Analyzing the Returns of the First Transaction Satisfaction on Intention to Purchase and Willingness to Pay: Evidence for New Food Products

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ABSTRACT

The present study sheds light on the kind of relationships that link first transaction consumer satisfaction (CS), purchase intention (PI), and willingness to pay (WTP) for new food products. The article presents a comparative evaluation of linear and nonlinear quadratic and cubic specifications used to assess the relationships involved. The study uses empirical evidence from three product-testing field experiments with consumers in different natural settings such as at-home and out-of-home. Statistical tests with structural equation modeling reveal that, for new food products, the CS–PI relationship is characterized by a nonlinear functional form with increasing marginal returns, while the CS–WTP relationship is defined by a linear functional form with constant marginal returns. The study contributes to the existing body of knowledge that so far has mainly described the relationship between cumulative CS and profit chain outcomes in the context of established products (brands). We discuss the implications for managers responsible for launching new food products and give hints on allocating resources to the most probable customers.

Keywords: new food product; first transaction satisfaction; intention to purchase; willingness to pay; nonlinear function.

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Introduction

In the food industry, one of the most competitive industries, new food products are developed frequently, and their success is assessed by performance in consumer reaction as measured along several dimensions such as consumer satisfaction (CS) and repeat purchase (Brody and Lord, 2007). The first transaction CS is the fulfilment response following the consumer's trial and appraisal of a new product (Jones and Suh, 2000). Because investments in CS increase the chances of consumer retention and influences the companies' margins (Eisenbeiss et al., 2014), it is important to understand how exactly the first transaction CS affects new product adoption through repeat purchase and willingness to pay for new products (Markovitch et al., 2015).

For a number of years, marketing practitioners and researchers have been interested in how CS influences consumer loyalty and sales. Ever since the influential work of Jones and Sasser (1995), which shows that the linear model may systematically overestimate or underestimate the impact of CS on loyalty (e.g. repurchase intention, repurchase behavior, customer referrals, endorsements, or spreading the word), numerous marketing studies have offered evidence on the empirical suitability of various nonlinear models (e.g., Agustin and Singh, 2005; Dong et al., 2011; Eisenbeiss et al., 2014; Homburg et al., 2005). However, despite significant advances in modeling the CS – profit chain relationship across industries, situations, and consumers, the evidence exist largely on the effect of cumulative CS or arbitrary transaction satisfaction with regard to established products and services with which consumers have substantial experience. Consequently, too little attention has been paid to researching the effect of the first transaction CS on retention and other value-based outcomes of satisfaction regarding new products.

The objective of the present study is to explicitly test for the functional form of the relationships between first transaction CS and purchase intention (PI), as well as between first transaction CS and willingness to pay (WTP), in the case of three new food products[1]. The relationship CS–PI for new products is expected to be different than the corresponding

[1] The new products analyzed in this study are incremental innovations with respect to the existing products. Major innovation is very unusual in the food industry, due to a specific form of risk aversion consumers reveal in their choice of food (Gallizi and Venturini, 2012).

relationship for well-established products for several reasons. First of all, for new products, there is little experience-based knowledge and positive affect towards the product (Oliver, 1999), less feelings of gratitude or reciprocity towards the provider (Palmatier et al., 2009), and a "zone of tolerance" significantly narrower (Eisenbeiss et al., 2014) that can influence the consumer intention to repatronate the new product or service again. Second, as discussed in more detail later, a certain level of uncertainty exists as regards to new products compared to established products (Hoeffler, 2003; Iyengar et al., 2015), which can affect significantly the relationship CS – consumer retention.

Scant research exists regarding whether or not the effect of the first transaction CS varies between PI and WTP. The two outcome measures are different in many respects. PI focuses on the individual as a 'consumer' and the perceived value of the seller's offering to satisfy a particular need. WTP refers to the individual as a 'customer' who is willing and able to pay the seller's price and/or to meet other conditions of sale (Webster and Lusch, 2013). The firms are interested in PI when attempting to retain the consumer and in WTP when trying to account for the value each customer brings to the firm at different degree of CS (Eisenbeiss et al., 2014). For new products, evidence on the functional form of the CS – WTP relationship is also useful for providing information to companies with regard to pricing strategies for new products and can be used as a diagnostic tool of future profits (Breidert et al., 2006).

This research contributes to existing knowledge in several ways. It is the first study to explore the nonlinear effects of the first transaction CS on PI and WTP in the context of a new product and to articulate the functional differences in these links for new vs. established products due to different underlying conditions. This knowledge is important especially in the light of previous studies focusing principally on the cumulative CS effect on repurchase intention and depending heavily on different levels of experience consumers had with the evaluated products or brands. Furthermore, considering the almost exclusive use of survey and secondary data in previous studies, another contribution of this research is the use of data from three field experiments run in natural settings, in-home and out-of-home. The field experiments involved a direct interaction between the consumer and the product with the assessment of the constructs just after consumption. This method has several advantages. First, immediate experience with a product produces stronger evaluation associations, and stronger attitudes have greater predictive power because they are more accessible from memory (Fazio and Zanna, 1981). Second, a consumer may manage the way a new product is experienced by controlling the physical and multisensory interaction thus maximizing the

informational input (Li et al., 2001). The information gained from such tests is therefore more reliable as regards future consumption expectations of a new food product compared to data based on consumers' indirect or past experience, which is usually collected via concept testing or surveys. Finally, we build our study on two conceptual approaches for evaluating CS. As with previous studies, we examine CS as an outcome of evaluation by directly measuring the consumer response to the experience associated with the product. In addition, based on the theoretical background, we evaluate CS as a cognitive process by capturing the perceptual, evaluative, and psychological components of each stage of CS formation and estimating CS that arises from disconfirming consumers' expectations (Oliver, 1980). Within such a process-based perspective, CS evaluation is more accurate and less strongly affected by the act of measurement itself (Yi, 1990), thus contributing to the internal validity of the research.

Nonlinearities in the Effect of CS on Relevant Business Outcomes

The Form of Nonlinearity

Many researchers have now confirmed a positive nonlinear relationship between CS and business relevant outcomes, such as loyalty intention, repurchase intention, WTP, and share of wallet. Table 1 summarizes the scientific evidence with the operationalization of the main variables, sample size, industry, and the results. While some researchers report decreasing marginal returns as the most likely functional form between CS and repurchase intention/loyalty intention/share of walet (e.g. Agustin and Singh, 2005; Eisenbeiss et al., 2014; Ngobo, 1999), other researchers find increasing marginal returns or varied evidence of both decreasing and increasing marginal returns between CS and repurchase intention (Dong et al., 2011) and between CS and WTP (Eisenbeiss et al., 2014; Homburg et al., 2005).

Table 1 about here

The quadratic and the cubic functions are the functional forms most studied in the literature. The *quadratic* function displays a single critical threshold that usually represents:

- The increasing part of the U-shape (i.e. increasing marginal returns, ${}_{i}CS^{2}$, Figure 1). This function comes into play when adding more CS, while holding all others constant, yields higher per-unit returns on e.g. repurchase intention. That is, efforts to increase CS such as going from only just to completely satisfied consumers will be reflected in a more than proportional increase in consumer repurchase intention; or

- The asymptotic part of the inverted U-shape (i.e. decreasing marginal returns, ${}_{d}CS^{2}$, Figure 1) when adding more CS while holding all others constant yields lower per-unit returns on repurchasing intention. In this case, a minimum level of CS exists, and an increase in CS above that minimum has no significant effect on repurchasing intention. Thus, efforts to increase CS from only just to completely satisfied consumers will be reflected in minor gains in repurchasing intention (i.e. only just satisfied consumers will be as likely to repurchase as completely satisfied consumers).

The researchers focusing on the two extremes of the CS scale found a *cubic* function between CS and relevant outcomes. A cubic function allows for two critical thresholds in this relationship:

- An inverted S-shape (${}_{i}CS^{3}$, Figure 1) with a trajectory of increasing marginal returns. Above and below the two thresholds an increase in CS leads to a higher per-unit increase in repurchasing intention (on the positive side, completely satisfied consumers are significantly more likely to repurchase than only just satisfied consumers, and on the negative side, completely unsatisfied consumers are significantly less likely to repurchase than merely unsatisfied consumers). Between these thresholds, an increase in CS leads to null or a non-significant increase in repurchasing intention.
- An S-shape (${}_{d}CS^{3}$, Figure 1) in which the CS–repurchase intention displays a trajectory with decreasing marginal returns at the extremes. Above and below the two thresholds an increase in CS leads to a non-significant increase in repurchasing intention (i.e. at the extreme right-hand side, extremely satisfied consumers are not more likely to repurchase than only just satisfied consumers); while between these thresholds an increase in CS leads to a higher per-unit increase in repurchasing intention (implying that, efforts to increase CS are worthwhile as there is a significant – more than proportional – difference among moderate levels of CS).

Figure 1 about here

Theoretical Underpinnings and Hypotheses Development

Alternative theories exist regarding the nonlinear effect of CS on relevant business outcomes of CS. According to Agustin and Singh (2005), CS is a basic, lower-order need, which has a hygiene effect on commitment to repurchase a specific product or brand (loyalty intention). This conceptualization implies that CS has decreasing incremental effect on loyalty intention beyond a certain point of expectation fulfillment and that, at the upper

extreme of the CS scale, merely satisfied consumers are likely to express similar loyalty intention as completely satisfied consumers. Ngobo (1999) proposed another explanation for the nonlinear effect of CS on loyalty intention. In his model, moderately satisfied consumers would feel motivated to engage physically or cognitively in a search and would consider a larger set of products from which to choose. When consumers cross the threshold from satisfied to completely satisfied, the size of the set drops dramatically and consumers ignore the competing products, meaning that loyalty intention increases sharply, displaying increasing marginal returns. Mittal et al. (1998) and Streukens and de Ruyter (2004) adopt a prospect theory approach (Kahneman and Tversky, 1979) to theoretically explain the relationship between CS and repurchase intention. Consistent with this theory, all of the alternatives that an individual faces are reduced to a series of prospects that are evaluated independently on the basis of an S-shaped function. Therefore, repurchase intention should display diminishing sensitivity toward changes in CS at the lower and upper extremes of the scale.

Investigating the relationship CS – WTP, Homburg et al. (2005) suggest that nonlinearity may stem from the emotions associated with disconfirming or exceeding expectations (Bell, 1985). According to this theory, consumers automatically compare the product performance with their expectations of product performance in the first phase. If product performance falls short of expectations, they are disappointed, and if performance exceeds expectations, they are elated. The disappointment amplifies the negative impact of CS on willingness to pay at the extremely low level of satisfaction, whereas elation yields additional willingness to pay at the extremely high level of CS, that is, incremental marginal returns.

One of the most recent studies by Eisenbeiss et al. (2014) combines disappointment theory (Bell, 1985) with mental accounting theory (Thaler, 1999) to explain the nonlinear returns of CS on the customer's share of wallet and WTP. The authors argue for a baseline S-shaped relationship with diminishing returns consistent with the idea that, even if highly satisfied, most customers will constrain their economic contribution to a firm to comply with their limited budget (Eisenbeiss et al., 2014). They further extend this research and find that the contextual factors can significantly modify the focal relationship. For example, they show that in high involvement settings there are increasing returns around high CS levels, while this functional pattern turn into the opposite – diminishing returns around high CS levels for low involved customers.

Summing up, one of the key characteristics of the previous studies is that all (except one) papers bring evidence of the nonlinear returns of CS for products and services that consumers used previously with different degrees of repetition. As some examples, Ngobo (1999) explored the CS by interviewing existing bank clients, car insurance policy holders, buyers of cameras, and retailers' clients, and Eisenbeiss et al. (2014) investigated CS in a B2B context among the existing business customers of a leading provider of rail freight transport and logistics services. In most of these studies the evidence reveals that the functional form of CS – repurchase intention has *decreasing* marginal returns. That is, satisfied consumers, whether completely satisfied or not, seem to remain loyal to their 'old' products and changes in CS for existent products would only result in minor effects in consumer retention (i.e. diminishing marginal returns).

In a new product context, only scant research exists, Homburg et al. (2005), with respect to the nonlinear returns of CS on WTP. In this study we address the returns of CS on both PI and WTP after the first single experience with the product. For established products, the consumer intention to repatronate the product is subject to feelings of affect towards the product/brand (Oliver, 1999), feelings of gratitude (emotional appreciation) for the benefits received and a desire to reciprocate the provider (Palmatier et al., 2009). For new products, the consumer intention to purchase the product is subject to other type of constraints. For instance, findings from product innovation literature reveal that the novelty of the product may create uncertainty with respect to the consumer's own evaluations in the absence of repetitive product experience (Hoeffler, 2003), and the acceptance of the new product by the important others (Iyengar et al., 2015) forces the consumers to adjust their intentions relative to these influences. Referring to the disappointment theory (Bell, 1985), which explains how consumers behave when making decisions under uncertainty, as the intensity of elation (positive disconfirmation) and disappointment (negative disconfirmation) increases, this effect yields additional value at extremely high or low levels of satisfaction, implying a more curvilinear function at the margins of CS. In particular, the extremely satisfied consumers are expected to be significantly more likely to purchase the new product again in comparison with merely satisfied consumers. Although the expectation-disconfirmation model (Oliver, 1980) is widely accepted and used, it has been difficult to analyze the nonlinear effects of disconfirmation through satisfaction down the retention funnel in the previous research. The data presented in study 3 offer a unique opportunity to assess the consumer satisfaction formation based on expectation disconfirmation and examine the nonlinear effects on PI. We hypothesize:

H_1: First transaction CS has increasing marginal returns on intention to purchase a new product.

In the context of value-based outcomes of CS, such as WTP, the assumption on the increasing marginal returns is less likely to hold. We base our argument on the mental accounting theory (Thaler, 1999) and the empirical findings of Eisenbeiss et al. (2014). This literature suggests that the customer´s willingness to pay for the new product is subject to an upper constraint, given that the budget, usually limited, impedes individuals spending more in a given product or category. This constraint implies that extremely satisfied customers are not significantly more willing to pay for a new product in comparison with merely satisfied customers. We therefore hypothesize:

H_2: First transaction CS has decreasing marginal returns on willingness to pay for a new product.

Methodology

Data Collection

The data were collected in three big cities in Spain (A Coruna, Valencia, and Madrid) during 2006-2008 as part of the integrated project SEAFOODplus, funded by the European Commission under the 6th Framework Program. Three new products were developed with the aim to promote the consumption of fish as a healthy product (Kris-Etherton et al., 2002) and in relation to the current trends for convenient foods, sustainable production, and health (Kearney, 2010). Study 1 focuses on a more convenient fish product targeting young people – a segment the fish industry generally has problems attracting due to perceived inconvenience associated with fish products (Olsen et al., 2007) – called "fish burger"[2] (see Figure 2, A.1). Study 2 focuses on a fresh fish product (cod) produced in an ethical husbandry system targeting the individuals responsible for buying and preparing food in their household in general and fresh fish in particular (see Figure 2, A.2[3]). Study 3 focuses on a healthier fish

[2] McDonald commercializes a fish sandwich ("Filet-O-fish") consisting of a breaded and fried whitefish filet topped with steamed bun, tartar sauce, and pasteurized processed American cheese. Burger King commercializes a similar product called "Big Fish Sandwich". None of these products resemble (in terms of ingredients and presentation) the product investigated.

[3] The product was proposed as a new product based on the idea that the ethical principle of production may create a positive difference in consumer perceptions of farmed fish as a new product. By the time the experiment was run (2008), there were very few fish products on the market claiming the ethical aspects of farming.

product, “fibre-enriched fish product with antioxidant properties”, targeting the overall population (Figure 2, A.3). The three products were not branded, and they were not released on the market before the experiment[4].

Figure 2 about here

Sampling and field-experiment description

The participants in study 1 were 400 young consumers (students) from a public university in La Coruna (Spain), recruited during lectures and randomly allocated to test the new product in one of two test situations: a central location (i.e. university canteen) (50%) and in-home (50%). The field-experiment in the central location occurred during two days in which the students tried the new product in the university canteen and filled out a questionnaire just after consumption. The students who participated in the in-home test were registered and asked to pick up the product and try it at home. They were instructed how to fill out the questionnaire after consumption and return it in a pre-paid return envelope within a maximum of three days. A local sponsor rewarded the participants after the experiment closed. A total of 349 responses were obtained corresponding to an overall response rate of 87%. The respondents were 60% female and 40% male, with an age range of 18 to 28 years and an average age of 22 years.

The participants in study 2 included 502 households randomly recruited by a market research institute in Valencia (Spain). Several interviewers carried out the recruitment process. Each interviewer randomly selected a street within a designated area and an apartment/house within the street. He politely asked whether the person answering the bell wanted to participate in a marketing product test. If the person agreed, the interviewer picked up a screener and asked some preselection questions (e.g. adult, responsible for buying food and fish). If the participant qualified, the interviewer introduced them to the test in more detail and explained how to prepare the product and fill in the questionnaire. Next, the interviewer and the participant arranged a date when the interviewer would come to collect the questionnaire. Each interviewer placed 8-10 products every day and picked a new street each

[4] The unbranded product allows isolating the CS effects from other drivers of new consumer product acceptance (e.g. brand reputation, Gielens & Steenkamp, 2007). This makes the results directly applicable to unknown/less known new branded products sold in stores and also out-of-home, such as in canteens and restaurants.

day. A total of 457 usable responses were obtained with an overall response rate of 91%. The typical respondent was female (93%), middle-class (61%), married with children (69%), and 41 years of age (range between 18 and 60 years).

The participants in study 3 were 1000 households recruited at random by a market research institute from phone book listings in Madrid (Spain). The study took place at a central location (i.e. a restaurant) during five days. The participants were invited to evaluate and consume a sample of the new product already prepared. In contrast with the previous studies, this experiment took place in two phases: i) the evaluation of expectations before consumption and ii) the evaluation of product performance and disconfirmation of expectations after consumption. A total of 374 usable responses were obtained giving an overall response rate of 37.4% (76% female, 59% middle-upper class, 54% married with children, 39 years old on average).

In the following sections, we first report the results from Study 1 and Study 2 in which CS was evaluated as an *outcome* of evaluation. Next, we report the results from Study 3 in which CS was evaluated as a *process* of expectations disconfirmation.

Measurements, Analyses, and Results (Study 1 and Study 2)

Measures

A multi-item 7-point semantic differential scale from -3 to 3 was used to measure consumers' degree of satisfaction with the new product (Table 2). The items were framed using the question: 'Overall, how satisfied were you with this product'. This scale has been previously used to assess the overall satisfaction with products including foods (e.g. Agustin and Singh, 2005; Evanschitzky and Wunderlich, 2006; Mittal et al., 1998).

To measure PI, four 7-point Likert scales were used. One or all of these facets are commonly used to measure repurchase intention in marketing and consumer behavior literature (e.g. Mittal and Kamakura, 2001; Seiders et al., 2005; Soderlund and Ohman, 2005). The measures were framed as: 'Assuming that the product is available in your supermarket, how likely would you be to purchase a product like this during the next month?' and the possible answers included 'I plan', 'I expect', 'I want', and 'I will try to', rated on a scale from (1) 'very unlikely' to (7) 'very likely'.

WTP was measured with four open-ended questions to measure the four dimensions of the construct (i.e. expected price, Simonson and Drolet, 2004; fair price, Grewal et al., 1998; inexpensive/minimum price, Wertenbroch and Skiera, 2002 and maximum price a consumer is willing to pay for a given quantity of the evaluated product, Monroe, 2003). While previous

research only used the maximum price as a descriptor of WTP (Homburg et al., 2005), we adopted multiple indicators to evaluate both the perceived value of the new product and the sacrifices involved in acquiring it (Simonson and Drolet, 2004). Multiple aspects of the WTP construct provide a more precise estimation of the value of the new product, and it is often used to attain critical price ranges for new and re-launched products (Breidert et al., 2006). The measures were framed using the request: 'We want you, on an as-honestly-as-possible basis, to evaluate the more and less expensive alternatives with regard to what the actual product is worth in euro per unit (Study 1) and per kilo (Study 2), if you were to buy it in a supermarket.' The respondents were given an indication of the price range for similar products in order to have a realistic anchor price in their minds (Simonson and Drolet, 2004). The following statement was used to this end: 'We remind you that a comparable product of good quality costs about X (euro per unit/kilo).'

Table 2 about here

Confirmatory Factor Analysis

Data analysis was performed using Mplus (version 4.0). The individual items were examined through various checks for accuracy of data entry, missing data, distribution, and outliers. The cases with extremely high z-scores on WTP and the missing values were replaced by the mean for all cases. To reduce the extreme skewness and kurtosis, the four indicators measuring WTP were logarithmically transformed.

A confirmatory factor analysis was performed to examine the relationship between the items and their corresponding latent construct (Table 2). The indices of measurement model fit revealed a good approximation of the postulated goodness-of-fit: the comparative fit index (CFI) and normed fit index (NFI) exceeded the threshold of .90, and the root mean square error of approximation (RMSEA) was below .08 (Hu and Bentler, 1998). All of the loadings were higher than .60 and significant ($p < .001$) (Jöreskog and Sörbom, 1993). Each construct had an estimated composite reliability that exceeded the value of .60 and an extracted variance higher than the recommended threshold of .50 (Hair et al., 2006). The constructs showed evidence of reliability and convergent validity in both samples. The Pearson correlation coefficient was positive between all constructs (Table 2). None of the correlations were excessive, which was evidence of discriminant validity according to the Fornell and Larcker (1981)' criterion.

Model Specifications

In line with previous studies, we estimated three polynomial structural equation models (linear, quadratic, and cubic), linking CS to PI and WTP. The system of equations (1)–(3) is a mathematical description of the three models where c_i denotes the intercepts, b_i denotes the coefficients of estimation, and ζ_i denotes the errors of estimation for each of the two samples (i = 1-2).

$$\begin{cases} PI = c_i^{PI} + b_i^{PI} CS + \zeta_i^{PI} \\ WTP = c_i^{WTP} + b_i^{WTP} CS + \zeta_i^{WTP} \end{cases} \quad \text{Linear model} \quad (1)$$

$$\begin{cases} PI = c_i^{PI} + b_i^{PI} CS + b_i'^{PI} CS^2 + \zeta_i^{PI} \\ WTP = c_i^{WTP} + b_i^{WTP} CS + b_i'^{WTP} CS^2 + \zeta_i^{WTP} \end{cases} \quad \text{Quadratic model} \quad (2)$$

$$\begin{cases} PI = c_i^{PI} + b_i^{PI} CS + b_i'^{PI} CS^2 + b_i''^{PI} CS^3 + \zeta_i^{PI} \\ WTP = c_i^{WTP} + b_i^{WTP} CS + b_i'^{WTP} CS^2 + b_i''^{WTP} CS^3 + \zeta_i^{WTP} \end{cases} \quad \text{Cubic model} \quad (3)$$

Model Estimation

The maximum likelihood estimation with robust standard errors (MLR), type RANDOM, and the algorithm INTEGRATION in Mplus were used to estimate the models. The significance of the beta coefficients, the badness-of-fit measures (Akaike information criterion (AIC), Bayesian information criterion (BIC), and sample-size adjusted BIC) were the criteria used to select among the competing models (Satorra and Bentler, 2010). The model with the lowest value on AIC, BIC, and adjusted BIC among the competing models was considered to fit the data best. The Satorra–Bentler scaled difference Chi-Square based on the likelihood values was used to test the difference in log-likelihoods for the linear model and higher-order models. A significant difference would imply that the quadratic and cubic terms add considerably to the prediction of the dependent construct, beyond the prediction based on the linear effect alone (Muthén and Muthén, 2007).

Common Method Variance Assessment

Common method bias was tested by using the single method factor test (Podsakoff, MacKenzie, Lee, and Podsakoff, 2003). This test involves adding a first-order factor with all the measures as indicators to our measurement model in order to determine the potential effects on the relationships between the constructs. The results showed that the relationships

between the constructs and the significance of these relationships did not change in the single factor model compared to the proposed model, allowing us to exclude potentially biasing effects of the common method.

Structural Model Estimation

In Table 3, we present the path coefficients, *t*-statistics, and *p*-values of the estimated models. Observing the CS–PI relation, there is a significant positive main effect of CS on PI. The quadratic and cubic models extend the linear model with the higher order satisfaction terms, CS^2 and CS^3. The significant positive effect of CS^2 and CS^3 on PI reveals that satisfaction yields higher per-unit returns on PI at increased levels of satisfaction (increasing marginal returns). The estimation diagnostics (AIC, BIC, adjusted BIC) for the quadratic and cubic models show smaller values when compared with those of the linear model. Likewise, the Satorra–Bentler scaled difference Chi-Square for comparing the three rival models is significant ($p < .001$), indicating an enhanced fit for the nonlinear models when compared with the linear model. Based on these results, we find evidence for H_1 of a significant nonlinear effect with increasing marginal returns of CS on PI.

Table 3 about here

Similarly, Table 3 illustrates the results for the CS–WTP relationship. The main effect of CS on WTP is found to be positive and significant, but the quadratic and cubic effects of CS on WTP are not statistically significant ($p > .05$). Hence, CS effect exhibits constant returns to scale on WTP for new food products, and there is no evidence to support H_2. We further tested the sensitivity of the CS–WTP relationship separately using the specific type of price indicated to the individuals (i.e. expected, fair, inexpensive, and maximum price). This approach was also adopted to compare our results with findings in previous literature that only considered the maximum price as an indicator of WTP (Homburg et al., 2005). The results of this analysis revealed a significant linear coefficient between CS and the specific WTP dimension.

From a substantive standpoint, the initial findings show that: (1) there is a nonlinear function with increasing marginal returns between CS and PI, and (2) a linear function with constant returns exists between CS and WTP for new food products.

Measurements, Analysis, and Results (Study 3)

After having employed CS as an evaluative response to the experience associated with the product, the main objective of Study 3 is to validate the functional dependencies in the CS–PI and CS–WTP by using CS as a cognitive process of expectations disconfirmation.

Measures

Pre-consumption expectations were measured by a seven-item instrument on a 7-point scale from Cardello (1994). Product performance was measured by a seven-item instrument on a 7-point scale selected from previous studies about evaluating food products. Disconfirmation of expectations was measured with a single-item measured on a 7-point scale (worse than expected - better than expected) according to Oliver (1980). CS was predicted ($\widehat{CS}$) as a second-order formative construct of expectations, performance, and disconfirmation of expectations. PI and WTP were measured as in Studies 1 and 2.

Confirmatory Factor Analysis (CFA)

The CFA supported the reliability and validity of all the constructs (Table 4).

Table 4 about here

Structural Model Estimation

Table 5 presents the results of the three hypothesized models. The estimated structural models differ from the model described in Studies 1 and 2 by integrating the relationships predicting CS. The links between expectations, performance, disconfirmation, and $\widehat{CS}$ are significant and in line with the expectation-disconfirmation theory (Oliver, 1980). Findings reveal a significant and positive effect of $\widehat{CS}$ on PI. In addition, the effect of the higher order term of satisfaction, $\widehat{CS}^2$, on PI is positive and significant ($p < .01$), thereby providing formal evidence that the functional from of the $\widehat{CS}$–PI link follows increasing marginal returns. The effect of $\widehat{CS}^3$ on PI is not significant ($p > 0.05$) indicating that the increasing marginal returns essentially occur at the upper extreme of the CS scale. The estimation diagnostics (AIC, BIC, and adjusted BIC) for the quadratic model show smaller values when compared with the linear model; the Satorra–Bentler scaled Chi-Square estimator for meaningful differences in the competing models is also significant ($p < .001$) supporting the superiority of quadratic model.

The corresponding effect of $\widehat{CS}$ on WTP is positive and significant; however, the effect of higher-order terms of $\widehat{CS}$ on WTP is not statistically significant ($p > .05$), providing evidence that the functional form of the $\widehat{CS}$–WTP relation is linear. We performed a number of additional tests by separately considering the type of price given to the individuals. The results did not change the conclusions and supported the findings of Studies 1 and 2.

Table 5 about here

Discussion

Theoretical Contributions

Numerous studies (see Table 1) have found that consumer satisfaction (CS) has a nonlinear effect with decreasing marginal returns on consumer repurchase intention. However, the exclusive focus on *well-established* products in these studies raises the question of how CS affects retention in the absence of repeated episodes with the product such as in the case of new products. To the best of our knowledge, no previous studies addressed this research question. We extend the existing literature by examining the functional form of the relationship between CS and purchase intention (PI), as well as between CS and willingness to pay (WTP) for three new food products. Several theoretical and empirical contributions emerge from these findings.

First, we highlight the importance of making a theoretical and practical distinction between the influences of CS on consumer retention, surrounded by non-repetitive vs. repetitive experiences. Specifically, we add to current research on the functional form of the CS–PI link by theorizing that different underlying assumptions, such as uncertainty and feelings of disappointment and elation under uncertainty - that in particular dominate the consumer decision-making about new products - moderate the CS–PI relationship. Our study clearly suggests that the CS–PI function should not be treated in a standard manner. While prior work has found a nonlinear effect with diminishing returns between cumulative CS and PI for established products, the current work brings complementary knowledge on how CS leads to PI in the case of a new product.

In the analytical part, we demonstrated the superiority of the nonlinear function with increasing returns characterizing CS–PI (hypothesis 1) for new products, using two different conceptual approaches for evaluating CS: as an outcome of evaluation and as a process of expectations disconfirmation. To gain some intuition of the magnitude of PI entailed by

improving CS, Table 6 illustrates the different impacts of CS on PI at the lower and upper extremes of the CS distribution using the nonlinear quadratic function. In Study 1, as CS increases by one unit, the expected PI increases by 1.26 (at the lower end) and 2.58 (at the upper end) of this unit. In Study 2, as CS increases by one unit, the expected PI increases by 0.68 (at the lower end) and 1.28 (at the upper end) of this unit. In Study 3, as CS increases by one unit, the expected PI increases by 0.82 (at the lower end) and 1.18 (at the upper end) of this unit. In comparison, a linear function between CS and PI (constant coefficient in column 3) would consistently bias the estimations. Satisfied and completely satisfied customers would not show dramatically different levels of PI under the linear assumption in particular.

Table 6 about here

Hypothesis 2, claiming a nonlinear function with decreasing marginal returns between CS and WTP, was not supported. Instead the findings indicate a positive linear relationship, revealing that the typical completely satisfied consumer is willing to pay more for new food products in comparison with a merely satisfied consumer. One of the most obvious explanations for the lack of a ceiling effect of CS on WTP at the upper extreme of CS distribution could be related to the type of the product evaluated. Because food products are generally inexpensive products, increasing WTP proportionally to the level of satisfaction does not affect significantly the consumers' budget. Therefore the extremely satisfied consumers are willing to pay more than merely satisfied consumers, corresponding to their level of satisfaction. Another explanation might be related to the degree of emotional experience implied by the product. Previous findings (Eisenbeiss et al., 2014) reveal that for high-involved individuals where the consumption experience is likely to be more emotionally charged, the diminishing returns are less dominant. Because food products by definition are hedonic products, it could be expected that the satisfaction experience be more significantly dominated by emotions, causing extremely satisfied consumers to overestimate their WTP.

Managerial Implications

There are a number of implications for managers in the food industry. The findings attest that managing a new product launch requires practitioners to develop a broader understanding of how CS influences the consumer's intention to consume the product again and willingness to pay for the new product. This aspect is particularly relevant to the food industry because of the low rate of new product adoption (Little et al., 2015) and the scarce

empirical findings on the functional form of the satisfaction–retention relationship in the context of new products in general. Our findings suggest that managers should exercise caution when estimating the returns of CS on individuals' PI. Different functional forms evaluated at different stages of experiencing the product have different implications for resource allocation decisions and customer lifetime value maximization as discussed below.

First, given the pessimistic rates of new product adoption, the successful launch of a new product requires managers to understand that the first transaction CS affects their PI positively but nonlinear at the extreme (upper) end of the satisfaction rating scale. Consumers who are only just satisfied are significantly less likely to adopt a new alternative product than those who are extremely satisfied. An even more important fact is that consumers who are only just satisfied are much less likely to purchase than completely satisfied consumers, and the lower PI is much more pronounced than what managers currently believe as they rely on a linear function (see differences in Table 6). These results imply that a firm may underestimate the seriousness of having consumers who are only just satisfied with a new product. Their PI may be very similar to that of consumers who are neutral or dissatisfied, although a linear formulation may lead managers to conclude otherwise (Dong et al., 2011; Homburg et al., 2005). Consistent with this thought, a nonlinear functional form of the CS–PI relationship with increasing marginal returns requires firms to focus their resources on consumers with very high levels of satisfaction to ensure future purchase activity. The resource allocation strategy is a key concern for organizations due to its significant role in customer lifetime value maximization (Venkatesan and Kumar, 2004). Managers should recognize the complex effect of satisfaction on customer acquisition and retention. Increased CS affects the length, depth, and breadth of a relationship, which ultimately influences customer lifetime value. For new products, however, the improvement effect is notable only at the end point, and consequently product managers wishing to increase the CS with new products should avoid focusing exclusively on the lower and middle points, as increasing satisfaction at these levels may produce no observable benefits.

Second, managers should be cognizant of the nature of a product when making predictions based on CS. For well-established products, the positive effect of increasing CS on PI may be rather high at the lower extreme of the satisfaction scale and fairly low at the upper extreme. In this case, a nonlinear functional form of the CS–PI relationship indicates decreasing marginal returns and implies non-significant differences in PI between merely and completely satisfied consumers. This function demonstrates that consumers who are only just satisfied with established products are much more likely to consume these products than the

firm would conclude on the basis of a linear form. The firm may therefore underestimate the benefits of having consumers who are only just satisfied. As the only-just-satisfied consumers of well-established products are more likely to defect compared to completely satisfied consumers (Dong et al., 2011), the firm should invest much more in consumers with moderate levels of satisfaction than in extremely satisfied ones.

The current research has important implications for setting prices for new products based on CS. Having a large segment of highly satisfied customers in their customer base may enable a company to charge premium prices (Hamburg et al., 2005). Still, this strategy seems more likely to succeed for established consumer brands where firms usually launch the new product at 16% above the market price and subsequently increase the price relative to the market price (Spann et al., 2015). For new unbranded food products, the present findings highlight the importance of not setting premium prices as the highly satisfied customers will only pay proportional to their level of satisfaction and most likely in line with or below the market price (Spann et al., 2015) as shown by the willingness to pay response function.

To summarize, we estimated the functional form of the relationship between the first transaction CS, PI and WTP for new food products. The findings have implications for the correct estimation of new food product returns (both in terms of commitment and profits) and for the resource allocation decisions targeted at various customers.

Limitations and Future Research

The limitations of this study provide avenues for further research. The authors encourage more studies to replicate this analysis with other new products in the food industry. Also a follow up study focused on unique inventions in the information technology industry can bring evidence to support the generalizability of this research. The cross-sectional character of the study imposes a series of limitations with respect to observing real behavior or time-dependent differences. Although intention is a good indicator of behavior in frequent decisions such as those involving grocery items (Chandon et al., 2005) and incrementally new products (Alexander et al., 2009), the results may be even more relevant when applied to actual purchases of new products. New studies may validate these findings by collecting data from respondents who have actually purchased a new product for the first time. Longitudinal follow-up studies would be particularly relevant to explain how CS influences repurchase behavior and WTP at different degrees of experience with the product.

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Table 1.
Relevant literature on the functional structure of the CS – outcomes link

Study	CS	CS outcome	Sample	Industry	CS returns
Jones and Sasser (1995)	Single item: Completely dissatisfied - Completely satisfied (5-point scale)	*Repurchase intention* Single item: unspecified scale	20 000	Airline	Decreasing returns (quadratic)
			10 000	Hospital	Decreasing returns (quadratic)
			NA[2]	Local telephone	Decreasing returns (quadratic)
			32	Automobile	Increasing returns (quadratic)
			> 2000	PC	Increasing returns (quadratic)
Ngobo (1999)	Multiple items: Product/service enjoyment Customer made a bad decision Customer is glad Customer is delighted (7-point Likert scale)	*Loyalty intention* Multiple items: Customer not ready to buy from the same firm (brand) again. Customer would choose the same firm (brand) on the next occasion. Customer is certain to buy from the same firm (brand) again. Customer will recommend the firm (brand). Customer will praise the firm/brand to the other people. Very unlikely-Very likely (7-point Likert scale)	73	Bank service	Decreasing returns (quadratic)
			53	Car insurance	Decreasing returns (quadratic)
			225	Camera	Decreasing returns (quadratic)
			50	Retailer	Constant returns (linear)

Mittal and Kamakura (2001)	Single item: Very dissatisfied - Very satisfied (5 - point scale)	*Repurchase intention* Single item: Very unlikely-Very likely (5-point scale)	100 040	Automotive	Nonlinear (unspecified)
Streukens and de Ruyter (2004)[1]	Single item: Very dissatisfied - Very satisfied (9 - point scale)	*Behavioral intention* Multiple items: 3 (unspecified) items of Zeithaml et al.'s (1996) behavioral intention scale	203 200 108	Dry cleaning Fast food restaurant Supermarkets	Constant returns [1] (linear) Constant returns [1] (linear) Constant returns [1] (linear)
Agustin and Singh (2005)	Multiple items: Highly unsatisfactory - Highly satisfactory Very unpleasant - Very pleasant Terrible - Delightful (10 - point scale)	*Loyalty intention* Multiple items: Likelihood of - most of future shopping - repeating purchase - spending more than 50% with the specific provider Very unlikely - Very likely (10-point scale)	246 113	Retail clothing Airlines	Decreasing returns (quadratic) Decreasing returns (quadratic)
Homburg et al. (2005)[2]	Multiple items: All in all, I would be satisfied with this restaurant. The restaurant would meet my expectations. The earlier scenario compares to an ideal restaurant experience. Overall, how satisfied would	*Willingness to pay* Single item: Price the consumers would be willing to pay for (open question)	80	New restaurant	Increasing returns (cubic)

	you be with the restaurant visit just described? () Strongly disagree –Strongly agree or Very dissatisfied – Very satisfied (9-point scale)		157	New CD-ROM tutorial	Increasing returns (cubic)
Dong et al. (2011)	Multiple items: Overall satisfaction Expectancy disconfirmation Performance versus other product or service in the category Performance versus the customer's ideal product or service in the category (10-point scale)	*Repurchase intention* Single item: Low - High (10-point scale)	146 300	Air conditioner Computer, Mobile phone, Refrigerator Telephone, TV Washing machine Beer, Cashmere sweaters Cigarette, Detergent Ham, Liquid milk Milk powder Shoe leather Toothpaste Wine, Mobile service	51% Constant returns (linear) 1.6% Decreasing returns (quadratic) 13.16% Decreasing returns (cubic) 0.6% Increasing returns (quadratic) 1.9% Increasing returns (cubic) 31.7% - unidentified
Eisenbeiss et al. (2014)	[Pilot study] Single item: How satisfied are you with the overall performance of [name of service provider] (7-point scale)	*Share of wallet* Single item: How large is the share of [name of the service provider] with respect to the total volume of traffic of your company? (6-point categorical scale)	453	Rail freight transport and logistics services	Decreasing returns (asymmetric mixed S-shaped)

Eisenbeiss et al. (2014)	[Study 1 and study 2]: Multiple items: All in all, I would be satisfied with this city weekend getaway/hair salon visit. The city weekend getaway/hair salon visit would meet my expectations. The earlier scenario compares to an ideal city weekend getaway/hair salon visit. Overall, how satisfied would you be with the city weekend getaway/hair salon visit just described? (different point scales)	*Willingness to pay* Single item: Price the consumers would be willing to pay for (open question)	1009 442	Hypothetical city weekend gateway trip Hypothetical experience with a hair salon	Decreasing/increasing returns subject to the context moderating effects

Notes: [1]Nonlinear models also plausible. [2]NA – data not available.

Table 2.
Results of confirmatory factor analysis (Study 1 and Study 2)

		Study 1					Study2				
	Items	**Mean**	**SD**	**Std. load.**	**CR**	**AVE**	**Mean**	**SD**	**Std. load.**	**CR**	**AVE**
Satisfaction (CS)					.92	.71				.93	.72
S1	Bad-Excellent	4.05	1.43	.902			5.66	1.06	.870		
S2	Very unsatisfied-Very satisfied	4.08	1.58	.934			5.86	1.09	.888		
S3	Unpleased-Pleased	4.25	1.49	.846			5.93	1.10	.832		
S4	Dislike it very much-Like it very much	3.88	1.50	.762			5.90	1.12	.792		
S5	Boring-Exciting	4.17	1.59	.747			5.75	1.17	.853		
Purchase intention (PI)					.92	.80					
Pi1	I plan to purchase this product	2.18	1.43	- [a]			4.77	1.72	.931	.96	.88
Pi2	I expect to purchase this product	2.37	1.56	.885			4.85	1.71	.963		
Pi3	I want to purchase this product	2.42	1.62	.958			4.88	1.75	.925		
Pi4	I will try to purchase this product	2.44	1.61	.840			5.02	1.73	.945		
Willingness to pay (WTP)					.88	.72				.91	.72
W1	What do you expect this product to cost in a typical store?	5.40	2.31	- [a]			9.74	2.83	.841		
W2	What is the highest price you are willing to pay?	5.58	2.61	.858			10.41	3.06	.837		
W3	What would you suggest as a fair price for this product?	4.76	2.20	.738			9.09	2.78	.946		
W4	What would you suggest as an inexpensive price for this product?	3.91	1.89	.946			5.58	2.29	.773		
Model fit statistics											
χ^2				69.85					222.39		
*d*f				41					62		
p-value				.003					.000		
CFI				.990					.972		
TLI				.987					.964		
RMSEA				.045					.07		
SRMR				.040					.037		

Estimated linear correlations between the constructs						
	CS	*PI*	*WTP*	*CS*	*PI*	*WTP*
CS	-			-		
PI	.67***	-		.41***	-	
WTP	.39***	.32***	-	.22***	.06	-

Notes: [a]Item removed due to relatively low factor loading.

*** $p < .001$.

Table 3.
Models unstandardized estimates, standard errors and significance (Study 1 and Study 2)

		Study 1						Study 2					
Model		**Linear**		**Quadratic**		**Cubic**		**Linear**		**Quadratic**		**Cubic**	
From	**To**	**b**	**SE**	**b**	**SE**	**b**	**SE**	**b**	**SE**	**b**	**SE**	**b**	**SE**
CS	*PI*	.94***	11.17	1.04***	10.68	1.11***	7.75	.44***	8.14	.58***	8.36	.62***	8.38
CS^2	*PI*			.22***	3.85	.21***	3.40			.10***	3.48	.01	.12
CS^3	*PI*					-.03	-.68					-.03	-1.46
CS	*WTP*	.46***	7.09	.46***	6.97	.48***	3.87	.23***	4.49	.21***	3.37	.22***	3.21
CS^2	*WTP*			-.07	-1.36	-.07	-1.40			-.01	-.45	-.02	-.34
CS^3	*WTP*					-.01	-.176					-.00	-.17
Model fit statistics													
AIC		11225.6		11209.0		11212.5		10262.2		10253.3		10255.0	
BIC		11387.5		11378.6		11389.8		10447.8		10447.1		10457.1	
Adj. BIC		11254.3		11239.0		11243.9		10305.0		10298.0		10301.6	
Log-likelihood (L_i)		-5570.8		-5560.5		-5560.2		-5086.1		-5079.6		-5078.5	
Scaling correction (c_i)		1.52		1.52		1.50		1.97		1.98		1.99	
Parameters (p_i)		42		44		46		45		47		49	
ΔScaling correction (cd)				1.39		1.33				2.20		2.21	
χ^2 difference (TRd)				14.80***		15.87***				5.85***		6.87***	

Notes: $CS-$ satisfaction; *PI* – purchasing intention; *WTP* – willingness to pay.
$\mathrm{cd} = (p_i * c_i - p_j * c_j)/(p_i - p_j)$. $\mathrm{TRd} = -2 * (L_i - L_j)/\mathrm{cd}$.
*** $p < .001$.

Table 4.
Results of confirmatory factor analysis (Study 3)

	Items	Mean	SD	Std. loading	CR	AVE
Prior expectations (EXP)					.94	.70
Exp1	Awful appearance - Nice appearance	5.24	1.60	.787		
Exp2	Unpleasant - Pleasant smell	5.67	1.46	.777		
Exp3	Bad - Excellent color	5.43	1.58	.754		
Exp4	Unappetizing - Appetizing	5.17	1.58	.888		
Exp5	Expect to dislike it - Expect to like it	5.36	1.61	.871		
Exp6	Negative expectations - Positive expectations	5.31	1.55	.904		
Exp7	Boring - Exciting	5.20	1.59	.885		
Performance (PER)					.89	.56
Per1	Color	5.45	1.56	.770		
Per2	Odor	5.66	1.42	.808		
Per3	Aroma	5.55	1.46	.838		
Per4	Taste	3.97	1.77	.773		
Per5	Texture	5.28	1.53	.677		
Per6	Digestion	5.26	1.41	.668		
Per7	Healthiness	5.52	1.45	.675		
Disconfirmation of expectations (DEXP)					-	-
Dis1	Better-Worse than expected	5.14	1.56	.866		
Purchase intention (PI)					.97	.90
Pi1	I plan to purchase this product	4.13	1.99	.929		
Pi2	I expect to purchase this product	4.22	2.01	.957		
Pi3	I want to purchase this product	4.19	2.09	.958		
Pi4	I will try to purchase this product	4.32	2.12	.951		
Willingness to pay (WTP)					.88	.66
W1	What do you expect this product to cost in a typical store?	2.72	0.87	.761		
W2	What is the highest price you are willing to pay?	2.93	1.06	.721		
W3	What would you suggest as a fair price for this product?	2.50	0.83	.912		
W4	What would you suggest as an inexpensive price for this product?	2.07	0.77	.863		

Model fit statistics					
χ^2			17996.78		
*d*f			253		
p-value			.000		
CFI			.904		
TLI			.900		
RMSEA			.08		
SRMR			.05		
Estimated linear correlations between the constructs					
	EXP	*PER*	*DEXP*	*PI*	*WTP*
EXP	-				
PER	.87***	-			
DEXP	.54***	.71***	-		
PI	.62***	.73***	.73***	-	
WTP	.24***	.26***	.25***	.25***	-

Notes: *** $p < .001$.

Table 5.
Models unstandardized estimates, standard errors and significance (Study 3)

Model		**Linear**		**Quadratic**		**Cubic**	
From	**To**	**b**	**SE**	**b**	**SE**	**b**	**SE**
PER	*EXP*	.83***	21.02	.83***	20.95	.83***	21.01
EXP	*DEXP*	-.71***	-7.67	-.72***	-7.75	-.71***	-7.70
PER	*DEXP*	1.56***	14.89	1.57***	14.92	1.56***	14.89
EXP	$\widehat{CS}$	.23	1.31	.06	.46	.16	.37
PER	$\widehat{CS}$	1.00	fixed	1.00	fixed	1.00	fixed
DEXP	$\widehat{CS}$	.45**	2.76	.30**	2.95	.39**	2.67
$\widehat{CS}$	*PI*	0.69***	4.68	.76***	5.06	0.75***	3.75
$\widehat{CS}^2$	*PI*			.06**	2.37	.07***	3.08
$\widehat{CS}^3$	*PI*					-.01	-1.51
$\widehat{CS}$	*WTP*	.08***	4.01	.11***	4.10	.11**	2.91
$\widehat{CS}^2$	*WTP*			-.00	-.08	-.00	-.50
$\widehat{CS}^3$	*WTP*					-.01	-0.69
Model fit statistics							
AIC		50682.7		50672.4		50666.0	
BIC		51039.3		51038.4		51041.4	
Adj. BIC		50797.9		50790.7		50787.3	
Log-likelihood (L_i)		-25265.3		-25258.2		-25253.0	
Scaling correction (c_i)		1.56		1.53		1.52	
Parameters (p_i)		76		78		80	
Δ Scaling correction (cd)				.702		.840	
χ^2 difference (TRd)				20.28***		29.38***	

Notes: EXP – prior expectations; *PER* - performance; *DEXP* – disconfirmation of expectations; $\widehat{CS}$ - satisfaction predicted as a higher-order formative construct; *PI* – purchase intention; *WTP* – willingness to pay.
$cd = (p_i * c_i - p_j * c_j)/(p_i - p_j)$. $TRd = -2 * (L_i - L_j)/cd$.
*$p < .01$; **$p < .01$; ***$p < .001$.

Table 6.
Interpretation of the quadratic relationship S–PI implied by Tables 3 and 5

Study 1			Study 2			Study 3		
CS level (1)	CS factor coefficient Quadratic model (t-value) (2)	CS factor coefficient Linear model (3)	CS level (1)	CS factor coefficient Quadratic model (t-value) (2)	CS factor coefficient Linear model (3)	CS level (1)	CS factor coefficient Quadratic model (t-value) (2)	CS factor coefficient Linear model (3)
1	1.26 (6.36)***	.94***	1	0.68 (7.32)***	.44***	1	0.82 (4.95)***	.69***
2	1.48 (5.58)***	.94***	2	0.78 (6.28)***	.44***	2	0.88 (4.88)***	.69***
3	1.70 (5.09)***	.94***	3	0.88 (5.52)***	.44***	3	0.94 (4.80)***	.69***
4	1.92 (4.76)***	.94***	4	0.98 (4.99)***	.44***	4	1.00 (4.72)***	.69***
M = 4.0	2.14 (4.76)***	.94***	5	1.08 (4.60)***	.44***	M = 4.0	1.00 (4.72)***	.69***
5	2.14 (4.52)***	.94***	M = 5.8	1.16 (4.37)***	.44***	5	1.06 (4.64)***	.69***
6	2.36 (4.34)***	.94***	6	1.18 (4.32)***	.44***	6	1.12 (4.57)***	.69***
7	2.58 (4.20)***	.94***	7	1.28 (4.10)***	.44***	7	1.18 (4.50)***	.69***

Notes: In column (1), CS level and the estimated sample mean. In column (2), the unstandardized CS factor coefficient for the quadratic model was calculated using $b_i+b'_iCS$; the t-value in parenthesis was estimated by dividing the coefficient's estimate by the estimate of its standard error (SE). SE was calculated based on the formula $\left[\mathrm{Var}\left(b_2 + b'_2 CS\right)\right]^{1/2} = \left[\mathrm{Var}(b_2) + CS^2\mathrm{Var}\left(b'_2\right) + 2CS\mathrm{Cov}(b_2, b'_2)\right]^{1/2}$ (Ping, 2002). In column (3), we report the unstandardized CS factor coefficient for the linear model for the purpose of comparison. *** $p < .001$.

Figure 1: The alternative functional form of the relationship CS - outcome

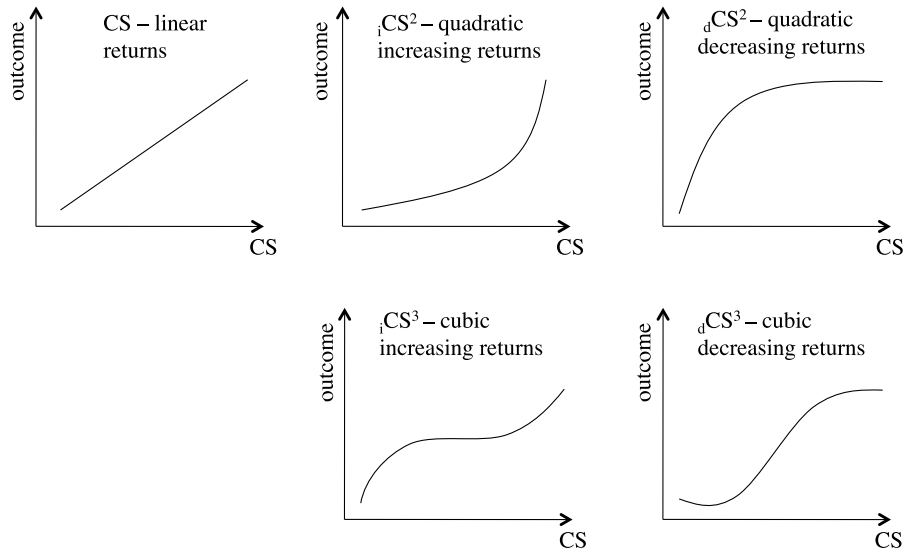

Figure 2

The new food products tested

A.1 Study 1

A.2 Study 2

A.3 Study 3