to be generalized across various combinations of two or more of the seven categories of purchasing activity studied. This requires that those who are opinion leaders be distinguished from those who are not for each area. To accomplish this, we dichotomized our three-point opinion leadership scale into a simple "leader" versus "non-leader" measure by operationally defining an opinion leader as being someone who checked the "more likely" category on the self-designating opinion leadership question discussed earlier. Table 5 shows the percentage of the total sample who were thus classified as opinion leaders for the various categories of purchasing activity. The incidence of opinion leadership varied from a low of only 2.6 per cent of the sample for automobiles to a high of 22.8 percent for "preparing food."

TABLE 5

DISTRIBUTION OF OPINION LEADERS BY CATEGORY OF PURCHASING ACTIVITY

Category of Purchasing Activity	Number of Opinion Leaders	Percent of Total Sample (n = 931)
Household Work	115	12.352
Automobiles	24	2.578
Buying Food	180	19.334
Preparing Food	212	22.771
Clothes	92	9.882
Health	115	12.352
Furnishing a Home	97	10.419

[23] Alvin J. Silk, "Response Set and the Measurement of Self-Designated Opinion Leadership," Working Paper, Sloan School of Management.

The distribution in the total sample of multiple, single, and non opinion leaders is shown in Table 6. Respondents classified as opinion leaders in none of the seven categories constituted almost 60 per cent of the sample. Another 16.5 per cent were identified as leaders in at least one category and 11 per cent were two area leaders. Only 13 per cent of the sample were classified as opinion leaders in three or more areas.

TABLE 6

DISTRIBUTION OF OPINION LEADERS BY NUMBER OF CATEGORIES OF INFLUENCE

Number of Categories of Influence	Frequency	Percent of Total Sample
None	553	59.398
1	154	16.541
2	101	10.849
3	57	6.122
4	36	3.867
5	17	1.826
6	12	1.289
All 7	1	.107
	931	99.999

Table 7 included as an appendix contains the observed and expected overlap figures for all possible combinations of 2, 3, 4, 5, 6, and all 7 areas. These observed and estimated overlap proportions were determined by the Marcus and Bauer procedure referred to earlier. An example will serve to illustrate the calculations. From Table 5 we note that 12.352 per cent of the sample were "household work" opinion leaders and 19.334 per cent were opinion leaders in the "preparing food" category. Even if opinion leadership in these two areas were independent of one another, we would expect to find by chance some proportion of the sample who were opinion leaders in both. The probability of the joint occurrence of two independent events is the product of the probabilities of their separate occurrence. Hence, we would expect that

.12352 x .19334 = .02388 or 2.388 per cent of the sample would be opinion leaders for both "household work" and "preparing food" even if being an opinion leader in one area is independent of being that in the other. This expected value is then compared with the corresponding observed overlap percentage. From Table 7 we see that six respondents identified themselves as opinion leaders only for the "household work' and "preparing food" areas and an additional 72 indicated they were opinion leaders for two categories and one or more others. Hence we have a total of 78 persons or 8.378 per cent of the sample were opinion leaders for both categories or more. In this fashion, the values of the expected and observed percentages shown in Table 7 were determined for each of the 120 possible combinations of overlap in two or more categories.

Comparing the magnitude of the observed and expected overlap percentages, we find that in only two of the 120 cases do the expected figures exceed the observed ones. Since the various combinations of opinion leaders shown in Table 7 are not independent of one another, an overall goodness of fit test cannot be applied here. Hence, we must test the significance of the difference between each pair of observed and expected overlap percentages separately. Note that although our sample is large (n = 931), many of the proportions (p) in Table 7 are extremely small. As a result, the value of np also tends to be very small and for many cases in Table 7 it is less than the minimum value of np needed for the normal distribution to be a satisfactory approximation of the binomial.[24] Under such circumstances, use of the Poisson approximation is recommended and this practice was followed here.[25] Using Molina's tables of cumulative terms of the Poisson, we determine for each overlap combination in Table 7 the probability of obtaining

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[24] See, George W. Snedecor and William G. Cochran, Statistical Methods, (6th ed.; Ames, Iowa: Iowa State University Press, 1967), p. 223

[25] William Feller, An Introduction to Probability Theory and Its Applications, Vol. I (2nd ed.; New York: Wiley, 1957), p. 176ff.

at least as many cases of overlap as that actually observed given that the probability of overlap occuring is equal to the expected proportion explained above.[26] The significance levels reported in Table 7 are based on the probabilities determined in this fashion.

The observed overlap percentages exceed the expected figures for 118 of the 120 opinion leader combinations shown in Table 7. The results of the above test indicate that in all but 10 of these 118 cases, the observed amount of overlap was significantly greater (at the .05 level or beyond) than the amount expected under the assumption of mutual independence of opinion leadership across these various categories of purchasing activity. These results clearly suggest that some "real" amount of overlap in opinion leadership exists beyond that to be expected by chance. However, it would not appear that opinion leadership is generalized across all the categories of purchasing activity studied here. In line with the results of the cluster analysis presented previously which showed that the interdependency between the "automobile" category and the other areas studied to be rather weak in terms of interest, we also find in analyzing multiple area overlap indications that "automobile" opinion leadership tends to be somewhat monomorphic. All ten of the non-significant differences between the observed and expected overlap percentages involved the automobile category. Also, the two opinion leadership combinations for which the expected frequency of overlap was greater than the observed also contained the automobile category. However, the overlap observed for several other opinion leadership combinations involving the automobile category was significant. The fact that so very few automobile opinion leaders are found in the sample precludes drawing any firm conclusions regarding overlap between automobiles and the other categories.

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[26] E. C. Molina, Poisson's Exponential Binomial Limit (New York: Van Nostrand, 1942).

SUMMARY

Evidence was found of significant amounts of overlap in opinion leadership across most but not all of the categories studied. In line with the suggestion made by King and Summers, patterns of overlap in opinion leadership appeared to parallel the manner in which housewives' interest in these categories cluster together. Several of the categories of purchasing activity studied here are similar to the product categories covered in the studies by King and Summers and Myers and Robertson mentioned earlier where significant amounts of overlap were also detected. While this general correspondence in the results of the three studies is encouraging, there are some methodological problems to be overcome before the question of how generalized opinion leadership is can be answered in a satisfactory manner. A study which tackled the overlap issue using multiple measures of opinion leadership would be an extremely worthwhile undertaking as means of assessing the extent to which acquiescent and/or social desirability response set inflates estimates of overlap based on self-designating measures of opinion leadership.[27] Also requiring attention are the statistical issues connected with the practice of comparing observed overlap proportions with expected values estimated from the same sample.

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[27] An excellent example of a study employing both multiple and unobstrusive measurements is Michael L. Ray, "Neglected Problems (Opportunities) in Research: The Development of Multiple and Unobstrusive Measurement," In King, op. cit., pp. 176-183.

APPENDIX

TABLE 7

OVERLAP AMONG OPINION LEADERS FOR SEVEN CATEGORIES OF PURCHASING ACTIVITY

Areas of Influence	Purchasing Activity H	A	B	P	C	D	F	Observed No. Only	Or More	Or More Observ. %	Or More Expect. %	Signif. Level
0								553		59.398		
1	x							14		1.504		
		x						6		.644		
			x					23		2.470		
				x				53		5.693		
					x			16		1.719		
						x		27		2.900		
							x	15		1.611		
								(154)				
2	x	x						1	9	.967	.318	***
	x		x					6	78	8.378	2.388	*
	x			x				5	74	7.948	2.813	*
	x				x			0	37	3.974	1.221	*
	x					x		2	42	4.511	1.526	*
	x						x	3	41	4.404	1.287	*
		x	x					2	11	1.182	.498	**
		x		x				0	7	.752	.587	.314
		x			x			0	5	.537	.255	.109
		x				x		1	7	.752	.318	**
		x					x	1	6	.644	.269	**
			x	x				34	123	13.212	4.403	*
			x		x			1	44	4.726	1.911	*
			x			x		9	62	6.660	2.389	*
			x				x	3	46	4.941	2.014	*
				x	x			6	49	5.263	2.250	*
				x		x		8	59	6.337	2.813	*
				x			x	5	50	5.371	2.373	*
					x	x		2	29	3.115	1.221	*
					x		x	10	53	5.693	1.030	*
						x	x	2	27	2.900	1.287	*
								(101)				

*** $p < .001$
** $p < .01$
* $p < .05$

TABLE 7 Cont'd.

Areas of Influence	Purchasing Activity H	A	B	P	C	D	F	Observed No. Only	Or More	Or More Observ. %	Expect. %	Signif. Level
3	x	x	x					1	6	.644	.462	.263
	x	x		x				1	5	.537	.544	n.s.(E>O)
	x	x			x			0	3	.322	.236	.377
	x	x				x		1	4	.430	.295	.287
	x	x					x	0	2	.215	.249	n.s.(E>O)
	x		x	x				17	62	6.660	.544	*
	x		x		x			1	31	3.330	.236	*
	x		x			x		2	35	3.759	.295	*
	x		x				x	0	31	3.330	.249	*
	x			x	x			1	28	3.008	.278	*
	x			x		x		2	33	3.545	.347	*
	x			x			x	1	30	3.222	.293	*
	x				x	x		0	17	1.826	.151	*
	x				x		x	2	29	3.115	.127	*
	x					x	x	1	17	1.826	.159	*
		x	x	x				0	5	.537	.113	**
		x	x		x			1	4	.430	.049	**
		x	x			x		1	4	.430	.062	**
		x	x				x	0	3	.322	.052	***
		x		x	x			0	3	.322	.058	***
		x		x		x		0	2	.215	.073	.156
		x		x			x	1	4	.430	.061	**
		x			x	x		0	3	.322	.031	**
		x			x		x	0	3	.322	.027	**
		x				x	x	0	2	.215	.033	***
			x	x	x			2	36	3.867	.435	*
			x	x		x		12	47	5.048	.544	*
			x	x			x	3	38	4.082	.459	*
			x		x	x		0	20	2.148	.236	*
			x		x		x	0	31	3.330	.199	*
			x			x	x	1	18	1.933	.249	*
				x	x	x		1	21	2.256	.278	*
				x	x		x	2	32	3.437	.234	*
				x		x	x	0	18	1.933	.293	*
					x	x	x	3	19	2.041	.127	*
								(57)				

***
**p < .05
*p < .01
p < .001

TABLE 7 Cont'd.

Areas of Influence	Purchasing Activity H	A	B	P	C	D	F	Observed No. Only	Or More	Or More Observ. %	Or More Expect. %	Signif. Level
4	x	x	x	x				1	4	.430	.0140	*
	x	x	x		x			0	3	.322	.0061	*
	x	x	x			x		1	3	.322	.0076	*
	x	x	x				x	0	2	.215	.0064	**
	x	x		x	x			0	3	.322	.0072	*
	x	x		x		x		0	2	.215	.0089	**
	x	x		x			x	0	2	.215	.0076	**
	x	x			x	x		0	2	.215	.0039	*
	x	x			x		x	0	2	.215	.0033	*
	x	x				x	x	0	1	.107	.0041	***
	x		x	x	x			1	25	2.685	.0537	*
	x		x	x		x		12	31	3.330	.0672	*
	x		x	x			x	3	27	2.900	.0567	*
	x		x		x	x		1	16	1.719	.0292	*
	x		x		x		x	4	24	2.578	.0246	*
	x		x			x	x	0	15	1.611	.0307	*
	x			x	x	x		0	15	1.611	.6031	*
	x			x	x		x	2	22	2.363	.5087	*
	x			x		x	x	0	15	1.611	.0362	*
	x				x	x	x	1	12	1.289	.0157	*
		x	x	x	x			0	3	.322	.0112	*
		x	x	x		x		0	2	.215	.0140	**
		x	x	x			x	1	3	.322	.0118	*
		x	x		x	x		0	2	.215	.0944	.228
		x	x		x		x	0	2	.215	.0796	.156
		x	x			x	x	0	1	.107	.0064	.058
		x		x	x	x		0	2	.215	.126	.337
		x		x	x		x	0	2	.215	.106	.264
		x		x		x	x	0	1	.107	.0076	.067
		x			x	x	x	1	2	.215	.0033	*
			x	x	x	x		2	19	2.041	.944	**
			x	x	x		x	5	27	2.900	.796	*
			x	x		x	x	0	17	1.826	.0567	*
			x		x	x	x	0	13	1.396	.0245	*
				x	x	x	x	1	14	1.504	.0289	*
								(36)				

***
 **p < .05
  p < .01
 *
  p < .001

TABLE 7 Cont'd.

Areas of Influence	Purchasing Activity H	A	B	P	C	D	F	Observed No. Only	Or More	Or More Observ. %	Or More Expect. %	Signif. Level
5	x	x	x	x	x			0	3	.322	.0014	*
	x	x	x	x		x		0	2	.215	.0017	*
	x	x	x	x			x	0	2	.215	.0015	*
	x	x	x		x	x		0	2	.215	.00075	*
	x	x	x		x		x	0	2	.215	.00063	*
	x	x	x			x	x	00	1	.107	.00079	**
	x	x		x	x	x		0	2	.215	.00089	*
	x	x		x	x		x	0	2	.215	.00075	*
	x	x		x		x	x	0	1	.107	.00083	**
	x	x			x	x	x	0	1	.107	.00040	**
	x		x	x	x	x		3	15	1.611	.0066	*
	x		x	x	x		x	8	20	2.148	.0056	*
	x		x	x		x	x	4	15	1.611	.0070	*
	x		x		x	x	x	0	11	1.182	.0030	*
	x			x	x	x	x	0	11	1.182	.0036	*
		x	x	x	x	x		0	2	.215	.0014	*
		x	x	x	x		x	0	2	.215	.0012	*
		x	x	x		x	x	0	1	.107	.0015	***
		x	x		x	x	x	0	1	.107	.00063	**
		x		x	x	x	x	0	1	.107	.00075	**
			x	x	x	x	x	2	13	1.396	.0056	*
								(17)				
6	x	x	x	x	x	x		1	2	.215	.00017	**
	x	x	x	x	x		x	1	2	.215	.00014	**
	x	x	x	x		x	x	0	1	.107	.00018	**
	x	x	x		x	x	x	0	1	.107	.00001	*
	x	x		x	x	x	x	0	1	.107	.00001	*
	x		x	x	x	x	x	10	11	1.182	.00069	*
		x	x	x	x	x	x	0	1	.107	.00014	*
								(12)				
7	x	x	x	x	x	x	x	1	1	.107	.00002	*

*** $p < .05$

** $p < .01$

* $p < .001$

Date Due