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Consumers' willingness to pay and drivers of motivation to consume omega-3 enriched mozzarella cheese

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Consumers' willingness to pay and drivers of motivation to consume omega-3 enriched mozzarella cheese

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Abstract

Purpose – Consumer interest and willingness to pay (WTP) for omega-3 enriched water buffalo mozzarella cheese are evaluated through an in-store experimental auction. The purpose of this paper is to estimate individual WTP for enriched mozzarella cheese and related it to self-efficacy beliefs and outcome expectations of omega-3 consumption, following regulatory focus theory.

Design/methodology/approach – Data were collected in May-June 2015 from a sample of 150 consumers in Southern Italy. A structural equation modelling procedure was implemented.

Findings – The results show a significant role is played by prevention outcome expectations on consumer behaviour. While promotion outcome expectation constructs proved non-significant, self-identity correlates with prevention outcome expectations.

Research limitations/implications – There are several limitations that the authors are aware of regarding this study. First of all, since the authors rely on self-reported measures, optimistic bias might have affected participants' responses (Weinstein, 1980). Second, results may be influenced by the choice of the specific information provided to consumers for the analysis; different claims and different information framings should be tested (LeBoeuf and Shafir, 2003).

Practical implications – Implications stemming from the results encourage the promotion of omega-3 enriched mozzarella cheese based on stimulating outcome expectations, bearing in mind that individual motivations should be enhanced by self-identity beliefs.

Originality/value – Although the combined role of self-efficacy and outcome expectations on personal intention to adopt healthy behaviour has already been demonstrated (Keller, 2006; Tudoran *et al.*, 2012), to the best of the knowledge no previous study relates individual behaviour to an intention measured as a WTP for an actual product. In addition, current study has applied a non-hypothetical BDM (from Becker *et al.*, 1964) auction in-store experiment.

Keywords SEM, Regulatory focus theory, In-store experiment, Non-hypothetical BDM auction, Omega-3 enriched mozzarella cheese

Paper type Research paper

Introduction

Omega-3 fatty acids are essential nutrients associated with various health benefits, including treatment of rheumatoid arthritis (Rennie *et al.*, 2003) and coronary artery disease (Freeman, 2000) while improving blood pressure control and other cardiovascular diseases (Bucher *et al.*, 2002; Jacobsen, 2010). Though fatty acid quality is specifically addressed in the healthy diet recommendations of the World

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Health Organization, dietary intake of omega-3 is deficient in typical western diets (Simopoulos, 1991; Mazzocchi *et al.*, 2007). Thus, increasing omega-3 in the diet has become the focus of numerous health campaigns and recommendations worldwide. Consumers show health expectations from omega-3 consumption: according to a qualitative study in Denmark (Krutulyte *et al.*, 2008) increased consumption of omega-3 supplements is believed by consumers to be health-preventive. The most salient perceived belief about omega-3 was the cardiovascular-related benefit, followed by reduced risk of rheumatic disease. Similarly, Patch *et al.* (2005) found that Australian consumers consider improving heart health and improving arthritis as the two most important outcome evaluations of omega-3 food intake. Positive outcome expectations of omega-3 consumption should come as no surprise. Omega-3 fatty acids have a long history of being used as a food supplement to treat inflammatory diseases (Euromonitor, 2015). This also explains why reduction of arthritis issues is one of the chief expectations of omega-3 consumption. Increased consumer interest in the potential health effects of dietary intake is also generating new opportunities and challenges for companies in the food sector: while food producers have significantly increased their investments, food economics research has been incentivised to analyse market opportunities and challenges for new or existing products (e.g. Caracciolo *et al.*, 2016; Kraus, 2015; Bröring and Cloutier, 2008; Frewer *et al.*, 2003).

Following this line of reasoning, the aim of current paper is to assess Italian consumers' willingness to pay (WTP) for omega-3 enriched food and evaluate the relations of self-efficacy (SE) beliefs, prevention outcome expectations (OPRE) and promotion outcome expectations (OPRO) in influencing WTP. To do so, a well-known food product was taken into consideration: mozzarella cheese made with water buffalo milk. The study took place in Campania, a region in Southern Italy. Campania is where most water buffalo mozzarella cheese is produced under protected designation of origin (PDO) certification. Water buffalo mozzarella cheese is the fifth Italian PDO product in terms of gross turnover, generating around €300 million/year (Qualivita-Ismea, 2013). Mozzarella is also well-known by consumers and deemed to be a naturally made food product (Chen *et al.*, 2009). The enrichment of omega-3 in mozzarella cheese was obtained by feeding buffaloes mostly with fresh grass. The relationship between the proportion of fresh grass in the cow/buffalo diet and milk fatty acid composition is well demonstrated in the literature (Bauchart *et al.*, 1984; Couvreur *et al.*, 2006). A specific study, however, was conducted in a farm producing mozzarella only with milk from its own herd of water buffaloes. Effects on omega-3 intake on the mozzarella in question were certified by scientists in the fields of agricultural and veterinary science, such that consumers were fully informed about the real higher content of omega-3 compared with the conventional content[1].

The current study concerns not only WTP for an improved (healthier) food product but also extends the literature on motivation to consume the product so as to establish effective promotion strategies. While WTP was estimated by means of an experimental auction, motivation to consume was captured by applying the principle of regulatory focus theory (Crowe and Higgins, 1997). The key element of regulatory focus theory[2] lies in the fact that individuals may decide to adopt self-regulatory behaviour with a focus on prevention and/or promotion. Specifically, individuals with a prevention focus have a strategic avoidance orientation focused on security needs and situations involving the avoidance of loss-nonloss in the performance of a particular behaviour (Higgins, 1997). While individuals with a promotion focus have a strategic approach orientation focused mainly on nurturance needs and on situations involving gain – nongain from the

performance of a specific behaviour (Higgins, 1997; Higgins *et al.*, 2003). In general, when people pursue goals in a strategic way in line with their regulatory focus, they feel right about what they are doing (Camacho *et al.*, 2003). The two focuses differ along the types of outcome expectations that are deemed relevant to individuals (Brockner *et al.*, 2004). We seek to ascertain whether and to what extent SE beliefs interact with outcome expectations in motivating individuals (consumers) to consume an omega-3 enriched food product. To illustrate, it is shown that individuals appraise their own ability to perform a particular behaviour (SE). SE may have a direct effect on personal purpose to adopt an action, say a healthy behaviour (Scholz *et al.*, 2005; Tudoran *et al.*, 2012). Changing beliefs about SE has an influence on healthy behaviour adoption (Baranowski *et al.*, 2003). Put differently, if individuals believe that they are able to adopt healthy behaviour, they are more likely to behave in this way irrespective of beliefs concerning response-efficacy (or subjective probability that a required action will lead to some consequences, Tudoran *et al.*, 2012) also known as outcome expectations (Keller, 2006). However, the reality shows that, even if individuals believe they are able to adopt a variety of healthy behaviour, they choose not to. One possible explanation is that the outcome expectations (or response-efficacy) of a certain action (say a healthy one) is a sufficient but not necessary condition to undertake an action (Keller, 2006). Hence, SE and outcome expectations may interact in determining to consume an omega-3 enriched food product. Previous research has demonstrated that consumers place a high value on dairy products enriched with known functional ingredients such as omega-3 fatty acids (Bechtold and Abdulai, 2014). Thus, one of the aims of this paper is to formally investigate the potential interactions between SE and outcome expectations on consumers' behaviour, measured as WTP, to consume omega-3 enriched mozzarella cheese.

Although the combined role of SE and outcome expectations on personal intention to adopt healthy behaviour has already been demonstrated (Keller, 2006; Tudoran *et al.*, 2012), to the best of our knowledge no previous study relates regulatory focus theory to individual behaviour of consumers measured as a WTP for an actual product. In addition, current study has applied a non-hypothetical BDM (from Becker *et al.*, 1964) auction in-store experiment. Following the main results of previous investigations (Tudoran *et al.*, 2012), in this study three hypotheses on the relations between SE beliefs, outcome expectations of omega-3 consumption and WTP for omega-3 enriched mozzarella cheese were formulated and will be formally tested through a multi-group structural equation model (SEM).

The remainder of the paper is organized as follows: in the Section 2 the experimental protocol and data collection process are described. Subsequently, sample statistics, empirical results and the hypotheses testing are presented. Finally, the findings are discussed, study limitations are outlined and some concluding remarks are made.

Materials and methods

Experimental protocol

In-store non-hypothetical experimental auctions (Costanigro *et al.*, 2011; Xue *et al.*, 2010; Nayga *et al.*, 2006) were conducted in a mozzarella dairy in May-June 2015. The experiments were conducted over a three-week period, and throughout the morning, afternoon and early evening of each day, in order to achieve a diverse and representative sample (East *et al.*, 1994). As the experiment included only actual product shoppers, and mostly responsible for household food purchases, we followed previous research to determine the final sample size. Indeed, other field studies apply convenience samples of similar size (see among others Costanigro *et al.*, 2014; Rousu *et al.*, 2014; Loureiro and

Umberger, 2003). Two interviewers were present during each session; the interviewer approached subjects individually at the dairy entrance (before any purchase took place) and introduced him/herself as an academic marketing researcher from the local university. To be eligible for the study, each participant had to be aged 18 or above and be a consumer of mozzarella cheese. To incentivise participation, individuals who completed the experiment were given half a kilogram of conventional (non omega-3 enriched) mozzarella (retail value of €5). The number of participants varied depending on the time of day, but on average about 50 per cent of those invited to participate completed the experiment.

The experimental protocol consisted of a PC-based survey and a WTP experiment for those consumers who preferred the omega-3 enriched mozzarella. The total procedure took approximately eight to ten minutes for each participant to complete, including careful explanation of the BDM auction mechanism (Table I). First, respondents were endowed with the conventional mozzarella (a half kilogram package) and seated in front of a monitor to read a brief description of mozzarella with naturally enriched omega-3 framed in two different information sources (see the Appendix). Half the sample was randomly assigned to information source A, receiving information about the naturally enriched mozzarella through the producer's brochure, while the other half was assigned to information source B, receiving the same information (exactly the same wording) through a newspaper format page. In both information sources it was clearly explained that the naturally enriched mozzarella did not differ in any sensory characteristic from the conventional/traditional one.

After reading the brief description, participants were handed the naturally enriched omega-3 mozzarella of the same weight and format as the conventional one (half a kilogram[3]), and prepared in order to avoid any external differences with the conventional one (same packaging, company brand, date of production). Respondents were then asked if they were interested in exchanging their endowed mozzarella (conventional) for its omega-3 enriched counterpart. If the subject answered in the affirmative, a BDM auction was used to determine the consumers' WTP for the omega-3 enriched mozzarella. In the endow-upgrade BDM auction format, the subject stated a monetary value that he/she would be willing to pay to exchange the conventional mozzarella for the naturally enriched omega-3 mozzarella. If the subject offered an amount equal to or greater than a randomly extracted binding value (bullets from a box), then the exchange was made with the subject paying the binding value to make the exchange. If the subject offered less than the binding value then the exchange was not made (Lusk and Shogren, 2007). Participants were also told that in the BDM auction they could only bid once and it was in their best interests to submit a bid equal to the full price they were willing to pay for the product. Subjects were not informed about the range of the distribution in the box to avoid anchoring (Bohm *et al.*, 1997).

Preliminary phase	Phase 1: omega-3 mozzarella information	Phase 2: auction procedure	Phase 3: regulatory focus theory information	Phase 4: collection of other relevant information
In-store recruitment (before any purchase)	Information disclosure through newspaper or company brochure	BDM auction	Agreement on self-efficacy beliefs and outcome expectations statements	Socio-demographics, BMI, food habits, mozzarella consumption frequencies

Table I.
Flow of the
experimental
protocol

The distribution of potential purchase prices was uniform and based on real market values: prices ranged from 0 cents (€) to 2.60, in increments of 20 cents. The incentive-compatible BDM auction procedure was selected as it is particularly suited to eliciting WTP directly at the point of purchase, thereby enhancing external validity (Wertenbroch and Skiera, 2002; McDaniel and Gates, 2001). In addition, the BDM was selected among other demand-revealing valuation mechanisms (e.g. Vickrey or *n*th-price auctions) because we had one participant at a time, a situation for which only the BDM is appropriate. The BDM method equally penalizes over- and underbidding (Lusk and Shogren, 2007) and reduces the psychic benefit from being declared the winner of an auction (Corrigan and Rousu, 2006). Furthermore, the BDM auction tends to provide relatively strong incentives for truthful bidding for all individuals regardless of the magnitude of their true WTP (Lusk *et al.*, 2007). Finally, compared to other auction mechanisms the BDM, in its endow-upgrade format, is also very easy to explain (i.e. participants need only to place one bid) and most of the time one example is enough to check for participants' comprehension (Combris *et al.*, 2009).

The questionnaire

Subsequent to the WTP experiment, participants were asked to answer a short questionnaire explicitly developed to analyse the extent to which regulatory focus theory can contribute to understand omega-3 enriched mozzarella cheese consumption. Questionnaire included three sections. Section (a) aimed to collect general information on the respondents: socio-demographic characteristics, lifestyle factors including physical activities (such as gym and sport activities) and body-mass index (BMI). Section (b) included a consumption frequency scale for mozzarella cheese, since the consumer decision being investigated refers to mozzarella cheese. Specifically, participants were asked to select one of the following four options, labelled 1 = "I seldom consume mozzarella cheese (no more than once a month)", 2 = "I occasionally consume mozzarella cheese (no more than once a week)", 3 = "I consume mozzarella cheese frequently (about once a week)" and 4 = "I regularly eat mozzarella cheese (almost every day)". Finally section (c) comprised items regarding the regulatory focus theory. The latter consisted in participants' agreement on a set of relevant statements, on seven-point Likert-type scales (ranging from 1 = totally disagree, to 7 = totally agree) regarding SE beliefs and outcome expectations of omega-3 consumption, adapted from Tudoran *et al.* (2012).

More specifically, SE was characterized by four items expressing consumers' beliefs in their commitment to eat omega-3 enriched mozzarella regularly. A consumer with a high score in this dimension generally agreed with the statements "I am confident that I will be able to eat omega-3 enriched mozzarella regularly, [...] even if it takes a lot of time to get into the habit of regularly taking them", or "[...] even if I cannot immediately feel/see the effects". OPRE captured consumer beliefs about the efficacy of omega-3 enriched mozzarella in preventing several diseases from three items. High scorers in this dimension would support the statements "If I follow a diet that includes omega-3 enriched mozzarella, then [...] I will reduce my risk of getting cardiovascular disease" and "[...] I will reduce my risk of having health problems when I get older". Finally, OPRO included information from three items, highlighting consumer beliefs in the efficacy of omega-3 enriched mozzarella in providing health benefits. Consumers scoring highly in this dimension agreed with the statements: "If I follow a diet that includes omega-3 enriched mozzarella, then [...]: I will get a greater sense of well-being"; and "I will feel better mentally".

Research hypotheses

After collecting consumer responses on the items concerning SE beliefs, OPRE and OPRO of omega-3 consumption, three hypotheses on their relations in influencing respondents WTP for omega-3 enriched mozzarella cheese were formulated and formally tested:

- H1. OPRE have a significant positive effect on WTP for omega-3 enriched mozzarella cheese.
- H2. OPRO have a significant positive effect on WTP for omega-3 enriched mozzarella cheese.
- H3. While SE beliefs interact with OPRE in affecting WTP for omega-3 enriched mozzarella cheese, they do not affect OPRO.

As for the empirical approach, following Tudoran *et al.* (2012), a multi-group SEM was implemented for testing the three hypotheses listed above. Even if SEM is often used in social and behavioural sciences for understanding human behaviour and the direct and indirect effects of its determinants to date few studies have applied SEM for analysing consumers' WTP. Among the few studies, Voon *et al.* (2011) analyzed the main behavioural factors (including attitude, subjective norms and personal norms) influencing WTP for organic food; while, Yee *et al.* (2008) investigated determinants of willingness to accept genetic modified foods based on experimental auctions.

In the SEM, latent variable models can be constructed to provide evidence of the relationships between latent constructs (in our case the three dimensions suggested by the regulatory focus theory) and observed measures, in this study WTP for omega-3 enriched mozzarella elicited through the BDM auction (Kaplan, 2007; Hair *et al.*, 2010).

For the *i*th respondent, our SEM includes the following four equations:

$$\text{(latent equation)} \quad \text{WTP}_i = \Gamma_1 \text{SE}_i + \Gamma_2 \text{OPRE}_i + \Gamma_3 \text{OPRO}_i + \varepsilon_i \quad (1)$$

$$\text{(measurement equation 1)} \quad \mathbf{x}_{1i} = \Lambda_1 \text{SE}_i + \mathbf{u}_{1i} \quad (2)$$

$$\text{(measurement equation 2)} \quad \mathbf{x}_{2i} = \Lambda_2 \text{OPRE}_i + \mathbf{u}_{2i} \quad (3)$$

$$\text{(measurement equation 3)} \quad \mathbf{x}_{3i} = \Lambda_3 \text{OPRO}_i + \mathbf{u}_{3i} \quad (4)$$

where the measurement equations link the latent construct (SE, OPRE and OPRO) to the observed \mathbf{x}_{1i} \mathbf{x}_{2i} \mathbf{x}_{3i} responses (items) through the parameters Λ (or loadings), while the latent equation reflects the hypotheses about how the different beliefs such as SE, OPRE and OPRO relate to each other, influencing WTP through the estimated coefficients (Γ parameters).

To assess the overall SEM goodness of fit the following criteria were employed: maximum likelihood χ^2 , root mean square error of approximation (RMSEA), comparative fit index (CFI) and Tucker-Lewis index (TLI) (Kaplan, 2007; Hair *et al.*, 2010). CFI and TLI indices range from 0 for models that fit poorly the data, to close to 1 for the models that fit well. Cut-off values above 0.9 have been suggested to indicate "acceptable" fit (Hu and Bentler, 1999). Considering RMSEA, a critical value of around 0.05 or less has been proposed as an indication of an acceptable error of approximation (Browne and Cudeck, 1992).

Results

Sample description

Overall, 150 individuals participated in the study. Traditional socio-demographic information shows that the participants (83 male and 67 female) were in the age range 18-76 years (47 ± 14 years), living in medium-size households (3.46 \pm 1.26 members); 21.3 per cent of respondents had a household income higher than €4,000/month, while for 35.5 per cent it was lower than €2,000. About a third had a university degree (35.3 per cent), while 19.3 per cent had a low formal education level. Many respondents stated they often consumed mozzarella cheese – once a week – (55 per cent) and, as regards the BMI, only 43 per cent of respondents were normal weight (BMI 18.5-24.9 kg/m²) (Table II).

WTP estimates

More than half of the respondents (57 per cent) showed a positive WTP for upgrading to the omega-3 enriched mozzarella (2.92 \pm €1.43/kg, above the regular price for conventional mozzarella; i.e. €10/kg). However, since we are interested in the mean WTP for the whole sample under study, also 0 WTP values have to be taken into account (Reiser and Shechter, 1999). The mean WTP for upgrading to the omega-3

Variable	Relative frequency (mean)
<i>Age</i>	(47.3) (SD = 14.4; min./max. = 18-76)
<i>Number of household members</i>	(3.47) (SD = 1.26; min./max. = 1-8)
<i>Gender</i>	
Female	45.2%
Male	54.8%
<i>Education level</i>	
University or higher	35.3%
High school	45.3%
Lower secondary school	15.3%
Primary school	4.0%
<i>Monthly income (€)</i>	
Over 4,000	21.3%
Between 2,000 and 4,000	45.3%
Below 2,000	35.3%
<i>Employment status</i>	
Employed	69.3%
Unemployed	30.7%
<i>BMI</i>	
Underweight (< 18.5)	1.3%
Normal (18.5-24.99)	43.3%
Overweight (\geq 25.0)	55.4%
<i>Stated frequency of mozzarella cheese consumption</i>	
I regularly eat mozzarella cheese (almost every day)	4.0%
I consume mozzarella cheese frequently (about once a week)	54.7%
I occasionally consume mozzarella cheese (no more than once a week)	30.7%
I seldom consume mozzarella cheese (no more than once a month)	10.7%

Table II.
Descriptive statistics
of the sample

Note: $n = 150$

enriched mozzarella, including 0 values, is equal to $(1-p) \times 2.92$, or €1.67/kg, p being the relative frequency of zero WTP response. Thus, according to our results, omega-3 enrichment leads to a price premium of nearly 17 per cent over the conventional mozzarella cheese. As stated above, a fraction of the consumers is willing to pay this price premium and could be really interested in purchasing. For instance, only 20 per cent of respondents would be willing to recognize a price premium of around €3/kg (Figure 1) and about half of the respondents appear to recognize a premium price lower than €1/kg. According to our research hypothesis, the observed variability on the elicited WTP may be affected by consumer SE and outcome expectations. Additionally, the source of information (producer's brochure or newspaper format page) did not significantly affect WTP (one-way ANOVA results, $F = 1.18$, $df = 1$; $\text{prob} > F = 0.28$).

SE, prevention outcomes and promotion outcomes

In order to measure SE beliefs and outcome expectations of omega-3 consumption, we adapted the validated scales from Tudoran *et al.* (2012). OPRE and OPRO constructs were both measured by a set of three items, while SE beliefs were identified by four items. Cronbach's α values of the three scales range from 0.61 (OPRE) to 0.74 (OPRO) indicating an acceptable internal reliability. The mean level of agreement (stated on a scale from 1 to 7), of the sample as a whole, reveals a prevailing widespread sense of awareness on the positive effects of omega-3 enriched mozzarella, together with the belief that its benefits can be visible in the long term (Table III). Moreover, prevention and promotion-related benefits seem equally important, since the average value of the two scales are quite similar (respectively, 6.17 for OPRE and 6.13 for OPRO). Indeed, items having the highest level of agreement are "If I follow a diet that includes omega-3 enriched mozzarella, then: I will reduce my risk of getting cardiovascular disease" (first item of OPRE scale, mean value = 6.45) and "If I follow a diet that includes omega-3 enriched mozzarella, then: I will feel better mentally" (second item of OPRO scale, mean value = 6.37). Finally, correlation coefficients were computed in order to get first insights on the interrelations existing between the three constructs. The correlation matrix identifies the presence of positive correlations between OPRE and OPRO (correlation coefficient = 0.65); while both are not excessively positively correlated with SE (both correlation coefficients close to 0.20).

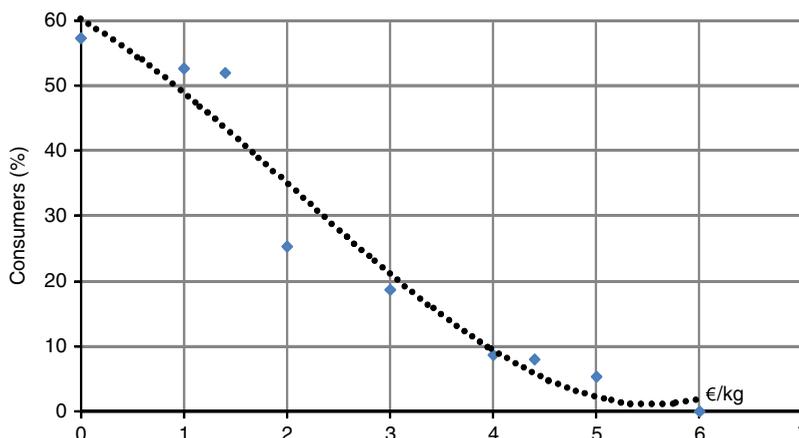


Figure 1.
Relation between
price premium and
willingness to
purchase omega-3
enriched mozzarella

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Construct	Items	Mean	SD
Self-efficacy ^a	I am confident that I will be able to eat omega-3 enriched mozzarella regularly	5.42	1.22
	SE1: even if it takes a lot of time to get into the habit of regularly taking them	5.01	1.72
	SE2: even at times when I feel stressed	5.36	1.55
	SE3: even if I cannot immediately feel/see the effects	5.87	1.33
Prevention outcome expectations ^b	SE4: although I have to create a detailed plan on where to buy some, which producer it should be, etc.	5.63	1.51
	If I follow a diet that includes omega-3 enriched mozzarella, then:	6.17	0.86
	PRE1: I will reduce my risk of getting cardiovascular disease	6.45	0.94
	PRE2: I will reduce my risk of getting rheumatic diseases	5.89	1.41
Promotion outcome expectations ^c	PRE3: I will reduce my risk of having health problems when I get older	6.21	1.04
	If I follow a diet that includes omega-3 enriched mozzarella, then:	6.13	0.89
	PRO1: I will get a greater sense of well-being	6.19	1.03
	PRO2: I will feel better mentally	5.81	1.27
	PRO3: I will be glad that I am doing something for myself	6.37	0.97
	Self-efficacy	Prevention outcome expectations	Prevention outcome expectations
Self-efficacy	1		
Prevention outcome expectations	0.20*	1	
Promotion outcome expectations	0.18*	0.65**	1

Table III. Self-efficacy, prevention outcome expectations and promotion outcome expectations – descriptive statistics and correlation matrix

Notes: Judgments were made on seven-point scales (scale anchored at 1: I totally disagree to 7: I totally agree). ^aCronbach's $\alpha = 0.72$; ^bCronbach's $\alpha = 0.61$; ^cCronbach's $\alpha = 0.74$. *,**Significant at p -value < 0.05 and < 0.01 , respectively

Hypothesis testing

The research hypothesis to be tested empirically focused on the potential interactions between SE and outcome expectations on the behavioural decision to consume omega-3 enriched mozzarella cheese, measured as WTP. Table IV shows the results of the SEM. Appropriateness of the SEM was confirmed on the basis of CFI criteria of 0.95, TLI of 0.93 and RMSEA of 0.06, indicating a suitable fit and validating the constructs and their relations. In the measurement equations, the loadings Λ can be interpreted as the correlation coefficients between the item and the corresponding latent construct. The higher the factor loading of a given item, the greater the contribution of that item to the latent variable. All the loadings Λ on the corresponding latent constructs were significant and high, suggesting strong contributions of the items to the three dimensions. This provides further evidence of the validity of the overall model hypothesized.

Self-efficacy	I am confident that I will be able to eat omega-3 enriched mozzarella regularly	Λ_1
	SE1: even if it takes a lot of time to get into the habit of regularly taking them	0.61***
	SE2: even at times when I feel stressed	0.74***
	SE3: even if I cannot immediately feel/see the effects	0.60***
	SE4: although I have to create a detailed plan on where to buy some, which producer it should be, etc.	0.47***
Prevention outcome expectations	If I follow a diet that includes omega-3 enriched mozzarella, then:	Λ_2
	PRE1: I will reduce my risk of getting cardiovascular disease	0.46***
	PRE2: I will reduce my risk of getting rheumatic diseases	0.58***
	PRE3: I will reduce my risk of having health problems when I get older	0.72***
Promotion outcome expectations	If I follow a diet that includes omega-3 enriched mozzarella, then:	Λ_3
	PRO1: I will get a greater sense of well-being	0.72***
	PRO2: I will feel better mentally	0.72***
	PRO3: I will be glad that I am doing something for myself	0.63***

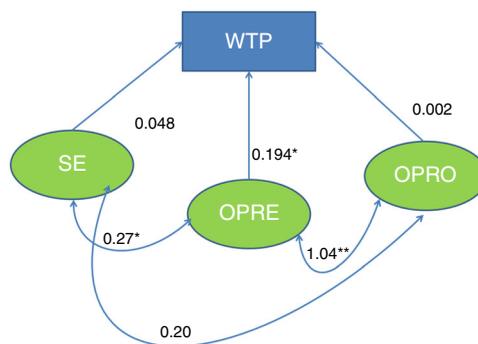
Note: ***Significant at $p < 0.01$

Table IV.
Measurement
equations, factor
loadings

Figure 2 illustrates the standardized path coefficients (Γ parameters) for the estimated SEM. The coefficients indicate the relative strength of association of the regulatory focus theory constructs with the WTP for the omega-3 enriched mozzarella and the sign of this influence[4]. While results support the hypothesis that OPRE significantly influence consumer WTP for the omega-3 enriched mozzarella ($H1$, coefficient (Γ_2) equal to 0.194 and statistically significant at 10 per cent), the hypothesis that OPRO have a positive impact on the WTP does not seem to be consistent with the data ($H2$, coefficient (Γ_3) equal to 0.002 and not statistically significant). As for the role of SE beliefs ($H3$), the results appear to support the validity of the hypothesis, showing both the existence of a significant correlation coefficient between OPRE and SE beliefs, and the absence of a significant correlation between the latter and OPRO.

Discussion and concluding remarks

According to regulatory focus theory, individuals can be motivated either by advancement and accomplishment (promotion focus), or by security needs (prevention focus). Thus,



Notes: Model: CFI=0.95; TLI=0.93;
RMSEA=0.06; $\chi^2(33)=42.9$, Prob> $\chi^2=0.12$.

* $p < 0.10$; ** $p < 0.05$

Figure 2.
Structural equation
model showing
standardized path
coefficients

a core issue in the theory is the way in which prevention-focused and promotion-focused individuals respond to complications that occur in undertaking a particular behaviour (Higgins, 1997). It has been extensively proved that consumer evaluation of products (and brand choice decisions) are influenced by their regulatory goal (e.g. Higgins, 2002). Moreover, SE beliefs and outcome expectations are central concepts in several health-related models (e.g. Rogers, 1975; Rosenstock *et al.*, 1988). Nevertheless, the combined role of SE, OPRE and OPRO has only recently been investigated in relation to the individual's consumption behaviour of omega-3 enriched products (Tudoran *et al.*, 2012). Indeed, increased consumption of omega-3 supplements is reported to be often motivated by expectations of direct effects on arthritis (Cox *et al.*, 2007; Krutulyte *et al.*, 2008). In the USA, consumers have developed increased awareness of the benefits of omega-3, resulting in increased consumption (Papanikolaou *et al.*, 2014). However, current data demonstrate that even in the USA most individuals do not meet the recommended intake of fatty acids (e.g. Kris-Etherton *et al.*, 2007).

The results of the current study, confirming previous research findings, reveal the core role in driving consumer behaviour towards healthy food of OPRE. In addition, our results prove that OPRE are correlated to SE beliefs, while, in contrast with several papers, our data show that OPRO do not affect consumer motivations. This could be related to individuals' different regulatory focuses, or due to the specific manipulations performed by the researcher (Higgins *et al.*, 2003). In addition, previous research demonstrating the significant effect of OPRO investigated intentions and not real market-behaviour (Krutulyte *et al.*, 2008; Tudoran *et al.*, 2012).

Food producers, health professionals and policy makers interested in fostering omega-3 enriched products should consider these results when planning specific public policies and communication campaigns. After all, one of the reasons for the limited success of healthy eating interventions could be attributed to the failure to combine effective health communication messages with tailored SE information (Keller and Lehmann, 2008). Indeed, previous campaigns to incentivise omega-3 consumption have framed the persuasive message mostly on prevention beliefs and the anticipation of a loss or an undesired state (Lichtenstein *et al.*, 2006). Furthermore, health claims attached to enriched/functional food are sometimes thought to be merely advertising tools (Verbeke *et al.*, 2009) and are confusing for many consumers (Annunziata and Vecchio, 2011), while messages focusing simply on the absence of negative events, and thus allowing the avoidance of loss (Keller, 2006), could better motivate individuals to consume omega-3 enriched products.

There are also several important marketing implications based on this study. The first is that producers of enriched mozzarella should carefully consider that a large share of customers are interested in this new product (57 per cent of our sample). However, it is important to understand the differences among these consumers, in order to adjust to these differences and create appropriate campaigns to reach efficiently the target of those willing to pay higher premium prices for the product. Moreover, marketers should bear in mind that previous research has demonstrated that innovations that increase or maintain the authenticity of traditional food are generally well accepted by regular consumers, while innovations that reduce the traditional image are not (Almli *et al.*, 2011; Vanhonacker *et al.*, 2010). Thus campaigns should cautiously address this issue, especially considering that water buffalo mozzarella is strongly perceived as a traditional cheese by most of its core consumers.

There are several limitations that we are aware of regarding this study. First of all, since we rely on self-reported measures, optimistic bias might have affected

participants' responses (Weinstein, 1980). Second, results may be influenced by the choice of the specific information provided to consumers for the analysis; different claims and different information framings should be tested (LeBoeuf and Shafir, 2003). Other limitations stem from the experimental auction mechanism, concerning the "endow-upgrade" approach (see Shogren *et al.*, 1994) that introduces a bias in the form of the endowment effect, consistent with loss aversion effects (Kahneman *et al.*, 1991), and related to the fact that BDM auctions produce a greater dispersion of bids and show a slower convergence towards the true WTP revelation (Noussair *et al.*, 2004). Finally, the results of the present study are based on a small number of interviews carried out with consumers in one store. Thus, a follow-up study based on a representative population is needed to ensure the overall validity of the findings. Nevertheless, our results highlight the possibilities of encouraging the promotion of omega-3 enriched mozzarella cheese efficiently by stimulating outcome expectations, especially given that previous evidence has underlined the fact that consumers consider enrichment of "non-healthy" foods more justified than foods already perceived as being health-promoting (Bech-Larsen and Scholderer, 2007), implying that non-healthy food could benefit from nutritional improvement to a greater extent. Current research should foster additional studies investigating the predictive capabilities of health behaviour by regulatory focus in outcome expectations.

Notes

1. The study refers to research findings of a European Regional Development funded project. Results are available upon request.
2. For an exhaustive illustration of regulatory focus theory, see the specific literature: Crowe and Higgins (1997); Brockner *et al.* (2004); Scholz *et al.* (2005); Tudoran *et al.* (2012).
3. This was our chosen product for a number of reasons. First, we needed the product that is the most widely consumed and would appeal to all customers. Second, we did not want to generate a reciprocity bias by giving an excessive endowment. Third, we wanted a product that can be sold, thereby minimizing any cognitive effort.
4. Standardized path coefficients close to 0.2 are considered acceptable (Hair *et al.*, 2010).

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Further reading

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Appendix

The following information about omega-3 enriched mozzarella was read to all respondents: "Results of a scientific research, conducted by the Department of Agricultural Sciences – University of Naples Federico II, have shown that feeding water buffaloes with a larger amount of fresh fodder, instead of commonly used dried fodder, leads to a mozzarella cheese with a higher content of omega-3. Omega-3 are polyunsaturated fatty acids and have anti-inflammatory properties which act as protection from cardiovascular diseases, controlling cholesterol and triglyceride levels. The Iemma dairy participated in the research and is the first farm to have fed water buffaloes mainly with fresh fodder, obtaining enriched omega-3 mozzarella cheese. Scientific tasting tests have demonstrated that the higher amount of omega-3 does not modify in any way the taste and flavour of the mozzarella".

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