A multi-level analysis of mixed gender couple's food decisions in a tourism context

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Abstract

Purpose – Through application of multi-level structural equation modeling as the data analysis technique, the purpose of this paper is to analyze the group-level impacts on a couple's food choices during travel at a coastal destination.

Design/methodology/approach – Researchers obtained 380 individual questionnaires from 190 mixed gender couples (who eat oysters) in Charleston and Beaufort County, South Carolina, USA. Data were collected from both members of the couple during their vacation. Due to missing data and normality issues 5 couples and 30 individuals were eliminated. The remaining data were analyzed with SPSS 21 and EQS 6.2 with advanced confirmatory factor analysis and multi-level (ML) regression techniques.

Findings – The study results indicated that while women have a more negative attitude than men toward oysters, their intention to eat oysters during vacation is not different from their partner. By detecting the interdependency of responses of individuals within a couple, this study revealed that a ML approach is a more powerful way to understand the decision-making process of couples. Additionally the difference in the results of single- and ML models showed that the latter approach lowers the chance of Type 2 error and provides more accurate results.

Originality/value – In tourism decision-making literature, the focus has been mostly on the individual despite the collectivistic nature of tourism activity. The current study is the first to analyze a couple's decision-making process at the group level. Furthermore by collecting data from both members of the group during their vacation, this study has distinguished itself from previous studies.

Keywords Attitude, Intention, Food choice, Multi-level approach, Tourism decision making, Tourist couples

Paper type Research paper

Introduction

Travel decision making is a dynamic and ongoing process which involves external factors as well as internal ones, and unexpected changes in travel plans are inevitable due to the uncontrollable nature of tourism product (Smallman and Moore, 2010; Thornton *et al.*, 1997). Also, the intangibility of the travel experience distinguishes travel decisions from daily purchase decisions (Mottiar and Quinn, 2004). Therefore, the travel decision-making process should be analyzed in a different way than the daily consumption process.

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Past research has found that family and friends were influential on travel intentions (Gardiner *et al.*, 2013). Additional evidence confirms that the influence of group in the tourism context adds to the complexity of the tourism decision-making process and is important to consider. Since the majority of people go on vacation with family or friends (Thornton *et al.*, 1997), examining travel decision making as a solo process is insufficient to provide accurate results. In addition, the impact of family and children on trip decisions has been found to be significant in several studies (Chen *et al.*, 2012; Kim *et al.*, 2010; Mottiar and Quinn, 2004; Zalatan, 1998). However, the tourism literature still lacks research focusing on group behavior (Obrador, 2012) and family travel experience (Schänzel *et al.*, 2005). Another gap in the travel decision-making literature is the impact of emotions and the travel mood (McCabe *et al.*, 2016; Sirakaya and Woodside, 2005) which consequently lead to *in situ* travel decisions (Blichfeldt *et al.*, 2011). Therefore, collecting data "*in situ*" will provide more accurate results. Consequently, tourism studies that assess the interaction between members of the group traveling together, usually family members or significant others, during actual travel, are needed. Relative to the research reported here, since the decision-making process does not take place only at the individual level, the individuals should be studied as a member of a group, with the group-level decision data included in analysis to improve understanding of this process. In addition, while Zalatan (1998) suggested that the husband's perspective on travel decision making is needed, interviewing only one member of the group may create biased results. Thus, it is important to collect information from all members in the travel group and to use that data to examine both the individual and collective experience, a conclusion supported by Schänzel *et al.* (2005).

Most importantly, focusing only on the individual behavior of people traveling in groups leads to the loss of variance which occurs at group level, meaning that the impact of the group on decision making would be overlooked (Coskun *et al.*, 2018). By using a multi-level (ML) analytical approach, the variance at the group level can be accounted for in addition to the variance occurring at individual level. Consequently, tourism studies that adopt a ML approach accommodate for the role of both the group and the individual in decision making by adding enhanced regression analyses that explain variance at more than one level.

This study looks at the couple as the travel decision-making "group" and utilizes the conceptual framework of the Theory of Reasoned Action (Fishbein and Ajzen, 1975) to examine a couple's food purchase decisions during travel. According to this theory, intention to perform a behavior is influenced by the attitude toward it and subjective norms which are formed by beliefs about the behavior. Cognitive and affective attitudes toward food have received much attention in non-tourism-related research (Aikman *et al.*, 2006; Letarte *et al.*, 1997; Winkielman *et al.*, 2005). More recent studies have focused on the impact of healthy eating attitudes (Chang, 2017), cognitive and affective image (Seo *et al.*, 2017) and attitude toward food (Björk and Kauppinen-Räisänen, 2016) on travel eating behavior. However, most of these studies overlook the influence of travel companions because analysis of travel eating behavior and its antecedents focuses at the individual level. Through application of multi-level structural equation modeling (ML-SEM) as the data analysis technique, the purpose of this study is to understand the impact of the group on travel decisions by analyzing the influence of cognitive and affective attitude on tourist couples' food purchase decisions specifically regarding a certain type of food, wildcaught oysters, during travel at a coastal destination.

Literature review

Travel decision-making stages

The nature of the tourism product is experiential and therefore, buying decisions for tourism products will not be similar to other purchases. The major differences of tourism products from others can be listed as follows: no tangible return, relatively higher expenditure, longer

planning time, the need to travel to consume the product and the non-storable nature of the product (Mathieson and Wall, 1982). Travel is composed of phases from planning the vacation to returning home (Clawson and Knetsch, 1966), and within each of these phases, specific decisions including accommodation, transportation, food, length of stay, budget, etc., need to occur. The process of travel decision making has been discussed in five stages: problem or need recognition (i.e. travel desire), information search and evaluation, final decision, consumption (i.e. travel experience) and post-purchase feelings (Mayo and Jarvis, 1981). The decision made in the first stage is to go on vacation; the second stage involves processing of information search related to destinations, travel types, accommodation and activities; and in the third stage, the alternatives are evaluated and a final choice is made. During the consumption process people tend to make decisions regarding restaurant choice and what activities to do within the destination (Blichfeldt *et al.*, 2011). The last stage of consumption, based on the extent that the travelers' expectations are met and whether or not the traveler is satisfied with the experience, involves post-purchase behaviors, such as posting on internet (e.g. reviews, trip photos) and making recommendations to friends (Mayo and Jarvis, 1981).

Travel decision-making models

Travel decision-making models were developed to analyze the decision-making process in detail and to examine the influence of various external and internal factors on the travel decision-making process. The internal and external factors influencing travel decisions are listed in Table I. Decrop (2006) categorized cognitive travel decision-making models as structural and process (Table II). While structural models lack complete understanding of the decision-making process (Decrop, 2006), the role of emotions is ignored (Sirakaya and Woodside, 2005). On the other hand, process models view travel decision making as a hierarchical process (Decrop, 2006). However, "Trip planning is not only a sequential process but also a contingent process" (Jeng and Fesenmaier, 2002, p. 27) and each decision step is limited by a prior decision.

According to McCabe *et al.* (2016), "tourists employ different choice strategies some of which are complex, logical, utility driven and normative, but others are driven by emotions,

Internal factors	Authors	External factors	Authors
Attitude	Van Raaij and Francken (1984), Um and Crompton (1990)	Culture	Lysonski *et al.* (1996), Correia *et al.* (2011)
Lifestyle	Van Raaij and Francken (1984), Woodside and Lysonski (1989), Decrop and Snelders (2005)	Social media	Hudson and Thal (2013)
Routines	Bargeman and van der Poel (2006)	Word of mouth	Murphy *et al.* (2007)
Motivation	Um and Crompton (1990), Gnoth (1997)	E-word of mouth	Hernández-Méndez *et al.* (2013)
Unconscious needs	Tran and Ralston (2006)	Climate of the destination	Hamilton and Lau (2005)
Involvement	Cai *et al.* (2004)	Political Instability	Seddighi and Theocharous (2002)
Information search	Vogt and Fesenmaier (1998)	Interpersonal variables	Mayo and Jarvis (1981)
Personality and self-concept	Lysonski *et al.* (1996)	Constraints	Hung and Petrick (2012)
Demographics	Zalatan (1998), Mottiar and Quinn (2004), Borges Tiago and Borges Tiago (2013)		
Constraints, self-efficacy	Hung and Petrick (2012)		

Table I.
Factors influencing travel decisions

Authors	Decision-making process	Stage	Critique
Structural models			
Um and Crompton (1990)	Destination selection process occurs by integrating internal and external inputs through a cognitive process that travelers go through from awareness of alternatives to the selection	Pre-trip	The role of emotions is ignored (Sirakaya and Woodside, 2005) All affect may not be mediated by cognition (Zajonc and Markus, 1985) Lacks complete understanding of the decision-making process, the sole focus on destination selection (Decrop, 2006)
Woodside and Lysonski (1989)	Affective associations (i.e. arousal of feelings) mediate the relationship between destination awareness and traveler destination preference, but this will not happen until a cognitive process occurs such as recognition, recollection and categorization	Pre-trip	
Process models			
Van Raaij and Francken (1984)	Individual, household and sociodemographic factors and interaction process have influence on vacation sequence which is composed of stages: generic decision, information acquisition, joint decision making, vacation activities and satisfaction	Pre-trip *In situ* Post-trip	Process models view travel decision making as a hierarchical process (Decrop, 2006) "Trip planning is not only a sequential process but also a contingent process" (Jeng and Fesenmaier, 2002, p. 27)
Moutinho (1987)	Decision making is a flow of actions in which preference structure creates a choice criterion through intention	Pre-trip *In situ* Post-trip	
Moore *et al.* (2012)	Travel decision making was evaluated in three dimensions: inflexibility, social composition of the decision and the timing or location of decision as well as on off-site, on-site spectrum	*In situ*	

Table II.
Travel decision-making models categorized based on Decrop (2006)

and reflect informal and unstructured processes, associative and intuitive styles of reasoning" (p. 4). Based on this argument, these authors proposed a decision-making model which incorporates both heuristic and systematic systems for the destination selection process.

Due to technological advances, new variables influencing travel decision making have emerged, such as social media and electronic word of mouth (Fotis *et al.*, 2012; Hernández-Méndez *et al.*, 2013; Hudson and Thal, 2013). However, opinions of friends and family are found to be more effective than other sources, including advertisements, in decision making regarding travel destination (Hernández-Méndez *et al.*, 2013). This influence will be even stronger when friends and family are traveling together. For example, Stone (2016) demonstrated that travel decisions are mostly delegated to individuals, as "social surrogates," by the people with whom they are traveling. Further, Smith *et al.* (2017) performed a quasi-experimental study and observed the use of persuasion among couples in the decision-making process. Therefore, the impact of group is crucial to understanding the tourism decision-making process. Research has demonstrated that the majority of trips are taken with the company of others, especially with families (Gitelson and Kerstetter, 1995; Thornton *et al.*, 1997). Consequently, despite advances in capturing complexity, theoretical perspectives in tourism research are typically insufficient for understanding family travel due to the emphasis on individual (Obrador, 2012).

Family decision making

Research on family travel decision making has shown that the roles of the husband, wife and children have evolved through the years. Family decision-making studies could be

categorized into two groups, those focusing on the role of only husbands and wives (Jenkins, 1978; Kozak, 2010; Litvin *et al.*, 2004; Mottiar and Quinn, 2004; Zalatan, 1998) and those focusing on the role of children as well as parents in travel decision-making process (Blichfeldt *et al.*, 2011; Borges Tiago and Borges Tiago, 2013; Kim *et al.*, 2010; Rojas-de-Gracia *et al.*, 2018; Thornton *et al.*, 1997).

While husbands were found to be influential in almost all travel decisions in Jenkins's (1978) study, more recent research replicating this study showed an increase in joint decisions (Litvin *et al.*, 2004). Some other researchers show the dominance of men and women in different phases of travel decision making. Women were found to be dominant in different stages of travel, such as information searching in the pre-trip stage (Chen *et al.*, 2012; Mottiar and Quinn, 2004; Thornton *et al.*, 1997; Zalatan, 1998), selection of restaurants *in situ* (Kim *et al.*, 2010; Zalatan, 1998) and intention to return after the trip (Kim *et al.*, 2010). One shortcoming of these studies is that data were collected from only one member of the family, which may result in bias. Another problem is the disagreement between the responses of each member of a couple even when the data were collected from both members. In addition, it is expected that the family members will influence each other, as previous research showed that the members of a couple have significant influence on each other's satisfaction and intention to return (Kozak and Duman, 2012).

Recently, there have been some attempts to shift the focus from individual to group in travel decision-making research by adopting different methods. For example, Smith *et al.* (2017) observed the couple's decision-making process in real time. Also, Watne *et al.* (2014) used dyadic groups as the unit of analyses, but couple dyads were not included in the study as the focus was on parent/child. Rojas-de-Gracia *et al.* (2018) collected data from both couples and analyzed the responses separately and showed that final decisions are made jointly. On the other hand, Stone (2016) asked respondents directly if decisions were delegated to them, but only one member of the group was interviewed. Rojas-de-Gracia and Alarcón-Urbistondo (2018) conducted hierarchical analysis to understand the influence of joint decisions on the couple's vacation satisfaction; however, no significant difference at the aggregate level was found among couples. Consequently, in the case of couples, there is a need to adapt new methodologies to provide better understanding of group travel dynamics by engaging more than one group member in responding to interview or survey questions.

Women and men have different vacation needs and interests which influence their travel behavior and eventually the travel decision-making process. While women are more interested in meeting other people (Gibson and Yiannakis, 2002), eating out (Mottiar and Quinn, 2004) and cultural experience, men are looking for sport and recreational activities (Uysal *et al.*, 1996). In terms of decision-making styles, females are more perfectionist, confuse by over choice, likely to exhibit impulse buying behavior, eager to buy latest fashion and quality conscious than males (Mitchell and Walsh, 2004). Additionally women show higher satisfaction than men when decisions are made jointly (Rojas-de-Gracia and Alarcón-Urbistondo, 2018).

Some studies have revealed differences between men and women in terms of the local food consumption behavior during travel and in daily life. While women want to eat local food due to "interpersonal relationship," men are looking for "cultural experience" (Kim *et al.*, 2013) and are risk takers (Ryu and Han, 2010). On the other hand, women tend to be more health conscious (Kang *et al.*, 2015), especially with regard to seafood consumption (Mazur and Curtis, 2008; Verbeke *et al.*, 2005). In summary, there are differences between men and women in terms of needs, motivation, personality and consumption behavior which affect travel decision making and experience. Consequently, the first set of hypotheses for the study is based on the differences between men and women, in the travel context:

H1. There is a significant difference between men and women in terms of attitude, importance and intention.

H2. The relationships between attitude and importance are moderated by gender.

Since the same sex couples were not included in the study, gender does not vary at couple level; *H1* and *H2* were tested only at Level 1 (individual).

Cognitive and affective attitudes

Fishbein and Ajzen (1975) described the antecedents of behavior as affect, cognition and conation in their theoretical framework which provides the base assumptions for the theories of reasoned action and planned behavior. Affect is composed of feelings and evaluations with regard to an object, cognition is knowledge about the object and conation is behavioral intentions to that object. The influence of these variables on behavior happens in a sequence, as cognition influences affect which influences conation, namely, intention, which will eventually have impact on actual behavior.

In most tourism studies, affective, cognitive and conative components have been attributed to destination image (Baloglu and Brinberg, 1997; Baloglu, 2000; del Bosque and Martín, 2008; Kim and Yoon, 2003; Pike and Ryan, 2004; Lin *et al.*, 2007). On the other hand, research on the influence of attitude on food choices is limited to daily food consumption behavior. The influence of affective factors (Letarte *et al.*, 1997), unconscious affective reactions (Winkielman *et al.*, 2005), positive and negative affect (Aikman *et al.*, 2006) and cognitive and affective image of country (Asperin and Wolfe, 2013, Seo *et al.*, 2017) on food and beverage consumption have been analyzed. These studies revealed that affective attitude has a stronger impact on pleasure food consumption, while cognitive attitude has a stronger impact on functional food consumption (Aikman *et al.*, 2006; Letarte *et al.*, 1997; Winkielman *et al.*, 2005).

Food consumption behavior during travel has received more attention recently. While some of these studies analyzed the local food consumption behavior of tourists by segmenting respondents based on attitude (Björk and Kauppinen-Räisänen, 2016; Chang, 2017), others identified attitude as the strongest antecedent, compared to perceived behavioral control and subjective norm, of intention to try local food (Ryu and Han, 2010; Shin and Hancer, 2016; Wu *et al.*, 2016). Seo *et al.* (2017) used cognitive and affective constructs to analyze the influence of destination food image on intention to eat destination food, and only the impact of cognitive image was significant. On the other hand, Lee *et al.* (2017) showed that the influence of emotions is stronger than cognitive factors on the intention to attend wine tours.

Gaining further insight about the influence of both affective and cognitive attitudes on food choice during travel depends on selecting a food type that represents both local and coastal (i.e. destination) distinctiveness and which generates variability in general perceptions. Therefore, this study focused on the coastal communities of South Carolina, where there is a history of local and coastal culinary distinctiveness, and on locally harvested wild oysters, which are increasingly popular among seafood eaters visiting the region and seeking destination-specific foods.

Prior studies that applied the Theory of Reasoned Action (Fishbein and Ajzen, 1975) examined the direct influence of attitude on intention to purchase local food (Ryu and Han, 2010; Shin and Hancer, 2016; Wu *et al.*, 2016). Attitude in this study was measured as general attitude toward food; however, as previous research shows, people are in a different mood during travel (Blichfeldt *et al.*, 2011) and the influence of attitude on their intention may not be similar to daily decisions. Therefore, a trip-specific "importance" variable (i.e. importance of eating oysters during my trip) was added to the model (Figure 1).

The following hypotheses describe the tested relationships between attitude, importance and intention for the ML model:

H3. There is a positive relationship between cognitive attitude about oysters and importance of eating local oysters during the trip.

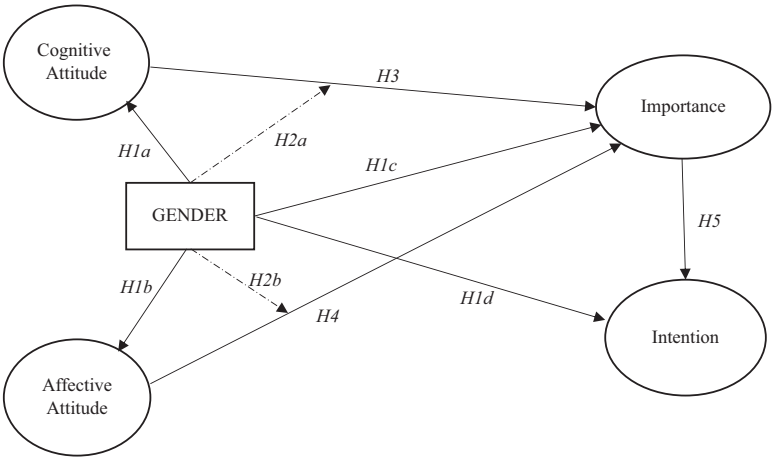

Figure 1.
Conceptual framework

H4. There is a positive relationship between affective attitude about oysters and importance of eating local oysters during the trip.

H5. There is a positive relationship between importance of eating local oysters and intention to eat local oysters at the destination.

H3–H5 were tested at both Level 1 (individual) and Level 2 (couple).

Methodology

Data collection

Data were collected in two popular coastal tourism destinations (Charleston and Beaufort) in South Carolina, USA. In 2015, tourism spending in South Carolina was $21.2bn (US Travel Association, 2018). Domestic visitor expenditures in 2016 were $2.3bn for Charleston and $1.3bn for Beaufort counties, which were two of the top 3 counties for domestic travel impact in South Carolina (US Travel Association, 2016). Oysters, clams and grits were initially tested as points of reference for local cuisine due to the popularity of these food items in the region and based on the focus of tourism promotional media generated by convention and visitor bureaus in Charleston and Beaufort counties. Since oysters showed the most reliable results in the pilot study and there was rising interest in best practices for marketing these local shellfish to tourists, oysters were chosen as the target tourism product for the study. Oysters were also an appropriate choice due to prior research demonstrating variability in general perceptions regarding product safety attributes (i.e. source, inspection) (Manalo and Gempesaw, 1997) and preference for brands based on region (Petrolia *et al.*, 2014). In South Carolina, oysters are harvested both recreationally and commercially, and 2.3 metric tons were landed by commercial harvesters in 2015 (NOAA Fisheries, 2016). In addition, media attention on the uniqueness of oysters in this region of the USA has increased (Neimark, 2016).

The pilot study was conducted in Clemson, South Carolina, located in the northwest corner of the state. This sample included 12 couples who had visited at least one of the coastal counties within the last two years. Then, data for the full survey were collected from mixed gender couples visiting the cities of Charleston and Beaufort, during the first three weekends of October 2014. Couples were intercepted in coastal venues: downtown and waterfront areas of Beaufort and Charleston and Hilton Head Beach. To participate in the study, the members of the couples had to be over 18, had to be traveling with a romantic

partner (husband/wife, fiancé or boyfriend/girlfriend) and be someone who eats oysters (i.e. if one member of the couple did not eat oysters, the couple was excluded from the sample). Since one of the purposes of the study was to examine difference in gender, same sex couples were not included. Data were collected by two researchers to minimize the interaction between partners, and couples were asked to fill out the questionnaire separately. In total, 425 couples were approached for this study. Of these couples, 140 were rejected from the study (i.e. 105 because at least one member of the couple did not eat oysters, 35 because they were local residents). There were 95 couples who refused, resulting in a response from 190 couples for an effective response rate of 67.1 percent. Due to missing data and normality issues 5 couples and 30 individuals were eliminated from the data, and analyses were conducted on 156 complete, 28 incomplete couples.

This sample size is sufficient for a ML or hierarchical linear modeling (HLM) study, based on 20 cases with 30 observations being the rule of thumb (Bickel, 2012). In addition, according to Maas and Hox (2005), at least 50, two-level observations are needed to assure that standard error estimates for fixed components are unbiased in a two-level model. Stratified sampling was also used to ensure that appropriate numbers of elements were drawn from the homogenous subsets of the sample (Babbie, 2010).

Sampling targets for each county were developed based on the portion of tourism expenditure represented by each county. Based on US Travel Association (2012) data available at the time of sampling, Charleston County accounts for the 63 percent and Beaufort County 37 percent of the total expenditure for both counties. Ultimately, 61 percent of 190 couples were surveyed in Charleston County and 39 percent were surveyed in Beaufort County.

Questionnaire development

The survey instrument included initial screening questions to assure each dyad in the sample was a "couple" and both of the members ate oysters previously. The scales used to measure general cognitive and affective attitude about South Carolina oysters were adapted from three studies, one of which measured attitude toward different objects and the other two of which focused on food and beverage (Aikman *et al.*, 2006; Cantin and Dubé, 1999; Crites *et al.*, 1994). After conducting the pilot study, the items with very low and very high standard deviations were eliminated from the scale. In total, 7 items out of 16 were selected for cognitive attitude, and 8 items out of 14 were selected for affective attitude. In all, 20 items were adapted from the personal involvement scale developed by Zaichkowsky (1994) to measure importance of eating oysters during the trip. After the pilot study, six of the importance items were selected for inclusion in analysis.

Both attitude and importance were measured on a seven-point scale (1 = not at all, 7 = definitely) in response to "I think eating wildcaught oysters is […]," "Eating wildcaught oysters makes me feel […]" and "During my travel to the South Carolina Coast eating local wildcaught oysters […]." Since conation is conceptualized as behavioral intentions to an object (Fishbein and Ajzen, 1975), it was measured through the variable intention in current study. Scales developed by Blanchard *et al.* (2008), Bredahl (2001) and Robinson and Smith (2002) were adapted to measure intention of purchasing local food, resulting in three items, measured on a seven-point Likert scale ranging from strongly disagree to strongly agree in response to "Prior to our trip to South Carolina coast I planned/intended to eat/thought that I would likely eat wildcaught oysters." This intention scale was not modified after the pilot study. The final section of the questionnaire included demographic questions.

Data analyses

The data were analyzed with SPSS 21 and EQS 6.2 with advanced confirmatory factor analysis (CFA) and ML regression techniques. A ML CFA was the most appropriate method for analysis given the primary focus was on understanding the travel decision-making

process of couples as a whole while accounting for the variability represented by each individual within the couple. Wendorf (2002) compared HLM and SEM on couple data and found that even if the parameter estimates and standard errors for both models were similar, SEM is a better way to analyze couple data since it offers more flexibility and more detailed model specification measures. Recent software programs such as EQS allow researchers to combine both techniques in one model known as ML-SEM (Kline, 2011). Furthermore, EQS software uses maximum likelihood estimation which solves the problem arising from unbalanced data (Byrne, 2006).

According to Kashy and Kenny (2000), dyadic groups should be investigated through research design and analysis techniques that recognize the interdependence of social behavior. In addition, there are several problems with single-level (SL) data analyses like OLS regression or ANOVA, the most common ones being aggregation bias, incorrectly estimated standard errors and heterogeneity of regression (Bryk and Raudenbush, 1988). Aggregation bias results from different meanings of variables at different levels. For example, in the case of a sample of students drawn from multiple secondary schools, student achievement could be influenced by the same factor differently at the student and the school level (Byrne, 2006). A ML approach solves this problem by decomposing the relationships into within school and between schools. If the individual cases are considered as independent when they are in reality dependent on each other, the standard error will not be estimated correctly (Bryk and Raudenbush,1988). As a result, the analysis design that ignores the group level will be less powerful, lacking insight into the role of the nested variable on the dependent variable (Sibthorp *et al.*, 2004). Inter-class correlations (ICCs) are computed in ML designs to evaluate the importance of group-level variance. The ICC is a unique inferential statistical measure used to detect interdependence of dyad response (Kashy and Kenny, 2000; Kenny *et al.*, 2006). Specifically, ICC indicates whether the observations from the same group tend to be different than the observations from other groups. Finally, the ML approach solves heterogeneity issues by enabling the calculation of variation among groups as a multivariate outcome (Bryk and Raudenbush, 1988).

The equations in hierarchical models are different from linear regression models. Specifically, the regression equation for the Level 1 (within-level) model is as follows:

$$Y_{ij} = \beta_{0j} + \beta_{1j} X_{ij} + r_{ij},$$

where "Y_{ij} is the outcome measure for the individual in group j; X_{ij} the value on the predictor for individual i in group j; β_{0j} and β_{1j} the intercepts and slopes estimated separately for each group (as noted by the subscript j); and r_{ij} the residual" (Hofmann, 1997, p. 727).

And the regression equation for the Level 2 (between-level) model is as follows:

$$\beta_{0j} = \gamma_{00} + \gamma_{01} G_j + U_{0j},$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} G_j + U_{1j},$$

where "G_j is a group-level variable; γ_{00} and γ_{10} the second stage intercept terms; γ_{01} and γ_{11} the slopes relating G_j to the intercept and slope terms from the Level l equation; and U_{0j} and U_{1j} the Level 2 residuals" (Hofmann, 1997, p. 728).

The advantage of applying SEM to this hierarchical analysis is that the ML modeling capacity "allows the research to consider both levels of the hierarchically structured data simultaneously. In particular, it enables the partitioning of total variance into within- and between- group components and allows separate structural models to be specified" (Byrne, 2006, p. 378).

Results

In order to assess normality of the data, Mahalanobis distance was calculated for the variables of interest for 380 individual cases (i.e. 190 couples). Five cases were deleted due to their extremely high Mahalanobis distance score. Kurtosis and skewness were calculated to assess the univariate normality of data, and all items had a normal distribution. After the elimination of the individual cases with more than 50 percent missing values for each scale, EM imputation was performed to replace missing values for the remaining cases. In total, 5 couples and 30 individuals were deleted due to missing data and normality issues. Ultimately 340 individual cases were used representing 156 complete and 28 incomplete dyads (i.e. resulting from elimination of the one individual from the couple due to normality issues and excessive missing values). Byrne (2006) indicates that "unlike other current SEM programs, EQS can compute ML estimation in the face of unbalanced group sizes" (p. 379). Further, convergence problems that resulted from imbalance between males and females were addressed by adding start values based on Singer and Willett (2003). Adding start values solves the type of convergence problems encountered in this study, especially in ML models with interactions. In addition, the mean of the number of people in a group was 1.85, indicating the data set was not extremely unbalanced.

Profile of respondents

Since some individual cases were excluded, the percentage of males (51 percent) was slightly higher than females (49 percent) (Table III). The majority of couples were married (76 percent). The average age of the respondents was 45 years, with a standard deviation of 15 years, and the median age was 45 years. With respect to highest level of education completed, 45 percent of respondents had a college education and almost one-quarter had a Master's degree. In addition, 55 percent of respondents reported individual income under $85,000. Since we worked on couples, the only demographic variable we took into consideration is gender. For the purpose of this paper, gender would be the only variable that matters as the previous literature on travel decision making provide a strong evidence for gender difference.

Measurement models

The SL model was run with cognitive attitude, affective attitude and importance as single factor variables in accordance with the proposed model. Robust maximum likelihood estimation was used due to high Mardia's (1970) multivariate kurtosis. The fit indices for the first model demonstrated poor fit (Satorra–Bentler $\chi^2 = 2{,}172.797$, df = 224, NFI = 0.697, CFI = 0.718, RMSEA = 0.160), and the R^2 values for negative items for affective and cognitive attitude and importance were under 0.5. Due to low correlation between the negative and positive items, a second model was run with seven factors (negative and positive cognitive attitude, negative and positive affective attitude, negative and positive importance, and intention). This model demonstrated better fit (Satorra–Bentler $\chi^2 = 714.845$, df = 505, NFI = 0.924, CFI = 0.976 and RMSEA = 0.035).

Before running the ML model, ICC for each item was calculated. Specifically, ICC indicates whether the observations from the same group tend to be different than the observations from other groups. For example, the ICC score of 1.0 means that all of the variance occurs at the couple level, and membership in a couple accounted for 100 percent of the variability. The majority of the items had an ICC score over 0.10, supporting the decision to use ML analysis. In addition, the dependent variable, intention to purchase wildcaught oysters, was the factor that had items with the highest ICC scores, ranging between 0.416 and 0.434 (Table IV). At least 42 percent of the variance of intention to purchase wildcaught oysters occurred at the couple level. The ML measurement model was run with the maximum likelihood estimation since a robust estimate was not an option for this model.

$n = 340$	%
Gender	
Male	51
Female	49
Relationship status	
Not married or engaged	22
Engaged	2
Married	76
Age	
18–24	8
25–34	23
35–44	18
45–54	20
55–64	21
65–74	8
75 and over	1
Highest level of education	
Less than high school	1
High school	5
Some college	20
College graduate	45
Master's degree	23
PhD degree	6
Individual income (annual)	
Under 25,000	11
25,000–54,999	23
55,000–84,999	21
85,000–114,999	19
115,000–144,999	8
145,000–174,999	4
175,000–189,999	3
190,000 and more	6

Table III. Demographic information

GOODHE	SAFE	NUTRIT	HARMFU	UNSAFE	NOTNUT	DELIGH	HAPPY
0.338	0.246	0.348	0.096	0.111	0.278	0.265	0.272
SATISF	EXCITE	SICK	BORED	TENSE	ANNOYE	IMPORT	MEANSA
0.270	0.195	0.259	0.233	0.283	0.223	0.387	0.365
VALUAB	UNIMPO	WORHTL	MEANSN	INTEND	WOULDL	PLANNE	
0.305	0.297	0.228	0.265	0.416	0.416	0.434	

Table IV. Model-based inter-class correlation coefficients

The ML measurement model had a χ^2 of 13,432.755 (df = 1,056) and fit statistics were NFI = 0.947, CFI = 1.00 and RMSEA = 0.000. Consequently, the fit indices for both measurement models demonstrated good fit (Hu and Bentler, 1998). Further, the ML model demonstrated almost perfect fit, meaning it fit the data better than the SL model.

Reliability and validity

α and ρ coefficients were all over 0.8 for factors included in both SL and ML models, demonstrating good reliability (Table V). Convergent and discriminant validity were assessed by calculating standardized factor loadings and average variance extracted (AVE)

	Loadings			α			ρ		
	SL	ML (L1)	ML (L2)	SL	ML (L1)	ML (L2)	SL	ML (L1)	ML (L2)
Positive cognitive attitude				0.895	0.867	0.951	0.896	0.868	0.952
Good for health	0.897	0.852	0.952						
Safe	0.838	0.874	0.857						
Nutritious	0.849	0.757	0.984						
Negative cognitive attitude				0.841	0.829	0.921	0.846	0.837	0.922
Harmful	0.867	0.875	0.861						
Unsafe	0.900	0.911	0.877						
Not nutritious	0.631	0.573	0.942						
Positive affective attitude				0.974	0.969	0.991	0.974	0.970	0.991
Delighted	0.960	0.953	0.985						
Happy	0.979	0.973	0.995						
Excited	0.928	0.922	0.972						
Satisfied	0.939	0.925	0.981						
Negative affective attitude				0.968	0.962	0.989	0.968	0.963	0.989
Annoyed	0.918	0.910	0.962						
Bored	0.960	0.951	0.991						
Tense	0.972	0.969	0.990						
Sick	0.912	0.893	0.977						
Positive importance				0.962	0.952	0.987	0.962	0.952	0.986
Important	0.953	0.946	0.969						
Means a lot	0.949	0.925	0.992						
Valuable	0.937	0.924	0.981						
Negative importance				0.919	0.900	0.974	0.919	0.901	0.974
Unimportant	0.860	0.921	0.958						
Means nothing	0.943	0.936	0.980						
Worthless	0.866	0.845	0.951						
Intention				0.970	0.952	0.993	0.970	0.952	0.994
I have intended to eat	0.856	0.946	0.993						
I would likely to eat	0.965	0.954	0.996						
I have planned to eat	0.972	0.899	0.985						

Table V.
Factor loadings, α and ρ values for all items for single-level (SL) and multi-level (ML) models

for the SL model and at Levels 1 and 2 for the ML model (Tables VI–VIII). All factor loadings were over 0.6, the majority of which were over 0.8 (Table V). All AVEs were over 0.6, and squared correlations between factors were less than the AVEs (Tables VI–VIII). Thus, convergent and discriminant validity were established (Fornell and Larcker, 1988).

Hypothesis testing

Structural models were run to test the hypotheses and identify the differences between SL and ML models. The ML structural model showed better fit ($\chi^2 = 14{,}833.375$, df = 1,260,

	F1	F2	F3	F4	F5	F6	F7
F1	*0.743*[a]						
F2	0.440	*0.653*[a]					
F3	0.365	0.169	*0.906*[a]				
F4	0.185	0.242	0.206	*0.885*[a]			
F5	0.208	0.094	0.289	0.064	*0.896*[a]		
F6	0.149	0.123	0.201	0.127	0.569	*0.793*[a]	
F7	0.271	0.132	0.345	0.132	0.452	0.324	*0.938*[a]

Notes: F1 = POSCOG, F2 = NEGCOG, F3 = POSAFT, F4 = NEGAFT, F5 = POSIMP, F6 = NEGIMP, F7 = INTENTION. [a]AVE

Table VI.
AVEs and squared factor correlations for single-level model

NFI = 0.918, CFI = 0.994 and RMSEA = 0.020) compared to the SL model (S–B $\chi^2 = 889.955$, df = 561, NFI = 0.908, CFI = 0.963 and RMSEA = 0.042), and both models represented acceptable fit (Hu and Bentler, 1998).

The standardized and unstandardized regression coefficients for significant relationships for the SL and ML (i.e. Levels 1 and 2) models are shown in Figures 2 and 3, respectively. Since gender varies on the individual level only, the influence of gender was taken into consideration only as within-level in the ML model. While the SL model analyzes gender difference in general, the ML model enables us to analyze the gender differences within a couple. While there is no significant difference between men and women in the SL model, the ML model shows that women score significantly lower on positive affective attitude ($\chi^2 = 2.105$) and higher in negative affective attitude ($\chi^2 = 2.598$) and negative importance ($\chi^2 = 2.114$). This tells us that women have more negative feelings toward oysters compared to their partner. Therefore, *H1b* was supported partly (Figures 2 and 3). The moderating impact of the gender on the relationship between attitude and importance was not significant in the single- or ML model; therefore, *H2* was not supported. The relationship between attitude and importance is not different for women and men.

The influence of cognitive (positive: $\chi^2 = 2.532$, negative: $\chi^2 = 3.654$) and affective attitude (positive: $\chi^2 = 4.407$, negative: $\chi^2 = 4.546$) on importance was significant in the SL and ML models at within-level. The influence of attitude on importance is significant; however, group has no effect on this relationship. Also the influence of positive (SL: $\chi^2 = 9.267$, ML: $\chi^2 = 5.438$) and negative importance (SL: $\chi^2 = 2.206$, ML: $\chi^2 = 3.731$) on the intention was significant in the SL and ML models at within-level. *H3–H5* were supported at Level 1. At between-level, meaning at the couple level only (L2), the influence of positive importance on intention was significant. *H5* was supported partly at Level 2. The regression coefficient of the relationship between positive importance and intention at the couple level ($\beta = 2.10$) is significantly higher than the individual level ($\beta = 0.370$).

	F1	F2	F5	F6	F5	F6	F7
F1	*0.688*[a]						
F2	0.472	*0.641*[a]					
F3	0.272	0.126	*0.890*[a]				
F4	0.107	0.228	0.140	*0.867*[a]			
F5	0.075	0.047	0.168	0.013	*0.868*[a]		
F6	0.072	0.099	0.127	0.063	0.466	*0.755*[a]	
F7	0.160	0.083	0.242	0.071	0.312	0.221	*0.903*[a]

Notes: F1 = POSCOG, F2 = NEGCOG, F3 = POSAFT, F4 = NEGAFT, F5 = POSIMP, F6 = NEGIMP, F7 = INTENTION. [a]AVE

Table VII. AVEs and squared factor correlations for multi-level model at Level 1

	F1	F2	F3	F4	F5	F6	F7
F1	*0.870*[a]						
F2	0.736	*0.799*[a]					
F3	0.707	0.618	*0.967*[a]				
F4	0.533	0.536	0.521	*0.961*[a]			
F5	0.612	0.591	0.723	0.389	*0.962*[a]		
F6	0.493	0.477	0.563	0.508	0.839	*0.928*[a]	
F7	0.521	0.605	0.656	0.388	0.728	0.621	*0.989*[a]

Notes: F1 = POSCOG, F2 = NEGCOG, F3 = POSAFT, F4 = NEGAFT, F5 = POSIMP, F6 = NEGIMP, F7 = INTENTION, [a]AVE

Table VIII. AVEs and squared factor correlations for multi-level model at Level 2

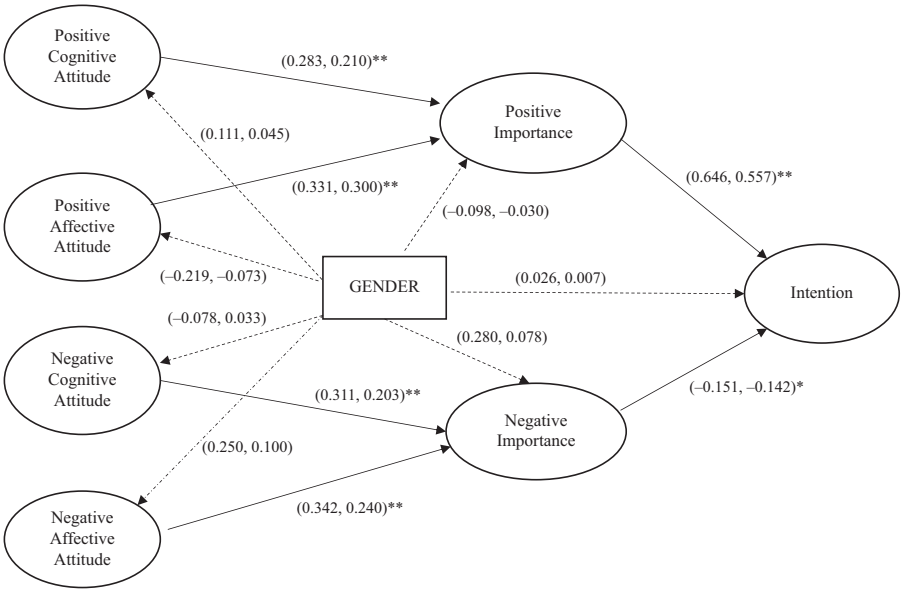

Figure 2.
Regression coefficients of relationships for single-level structural model

Notes: Unstandardized and standardized regression coefficients are used. Dashed lines indicate no significant relationship. *p-values are significant at 0.05 and 0.01 levels, respectively

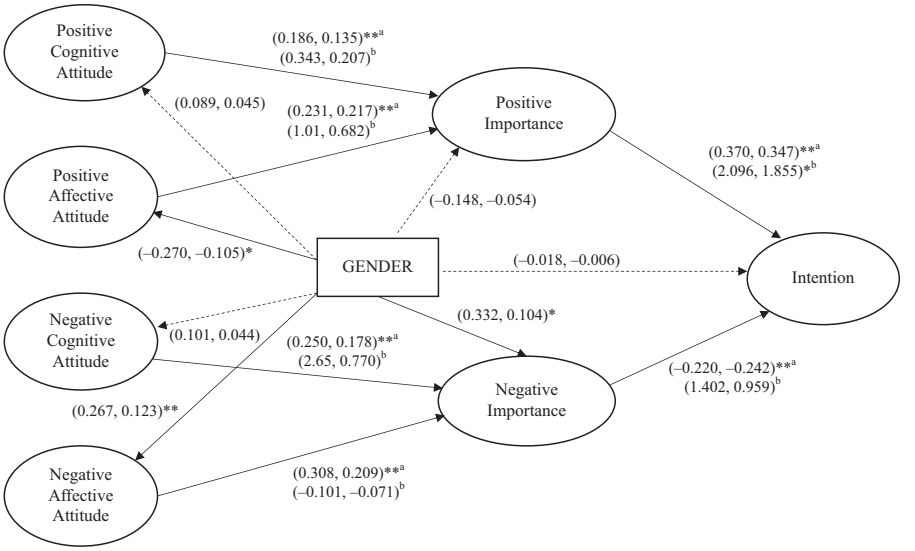

Figure 3.
Regression coefficients of relationships for multi-level structural model

Notes: Unstandardized and standardized regression coefficients are used. Dashed lines indicate no significant relationship. [a]Level 1; [b]Level 2. *p-values are significant at 0.05 and 0.01 levels, respectively

Consequently, results show that the influence of members of a couple on each other occurs on the relationship between positive importance and intention and that this relationship is stronger at couple level.

Discussion

As pointed out by many researchers travel decision making is not a solo process and the influence of the travel companions, mostly family members, cannot be ignored (Obrador, 2012; Stone, 2016; Thornton *et al.*, 1997). Through application of ML-SEM, this study was designed to provide a better understanding of the importance of group level in a tourist couple's food decision process by focusing on a certain type of locally available food, oysters, during travel at a coastal destination. Unlike previous studies (Chen *et al.*, 2012; Jenkins, 1978; Kozak and Duman, 2012; Litvin *et al.*, 2004; Mottiar and Quinn, 2004; Rojas-de-Gracia and Alarcón-Urbistondo, 2018; Stone, 2016; Watne *et al.*, 2014), this study did not involve determining the influence of family members on each other by asking direct questions. In addition, unlike previous research, the aim was not to understand the main decision maker in a family on specific travel components (Chen *et al.*, 2012; Kim *et al.*, 2010; Rojas-de-Gracia *et al.*, 2018).

Instead, the goal was to analyze the influence of individuals, within a couple, on each other in the context of purchasing a specific type of food item local to the destination. To test the interdependency of couple responses, the relationships between variables were measured at the individual and couple level by building a ML structural model which provided more statistically accurate results, at both the individual and couple levels, due to separate calculation of the variation within and between groups (Bickel, 2012). Further, the majority of previous studies collected information only from the one member of the family (Kim *et al.*, 2010; Kozak and Duman, 2012; Zalatan, 1998). Kozak and Duman (2012) found a significant influence of a spouse's satisfaction on the other spouse. However, since the data for these studies were based on the response from only one spouse, asked to answer on behalf of the other spouse, these past results may not accurately reflect two-way influence. In some other research, where both members of the couple were surveyed, the responses were analyzed separately (Litvin *et al.*, 2004; Mottiar and Quinn, 2004; Rojas-de-Gracia *et al.*, 2018). By collecting data from both members of the couple and analyzing the interdependence of a couple's responses, this current study provided a less biased estimate of the influence of couples on each other.

With regard to gender some differences were observed between SL and ML models. While no significant difference between men and women was found for any variable in the SL model, the gender difference was significant for both positive and negative affective attitude and negative importance in ML model. Previous research suggests that ML analysis offers more accurate results due to a better estimation of error and decreases the possibility of Type 1 and Type 2 errors (Bryk and Raudenbush, 1988; Sibthorp *et al.*, 2004). The results of the current study support this argument by detecting the possibility of Type 2 error.

Similar to previous research in which women showed stronger affective reactions in consumption situations (Derbaix and Pham, 1991; Gohier *et al.*, 2013), the current study found that women scored higher in negative and lower on positive attitudes toward wildcaught oysters compared to their partner. This is not surprising, since previous research shows women are more health conscious than men toward seafood (Mazur and Curtis, 2008; Verbeke *et al.*, 2005) and men have a stronger preference than women for wild fish (Cardoso *et al.*, 2013).

The purpose of adding importance to the model was to analyze the situation specific to the travel context, since the attitude questions only measured general attitude toward wildcaught oysters in SC coastal areas. While previous research added involvement as an

antecedent of attitude (Lee *et al.*, 2017), the significant impact of attitude on importance and importance on intention confirms attitude as an antecedent to importance in relationship to intention in the current study. The gender difference for importance of eating oysters was supported only in a negative way. Eating wildcaught oysters during vacation was less important for women compared to their partner. However, the intention to purchase oysters was not different between the members of the couple. Therefore, while men had a more positive attitude than women toward SC oysters in general, in the context of travel this difference was not strong enough to influence intentions. In addition, the moderating impact of gender on the relationships between attitude and importance was not significant, which means the relationships between these variables do not differ between men and women. Even if women had more negative feelings and beliefs about oysters, their intention to purchase this food item during vacation was not different from their partner.

In previous studies, women were found to be the main decision makers regarding food purchase during vacation (Chen *et al.*, 2012; Kim *et al.*, 2010). As mentioned earlier, even if the current study did not include direct questions about decisions, through comparison of couples' responses within a dyad it is possible to detect the influence of partners on each other. Based on the results of within-level analyses, it could be assumed that men's positive attitude might encourage their female partner to try wildcaught oysters. Since previous research showed that males were more satisfied when they dominated the travel decisions (Rojas-de-Gracia and Alarcón-Urbistondo, 2018), women may be willing to try oysters, regardless of their negative attitude, to please their partners.

Prior research also shows that women's motivation to eat local food during travel was triggered by interpersonal relationship, while males were looking for cultural experience (Kim *et al.*, 2013). In this study, the questions were specific to attitude toward local food which is a tangible aspect of cultural experience. Since attitude is formed as a result of past experience (Fishbein and Ajzen, 1975), it might be specific to an individual. However, the intention to purchase local oysters may be part of a couple's travel plan. Even if women tend to make the food purchase decisions, for certain foods, especially local foods there may be a cultural element that is more important to men, and may result in the need for agreement between members of the couple or the delegation of the decision to women by her partner as previous research suggests (Stone, 2016).

The influence of attitude on importance as well as importance on intention is significant in both the SL and ML models at within-level. The regression coefficients for these relationships in the SL model are higher than the ML model at within-level (see Figures 2 and 3) due to the separate calculation of variance at the between-level and within-level in the ML model. The only significant relationship at the couple level was between positive importance and intention. However, this result offers valuable insight into the influence of partners on each other and demonstrates that this influence only occurs in positive way.

Previous research indicates that both affective and cognitive elements have influence on travel decisions (Baloglu, 2000; Walls *et al.*, 2011). On the other hand, with regard to food and beverage decisions, the impact of affective reactions has been found to be stronger than cognitive ones (Lee *et al.*, 2017; Letarte *et al.*, 1997; Winkielman *et al.*, 2005). In this study, the influence of both cognitive and affective attitude on importance was significant in both positive and negative ways. However, none of these relationships were significant at the couple level, which means couples do not differ in terms of the relationship between attitude and importance. Even if it was assumed that partners within a couple would have influence on each other's food preference during vacation, the importance of eating oysters is still an individual decision. Since there may not yet have been action or intention toward food involved at this stage (i.e. when they were intercepted), couples might have answered questions based on their personal opinion rather than an agreement on food choice.

Implications

Theoretical implications

This study applied modified Theory of Reasoned Action to analyze local food purchase intention of tourists at the destination. The theoretical contribution of this study to the literature can be discussed in two ways. First, the addition of importance to the model has provided an alternative way to explain tourist decision making at the destination. Second, measuring attitude and importance variables in positive and negative way has offered more accurate results.

The significant impacts of attitude on importance and importance on intention support the argument that the general attitude toward food may not be the sole determinant in food decisions during travel. The influence of general attitude on intention to purchase during travel does not give us a complete understanding of the travel decision making. This study attempted to close this gap and results showed that by adding importance to the model, a further step was taken toward understanding travel decision making. The attitude and importance can be both positive and negative, and measuring these variables in one dimension leads to poor fit and higher error possibility. This study has revealed that dividing attitude and importance into two dimensions, positive and negative, results in a better fit and more accurate results than using a semantic scale to measure these variables. Additionally, the difference in regression coefficients showed that positive feelings and opinions have stronger impact on intention than negative ones. By measuring positive and negative attitude as two separate constructs, the factor loadings for each construct have increased and the bias due to phrasing of items was decreased.

Methodological implications

The methodological purpose of this study was to provide a better understanding of whether the tourists' decision-making process is influenced by group membership, and this was accomplished by using the ML-SEM analysis technique. The inclusion of the SL and ML models improves the accuracy of error estimations in the ML model, and using the ML approach allows researchers to decrease the chance of Type 2 error. High ICC between variables indicated a certain percentage of the variance occurred at the couple level, and it was over 40 percent for dependent variables, a phenomenon that would be overlooked in SL models. Even if only one relationship was significant at the couple level in the current study, this significance provided valuable insight into the process of the couple's decision making. In addition, by analyzing the data at within-level, the difference between women and men in the same dyad was detected, while a SL analysis would only analyze the difference between men and women in the whole sample. This approach made it possible to better understand couple dynamics in regard to attitude, importance and intention. Additionally, the collection of data from both members of the couple while they were still on vacation has provided more accurate results.

Practical implications

The results showed that the women's negative attitude toward wildcaught oysters was stronger than that of their partners. On the other hand, the stronger impact of positive variables at the couple level indicates the influence of couples on each other's decisions. Since wildcaught oysters are a desirable food in these destinations, promotion of this seafood product in relation to couple preferences and activities related to each community is recommended. Charleston is known as a wedding destination; therefore, promotion of local wildcaught oysters for weddings will strengthen marketing of this product. On the other hand, Beaufort attracts older couples looking for a relaxing vacation, which

suggests local oyster providers should focus on pairing their products with relaxing dining opportunities. Considering the influence of couples' decisions on each other, especially in positive way, the marketing campaigns should target both men and women. The current study shows that the main reason for women's negative attitude toward oysters is their feelings. Promotional tools, highlighting oysters in the context of the couple, could instill more positive feelings among women. Additionally, the results showed that eating local food at the destination was important for both women and men. This provides further evidence that destinations focusing on local food as a pull factor could work with local food producers and harvesters to help promote products to tourists.

Limitations and suggestions for future research

Important study limitations include the exclusion of same sex couples and the focus on a specific local food product. Including same sex couples will allow future researchers to test gender at both the individual and couple levels. Also, despite the focus on one food type, the approach and model could be implemented in future studies to analyze local food choice for other types of destination-specific food as well as any other type of travel decisions such as accommodation, transportation or leisure activities during travel. During data collection some other limitations emerged. For example, the couples with small children were reluctant to respond to the questionnaire, since they had to attend to their children. However, the majority of respondents were not traveling with their children, so the influence of children was not considered for the purpose of the current study. Future studies can include couples traveling with children and compare couples with and without children. Also families in different stages of the family life cycle could be compared. The most common tourist groups are families; however, the travel decision process of other groups such as friends, school groups, and church groups can be explored. Another limitation of the current study is that actual behavior was not measured. Therefore, future studies could compare intention to eat local food at the destination and actual behavior using pre-visit and post-visit surveys. There are also some technical limitations of the current study such as uneven group numbers resulting from individual cases being deleted due to normality issues. However, ML models are appropriate method to deal with issues such as uneven group numbers and small numbers per group (Byrne, 2006; Sibthorp *et al.*, 2004).

Conclusion

This study attempted to measure the influence of attitude and importance on the intention to eat local food at both the individual and group levels. Being the first study to measure tourist behavior at the group level, this research demonstrates that the ML analysis approach provides more accurate results in tourist behavior research. Through the application of ML-SEM, the interdependency of couple's responses was detected. The differences between attitude and importance in women and men do not reflect their intentions, since even if women have a negative attitude toward oysters and it is less important for them to eat oysters while on vacation, their intentions to eat oysters on vacation are not different from their partners.

By collecting data from both members of a couple while they were still on vacation, this study has provided more accurate results than previous research on a couple's decision-making process during travel. This study has contributed to the literature, particularly the application of Theory of Reasoned Action to tourism, by providing a methodological approach for analyzing group tourist behavior, by testing the importance variable as an antecedent of intention and by proposing practical implications based on empirical data for tourism destination and local food promoters.

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