Cornell Hospitality Quarterly
XX(X) 1–14

DOI: 10.1177/1938965512459801
http://cqx.sagepub.com
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Individual Preference and Bargaining Behavior in Families' Buying Decisions of Restaurant Service

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Abstract

A study of how couples choose a restaurant finds a two-step process, in which each partner determines an individual utility for a particular restaurant's attributes and then the two partners negotiate a joint family utility for those attributes. To examine this negotiation process, the study used discrete choice analysis among sixty-eight families in a major metropolitan area in southern India. Each partner was separately presented a set of "restaurant" choices based on seven restaurant attributes with numerous different levels. Once that choice was made individually, the couples were then invited to choose "restaurants" jointly, again using the seven attributes. The study found that part of the negotiation involves each partner's divergent mental budget for family entertainment, as compared with a separate individual entertainment budget. In finalizing the negotiation, the two partners seek to maximize their utility on attributes that are personally important as they achieve a joint decision. Spouses who each have an external income source tended to have matched bargaining power, while the negotiation patterns for families with one breadwinner were more variable.

Keywords

family purchase decision, intrafamily bargaining, individual and family budget, individual and family utility, hierarchical Bayes

Consumers' decision regarding which restaurant to patronize is usually made jointly when a couple, family, or group is involved. In this study, we examine the decision dynamics of married couples. Our model takes into account the varying individual preferences for a restaurant in the couple's decision (Arora 2006; Arora, Allenby, and Ginter 1998; Ferber and Lee 1974). We believe that the couple's decision regarding a restaurant to patronize for dinner will be taken by one partner based on interaction with the other. This interaction and decision will be influenced by the couple's preference structure and budgetary considerations (Foxmann, Tansuhaj, and Ekstrom 1989; Hopper, Burns, and Sherrell 1989). In studying couples, we acknowledge that the partners will have a different budget and preferences for their individual consumption than they do for their family consumption (Kenkel 1961; Ott 1992), and still different preferences when making a group choice decision (Aribarg, Arora, and Kang 2009; Corfman 1991; J. H. Davis 1973).

In this paper, we present a conceptual framework and a mathematical model of a couple's buying decision, which takes into account the two partners' relative influence and their different budget allocation for the family dinner (as distinct from individual dining). One purpose of this framework and model is to take into account factors in the family purchase decision that have either been neglected by marketing researchers or addressed in isolation. These issues include (1) how consumers' preferences during a joint decision-making process differ from preferences considered in individual decision making, (2) how their utility structure changes during interaction in a joint decision as compared with an individual purchase decision, and (3) the relative bargaining power of the two partners. Although our study examines the decision regarding a restaurant meal, it applies to other entertainment choices. As married couples make joint decisions, we gathered both individual choice data and joint purchase decision data for empirical validation. This study makes a contribution to the literature of family buying behavior by considering this as an intragroup bargaining problem, in which each individual bargains while submitting his or her own preferences. This study predicts

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that the individuals will submit changed preferences to maximize their own utility from the group choice outcome. Not surprisingly, the study reveals that the joint choice outcomes differ from each partner's individual choice outcomes due to one partner's expectations of the utility of the other partner, and their relative bargaining power.

Theoretical Background of Family Decision Making

Studies examining a family's joint buying decision process have considered the following three aspects: the role of individual family members (Aribarg, Arora, and Kang 2009; M. A. Belch, Belch, and Sciglimpaglia 1980; Blood and Wolfe 1960), exchange of information among family members (Alderson 1957; Fry 1967; Morgan 1961; Szybillo and Sosanie 1977), and individual differences in interest, motives, and the value ascribed to various family members' preferences (Arora 2006; Arora, Allenby, and Ginter 1998; Bott 1957; Coulson 1966; Morgan 1961).

Researchers have also explored factors affecting couples' decision making. These factors include individual spouses' personality traits, lifestyle, and knowledge of product attributes (Arora, Allenby, and Ginter 1998; Bott 1957; Heer 1963; Lu 1952; Nicosia 1966); the role of spouses, especially wives, in family decision making (Hempel 1975; Litvin, Xu, and Kang 2004; Zober 1964); family lifestyle, career of spouses, and consumers' desires (Bell 1958; Wilkening 1954); and the effect of gender, social class, peer group influence, and ethnic background (Alexander 1947; Bell 1958; D. J. Burns 1992; Glock and Nicosia 1964; Hempel 1974; Neiman 1954).

The selection of a restaurant is one of many joint entertainment-product purchase decisions made by family members (Aribarg, Arora, and Kang 2009; G. E. Belch, Belch, and Ceresino 1985; M. A. Belch, Belch, and Sciglimpaglia 1980; H. L. Davis 1976; Douglas 1983; Spiro 1983). While one spouse may propose a particular restaurant, the purchase decision may be subjected to intrafamily bargaining due to budget constraints or menu preferences. Each spouse assesses the utility of the entertainment product—both from the point of view of the individual's consumption and the family's consumption (Wolgast 1958). If one spouse has higher earnings, that person is expected to have a higher threshold for individual consumption of entertainment goods as compared with the low-earning spouse. In any event, one can anticipate the existence of both noncooperative and cooperative bargaining in the purchase decision (Chen and Woolley 2001; Ott 1992).

Several studies on joint decision making (Arora and Allenby 1999; Kim, Mattila, and Baloglu 2011; Krishnamurthy 1988; Rao and Steckel 1991) have found that family members must address differences in their preferences and knowledge of the product that they propose to buy. Krishnamurthy (1988) used conjoint analysis to examine individual and joint preferences and predict joint decisions regarding the choice of a job for MBA students at a major private university in the United States, including both the desires of the students and their guardians. However, these studies consider only the knowledge and influence of the members of the family on the complete product, rather than accounting for family members' varying assessment and knowledge of individual product attributes. Thus, this heterogeneity was included in our model. A more practical approach in group decision making is to measure attribute-specific influence and consumer-level heterogeneity through hierarchical Bayes modeling (Arora and Allenby 1999; Aribarg, Arora, and Kang 2009; Aribarg, Arora, and Onur Bodur 2002). The resulting model accounted for an individual family member's knowledge about a particular attribute, which influences the family purchase decision.

In the process of modeling group purchase decisions, marketing researchers considered one family member's use of power to change another member's attitude, belief, and behavior so that it coincides with his or her own intended direction, albeit in a fragmented way (D. J. Burns 1992; Corfman and Lehmann 1987; Filiatrault and Brent Ritchie 1980; Gary and Mayhew 1970). Although these researchers did not investigate power in relation to social choice theory (Emerson 1972) or bargaining theory (Bacharach and Lawler 1981; A. C. Burns and Ortinau 1979), they did consider the potential effectiveness perceived by one member for using his or her power on another member, and the cost and value associated with successfully implementing that power.

It is natural that a joint buying decision might involve some amount of conflict (Buss and Schaninger 1983; Qualls 1988) due to different buying motives and the evaluation of alternative choices (Seth 1974; Shepherd and Woodruff 1988). Economic literature gives evidence of the presence of bargaining behavior in family decision making (Chen and Woolley 2001; Harsanyi 1955; Keeney and Raffia 1993; Nash 1950). Moreover, social choice theory does not assume that all family decisions are taken with total agreement of family members (Ott 1995). Researchers (Chen and Woolley 2001; Warman, Woolley, and Worswick 2006) opined that each family member maximizes his or her own utility, although the family members are interdependent.

Knowing about the above dynamics is valuable in understanding the restaurant decision, including intrafamily bargaining, individual preference elicitation, budget constraints, and estimates of each partner's utilities both at the individual level and the household level. Such knowledge will help restaurant marketers ensure acceptance of new and improved restaurant offerings by making certain that product communication specifically addresses each individual spouse's needs (particularly if spouses have separate utility functions). Marketers should also benefit from knowing about

the extent of bargaining in a restaurant-selection decision. We have not seen research that addresses these issues. Consequently, we propose and empirically test a conceptual framework of couples' joint restaurant purchase decision, considering intrafamily bargaining arising from individuals' varied preferences and budget allocations. The model deals with each partner's initial preference and reveals how these preferences are modified when it comes to joint buying decision. Based on the theoretical framework, we develop the mathematical model to estimate the utilities and show that (1) each family member has an individual utility function that may be different from his or her joint utility function, (2) there are two types of bargaining behavior in a family purchase decision, and (3) the earning status of each partner has significant influence in the family buying decision (i.e., whether one partner or both are breadwinners).

We consider the following assumptions to develop the model:

1. Private consumption is independent between the family members, so that one partner gains no utility from the other partner's personal consumption.
2. The price vectors of personal entertainment goods and family entertainment goods are the same for both partners.
3. Income of a spouse who does not have an external source of earning comes from a transfer of money from the breadwinner spouse.
4. We consider that bargaining happens only during the purchase decision (expenditure) and not when the individuals' budgets are set.
5. Individuals' utility varies due to their changed product preference arising from actual change in the product attribute combinations and not merely the change in their perception about a particular product attribute in two different consumption situations (one individual and one family).

The rest of the paper is divided into three sections. The first section develops a theoretical framework describing each spouse's preference revision and bargaining activity while revealing the preference during the interaction of joint decision making. The second section describes the experimental choice design and data collection procedure. The last section discusses model estimation and the bargaining power of each member of three randomly selected families and illustrates how his or her individual preferences influenced the joint decision making of the family. Finally, we offer implications of our study.

Conceptual Model Framework

Researchers in economic science have identified family bargaining as both a social issue (Ott 1992; Woolley and Phipps 2008) and an economic issue (Lancaster 1966; Ott 1992). For instance, Ott (1992) illustrated that noncooperative bargaining occurs when the family members choose their strategies independent of each other, which therefore may not be taken simultaneously. In this scenario, a decision is reached when a mutual best option is arrived at. If the preference submission is simultaneous for all members of the family, then Ott concluded that the probability of selection of any alternative is equal. However, Ott did not see simultaneous suggestions occurring in reality.

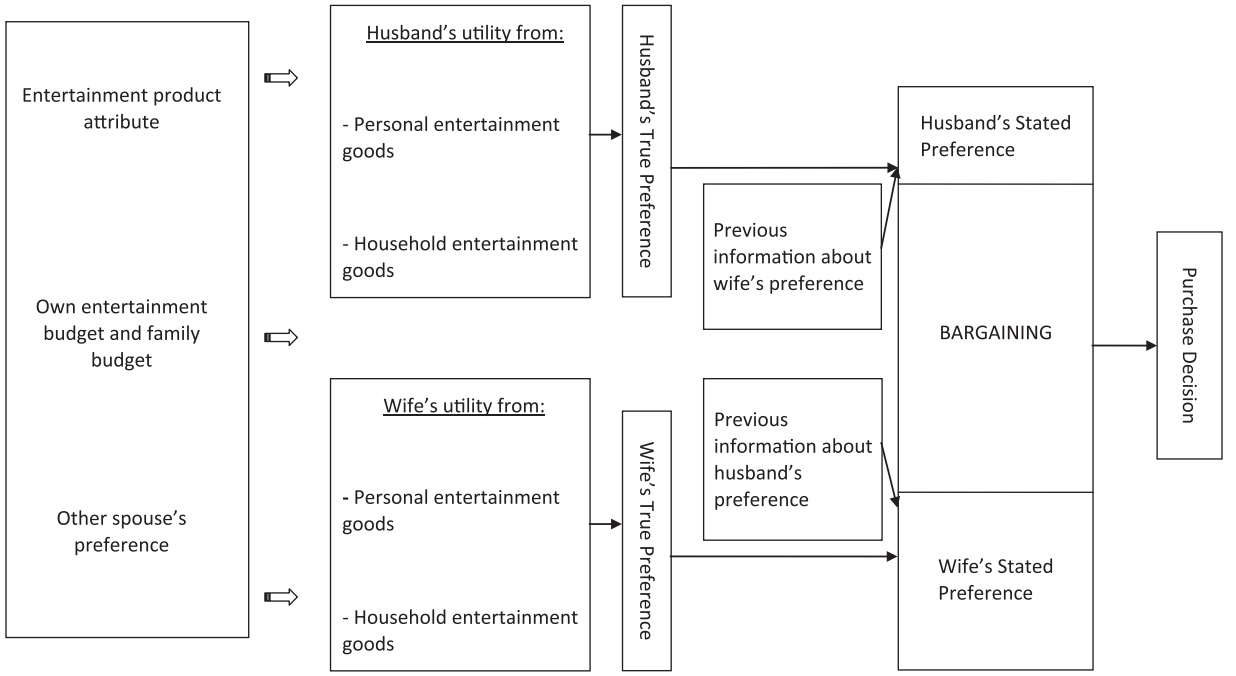
Other studies considered individuals' budget restrictions while modeling consumption of family and personal goods (Lundberg, Pollak, and Wales 1997; Pollak 1988, 2003; Woolley 2008). They showed that the family decision can be modeled most effectively with the individual utility function of each member rather than a common utility function. These authors further found that external earning status influences spousal bargaining behavior, rendering cooperative behavior less prominent when both spouses are breadwinners. Chen and Woolley (2001) stated that equilibrium points in noncooperative family bargaining are often not Pareto optimal, as both spouses can gain by agreement.[1] Many authors (Bohlmann et al. 2006; Corfman and Lehmann 1987; Lackman and Lanasa 1993) have argued that the impetus toward equilibrium is self-enforcing as each person maximizes his or her well-being, and maximization of joint utility may not necessarily maximize individual utility. This logic leads to the understanding that family members can increase their utility by negotiation and agreement. Cooperative bargaining behavior, however, is more prominent with a single breadwinner, in part because the nonearning spouse has fewer outside options. Economic literature suggests that a bargaining process becomes cooperative when the family members can communicate with each other and come to an agreement that is binding to all (Bergstorm 1996; Lundberg and Pollak 1994). The literature also suggests that cooperative bargaining often results in a Pareto optimal decision (Su, Fern, and Ye 2003), because the members who stand to lose more in case of any disagreement agree to an implicit contract.

Eliciting Individual Preference and Influence in Joint Decision

The purchase decisions of entertainment products largely depend on the budget of an individual consumer and his or her preference for several attributes of the product. However, one's personal utility is the sum of the utility that one gets from the family purchase and from individual goods (Chen and Woolley 2001; Hauser and Urban 1986). Similarly, in addition to the bundle of family goods, a consumer has a budget allocation for his or her personal goods.

In this framework, we focus on (1) each spouse's individual preference, which is his or her true preference;

Exhibit 1:
Theoretical Diagram of Individual Preference and Influence on Joint Purchase Decision



(2) information about each partner's preference based on which one revises his or her submitted preference; and (3) each individual's bargaining behavior due to individual preference and budget constraint to arrive at joint purchase decision. The theoretical framework is shown in Exhibit 1. Although the framework is essentially developed for two spouses who jointly decide on a product, it can be extended to considering children's participation.

In the first stage, the spouses assume that they would have their initial preference, which is their true preference for the attributes of the product they plan to buy (U_m and U_f). Each spouse's initial preferences are formed based on his or her preferences for product attributes and budget, as well as the other spouse's preference. In the second stage, which involves spousal interaction, the two partners bargain, change their preferences, and submit a revised preference. They thus make a joint decision, and joint utility is thus derived (U_h).

This model considers that each family member has an entertainment expense "budget" comprising personal entertainment expense and family entertainment expense. The amount spent on the family's purchase of such products may be subjected to one's budget constraint. Each member in the family will have different budget allocations for personal entertainment and family entertainment. In the budget allocation decision, every member of the family would allocate his or her entertainment budget in a personal budget and a household budget. For this reason, we separated the budget amounts in the survey questions where the respondents were required to segregate their personal budget and family budget for entertainment. We also asked whether income is transferred from one spouse to the other spouse.

For the model's joint utility function, we include bargaining behavior caused by budget constraints of an individual member, relative bargaining power, and preference intensity. Each member of the family allocates a certain amount of money, S, to spend on private entertainment goods and family entertainment goods:

$$S_i = \sum \mathbf{P^0 l^0} + \sum \mathbf{P^1 l}_i^1,$$

where i = male or female spouse, $\mathbf{P^0}$ = the price vectors of family entertainment goods, $\mathbf{P^1}$ = the price vectors of personal entertainment goods, $\mathbf{l^0}$ = the quantity vectors of family entertainment goods, and I_i^1 = the quantity vector of the individual's personal entertainment goods.

As each spouse's utility depends not only on his or her own utility but also on a portion of the utility of the other member, the individual utility of each member in the family decision can be written as

$$U_m = u\left(l_m^1\right) + v_m\left(l^0\right) + \psi_m\left[v_f\left(l^0\right)\right]$$
$$\text{when } \sum P^0 l^0 + \sum P^1 l_m^1 \le S_m,$$

$$U_{\mathrm{f}} = u\left(l_{\mathrm{f}}^{1}\right) + v_{\mathrm{f}}\left(l^{0}\right) + \ddot{} _{\mathrm{f}}\left[v_{\mathrm{m}}\left(l^{0}\right)\right]$$
$$\text{when } \sum P^{0} l^{0} + \sum P^{1} l_{\mathrm{f}}^{1} \le S_{\mathrm{f}},$$

where U_{m} = total utilities of the male partner; U_{f} = total utilities of the female partner; l_{m}^{1} = the husband's individual personal good consumption; l_{f}^{1} = the wife's individual personal good consumption; $u(l_{\mathrm{m}}^{1})$ = the husband's individual personal entertainment utilities; $u(l_{\mathrm{f}}^{1})$ = the wife's individual personal entertainment utilities; $v_{\mathrm{m}}(l^{0}), v_{\mathrm{f}}(l^{0})$ = each partner's individual utilities for family entertainment; and S_{m}, S_{f} = each partner's entertainment expenditure.

ψ_{m} and ψ_{f} are the fraction of utility that male and female spouses enjoy from their partner's utilities of household goods. ψ_{m}, ψ_{f} vary between 0 and 1 on the assumption that the utility gained by one partner from the other partner's utility is not greater than the other partner's own utility.

The outcome of the family purchase decision is determined by the two partners' relative influence arising from their separate preference structure and budget constraints. Each member attempts to exert bargaining power to gain his or her own utility from the joint purchase. Hence, we write the joint utility of the family as

$$U_{\mathrm{h}} = \kappa_{\mathrm{m}} U_{\mathrm{m}} + \kappa_{\mathrm{f}} U_{\mathrm{f}} + \text{Unexplained residual},$$

where κ_{m} and κ_{f} are each partner's bargaining power.

Estimating Individual and Joint Utilities of Family Members

Individual utilities of family members and their joint utility are derived from their selection from a set of alternative "restaurant" descriptions. Respondents are asked to select the alternative that gives maximum utility among the available alternatives, and their probability of selecting that alternative is calculated through the following model.

Multinomial logit choice model. The utility of the product attributes is the summed utilities of the selected alternatives in a particular choice set, denoted by θ_a. The choice model is then developed by combining the utility of the selected alternatives' attributes. As the covariates at the individual level need not be full rank for part-worth estimation (Lenk et al. 1996), a few choice profiles per respondent are good enough for the estimate of an individual part-worth. The probability that an individual i will select an alternative j from a choice set containing k alternatives can be given by multinomial logit form:

$$P_i(j) = \frac{Exp\left[X_j \theta_a(i,j)\right]}{\sum_{g=1}^{J} Exp\left[X_g \theta_a(i,g)\right]},$$

when $g \in C_r$ and $\mathbf{X}_j$ = vector of levels of attributes in jth alternative, g = index of alternatives in the choice task, C_r = rth choice task containing J alternatives, and $\boldsymbol{\theta}_a(i,j)$ = part-worth vector of attributes for ith respondent for jth alternative.[2]

Individual-level heterogeneity is assumed to follow multivariate normal (MVN) distribution, thus $\theta_i \sim \text{Normal}(\bar{\theta}_i, \Sigma)$ and can be expressed through a linear equation:

$$\theta_i = \boldsymbol{\Delta} \mathbf{Z}_i + \xi_i,$$

where error ξ_i follows MVN distribution with a mean of 0 and covariance matrix $\boldsymbol{\Sigma}$ and where $\bar{\boldsymbol{\theta}}_i$ = vector of ith individual's mean part-worth; $\boldsymbol{\Sigma}$ = covariance matrix which is positive, definite, and assumed to be same for all individuals; $\boldsymbol{\Delta}$ = matrix of regression coefficients; and $\mathbf{Z}_i$ = vector of explanatory variables that cause heterogeneity. These are demographic variables (including the budget for individual entertainment expenses).

Getting estimates of individual-level utilities becomes a basic problem in choice-based research due to the necessity of acquiring a minimum amount of individual-level information (i.e., data points) required to calculate individual part-worth as well as to predict individual preferences. This is due to the fact that the large number of attributes with many levels calls for a large amount of data to make an estimate. Pooling information at an aggregate level is inadequate because it assumes that utilities are the same across all respondents. Instead, each individual has specific preferences for each attribute of the product, as well as having separate budget constraints for themselves and for the family. Hence, an estimation of individual-level information is necessary for a better understanding of consumer preferences and the purchase decision.

Individual Estimates Using Hierarchical Bayes

A hierarchical Bayes analysis helps in estimating individual-specific utilities using aggregate-level information under limited data (Allenby and Ginter 1995; Lenk et al. 1996; Rossi, Allenby, and McCulloch 2005). As we estimate individual-level utilities and preferences, we consider that the likelihood of individual utility vectors and the common utility vector of mixing distribution (known as "hyper-parameter") can be written as

$$L\left(\{\boldsymbol{\theta}_i\}, \tau\right) = P\left(\text{data} \mid \boldsymbol{\theta}_i, \tau\right) = \prod_{i=1}^{N} P\left(\text{data} \mid \boldsymbol{\theta}_i\right) P\left(\boldsymbol{\theta}_i \mid \tau\right),$$

where N = total number of family members, N_i = the ith member of the family in total, $\boldsymbol{\theta}_i$ = utility vector of an individual family member, $\{\boldsymbol{\theta}_i\}$ = set of utility vector of all family members, $\boldsymbol{\tau}$ = hyper-parameter (i.e., a common utility vector estimated at group level), and $P(\boldsymbol{\theta}_i|\boldsymbol{\tau})$ = the prior (mixed distribution) of individual utility vector conditional on $\boldsymbol{\tau}$.

Given the joint prior of utility vector $\boldsymbol{\theta}_i$ of the *i*th member in the group, the posterior distribution can be written as

$$P\left(\theta_1,\theta_2,\theta_3,\ldots,\theta_N\left|\mathbf{y}_1,\mathbf{y}_2,\mathbf{y}_3,\&,\mathbf{y}_N\right.\right)\infty$$
$$\left[\prod_{i=1}^{N}P\left(y_i\left|\boldsymbol{\theta}_i\right.\right)\right]\times P\left(\theta_1,\theta_2,\theta_3,\ldots,\theta_N\left|\tau\right.\right),$$

where τ is hyper-parameter on which the prior distribution is based, and ($\mathbf{y}_1$,$\mathbf{y}_2$,$\mathbf{y}_3$, . . . , $\mathbf{y}_N$) are the data vectors of *N* members, which are independent of each other. The availability of insufficient data at the individual level makes the specification of functional form and prior hyper-parameters important for an analysis at the individual level. This process is useful in choice data sets where many respondents evaluate all the alternatives presented.

Huber's (1998) study of hierarchical Bayes analysis as against the latent class and aggregate model with survey data, and that of Natter and Feurstein (2002), who used real-world purchase data, revealed that hierarchical Bayes outperforms the latent class and aggregate models in terms of the accuracy of utility estimation (root mean square error [RMSE]) and prediction of holdout choices, as Bayes incorporates heterogeneity in the model. They also compared the model with RMSE as it was implemented by Lenk et al. (1996). It supports the theory that the incorporation of heterogeneity in the consumer choice model has higher predictive power.

Experimental Design of Choice Sets

Although identifying an entertainment product for the purpose of study, the following three aspects were taken into consideration: (1) the product features should have varied individual preferences, (2) the product should be representative of the products that call for a consumer's separate entertainment budget and for a family consumption budget, and (3) the product buying decision should have sufficient interaction among the spouses so that the bargaining behavior could be observed. We approached ten families during a pre-test to determine the product. We asked these families to name three products that they consume at both the individual level and the family level, for which they considered the budget separately, and for which they try to achieve their own preference while buying the product for the family. Their three top choices were (1) an outing to a preferred place, (2) dinner in a restaurant, and (3) a party in a pub. Of those three, dinner in the restaurant best fit our study criteria. Referring to other studies (Jang and Namkung 2009; Kim and Moon 2009; Lewis 1981; Verma 2010), we selected restaurant attributes perceived to be important in restaurant selection. We conducted four focus group interviews to verify these attributes and we found that the attributes thus identified conform to those from the earlier studies. Based on the focus group interview and the literature, we developed seven attributes, each offering from three to six levels for the choice design. The seven attributes were (1) inside décor and ambiance, (2) music, (3) food, (4) chef, (5) serving staff, (6) restaurant brand (as indicated by various examples), and (7) price of the dinner, excluding drinks. So, for example, the chef was one attribute with the following four levels: (1) Food is prepared by ordinary chef, (2) food is prepared by chef from a star-ranked restaurant, (3) food is prepared by chef from three-star hotel, and (4) food is prepared by chef from five-star hotel. Prices ranged from Rs. 900 (about US$18) per couple to Rs. 2,000 (US$40). A description of the seven attributes and the levels of each is shown in Appendix A. Note that décor was depicted by a photo or video. Exhibit 2 shows one of the many choice tasks.

Choice Design

As the total number of fractional factors is too high to execute properly, we employed a random block design that used twelve random choice tasks and two fixed choice tasks for each respondent. Consequently, each respondent evaluated fourteen choice tasks, twelve of which were presented randomly to avoid order or learning effects (as described below, two tasks occupied fixed positions). The two fixed choice tasks, which are used for validation, are two specific products with attribute levels that are the same in all cases and can be directly assessed and compared between respondents. These choice tasks are also used for predictive accuracy of the model.

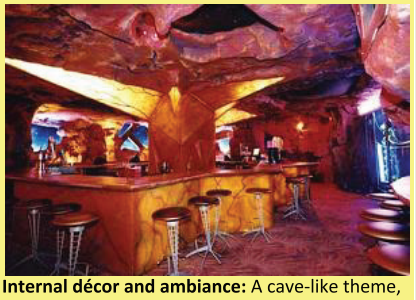
Each choice task has two alternatives plus a "none" option. As depicted in Exhibit 2, each alternative is a complete "restaurant product," with a particular combination of six product attributes and one price attribute, thus making up a restaurant offer. Every respondent received a unique version of the questionnaire with choice designs created to allow the choice sets to be grouped to improve the measurement effect of attribute levels by ensuring a high degree of variability in the choice design across the respondents.

We generated 300 combinations of attribute levels for this study, which is more than the number of respondents. Through this mechanism, every respondent received his or her own unique set of choice tasks.

Before conducting the survey, we tested the efficiency of the choice design, especially for main effects, to ensure that the design is good enough for computation of part-worth and to minimize errors. Through several trials of choice design, we measured the design efficiency through the square of the ratio between "ideal standard error" and "actual standard error." The test result showed that the choice design is 84 percent efficient, which is of appreciable value.

Exhibit 2:
Sample Choice Task

If these were your only options, which would you choose?

ALTERNATIVE	ALTERNATIVE	
		
Internal décor and ambiance: Luxurious internal decor with larger table spacing and designed light to suit high-end ambiance of the restaurant, as shown in above photo.	**Internal décor and ambiance:** A cave-like theme, forest, or aquarium, as shown in the above photo	
Music: Live music on stage located in one side of the restaurant	**Music:** Live music in the sitting area where singers sing near the guests.	**NONE: I wouldn't choose either of these.**
Food: multicuisine	**Food:** Special dish as named or described by you.	
Chef: Food is prepared by chef from star-rated restaurant	**Chef:** Food is prepared by chef from five-star hotel	
Serving of food: Served by girls	**Serving of food:** Serving boys or girls trained and dressed to match with the theme of the restaurant.	
Restaurant brand: A restaurant chain like Mainland China.	**Restaurant brand:** A restaurant maintained by Sheraton.	
Price for dinner of two (excluding drink): Price for dinner is approximately Rs. 1,400 per couple (i.e., Rs. 900 for dinner and Rs. 500 premium for additional experience as described above)	**Price for dinner of two (excluding drink):** Price for a dinner in above restaurant is approximately Rs. 1,800 per couple (i.e., Rs. 900 for dinner and Rs. 900 premium for additional experience as described above)	

Data Collection, Analysis, and Discussion

We drew our prospective sample of families from a restaurant's customer list and personal suggestions. All prospective participants lived in the metropolitan area of a city in southern India. The initial selection of respondents was done using random numbers from the restaurant's list. We contacted the families via telephone to gain their consent to participate. As some questionnaire items are of a personal nature, we protected respondents' identities by generating a set of ID numbers that were randomly and confidentially assigned to each respondent. We sent the ID numbers before sending the link to the questionnaire, and we followed up with e-mails to ensure that respondents had no doubts regarding the purpose of the survey or the appropriate

way to answer it. The ID numbers for each couple were coded so that we could match the three family responses (i.e., spouses' two independent responses and one joint response). A sample ID is provided in Appendix B.

Data Collection

We received data from sixty-eight of the seventy-five families who agreed to participate in the study. This sample size is typical for studies investigating family decision making (D. J. Burns 1992). Both single-earner and dual-earner families were represented. The age of the respondents ranged between twenty-eight and forty-two years. Family income ranged between Rs. 350,000 (US$22,000 as per purchasing power parity [PPP]) and Rs.1,500,000 (US$100,000). The responses were obtained in two stages. In Stage I, the husband and wife were asked to give their responses regarding the fourteen choice sets independently, without consulting each other at a time when they were alone. In Stage II, they were asked to give their responses jointly, after they had interacted and discussed their choice-set preferences with each other and arrived at joint preferred alternative restaurants, as presented in the fourteen tasks in each choice set.

Stage I of the survey involved a forty-five-item questionnaire divided into three sections. The first section collected demographic information, including the individual's monthly income and expenditure, transfer of income between spouses, individual and family budget, and the importance of the partner's utility to that spouse. The second section consists of utility information for each level of all the attributes through preference ratings of each level of all the attributes. These preference ratings were multiplied with the weights the respondents provided for each attribute. Individual preferences for each level of every attribute were indicated on a ten-point scale (1 = *least preferred level*, 10 = *most preferred level*). We summed the relative importance of the six nonprice attributes on a hundred-point scale. These two measurements, that is, the weighted preferences and the summed preference scale, are used to calculate each partner's utility. The third and last part of the questionnaire consists of the fourteen choice tasks, as described above.

Analysis and Discussion

As we indicated above, we estimated the individual-level part-worth choice model using hierarchical Bayes data analysis. For target distribution, we calculated percent certainty (the percentage estimate that the solution is better than chance) and root likelihood from likelihood of the data (Hauser 1978). In the estimation process of iteration, the probability of each respondent choosing a particular alternative in each task is calculated through the logit model using his or her estimate of part-worth. The likelihood is then calculated as the product of those probabilities over all respondents and tasks. As the probability is likely to be an extremely small value, we take the logarithm of the likelihood and calculate log likelihood. Percent certainty (ranging from zero to one) is the ratio of the difference between final log likelihood and the log likelihood of a chance model, and the negative of the log likelihood of the chance model. A zero value for this ratio signifies that the model fits the data only at the chance level, while a value of one (i.e., 100%) means that the data fit the model perfectly. The percent certainty value for this model is 82.3 percent, indicating a good fit.

After the simulation process has converged, forty numbers of iteration values of each respondent's part-worth are saved. The iteration values are saved only after the simulation reached the convergence (18,000,000 iterations are burnt in to ensure that participants are picked up after proper convergence of the chain). This means that for each respondent, each attribute utility is based on forty values that come from the same target distribution, which we treat as forty samples. We selected five families at random for further analysis (Family 3, Family 15, Family 42, Family 47, and Family 72 based on their number from the original 75). The iterated sample values are tabulated for each of the five selected families (i.e., husband's, wife's, and joint utilities). Because the assumption of independence may be weak as the utility of husband and wife in a family may be correlated, we used a paired sample test to test equality of means in three of the five families. The families with both spouses having an external income have a significant difference in the utility vector of the husband and the wife for twenty-seven out of thirty attributes' part-worth utilities in Family 15 and Family 72, and in twenty-five out of the thirty for Family 42. These findings suggest that in families where both spouses have external incomes, the partners have separate utility functions.

The picture is more complicated in the two families with one income (the husbands in Family 3 and Family 45). Here, we observed that the utilities of levels that have less of an entertainment aspect (i.e., first two levels of each attribute) are not significantly different between the two partners. However, the difference in utility of levels with of almost all attributes with high entertainment value (i.e., the upper levels of each attribute) is significantly different between husband and wife. Thus, we identify two types of utility functions in a single-earner family. In the case of purchases where the rational benefits are higher, the families have a common utility function, whereas in the case of purchases that contain more of an entertainment component, the partners have separate utility functions.

To test whether both noncooperative and cooperative bargaining behavior exists in the family purchase decision,

Exhibit 3:
Difference in Individual Utility and Joint Utility of Family Members

	Paired *t*-Test of Male and Female Member's Individual Utility for Each Attribute Level			Paired *t*-Test of Male Member's Individual Utility and Joint Utility of the Family for Each Attribute Level			Paired *t*-Test of Female Member's Individual Utility and Joint Utility of the Family for Each Attribute Level		
Pair Attribute No./Level No.	Family 3 (one spouse is external earner) *t*-Value	Family 15 (both spouses are external earners) *t*-Value	Family 72 (both spouses are external earners) *t*-Value	Family 3 (one spouse is external earner) *t*-Value	Family 15 (both spouses are external earners) *t*-Value	Family 72 (both spouses are external earners) *t*-Value	Family 3 (one spouse is external earner) *t*-Value	Family 15 (both spouses are external earners) *t*-Value	Family 72 (both spouses are external earners) *t*-Value
Pair 1/1	−1.783	10.109**	12.285**	8.010**	16.530**	2.044*	11.494**	4.455**	−1.267**
Pair 1/2	−1.237	−15.098**	−15.236**	6.526**	−2.913**	−11.363**	15.675**	15.971**	−1.560
Pair 1/3	−0.062	2.617*	4.687**	−9.400**	−5.688**	2.163*	−6.660**	−10.161**	−0.391
Pair 1/4	3.594**	−3.652**	−10.132**	−9.144**	−6.736**	−6.204**	−17.541**	−2.891**	−1.535
Pair 2/1	−1.015	10.744**	−21.825**	12.583**	0.607	−12.840**	9.961**	−7.583**	0.267
Pair 2/2	8.029**	−14.324**	12.724**	−12.474**	−19.063**	2.613*	−20.508**	0.558	−3.225**
Pair 2/3	−8.936**	3.163**	9.867**	−3.460**	13.285**	20.001**	0.541	7.375**	7.651**
Pair 3/1	−1.153	−6.640**	−11.408**	−2.962**	−1.422	−25.433**	−2.364*	7.277**	−5.618**
Pair 3/2	4.672**	−0.714	−11.408**	−5.721**	−1.166	4.339**	−7.978**	−0.707	−6.949**
Pair 3/3	−5.333**	3.950**	10.989**	0.867	−2.573*	15.607**	6.896**	−13.117**	4.257**
Pair 3/4	3.096**	6.452**	10.779**	5.849**	5.782**	6.549**	4.186**	0.985	9.503**
Pair 4/1	−0.720	26.115**	−0.349	0.150	2.969**	1.437	1.120	−23.688**	−4.585**
Pair 4/2	−0.047	−19.034**	13.555**	−0.471	−10.539**	−3.891**	−0.330	7.973**	4.550**
Pair 4/3	3.794**	−11.486**	−12.664**	−0.612	−6.892**	4.245**	−6.559**	6.507**	0.997
Pair 4/4	−3.409**	15.994**	5.424**	0.852	19.114**	−1.499	3.311**	11.332**	0.655
Pair 5/1	5.749**	21.723**	−3.157**	−2.804**	9.221**	1.541	−9.509**	−8.562**	−0.094
Pair 5/2	−3.205**	14.627**	1.486	4.799**	3.806**	−7.160**	11.152**	−21.927**	−0.372
Pair 5/3	0.427	−17.826**	−7.409**	−6.826**	−8.139**	14.523**	−4.464**	1.868	25.194**
Pair 5/4	−1.225	−29.204**	−5.344**	−0.025	−2.937**	−3.008**	1.964	19.485**	−9.129**
Pair 6/1	9.156**	18.720**	3.727**	3.584**	16.308**	6.574**	−3.176**	−8.013**	−1.941
Pair 6/2	5.885**	−6.700**	7.424**	−2.119*	−4.535**	−13.377**	−5.822**	2.572*	−11.408**
Pair 6/3	−2.440*	−15.921**	−5.375**	−3.666**	−12.554**	10.994**	−0.806	4.971**	3.401**
Pair 6/4	−12.736**	5.210**	6.391**	2.934**	2.082*	−2.069*	12.322**	−4.902**	0.656
Pair 7/1	−0.780	−17.419**	−14.166**	3.025**	−22.649**	−3.902**	4.390**	−3.829**	−8.331**
Pair 7/2	1.013	−13.127**	−2.333*	−2.011*	−5.781**	9.905**	−3.447**	10.064**	−4.253**
Pair 7/3	−4.351**	9.538**	−1.628	−11.549**	3.865**	20.586**	−7.792**	−9.554**	−3.146**
Pair 7/4	0.747	−0.599	18.385**	0.718	−0.668	−7.900**	−0.200	−0.221	−0.346
Pair 7/5	5.505**	1.078	−10.256**	10.689**	3.747**	−8.008**	0.844	3.217**	0.154
Pair 7/6	−6.502**	23.033**	−3.486**	4.673**	24.307**	−7.247**	7.939**	−4.692**	0.307
Pair for "Do not Buy"	0.302	−12.938**	−4.401**	9.841**	−13.996**	−12.381**	9.373**	−9.150**	−6.329**

*Significant at <5% level for two-tailed test. *Significant at <1% level for two-tailed test.

we compared the utility of individual partners with their joint utility, using paired *t*-tests between the utilities of each spouse and their joint utility. With one exception (Family 72's wife), individual spouses' utilities are significantly different from their joint utilities ($p < 1\%$). This implies the existence of noncooperative bargaining behavior in those families. However, the utilities of "Mrs. 72" are not significantly different from her joint utilities in fourteen out of thirty instances. This indicates cooperative bargaining behavior, because "Mr. 72" cooperated with his wife to match her preference in the joint purchase decision. Hence, although the test suggests the existence of both cooperative and noncooperative bargaining behavior, the presence of one or the other may not be based on the

Exhibit 4:
Bargaining Power of Each Family Member

	Bargaining Power	Significance (*p* Value)
Family 3		
Attribute: Internal ambiance and décor		
Male	1.012	.000
Female	0.708	.000, R^2 = .71
Attribute: Food		
Male	0.468	.000
Female	0.182	.022, R^2 = .65
Attribute: Serving		
Male	0.105	.239
Female	0.15	.024, R^2 = .55
Attribute: Brand		
Male	0.885	.000
Female	0.017	.681, R^2 = .59
Family 15		
Attribute: Internal ambiance and décor		
Male	0.772	.000
Female	0.922	.000, R^2 = .85
Attribute: Food		
Male	0.626	.000
Female	0.398	.000, R^2 = .83
Attribute: Chef		
Male	0.46	.000
Female	0.072	.017, R^2 = .51
Attribute: Brand		
Male	0.359	.000
Female	0.68	.000, R^2 = .74

partners' earning status. Exhibit 3 shows the result of paired *t*-tests of three selected families from five families discussed before.

To estimate the strength of each spouse's bargaining power (κ), joint utility is regressed on individual utility of each spouse. We randomly selected two families (Family 3 and Family 15) from five previously selected families for this test. We considered four attributes that were the most important to each spouse to determine his or her bargaining power, with the results shown in Exhibit 4. For Family 3, these attributes were ambiance and décor, food, serving, and the brand, whereas for Family 15, the attributes were ambiance and décor, food, chef, and the brand. We found that both members have bargaining power, but that the power sometimes depends on the attribute. The husband in Family 3 has a higher bargaining power in three of the four attributes, for instance. But Family 15's husband has higher bargaining power in just two attributes (food and chef), and his wife has a higher bargaining power in the other two attributes (internal ambiance and brand). This finding again shows the balanced bargaining power in couples where both have external income.

Managerial Implications

Perhaps the most important implication for this study is that restaurant owners need to recognize that the decision to patronize their restaurant is undoubtedly the product of negotiation. Moreover, the selection decision is separate from consumption of the restaurant service. Although marketers are largely motivated by consumption behavior when their customers are inside the restaurant (Verma, Plaschka, and Louviere 2002), a completely different process may occur during selection of restaurant. Even during consumption, the effects of the previous negotiation may be seen, when one family member may act as a buying agent inside the restaurant and is implementing a negotiated decision already taken during selection of the restaurant. It is also important for the marketer to note that the dynamics of an individual's choice of which restaurant to patronize can vary widely from the family's restaurant choice.

Chances are that the restaurateur will not be party to the selection negotiation, but if the restaurant owner can discern individual differences between preferences, motives, and even utilities among spouses, the restaurant owner may be able to offer restaurant services more effectively. It appears that the process of merchandising to two-income couples is different from that of one-income couples, because the restaurant has to appeal to both parties with external income. The intertwined bargaining power of single-earner families is harder to fathom.

Restaurants might be able to collect the information regarding whether local residents are largely single-earner families or dual-earner families. Successful segmentation strategy on the basis of family bargaining may be implemented along demographic lines. Creating and catering to attribute-specific interest in individual family members would give marketers a well-directed outcome of their marketing investments. If corroborated by further research, marketing professionals, to ensure the ultimate acceptance of a new product, may want to examine their plans to make certain that product communication specifically addresses wives' need for sensation.

Conclusion and Future Research

This study investigated joint purchase decision behavior considering individual preferences and bargaining behavior. An accurate assessment of individual preference structure and influence is necessary in many purchase contexts where a joint buying decision is involved. This study considers budget constraints of the individual consumer in deriving utility by separately considering each consumer's budget for personal consumption and for family consumption. Derivation of consumer utility under budget constraints

would simulate the actual purchase decision more accurately. Findings from this study provide evidence of a separate utility function that applies to the family. Hence, individual budget constraints of both members in the family call for different utilities in entertainment products. Finally, this study captures intrafamily bargaining due to two types of budget constraints and investigates the existence of noncooperative bargaining and cooperative bargaining in the family purchase decision.

Two major findings emerged from the empirical investigation. (1) Spouses have two separate utility functions in relation to the family buying decision. These separate utility functions exist due to individual budget constraints for self-consumption and for family consumption of an entertainment product, as well as an individual's varied preference for several product attributes. (2) Different families engage in different types of bargaining behavior while taking joint purchase decisions. Each spouse exerts bargaining power to optimize his or her own utility in the joint decision. The family purchase decision involves interaction in which spouses exert individual power and promote their preferences. Corfman and Lehmann (1987) and Su, Fern, and Ye (2003) opined that the influence of one spouse's preferences varies according to the response of the other spouse to suggestions regarding those preferences. While Corfman and Lehmann did not show any empirical evidence, Su et al. presented it in aggregate, that is, without eliciting spouse-level preference and influence. The results from our study show that each spouse has different bargaining pattern depending on his or her preference and budget allocation. The approach adopted in this study involves individual preference and bargaining behavior through choice data at both the individual level and group level.

This study has certain limitations. The study has examined family decision making of a numerically and geographically limited set of families regarding the selection of a moderately priced family style (casual dining) restaurant. The result may not generalize to other, less expensive restaurants, such as quick service restaurants, where the impact on individuals' budgets of a particular choice is small compared with the overall entertainment budget. This is one of the interesting dimensions for future research, which may focus on how an individual family member's preference structure and bargaining behavior change in multiple buying contexts. For example, the preference structure and bargaining behavior of the husband would possibly change in case of a dinner celebrated on the occasion of his daughter's birthday when compared with his reaction to a weekend dinner. In addition, future research should investigate spousal dynamics in other cultural contexts.

Appendix A

List of Attributes and Their Levels Considered in the Study

SL. No.	Attributes	Levels
1.	Inside décor and ambiance	1. Restaurant with conventional interior décor and ambiance as shown in the photo or video 2. Luxurious internal décor with larger table spacing and designed light to suit high-end ambiance of the restaurant as shown in the photo or video 3. Internal ambiance with designed lighting, large table spacing with one side glass overlooking the courtyard as shown in the photo or video 4. Theme internal décor and ambiance (like cave, forest, aquarium, etc.) as shown in the photo or video
2.	Music	1. Soft background music 2. Live music on stage located in one side of the restaurant 3. Live music in the sitting area where singers sing near the guests
3.	Food	1. Single cuisine as available in restaurant 2. Multicuisine 3. Exotic food and the chef explains the recipe 4. Special dish as named or described by you
4.	Chef	1. Food is prepared by ordinary chef 2. Food is prepared by chef from star restaurant 3. Food is prepared by chef from three-star hotel 4. Food is prepared by chef from five-star hotel
5.	Serving staff	1. Served by boys 2. Served by girls 3. Exclusive serving boy or girl assigned to the table 4. Serving boys or girls trained and dressed to match with the theme of the restaurant
6.	Brand of restaurant	1. Taking dinner in local restaurants (e.g., Copper Handy, Blue Fox) 2. Taking dinner in restaurant chain (e.g., Mainland China) 3. Taking dinner in a restaurant maintained by Tajo 4. Taking dinner in restaurant maintained by Sheraton

(continued)

Appendix A (continued)

SL. No.	Attributes	Levels
7.	Price of the dinner, excluding drinks	1. Price for a dinner in above restaurant is approximately Rs. 900 (US$18) per couple 2. Price for a dinner in above restaurant is approximately Rs. 1,200 (US$24) per couple 3. Price for a dinner in above restaurant is approximately Rs. 1,400 (US$28) per couple 4. Price for a dinner in above restaurant is approximately Rs. 1,600 (US$32) per couple 5. Price for a dinner in above restaurant is approximately Rs. 1,800 (US$36) per couple 6. Price for a dinner in above restaurant is approximately Rs. 2,000 (US$40) per couple

Appendix B

Sample ID Number of Family Respondent No. 34

FAM 200034 MALE = Stage I ID of the male member of the family.

FAM 200034 FEMALE = Stage I ID of the female member of the family.

FAM 200034 JOINT = Stage II ID for joint response of the family.

Acknowledgments

The authors are indebted to Professor Jerry Kelly, Amiya Basu, and S. P. Raj of Syracuse University for their continuous feedback at every stage of this research. The authors also thank Greg Allenby and Peter Rossi for useful comments on earlier draft of this paper.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The authors gracefully acknowledge financial support from Royal Economic Society, London, for data collection, and software support from Sawtooth Software, Inc., USA.

Notes

1. An outcome is Pareto optimal when no party can make a further utility gain without others suffering a loss.
2. Note that θ_a is actually U_m, U_f, and U_h of several product alternatives in different choice sets.

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