ASSESSING THE RELIABILITY AND VALIDITY OF JOINT SATISFACTION MEASURES IN THE CONTEXT OF A SYNCRATIC DECISION

Hudson P. Rogers, University of Southwestern Louisiana
Reginald M. Peyton, Christian Brothers University
Robert L. Berl, University of Memphis

ABSTRACT

The literature is full of studies on consumer satisfaction. Little research, however, has been conducted on the validity of the measurement methodologies used. This study reports on the assessment of the reliability and validity of measures of eight separate constructs hypothesized to be relevant to joint satisfaction with husband-wife purchase of their principal place of residence. This study conceptualized the house purchase decision as a syncratic decision resulting from some degree of interaction between husband and wife. The results of a Multitrait-Multimethod (MTMM) analysis indicate the existence of individual and joint satisfaction and provide support for developing the concept of joint satisfaction.

INTRODUCTION

The notion of joint satisfaction suggests that consumers may have joint satisfaction with joint decisions. However, since its introduction (Rogers, Peyton and Berl 1992) the concept has not been empirically tested. The need for validation of the satisfaction measures in the context of joint family purchasing decisions has become more important in the face of ever changing sex roles (Jacoby 1978). The lack of standardization among empirical scales, however, continues to be a major obstacle to the development of usable constructs in husband-wife decision-making studies (Hopper, Burns and Sherrell 1989; Waldruff 1988; Thompson and Walker 1982; Davis 1976) and in consumer satisfaction studies (Oliver 1980a; Churchill and Surprenant 1982; Cadotte, Woodruff and Jenkins 1987). Thus, there seems to be a need for validation research that provides some understanding of the degree of joint satisfaction with a product which was purchased using syncratic decision-making.

The notion of consumer satisfaction/ dissatisfaction (CS/D) has been widely studied (Oliver and Swan 1989; Cadotte et al., 1987). Part of the concern for the satisfaction of the consumer stems from the realization that customer satisfaction with a product often leads to repeat purchase, acceptance of other products in the product line, and favorable word-of-mouth. Unfortunately, the concern with consumer satisfaction has focused upon the individual satisfaction with individual decisions. This has caused the research into consumer satisfaction to become an individualized concept in the sense that any attempt to meet the needs of the customer must focus on individual satisfaction. Except for studies of organizational response to complaints (Yi 1990), the role of groups in the satisfaction/ dissatisfaction process has been largely ignored.

In advancing the notion of joint satisfaction, Rogers et al., (1992) asserts that the relatively large number of purchasing decisions that are made by groups suggest that the notion of group satisfaction may be a concept with which the marketer needs to be concerned. Indeed, joint or syncratic decisions, resulting in possible joint rewards, may modify the satisfaction outcome in some manner. However, to date, no research has been undertaken is this area. Much of the debate in the area of husbands and wives decision-making has focused on who provides the data (Thompson and Williams 1982), on the degree of agreement between the individual responses of the individual spouses (Thompson and Walker 1982), and on the nature of husband-wife decision-making (Waldruff 1988). Researchers generally agree that husbands and wives do not always express similar perceptions concerning individual influence in family decision-making (Davis and Rigaux 1974; Thompson and Williams 1982). Douglas and Wind (1978) note that such discrepancy may result from measurement error rather than from actual spousal disagreement. However, even with joint decisions (Waldruff 1988), the debate tends to

focus on individual outcomes excluding the possibility of joint outcomes with the purchase decision.

Purpose of the Study

This study focuses on measure validation issues within the context of joint husband-wife decision-making. The main purpose is to assess the reliability and validity of the five separate measures hypothesized to be central to consumer satisfaction: norms, expectations, performance, confirmation and satisfaction. The multitrait-multimatrix (MTMM) approach developed by Campbell and Fiske (1959), has been shown to provide adequate assessment of the reliability and validity of measures of psychological constructs (Goldsmith and Emmert 1991; Hopper et al., 1989; Davis 1976; Heeler and Ray 1972; McDonald 1980). This study applies this methodology to the satisfaction constructs in the context of a syncratic decision for the purchase of a house which is to be the couple's principal place of residence. Following the approach outlined by Davis (1976), the joint, as well as the individual husbands and wives responses are viewed as belonging to different methods. Therefore, this study compared the perceptions of the three groups across different traits. The traits used were the five consumer satisfaction constructs, in addition to husband-wife consensus, husband-wife cohesion, and the degree of syncratic decision-making as outlined by Rogers et al., (1992).

VALIDATION STUDIES IN HUSBAND-WIFE DECISION-MAKING AND IN CONSUMER SATISFACTION

Husband-Wife Validation Studies

Studies in the area of husband-wife decision making have tended to focus on the role of individual influence in the decision-making process (Hopper et al., 1989; Waldruff 1988; Davis 1976). Indeed, no study could be found which focus on the satisfaction of a spouse with a family decision. Most validation research in the area of husband-wife decision making focus concentrate on the identification of individual level spousal influence as the primary construct to explain husband-wife decision processes (Waldruff 1988; Davis 1971; Wilkes 1975; Syzbillo, Sosanie and Tenebein 1979; Seymour and Lessne 1984).

A few researchers have examined the validation of husband and wife decision influence measures (Hopper et al., 1989; Davis 1971; Wilkes 1975; Seymour and Lessne 1984). Most of these studies viewed husbands' and wives' responses as different methods and compare their perceptions of influence across differing product purchases. The results from most of these studies indicate that researchers consistently find disagreement on perceived decision influence between spouses. Davis (1976) asserts that this disagreement results because husbands and wives do not necessarily hold the same or similar perceptions of their influence in household decision making. However, Douglas and Wind (1978) argue that the most likely source of discrepancy between the responses of husbands and wives are the measurement instruments. The apparent lack of usable constructs in husband-wife studies stems, to a large extent, from the inability of researchers to compare research results across studies. Asserting that this disagreement results because husbands and wives do not necessarily hold the same or similar perceptions of their influence in household decision-making, Davis (1976) calls for scale development and replication as a means of standardizing measures of critical constructs.

Consumer Satisfaction Validation Studies

Since the early 1970's, researchers have investigated the concept of consumer satisfaction with a vast majority of them using the disconfirmation model. One of the earliest studies on the validity of consumer satisfaction measures was conducted by Oliver (1980b). He examined five constructs thought to be relevant to the measurement of consumer satisfaction. The measures examined included norms, expectations, performance, confirmation/disconfirmation of expectations, and satisfaction. Oliver found the constructs to be highly reliable and valid. Since that initial study, a number of other researchers have used and extended the confirmation-disconfirmation model (Cadotte, Woodruff and Jenkins 1983; Tse and Wilton 1988; Churchill and Surprenant 1982). However, a review of the

validity studies in the consumer satisfaction area illustrates that all the studies focused on individual satisfaction outcomes with a purchase decision.

Westbrook and Oliver (1981) used the MTMM to assess the validity of three different scale types across two product categories. They found that the reliabilities and convergent and discriminant validities were relatively high. In the development of a multidimensional scale for measuring consumer satisfaction, Oliver (1981) also found that Likert and semantic differential scales were more likely to show comparable results. His analysis supported a conclusion of relatively high convergent and discriminant validity for both types of scales. Tse and Wilton (1988) reported that the measures in the disconfirmation model showed good discriminant and convergent validity. They also found support for the variables used by Churchill and Surprenant (1982). Bearden and Teel (1983) reported reliable and valid satisfaction measures and found that expectations and disconfirmation were plausible determinants of satisfaction.

CONCEPTUALIZATION OF THE VALIDATION STUDY COMPONENTS

The constructs of norms, expectations, performance, disconfirmation, and satisfaction were included in the study to help assess the discrimination ability of the husbands and wives in their individual and joint responses about post purchase satisfaction. These constructs have been widely used to measure individual consumer satisfaction (Tse and Wilton 1988; Cadotte et al., 1983) and were used in this study to facilitate comparing the results with those obtained from prior research. If a comprehensive study of the joint satisfaction process is to be conducted, eight major concepts have to be measured as the "traits" in the validation model. The first five of these concepts (attribute importance or norms, expectation, performance, disconfirmation, satisfaction) were suggested by consumer satisfaction research and the next three (degree of syncratic decision-making, husband-wife consensus, and husband-wife cohesion) were suggested by Rogers et al., (1992). In this study, the scale used to collect all of the data had at least five points. Syzbillo et al., (1979) assert that the use of scales with five or more points would help to eliminate any confounding between the self-report measures and the different methods of husbands, wives, and joint responses.

DISCONFIRMATION MODEL "TRAITS"

Attribute Importance (Norms)

The first step in satisfaction analysis is the identification of the salient attributes (Oliver 1981; Ajzen and Fishbein 1980; Woodruff, Cadotte, and Jenkins 1983). Attribute importance can be determined by asking the respondents to pick out the attributes which they used to purchase the product or to rate a number of product-related attributes according to the degree to which each attribute was important in the decision to purchase the product. Current attribute importance measurement is based upon the work of Fishbein and Ajzen (1975). They have suggested that attribute importance can be measured by asking the respondent to rate the relative importance of each attribute. In order to derive weighted summation scores for the attribute importance variable (norms) respondents were asked to provide ratings for seventeen product attributes considered to be important in the selection of a residence (Hempel 1976; Leigh 1987; Park 1982). Each respondent was asked to report their beliefs about product attributes such as size of the house, location, price, number of bedrooms, and number of bathrooms along a 5 point scale ranging from (1) not at all important to (6) extremely important.

Expectations

Traditionally, expectations are viewed as the anticipation of positive or negative occurrences with respect to some future event or occurrence. The full set of seventeen product attributes, restated as statements reflecting consumer expectations, was used to gather expectations data. Using statements such as "I expected the number of bedrooms in this house to be adequate," respondents were asked to indicate their level of expectation for each attribute using a six-point scale ranging from (1) strongly disagree to (6) strongly agree. A single item measure of expectation was also obtained from each

respondent. Based upon the work of Oliver (1980a) and Olson and Dover (1979), each respondent was asked to indicate their overall expectation for the house along a six-point delightful-terrible scale.

Disconfirmation of Expectations

Previous research has shown that it is possible to derive the disconfirmation of expectation measure by averaging the difference in the ratings on performance and expectations to compute a difference score. However, such a measure was not used in this study because both the performance and the expectation measures were obtained at the same time. This may result in the possible contamination of the measure. Therefore, a perceived disconfirmation measure was computed for the standard of comparison for the typical product norm. As suggested by Oliver (1980a), each perceived disconfirmation measure was a single item score using the same wording and coding format (much worse than expected = 1, worse = 2, slightly worse = 3, just as expected = 4, slightly better = 5, better = 6, much better than expected = 7), to the question "Compared to your expectations for your present house, how did it actually rate on each of these factors?" In addition to providing their perceived disconfirmation for each product attribute, respondents also provided a single-item overall measure of product disconfirmation of expectations.

Satisfaction

Given the criticisms of the different ways of measuring consumer satisfaction (Westbrook 1983; Oliver 1981), it is desirable that the satisfaction/dissatisfaction measure be deemed to be the result of the confirmation/disconfirmation of the normative standards or norms and not simply a restatement of the confirmation/disconfirmation evaluation. This approach captures the emotional response to the disconfirmation of normative standards (Oliver 1980a). This study obtained three different measures of consumer's satisfaction with their present house. The first, termed the "cognitive measure of satisfaction," used a five-point scale ranging from (1) strongly disagree to (5) strongly agree to measure agreement with eight statements expressing non-emotional responses to the consumption experience. Six of the eight items were suggested by Oliver (1980a) and have been used by other researchers (Oliver and Swan 1989; Churchill and Surprenant 1982). Consumers were asked to respond to statements such as "the choice to buy this house was a wise one," and "living in this house has been a pleasurable experience."

The second measure, termed the "affective measure of satisfaction," was obtained using items which were affective or evaluative in nature (Churchill and Surprenant 1982). This approach measures respondents' attitude or enduring affective orientation or feeling for the product. It assumes that the individual is capable of experiencing affective or emotional responses following a cognitive evaluation of a product's performance. As such, the intensity of the consumer's affective (like/dislike) expressions following a consumption experience and evaluation is viewed as the measure of satisfaction with the house. Following the approach used by Cadotte et al., (1987), a series of six-point bipolar scales such as happy-unhappy, comfortable-uncomfortable, pleased-displeased, and contented-discontented, were used to encourage respondents to report on a variety of feelings towards the product.

The third measure of satisfaction, the attribute-specific measure, was obtained using a six-point scale to assess the degree of consumer displeasure or pleasure across the various product attributes. This approach seeks to determine which of the seventeen product attributes are critical to satisfaction. An overall measure of consumer satisfaction was also obtained. This single-item measure was expressed in terms ranging from (1) definitely dissatisfied to (5) definitely satisfied.

HUSBAND AND WIFE DECISION-MAKING "TRAITS"

Type of Family Decision-Making

The construct of perceived influence was included in the study to help assess the degree to which each spouse influenced the decision-making process. The notion of perceived influence has been widely used in husband-wife research (Davis 1971; Wilkes 1975; Syzbillo et al., 1979; Hopper

et al., 1989). In this study, perceived influence was determined by the degree to which spouses agreed that the purchase decision fell into one of four categories husband-dominant, wife-dominant, autonomic, and syncratic decision-making (Rogers et al., 1992).

Manipulation checks for syncratic decision-making were used to determine the extent to which subjects were involved in jointly purchasing the house. The syncratic decision-making check included a series of Likert statements which covered possible contributions of the parties to the decision-making process. Following Blood and Wolfe (1960), and Davis (1970; 1971; 1976), eight decision statements, such as location and style of the house, were used to generate a measure of family decision-making with respect to the housing purchasing decision. These items were coded on a five-point Likert scale ranged from (1) husband alone decided, (2) husband mostly decided, (3) joint or equal input, (4) wife mostly decided, to (5) wife alone decided. Scores on all eight items were summed to provide a multi-item manipulation check of syncratic decision-making. A single-item measure of decision-making was also obtained by asking the question "overall, how did you and your spouse make the decision to buy this specific house?"

Dyadic Consensus and Cohesion

The type and quality of the dyadic decision-making depends upon the degree to which the parties to the decision share common attitudes and meanings (consensus/congruence) and are relatively cohesive or similar in their views regarding those attitudes (Spanier 1976; Heffring 1978; Rogers et al., 1992). The consensus and cohesion constructs were measured using the scales developed by Spanier (1976). He reported using thirteen items, with a reported coefficient alpha of .90, to measure the dyadic consensus construct. A six-point Likert-type scale was used to gather this data. Coding for these items ranged from (0) always disagree to (5) always agree. The cohesion construct measures the degree to which the dyad members do things together. Five items were used to measure the cohesion construct. This data was gathered on a six-point scale (never = 0, less than once a month = 1, once or twice a month = 2, once or twice a week = 3, once a day = 4, more often = 5). Spanier (1976) found that both the consensus and the cohesion scales exhibited high construct and criterion related validity.

HUSBAND, WIFE AND JOINT DECISION-MAKING "METHODS"

As in previous measure validation research involving husband-wife data (Hopper et al., 1989; Davis 1971; Wilkes 1975), the responses of husbands only, wives only, and the husbands and wives responding together on a single questionnaire (joint responses) were treated as three different methods. This study used the confirmation-disconfirmation of expectation model, outlined by Oliver (1980b), to explain the consumer satisfaction using four constructs: expectations, performance, disconfirmation, and satisfaction. The respondents were also asked to identify the degree to which the decision-making process was individual or joint and to record the degree of consensus and cohesion between husband and wife (Spanier 1976). Therefore, seven items were generated for assessment; four for the satisfaction process; one for husband-wife consensus; one for husband-wife cohesion; one for degree of husband-wife influence.

METHODOLOGY

The data for this study were collected from 137 couples (husband and wife) who purchased their principal place of residence within a medium size city in the southern United States. Because of the many difficulties inherent in obtaining couple co-operation for husband-wife surveys, most of the data for this study (70.8%) were gathered from couples contacted through Realtors. While not ideal, the use of convenience samples is commonplace in husband-wife decision-making and purchasing studies (Burns and Granbois 1979; Hopper et al., 1989) and the practice has been defended in methodological studies such as this one (Calder 1983; 1982; Calder, Phillips and Tybout 1981).

In order to determine the degree to which the convenience sample matched the population, a random sample of 522 homeowners were contacted through the mail. The initial mailing of letters

yielded 142 qualified prospects. Of this number, 57 couples, or 40.1 percent, agreed to participate in the study. However, only 40 of them actually participated. This provided a response rate of 28.2 percent for the group of qualified mail contacts. Considering that each couple had to complete an individual and then a joint questionnaire, this response rate seems to compare well with the reported 15 to 35 percent response rates for gathering data from an individual spouse (Thompson and Walker 1982). For comparison purposes, however, no previous studies could be found which gathered both individual and then joint data from the same respondents.

For the mail contacts, all qualified couples who chose not to be part of the study were asked to complete a non-respondent questionnaire. Since the non-response items consist mostly of the demographic questions from the individual and joint questionnaires, either the husband or the wife was asked to respond. Sixty-three individuals, or 61.76 percent of the non-respondents, completed this twenty-three item questionnaire. For the couples contacted by mail, a chi-square test, with an alpha of .05, reveal that there were no significant differences between respondents and non-respondents on the basis of the age of either the husband or the wife, number of bedrooms and bathrooms in the house, race, length of marriage, type of employment, education of the husband and the wife, price paid for the house, and family income.

The differences between the responses obtained from couples contacted by Realtors, and that obtained from the random selection of homeowners was examined to determine homogeneity between the two sets of data. A chi-square test, with an alpha of .05, reveals that there were no significant differences between the two groups based on the age of either the husband or the wife, number of bedrooms and bathrooms in the house, race, length of marriage, type of employment, education of the husband and the wife, price paid for the house, and family income. Further, no significant differences were found in the number of children living at home, and the type of decision-making process used to purchase the house. The overall response pattern indicates that the two groups are quite similar in the evaluation of their home. In sum, the data from the two groups appear to be rather similar. This may indicate that differences in the data gathering techniques had more to do with the number of responses received than it had to do with differences in respondent perceptions. The two sets of data were therefore pooled and used in the study.

In each household, the data were collected by means of identical self-report questionnaires independently administered to each spouse by an interviewer. Upon completion of the individual questionnaire, the spouses were asked to confer in completing the joint instrument that contained the same questions asked on the individual questionnaires. Thompson and Walker (1982) and Thompson and Williams (1982) note that it is permissible to collect husband-wife data in this manner since the focus is on having the couple resolve their areas of disagreement. To the extent that the couple agrees on an item, there are little or no confounding effects stemming from having first completed the individual questionnaires.

Of the 137 respondents used in the study, 54.0 percent were white and 46 percent were black. These figures closely match the racial composition of the city. Fifty six percent of the couples were married for more than ten years. Seventy-four percent of the male and 71.8 percent of the female respondents were between 30 and 59 years of age, 72 percent of males and 62 percent of females had at least some college education, 84.6 percent of males and 59 percent of females worked full-time and 2.9 percent of males and 17.9 percent of females worked part-time. In general, most respondents held white collar jobs and median family income for entire sample was $45,000. The median price of the house purchased was $65,000, and most of the houses had at least 3 bedrooms and 2 baths. Based on their responses, 7.7 percent of the couples agreed that the decision to purchase the house was made by the wife; 9.1 percent agreed that it was somewhat of a husband decision, and 83.2 percent of the couples agreed that they used a joint or syncratic decision-making process in purchasing the house.

Based on their responses, 46.7 percent of the couples were first time home owners; 38.7 percent of the couples were in their second house; 10.9 percent were in their third house and 3.7 percent had purchased more than three houses for owner

occupancy. The relatively large number of couples who had purchased more than one house may have some effect on their expectations, and hence upon their satisfaction. However, this may be offset by the fact that their expectations may be more realistic.

External Validity

From the data collected on households, only one characteristic, price of the house, was common to all the houses sold between January 1986 and December 1989. Based upon an analysis of this characteristic, the respondent group generally matched the population. However, it is worth noting that some of the houses in the population were purchased by either male or female single head of household and some were purchased for investment (rental) or non-residential purposes. It was not possible, however, to separate these from the population of houses sold in the period. This may affect the external validity of the results.

Variations in the price of houses, and level of income, may also affect level of satisfaction, but this is a truism relevant to the population at large. Since the data were collected from a single city, the opinions expressed by a fairly representative sample of home-owners should reflect the feelings of the population in question. Further, since the purpose of this study was to obtain insight into joint husband-wife satisfaction with a syncratic decision, the nature and final composition of the sample, as well as any deviation of the sample from the population profile, does not detract from the findings. Therefore, the external validity would appear to be quite good.

Data analysis was conducted using a number of steps. First, the many items were factor analyzed to identify the various constructs. Second, Cronbach's (1951) alpha was used to assess the reliability for each factor dimension identified. Finally, convergent and discriminant validity of the various measures were assessed by constructing a MTMM matrix consisting of the correlations of internally consistent dimensions (Campbell and Fiske 1959).

RESULTS AND DISCUSSION

Construct Validation

The eight traits used in this study were factor analyzed, using a principal component analysis with varimax rotation, to confirm the various construct dimensions. In each case, the factor selected had an eigenvalue of at least 1.0. The constructs were divided into three groups and the scale items related to each grouping of constructs were included in the same factor analysis. The first factor analysis included the scale items related to norms, expectations, performance and disconfirmation. The second factor analysis included the items related to the three satisfaction measures. The items related to the consensus, cohesion and the syncratic decision process were included in the third factor analysis. In general, the factor analyses captured the relevant construct dimensions conceptualized. In almost every case, the items for each of the scales loaded heavily on only one factor, an indication of a single dimension within each scale. Except for the cognitive measure of satisfaction, the results from the factor analyses provide strong evidence of unidimensionality for each scale.

Reliability Analysis

One test for the unidimensionality of a multi-item measure is its internal consistency. Internal consistency is concerned with the correlations between the various items used to measure a construct (Peter 1979). If all the items in a multi-item scale measure the same underlying trait, the correlations between the various scale items should be high. A priori, the measures were partialed into initial clusters on the basis of the constructs they were intended to measure and the reliability of each cluster was assessed using coefficient alpha, a widely used method for determining the internal consistency or reliability of multi-item measures. As recommended by Nunnally (1978), a coefficient alpha which is below .70 indicates that the items perform poorly in capturing the construct meaning. The scales used in this study are consistent with those conceptualized and highly reliable. A summary of the coefficient alphas for the various scales are

presented in Table 1. For the purpose of comparison, the alpha coefficients have been determined using three levels of data: husbands only, wives only, and joint husband-wife responses. With the exception of the cognitive measure of satisfaction which has an alpha of .60 when using the joint data, the reliability coefficients are all above the .70 cut-off requirement, an indication that they are all quite acceptable for the three respondent groups. For the husbands only and the wives only, the magnitude of the reliability coefficients does not differ markedly among the ten measures, .705 to .956 for husbands only, .746 to .933 for wives only. While the range is wider for the joint husband-wife respondent group (.601 to .961), some of the individual coefficients are higher than those obtained for either the husbands only or the wives only group.

Table 1
Reliability Assessment: Coefficient Alpha for Variables in the Study Using Three Levels of Data

	Data Level		
	Husband	Wife	Joint
Measure	Coefficient Alpha	Coefficient Alpha	Coefficient Alpha
Product Norm	.9132 (15 items)	.9012 (15 items)	.9411 (15 items)
Expectations	.8838 (8 items)	.8544 (8 items)	.8006 (8 items)
Performance	.7622 (6 items)	.8032 (6 items)	.8308 (6 items)
Disconfirmation	.9558 (16 items)	.9268 (16 items)	.9606 (16 items)
Satisfaction			
Cognitive	.7048 (3 items)	.7461 (3 items)	.6015 (3 items)
Affective	.9524 (5 items)	.9331 (5 items)	.9310 (5 items)
Attribute Specific	.9223 (11 items)	.9028 (11 items)	.9180 (11 items)
Consensus	.9058 (11 items)	.8563 (11 items)	.9335 (11 items)
Cohesion	.8183 (5 items)	.8439 (5 items)	.8715 (5 items)
Syncratic Decision	.8435 (8 items)	.8156 (8 items)	.8020 (8 items)

Validity Assessment

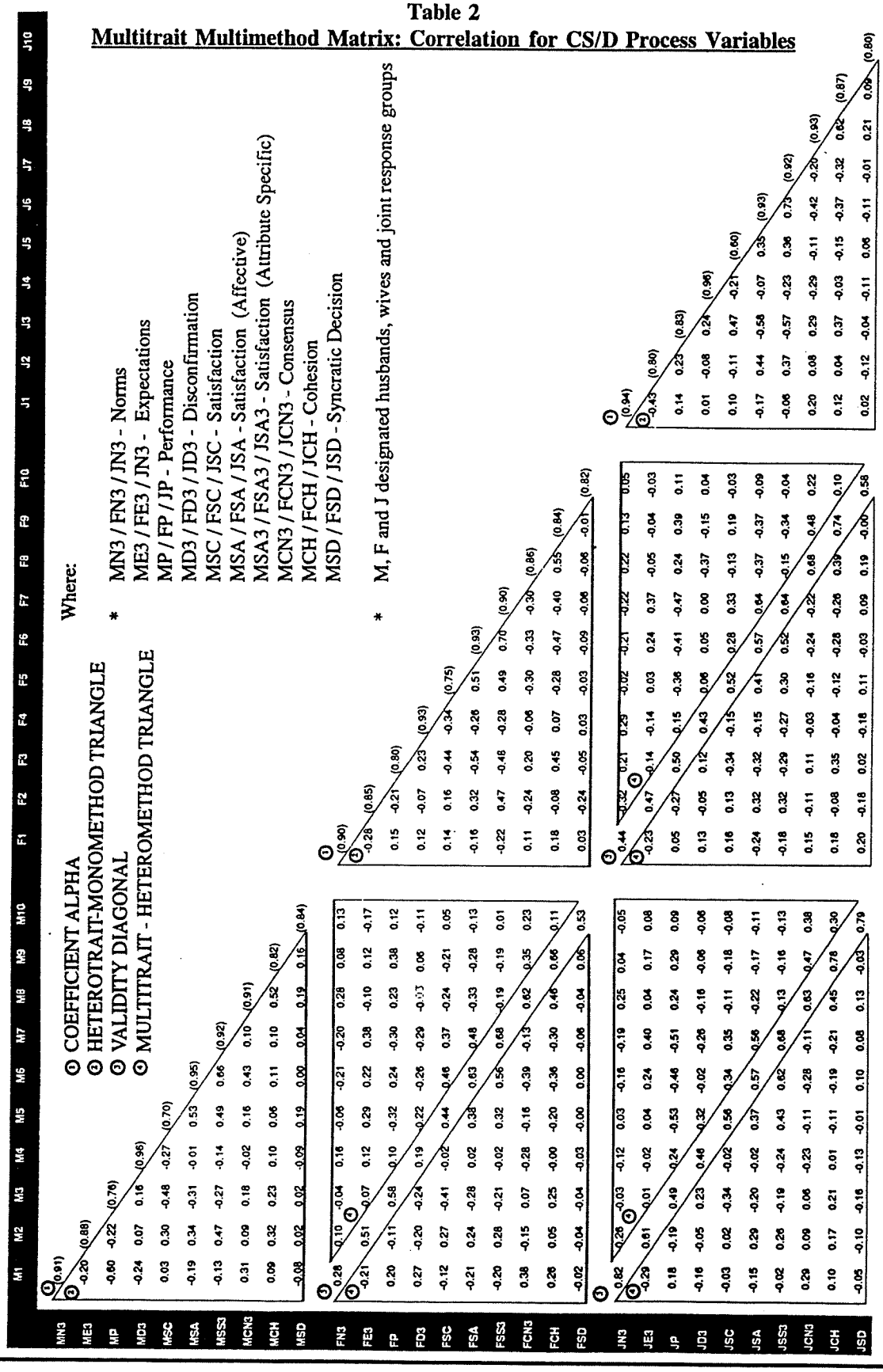
Measure validation provides evidence of the degree to which research tools are generalizable (Peter 1981). In this study, the validation checks focused on the degree to which the various constructs exhibit high convergent and discriminant validity. The MTMM matrix can be used to simultaneously examine the reliability and the convergent and discriminant validity of the various constructs used in a study (Campbell and Fiske 1959; Heeler and Ray 1972). This method, has been used to assess the validity of some of the measures used in husband-wife research (Hopper et al., 1989; Syzbillo et al., 1979; Wilkes 1975), and in satisfaction research (Cadotte et al., 1987; Bolfing 1985). The MTMM is composed of intercorrelations that result when each of two or more traits are measured by each of two or more techniques or methods. An assessment of reliability is provided on the reliability or main diagonal (1) of the matrix (Table 2).

The convergent validity of a trait or construct is assessed by examining the correlations between different measures of the same construct or trait (Heeler and Ray 1972). Convergent validity, exhibited by the correlations along the validity diagonal (3), should by significantly different from zero and large enough to encourage further examination of validity. According to this approach, the correlations among multiple measures of the same trait should have higher correlation in the matrix than the correlations across measures of different traits.

Table 2 reveals that, with two exceptions, all the correlations on the three validity diagonals (3) are above the .40 level required for scale convergence ($p < .01$), with the exception of the scale for norms and disconfirmation. The correlation between the male or husbands only and female or wives only measures of these scales correlate at .28, and .19 respectively. However, these two scales converge when the male (husbands only) and joint data, or the female (wives only) and joint data are used in the correlation. The three satisfaction scales correlate highly with each other at a significance level above .001, regardless of whether male, female, or the joint data is used. The satisfaction scales converge with correlation coefficients ranging from .44 to

Table 2

Multitrait Multimethod Matrix: Correlation for CS/D Process Variables



.68 ($p < .01$).

Discriminant validity, assessed after convergent validity has been determined, focuses upon the degree to which the measures of one construct differ from measures of different constructs. It requires that a measure not correlate too highly with measures from which it is supposed to differ. In other words, discriminant validity among traits is attained when the trait correlation differs significantly from 1.00, or when the chi-square difference test indicates that the two traits are not perfectly correlated (Bagozzi and Yi 1991; Schmitt and Stults 1986).

Three conditions provide evidence of discriminant validity (Campbell and Fiske 1959; Churchill 1979). First, as a minimum requirement, the correlation between two different measures of the same trait should be higher than the correlation between that trait and any other measure which has neither the method nor trait in common. As an indicator of high discriminant validity, entries in the validity diagonal (3) should be higher than those in the same row and column in the heteromethod block (4). In this study, a comparison between the coefficients in the validity diagonal (3) and those along the row and column of the heteromethod block (4) reveals that a few of the entries in the matrix do not satisfy the required conditions. Four of the thirty constructs have higher correlations with measures of different constructs (values in the row and column) than with other measures of the same construct (value in the validity diagonal). These four constructs, with their validity coefficients are female norms (.28), female disconfirmation (.19), female cognitive measure of satisfaction (.44), and joint affective measure of satisfaction (.574).

A second, and even more stringent requirement for discriminant validity is that validity coefficients (3) should be higher than those in the heterotrait-monomethod triangles (2). This is an indication that the correlation within the trait measured by different methods must be higher than the correlation between traits which have methods in common. "Failure to satisfy this requirement could indicate the existence of shared methods variance and response set or reflect non-independence of traits" (Davis 1976, p. 309). To test this requirement, the correlation in the validity diagonal (3) that is related to each trait is compared with its correlation in the three heterotrait-monomethod triangles (2). An examination of the various coefficients reveals that this requirement is generally, though not totally satisfied by the data in Table 2. The female measures of norms, and disconfirmation and the joint measure of expectation each has a validity coefficient which is lower than one for the same trait but in the multitrait-monomethod triangle (2). Similarly, for the affective and the attribute-specific measure of satisfaction, the husband, wife and joint measure of satisfaction also exhibit lower validity correlations. The use of three different satisfaction measures may, in part, explain why this problem occurs. This is evidenced by the fact that the validity coefficients for the satisfaction measures are only lower than the correlations between these same traits in the heterotrait-monomethod triangles (2).

Third, the pattern of correlations or the rank order of the correlations present in all heterotrait triangles (2 and 4) should be the same even though the general size of the coefficients within each triangle may differ. This requirement is a check on the significance of the traits when compared to the methods and can be determined either by ranking, from largest positive to largest negative values, and then visually inspecting the correlation coefficients in each heterotrait triangle (2 and 4) or by computing a rank order correlation coefficient such as the coefficient of concordance. Generally, the pairwise correlations within each heterotrait triangle (2) are consistent in sign. In order to determine the degree of association between the relatively large number of rankings, the coefficients in the heterotrait-monomethod and heterotrait-heteromethod triangles were rank ordered and Kendall's coefficient of concordance (W) was computed to assess the similarity of the coefficient patterns across triangles (Siegel 1956). With values only possible between 0 and +1, the coefficient of concordance has a linear relationship to the average rank order correlation coefficient taken over all groups and indicates the extent of agreement among several rankings of N objects. The objects in this study are the forty-five intertrait correlations and the judges or rankings are the nine heterotrait triangles in Table 2. Siegel

(1956) notes that a high or significant value of W may be interpreted as meaning that the observers or judges are applying essentially the same standard in ranking the N objects under study. The data fully satisfy this criterion (W = .815, chi-square = 322.878, d.f. = 44, $p < .000$). This is an indication that the correlations between different traits were similar in their behavior within the same method and with different methods (Hopper et al., 1989). In other words, the pattern of trait inter-relationship is similar across the heterotrait triangles and is not sensitive to the spouse making the assessment of satisfaction with the principal place of residence.

CONCLUSIONS

The main purpose of this study was to assess the reliability and validity of the constructs used to measure the joint husband-wife satisfaction with a syncratic decision. While the reliability and validity of these measures have been examined with the MTMM matrix, they have not been explored with "joint husband-wife" data in the context of a syncratic decision. This study provide results which are encouraging. The results from this study suggest that the concept of joint satisfaction may have merit as an indicator of joint or group response to a group decision. More importantly, the results provide evidence of the reliability and validity of the satisfaction measures in the context of a joint decision. Additionally, the measures performed adequately when tested with husband only, wife only and with the joint data. This may be an indication that husband-wife data may be gathered from either the husband or the wife. This finding has implications for data gathering in husband-wife studies. However, future studies must determine whether these findings are valid across a range of products beside a house. Future studies should also investigate the applicability of the concept of joint satisfaction with such products as household appliances, automobiles and high involvement services and with other durable and nondurable goods.

Overall, the many multi-item rating scale measures performed relatively well. In most cases, the measures were highly reliable, and met or surpassed Campbell and Fiske's (1959) criteria for convergence and discriminant validity. Further research of the MTMM using confirmatory factor analysis or some other technique (Bagozzi and Yi 1991; 1990; Kumar and Dillon 1992; Bagozzi, Yi and Phillips 1991) would be of assistance in providing estimates of validity or trait variance and correlated error or method variance (Westbrook and Oliver 1981). While researchers have cautioned about the use of the MTMM analysis, it seems appropriate that the MTMM methodology should be used for this the first attempt at measuring joint satisfaction. Indeed, the MTMM method provides an intuitively appealing analysis to be performed in an area where little work has been conducted. As measure validation theory increases in this area, the use of more sophisticated techniques will be appropriate.

The results of this study also suggest that future research is needed to refine the measurement of husband-wife decisions in a dyadic setting. The assessment of the convergent and discriminant validity provides support for further testing of the concept of joint satisfaction using other products. This is in keeping with suggestions made by Churchill (1979). He advocates that constructs should undergo additional measure validation by using new samples to repeat the measure validation process. Bagozzi, Yi and Phillips (1991) note that the assessment of construct validity is full of complexity and different measure validation methods can lead to different conclusions for the same data. Therefore, future research should test the validity of the constructs using different procedures. As a starting point, the confirmatory factor analysis (CFA) approach should be used in testing the convergent and discriminant validity of these scales. Schmitt and Stults (1986, p. 2) observe that the use of CFA is "the preferred method of analyzing MTMM matrices" in order to determine explicit estimates of trait, method and error variance that can be of help in construct validation when the underlying assumptions are met.

REFERENCES

Ajzen, Icek and Martin Fishbein (1980), *Understanding Attitudes and Predicting Social Behavior*, Englewood Cliffs, NJ: Prentice-Hall, Inc.

Bagozzi, Richard P. and Youjae Yi (1990), "Assessing Method Variance in Multitrait-Multimethod Matrices: The Case of Self-Reported Affect and

Perceptions at Work," *Journal of Applied Psychology*, (75), 547-560.

Bagozzi, Richard P. and Youjae Yi (1991), "Multitrait-Multimethod Matrices in Consumer Research," *Journal of Consumer Research*, 17, (March), 426-439.

Bagozzi, Richard P., Youjae Yi and Lynn W. Phillips (1991), "Assessing Construct Validity in Organizational Research," *Administrative Science Quarterly*, (36), 421-458.

Bearden, William O. and Jesse E. Teel (1983), "Selected Determinants of Consumer Satisfaction and Complaint Reports," *Journal of Marketing Research*, (February), 21-28.

Blood, Robert O. Jr. and Donald M. Wolfe (1960), *Husbands and Wives: The Dynamics of Married Living*, Glencoe, Illinois: The Free Press.

Bolfing, Claire Pera (1985) "An Examination of Selected Triggering Mechanisms for Consumer Satisfaction Processes," Unpublished Ph.D. Dissertation, Knoxville: The University of Tennessee.

Burns, Alvin C. and Donald H. Granbois (1979), "Advancing the Study of Family Purchasing Decision Making," in *Advances in Consumer Research*, 7, ed., Jerry C. Olson, Chicago, IL: Association of Consumer Research, 221-225.

Cadotte, Ernest R., Robert B. Woodruff and Roger L. Jenkins (1987), "Expectations and Norms in Models of Consumer Satisfaction," *Journal of Marketing Research*, (August), 305-314.

Cadotte, Ernest R., Robert B. Woodruff and Roger L. Jenkins (1983), "Norms and Expectations Predictions: How Different Are the Measures?" In *International Fare in Consumer Satisfaction and Complaining Behavior*, Ralph L. Day and H. Keith Hunt, eds. Bloomington, Indiana: Indiana University, 49-56.

Calder, Bobby, Lynn Phillips and Alice Tybout (1981), "Design Research for Application," *Journal of Consumer Research*, 8, (September), 197-207.

Calder, Bobby (1982), "The Concept of External Validity," *Journal of Consumer Research*, 8, (December), 240-244.

Calder, Bobby (1983), "Beyond External Validity," *Journal of Consumer Research*, 10, (June), 112-114.

Campbell, Donald T. and Donald W. Fiske (1959), "Convergent and Discriminant Validation by the Multitrait-Multimethod Matrix," *Psychological Bulletin*, 56, (March), 81-105.

Churchill, Gilbert A., Jr. (1979), "A Paradigm for Developing Better Measures of Marketing Constructs," *Journal of Marketing Research*, 16, (February), 64-73.

Churchill, Gilbert A. and Carol Surprenant (1982), "An Investigation into the Determinants of Customer Satisfaction," *Journal of Marketing Research*, 19, (November), 491-504.

Cronbach, Lee (1951), "Coefficient Alpha and the Internal Structure of Tests," *Psychometrika*, 16, (September), 297-334.

Davis, Harry L. (1976), "Decision Making Within the Household," *Journal of Consumer Research*, (March), 241-260.

Davis, Harry L. (1971), "Measurement of Husband-Wife Influence in Consumer Purchase Decisions," *Journal of Marketing Research*, 8, (August), 305-312.

Davis, Harry L. (1970), "Dimensions of Marital Roles in Consumer Decision Making," *Journal of Marketing Research*, 7, (May), 168-177.

Davis, Harry L. and Benny P. Rigaux (1974), "Perception of Marital Roles in Decision Processes," *Journal of Consumer Research*, 2, 51-62.

Douglas, Susan P. and Yoram Wind (1978), "Examining Family Role and Authority Patterns: Two Methodological Issues," *Journal of Marriage and the Family*, 40, (February), 35-47.

Fishbein, Martin and Icek Ajzen (1975), *Belief, Attitude, Intention*, and Behavior, Reading, Mass: Addison-Wesley.

Goldsmith, Ronald E. and Janelle Emmert (1991), "Measuring Product Category Involvement: A Multitrait-Multimethod Study," *Journal of Business Research*, (23), 363-371.

Heeler, Roger and Michael L. Ray (1972), "Measure Validation in Marketing," *Journal of Marketing Research*, 9, (November), 361-370.

Heffring, Michael (1978) "Consumer Satisfaction: The Family Perspective," in Ralph L. Day and Keith Hunt, eds., *New Dimensions of Consumer Satisfaction and Complaining Behavior*, Bloomington: Indiana University, 162-168.

Hempel, Donald J. (1976), "Consumer Satisfaction with the Home Buying Process: Conceptualization and Measurement," in Keith Hunt, ed., *Conceptualization and Measurement of Consumer Satisfaction and Dissatisfaction*, Cambridge, Massachusetts: Marketing Science Institute, 275-299.

Hopper, JoAnne, Alvin C. Burns, and Daniel L. Sherrell (1989), "An Assessment of the Reliability and Validity of Husband and Wife Self-Report Purchase Decision Making Measures," *Journal of the Academy of Marketing Science*, 17, (3), 227-234.

Jacoby, Jacob (1978), "Consumer Research: State of the Art Review," *Journal of Marketing*, 42, (April), 87-96.

Kumar, Ajith and William R. Dillon (1992), "An Integrative Look at the Use of Additive and Multiplicative Covariance Structure Models in the Analysis of MTMM Data," *Journal of Marketing Research*, 29, (February), 51-64.

Leigh, James H. (1987), "An Examination of the Dimensionality of Satisfaction with Housing," *Psychology and Marketing*, 4, (Winter), 339-354.

McDonald, G. (1980), "Family Power: The Assessment of a Decade of Theory and Research," *Journal of*

Marriage and the Family, (November), 460-467.

Nunnally, Jum C. (1978), *Psychometric Theory*, 2nd ed. New York: McGraw-Hill Book Company.

Oliver, Richard L. (1981), "Measurement and Evaluation of Satisfaction Processes in Retail Settings," *Journal of Retailing*, 57, (Fall), 25-48.

Oliver, Richard L. (1980a), "A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions," *Journal of Marketing Research*, 17, (November), 460-469.

Oliver, Richard L. (1980b), "Theoretical Bases of Consumer Satisfaction Research: Review, Critique, and Future Direction," in *Theoretical Developments in Marketing*, Charles W. Lamb, Jr., and Patrick M. Dunne, eds., Chicago: American Marketing Association, 206-210.

Oliver, Richard L. and John E. Swan (1989), "Consumer Perceptions of Interpersonal Equity and Satisfaction in Transactions: A Field Survey Approach," *Journal of Marketing*, 53, (April), 21-35.

Olson, Jerry C. and Philip A. Dover (1979), "Disconfirmation of Consumer Expectations Through Product Trial," *Journal of Applied Psychology*, 64, (April), 179-189.

Park, C. Whan (1982), "Joint Decisions in Home Purchasing: A Muddling-Through Process," *Journal of Consumer Research*, 9, (September), 151-162.

Peter, J. Paul (1981), "Construct Validity: A Review of Basic Issues and Marketing Practices," *Journal of Marketing Research*, 18, (February), 133-145.

Peter, J. Paul (1979), "Reliability: A Review of Psychometric Basics and Recent Marketing Practices," *Journal of Marketing Research*, 42, (February), 6-17.

Rogers, Hudson P., Reginald M. Peyton, and Robert L. Berl (1992), "Measurement and Evaluation of Satisfaction Processes in a Dyadic Setting," *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, (5), 12-23.

Schmitt, N. and D. N. Stults (1986), "Methodology Review: Analysis of Multitrait-Multimethod Matrices," *Psychological Measurement*, (10), 1-22.

Seymour, Daniel and Greg Lessne (1984), "Spousal Conflict Arousal: Scale Development," Journal of Consumer Research, 11, (December), 810-821.

Siegel, S. (1956), *Nonparametric Statistics for Behavioral Sciences*, New York: McGraw-Hill Book Co.

Spanier, Graham B. (1976), "Measuring Dyadic Adjustment: New Scales for Assessing the Quality of Marriage and Similar Dyads," *Journal of Marriage and the Family*, (February), 17-21.

Syzbillo, George, Arlene K. Sosanie and Aaron Tenebein (1979), "Family Member Influence in Household Decision Making," *Journal of Consumer Research*, 6, (December), 312-316.

Thompson, Linda and Alexis J. Walker (1982), "The Dyad as the Unit of Analysis: Conceptual and Methodological Issues," *Journal of Marriage and the Family*, (November), 889-900.

Thompson, Elizabeth and Richard Williams (1982), "Beyond Wives' Family Sociology: A Method for Analyzing Couple Data," *Journal of Marriage and the Family*, (November), 999-1008.

Tse, David K. and Peter C. Wilton (1988), "Models of Consumer Satisfaction Formation: An Extension," *Journal of Marketing Research*, (May), 204-212.

Waldruff, Douglas Lee (1988), *Analytic Path Model of Joint Decision-Making by Husbands and Wives*, Unpublished Ph.D. Dissertation, The University of North Carolina at Greensboro.

Westbrook, Robert A. (1983), "Consumer Satisfaction and the Phenomenology of Emotions During Automobile Ownership Experiences," in *International Fare in Consumer Satisfaction and Complaining Behavior*, Ralph L. Day and H. Keith Hunt, eds. Bloomington, Indiana: Indiana University, 2-9.

Westbrook, Robert A. (1981), "Sources of Consumer Satisfaction with a Retail Service," *Journal of Retailing*, 57, (Fall), 68-85.

Westbrook, Robert A. and Richard L. Oliver (1981), "Developing Better Measures of Consumer Satisfaction: Some Preliminary Results," *Advances in Consumer Research*, 8, Kent B. Monroe, ed., Ann Arbor, Michigan: Association of Consumer Research, 94-99.

Wilkes, Robert E. (1975), "Husband-Wife Influence in Purchase Decisions: A Confirmation and Extension," *Journal of Marketing Research*, 12, (May), 224-227.

Woodruff, Robert B., Ernest R. Cadotte and Roger L. Jenkins (1983), "Modeling Consumer Satisfaction Processes Using Experience-Based Norms," *Journal of Marketing Research*, 20, (August), 296-304.

Yi, Youjae (1990), "A Critical Review of Consumer Satisfaction," in *Review of Marketing 1990*, Valarie A. Zeithaml ed., Chicago, IL: American Marketing Association, 68-123.

Send correspondence regarding this article to:
Hudson P. Rogers
Department of Marketing, Box 43490
University of Southwestern Louisiana
Lafayette, LA 70504-3490 USA