

The role of health orientation in determining purchase intention and behaviour

Health
orientation's
impact on
consumers

559

Andrzej Szymkowiak, Marcin Adam Antoniak and Barbara Borusiak
*Department of Commerce and Marketing, Uniwersytet Ekonomiczny w Poznaniu,
Poznan, Poland*

Received 7 December 2021
Revised 27 March 2022
28 April 2022
Accepted 28 April 2022

Abstract

Purpose – The objective of the study is to explain how health orientation influences attitude towards paying attention to nutrition claims (NCs), intention to pay attention to NCs, and willingness to buy products containing NCs.

Design/methodology/approach – In the first study, conducted amongst 770 respondents using the CAWI (Computer-Assisted Web Interview) method, the authors investigated the role of health orientation in explaining intention to pay attention to NCs and willingness to buy products with NCs. The theory of planned behaviour was used as the main theoretical framework. In the second online experiment, carried out amongst 485 respondents, the impact of health orientation on attitude towards the label containing NC and on NC product purchase intention was studied.

Findings – The authors revealed that health orientation plays a significant (direct and indirect) role in explaining attitude towards paying attention to NCs, and intention to pay attention to NCs, as well as NC product purchase intention.

Originality/value – Health orientation appeared to be an important determinant of selecting products with NCs. Consumers' intent to choose products containing claims is mainly determined according to their attitudes driven by health orientation and outcome expectancy. Consequently, intention to pay attention to NCs is strongly related to intention to buy products containing claims.

Keywords Nutrition claims, Health orientation, Outcome expectancy, Healthy eating, Willingness to buy, Theory of planned behaviour

Paper type Research paper

1. Introduction

It has been claimed that poor diet is a major cause of illness and chronic diseases (Afshin *et al.*, 2019). Awareness of this fact amongst consumers is constantly growing. This is reflected in their increased interest regarding the consumption of products containing better proportions of nutrients (Bloomberg, 2019). In addition, for most consumers, easily-available sources of information, such as nutrition claims (NCs), are the primary source of knowledge on the nutritional aspects of a product (Provencher and Jacob, 2016). Furthermore, food containing NCs is more likely to be selected in comparison to identical products without them (Kaur *et al.*, 2017). In addition, the importance of claims may be even greater than expected, as many customers who access claims displayed on the front label do not pay attention to the nutritional information displayed elsewhere (Williams, 2005).

The authors have noticed a gap in the existing scientific literature on nutrition claims. In previous studies, two groups of determinants have been examined regarding willingness to buy claim-bearing products. The first one includes factors referring to both claim-bearing products and claim attributes, such as perceived product healthiness (Bialkova *et al.*, 2016;



© Andrzej Szymkowiak, Marcin Adam Antoniak and Barbara Borusiak. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licences/by/4.0/legalcode>

British Food Journal
Vol. 124 No. 13, 2022
pp. 559-577
Emerald Publishing Limited
0007-070X
DOI 10.1108/BFJ-12-2021-1272

Fenko *et al.*, 2016; Gravel *et al.*, 2012; Maubach *et al.*, 2014; Stancu *et al.*, 2017), claim familiarity (Carrillo *et al.*, 2014; Läähtenmäki, 2013) and their simplicity (Bitzios *et al.*, 2011; Läähtenmäki *et al.*, 2010). The second one comprises consumer characteristics such as age and gender (Bimbo *et al.*, 2017; Siegrist *et al.*, 2015) as well as consumer knowledge (Bryla, 2020). The effect of NCs on the willingness to buy a claim-bearing product was also recognised as related to consumer health orientation. It was found that highly health-oriented consumers are more likely to refer to the extensive information reported on nutrition facts panels, whereas claims are of main interest for consumers with low orientation towards health (Cavaliere *et al.*, 2016). However, to the best of the authors' knowledge, there were no studies in the past on how health orientation influences intention to pay attention to claim-bearing products and willingness to buy such products. Therefore, the authors have decided to conduct research regarding the whole attitude-intention-behaviour process concerning products with NCs in which several steps can be distinguished: first, the consumer has an attitude towards paying attention to NCs, then he/she may demonstrate intent to pay attention to claims and finally, he/she may be willing to choose products bearing NCs. Consequently, the authors' objective is to explain how health orientation influences attitude towards paying attention to NCs, intention to pay attention and the willingness to buy products containing NCs. In order to achieve this aim, the TPB has been chosen as the main theoretical framework explaining any type of people's volitional behaviour, in which intention is regarded as a key variable. In light of this, one's attitude towards a given behaviour has become one of the basic variables – next to subjective norm and perceived behavioural control – influencing behavioural intention (Ajzen, 1991). TPB also provides a good opportunity to include two other variables – manifesting beliefs, which may affect people's attitude towards paying attention to NCs: healthy eating orientation (accepted as health orientation – expression specifically concerning nutrition) and outcome expectancy (concerning expectations about the presence of NCs on labels). We have also decided to verify the influence of Health Orientation on the intention to buy products bearing claims, proved by TPB-based research (Study 1), carried out by conducting an experiment on the relation between health orientation and NC product purchase intention (consumer intention towards purchasing products bearing claims).

The main contributions of this paper are two-fold. Firstly, results concerning the aforementioned relationships are provided. The mechanism of health orientation impact was examined on the intention to pay attention to NC products using the theory of planned behaviour. Secondly, it is evaluated which components of Ajzen's theory play important roles in explaining intention to pay attention to NC products and willingness to buy them - we noted both direct and indirect relationships between health orientation and attitude towards paying attention to NCs. Ultimately, the results of our research comprise the creation of a modified TPB model, enabling a better understanding of the influence resulting from various predictors of purchase decision-making process with regard to claim-bearing products.

2. Review of literature

Nutrition claims (NCs) are used to help consumers make healthier food choices. In the USA, they “describe the level of a nutrient, using terms such as free, high, and low, or they compare the level of a nutrient in a food to that of another food” (U.S. Food and Drug Administration, 2020). In the European Union, they mean “any claim which states, suggests or implies that a food has particular beneficial nutritional properties” (Union, 2020). According to these definitions, the more people pay attention to NCs and buy products bearing them, the more beneficial the nutrition is for their health. As such, it is vital to understand what makes people become interested in and willing to buy products containing NCs. To measure the impact of health orientation on the intention to buy products bearing claims, Ajzen's TPB was used in the current study.

TPB is a model widely known in social sciences (Ajzen, 2015). Moreover, it is considered to be parsimonious due to its standardised and well-operationalised guidelines for

measurements (Oluka *et al.*, 2014). Recently, it was also used to study the intentions, attitudes and behaviours of consumers regarding food (Dionysis *et al.*, 2022; Loera *et al.*, 2022). Furthermore, TPB was applied in research focused on packaging, and more precisely, on labels (Grappe *et al.*, 2022; Tian *et al.*, 2021). Generally, this framework is focused on behavioural intentions as the main determinant of behaviour. Intentions express the motivational factors influencing a given behaviour. The stronger the intention, the greater the likelihood of a certain activity. This allows to indicate that intentions are strongly influenced by three variables, expressing several types of beliefs: behavioural (attitude), normative (subjective norm), and control-related (perceived behavioural control), which for the need of this study, are named: attitude towards paying attention (APA) to NCs, subjective norm (SN), and perceived behavioural control (PBC) – all affecting intention to pay attention (IPA) to NCs, which finally affect willingness to buy (WB) products bearing claims. In order to examine the role of health orientation in the whole process of building the WB, we included two predictors of attitude, expressing behavioural beliefs – healthy eating orientation (HEO) and outcome expectancy (OE) regarding expectations towards the presence of NCs on labels.

Attitude is described as an individual's like or dislike towards something (Eagly and Chaiken, 2007). This is an internally driven factor, based on an individual's assessment of certain behaviour. Its significance has been confirmed in previous studies (Salmani *et al.*, 2020; Sultan *et al.*, 2020). It was found, however, that the relationship between attitudes and intentions may significantly differ from a high (Al-Swidi *et al.*, 2014) to low level of measures reflecting the strength of the relation (Guido *et al.*, 2010). In the current study, the focus was, in particular, on attitude, thus on the respondents' opinions regarding how they assess paying attention to NCs. Therefore, the following hypothesis was formulated:

- H1. Attitude towards paying attention to nutrition claims is positively correlated with intention to pay attention to nutrition claims.

Subjective norm (SN) is another important factor influencing intentions. This may be defined as a belief concerning social pressure, empowering people to behave in a certain way (Sreen *et al.*, 2018). According to Ajzen (1991), this measure can be expressed by the extent to which important others would approve or disapprove of an individual's behaviour. This means that SN is an externally driven factor. In the majority of studies, it has been shown that SNs play a significant role in determining intentions (Bhutto *et al.*, 2019; Sultan *et al.*, 2020); however, in some, they were considered insignificant predictors (Paul *et al.*, 2016). Hence, the following hypothesis arose to test the relationship between SN and intention to pay attention (IPA) to NCs:

- H2. Subjective norm regarding nutrition claims is positively correlated with intention to pay attention to nutrition claims.

Perceived behavioural control (PBC) is known as perceived ease or difficulty in performing behaviour, and therefore, it reflects past experiences and anticipated obstacles (Paul *et al.*, 2016). In other words, it reflects the belief on availability of resources necessary to perform a given behaviour, thus, it is also an externally driven factor (Grimmer and Miles, 2017). Earlier results from food-oriented research indicate a positive correlation between PBC and intentions (Shamsi *et al.*, 2020; Sreen *et al.*, 2018), but in this case, there are also studies in which insignificant correlations between PBC and intentions are additionally discussed (Yazdanpanah and Forouzani, 2015). The authors assume that PBC influences IPA, therefore, the following hypothesis was put forward:

- H3. Perceived behavioural control is positively correlated with intention to pay attention to nutrition claims.

According to Armitage and Conner (2001), the TPB is a concept still not fully evaluated, which is constantly being altered by various researchers. Thus, the authors decided to build a

model (Figure 1) in which healthy eating orientation (HEO) and outcome expectancy (OE) were added as new factors influencing attitude towards paying attention (APA) to NCs. These variables were taken from other studies using the TPB model (Contini *et al.*, 2020; Shamsi *et al.*, 2020).

Health orientation (HO) and HEO are very important factors influencing human behaviour. In their TPB-based research on healthy eating, Setiawati *et al.* (2018), demonstrated that there are positive relationships between health awareness and attitudes. As a result, many consumers perceive NC-marked foods to be better (Dean *et al.*, 2012) – usually healthier. However, there are large discrepancies between studies on the effect of NCs, as already noted by several authors (Hieke *et al.*, 2015; Läähteenmäki, 2013). In this study, the authors chose to use health issues as additional predictors of intention to pay attention to NCs. These issues assumed the form of "healthy eating orientation". Therefore, considering the fact that the afore-described studies, conducted on various aspects of health, do not provide conclusive results, the authors decided to examine the correlations between HEO and attitude by formulating the following hypothesis:

- H4. Healthy eating orientation is positively correlated with attitude towards paying attention to nutrition claims.

Another variable that the authors wanted to focus on was outcome expectancy (OE). This is a factor derived from the expectancy-value model and it combines beliefs, attitudes, opinions and expectations. It is also considered a predictor of attitudes related to someone's estimates that certain behaviour will lead to certain outcomes. There are not many studies in which this factor would be measured, but some scientists have already been able to analyse the impact of OE on consumption-related attitudes (Shamsi *et al.*, 2020; Waters *et al.*, 2012). Following this line of thought, the authors decided to erect the following hypothesis:

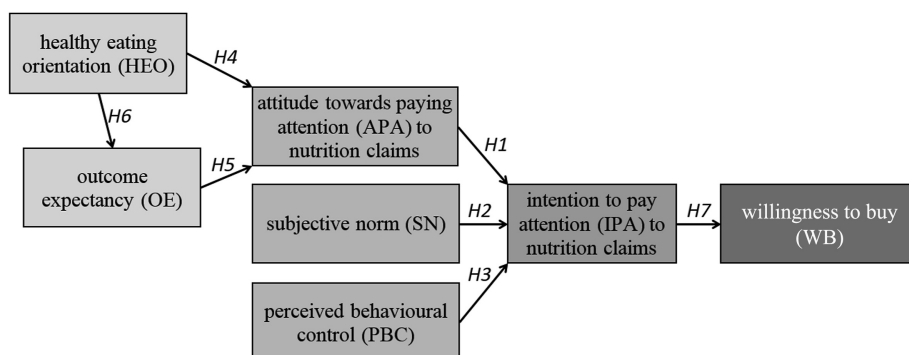
- H5. Outcome expectancy towards products containing nutrition claims is positively correlated with attitude towards paying attention to nutrition claims.

The authors also assume that a positive correlation between HEO and OE may exist. This assumption is based on the fact that if consumers pay attention to something, it is very possible that they have certain expectations about it. Therefore, with regard to NCs, the sixth hypothesis was formulated:

- H6. Healthy eating orientation is positively correlated with outcome expectancy towards products containing nutrition claims.

The final correlation to be mentioned in this article concerns IPA and willingness to buy (WB). According to Wansink and Chandon (2006), nutrition content claims influence customer behaviour. Roberto *et al.* (2012) obtained similar results. Another study on nutrition claims and purchase behaviour was conducted by Benson *et al.* (2019). The authors showed that the perception of products containing NCs influences believability and thus, purchase behaviour. Claims were also tested by Barreiro-Hurlé *et al.* (2010), who have proved that NCs influence consumer choices. Within the context of behaviours related to healthy/unhealthy foods, Talati *et al.* (2018) conducted an experiment in which NCs influenced the likelihood of choosing unhealthy foods. In a review of 31 papers, Kaur *et al.* (2017) showed that positive correlations were found between NCs and purchasing/consumption. We believe that the above facts can also be translated into the basis for our analyses. Knowing that WB is a declarative version of customer behaviour, the following hypothesis has been formulated:

- H7. Intention to pay attention to nutrition claims is positively correlated with willingness to buy food containing such claims.

Figure 1.
Research framework

3. Method

3.1 Study 1

In order to evaluate the adopted theoretical model, a survey was conducted. The questionnaire consists of 2 parts: basic questions related to the analysed variables and questions on the metrics supplemented with general purchasing attitudes and behaviours. The main study was preceded by a pre-study on 4 students, which allowed us to eliminate minor errors. As a result, in order to obtain reliable declarative information, the part with questions was preceded by information about the nutrition claims. The study was carried out on the Amazon Mechanical Turk platform – an online application interface used to integrate human intelligence into remote procedure calls. A group of 839 respondents participated in the study. In order to eliminate random answers, 3 attention checking questions were asked and the response time was considered by eliminating the so-called speed runners. On this basis, the answers provided by 770 respondents were used for further analysis. The mean age of the participants was 38.479 (SD = 11.919, Min = 18, Max = 74, $N = 770$). The group differed in terms of gender, household size, level of education, current professional status and declared annual income (Table 1).

The main questions referred to the variables presented in the TPB-based model. All responses were evaluated on a 7-point scale. The research tool was constructed on the basis of previous research and validated scales. A complete list of questions with their sources is presented in “Table A1”. Due to the use of latent variables, data analysis was performed in 2 steps. In the first stage, the research tool was assessed, whilst a hypothetical structural model was adopted in the second one. At the stage of data analysis, the R studio program and the R compiler with the Lavaan and SemTool packages were used. In order to improve the reliability of the obtained results, bootstrapping was introduced. The number of re-samples was 5,000.

3.2 Study 2

The second study was based on the verification of selected findings from the first study, taking greater psychological realism into account. We wanted to verify the influence of health orientation on attitude towards labels containing NCs and on NC product purchase intention which were found in the first study (based on reported opinions). For this purpose, an experimental study was conducted in which respondents were shown a food product (yogurt) containing a NC (good source of calcium). Users were recruited in the same way as in the case of the first study. A number of 542 responses was collected. In order to increase the credibility of the obtained results, only people who correctly answered the questions verifying their attention and who displayed stimulus (image of yogurt) for more than 3 s were considered for further analysis. A shorter time may indicate mechanical transition between sections or lack of the minimum time needed to become familiarised with the essentials of a product.

Table 1.
Description of the
study group (study
1); *N* = 770

Variable	Option	Frequency	Percent
Gender	Female	315	40.9
	Male	453	58.8
	Prefer not to say	2	0.3
Education	High school or equivalent	101	13.1
	Bachelor's degree	450	58.4
	Master's degree	196	25.5
	Doctorate	9	1.2
	Other	14	1.8
Household size	1	81	10.5
	2	155	20.1
	3	222	28.8
	4	241	31.3
	5	51	6.6
	More than 5	20	2.6
Employment	Full-time	599	77.8
	Part-time	62	8.1
	Retired	23	3.0
	Self-employed	36	4.7
	Student	12	1.6
	Unable to work	5	0.6
	Unemployed	33	4.3
Income	≤ \$19,999	62	8.1
	\$20,000–\$29,999	102	13.2
	\$30,000–\$39,999	80	10.4
	\$40,000–\$49,999	127	16.5
	\$50,000–\$59,999	137	17.8
	\$60,000–\$69,999	67	8.7
	\$70,000–\$79,999	66	8.6
	\$80,000–\$89,999	42	5.5
	\$90,000 ≥	87	11.3

The complete list of statements is presented in “Table A1”. A total number of 485 respondents qualified for the analysis. The characteristics for the group are presented in “Table A2”. After displaying the photo, the participants responded to the statements on a 7-point scale, measuring attitude towards the label (ATL) and product purchase intentions (PPI). In the next step, health orientation was measured using a 5-item scale. Data collected in this way made it possible to divide the respondents into those more and less health-oriented, using the mean split procedure. At this stage, we used the Jamovi program to analyse mediation.

4. Data analysis and results

4.1 Study 1

The structural equation modelling technique was used for data analysis. The first step in the analysis, as recommended by Bagozzi and Yi (2012), was evaluation of convergent and discriminant validity regarding individual items, and additionally, the composite reliability of variables. Confirmatory factor analysis was also performed. The factor loadings of the individual items exceeded the recommended level of 0.6 (Chin et al., 1997). Moreover, to measure the reliability of the scale, Cronbach’s α coefficient was applied. The values of Cronbach’s α ranged from 0.82 to 0.89, representing good and very good consistency, as recommended by Hair et al. (2017). For the measurement of convergent and discriminant validity, in addition to standardised factor loading, 2 parameters were used, i.e. Composite

Reliability (CR) and Average Variance Extracted (AVE). The AVE values ranged from 0.55 to 0.73, which is above the acceptable limit of 0.5, also recommended by [Hair et al. \(2017\)](#). The CR values further exceeded the acceptable limit of 0.6, with values ranging from 0.74 to 0.87, showing internal consistency of multiple indicators ([Bagozzi and Yi, 2012](#)). Detailed values for individual variables and items are presented in [Table 2](#).

The Heterotrait-Monotrait ratio of correlations (HTMT) was used to assess the discriminant validity and to measure similarities between latent variables. The HTMT ratio of correlations for each construct was below 0.8. Additionally, in [Table A5](#), we have presented the variable correlation matrix. This means that discriminant validity – used to verify that constructs that should have such a relationship really do not have one – has been established ([Henseler et al., 2015](#)). Moreover, we have implemented Harman's one-factor test, and the total variance extracted by one factor is 48% which is less than the recommended threshold of 50%. All the actions taken allow us to conclude that there is no common method bias. Various measures were used to evaluate the model, as proposed by [Schumacker and Lomax \(2017\)](#). Therefore, the model was tested with 3 types of fit indices: absolute, parsimonious and incremental fit measures. All of the obtained fit indices met the suggested ranges, i.e. RMSEA = 0.056, GFI = 0.943, AGFI = 0.915, CFI = 0.968 and NFI = 0.952, $\chi^2 = 433.815$ and $df = 128$ ([Hair et al., 2017](#); [Marsh and Hocevar, 1985](#)).

After the stage of confirming reliability and validity of the measurement model, path analysis was performed. Assessment of the structural equation modelling (SEM) model, as in the case of confirmatory factor analysis (CFA), was also based on various measures: SRMS = 0.036, RMSEA = 0.59, NFI = 0.948, CFI = 0.962, TLI = 0.953, $\chi^2 = 508.05$ and $df = 139$. This was done to explain the relationships between the measured and latent variables, as well as the relationships between the latent ones, which may be additionally characterised by not being directly measurable. The results indicate that empirical data confirm validity of the proposed theoretical model, which allows for a more detailed analysis. The applied structural model explains the high variability of willingness to buy food containing NCs ($R^2 = 0.66$) and the intention to pay attention to NCs ($R^2 = 0.74$). In line with the adopted hypotheses, path analysis was performed. First, the impact of healthy eating

Construct	Item	Loading	<i>p</i> value	Cronbach's	CR	AVE
				α		
Healthy eating orientation (HEO)	HEO1	0.68	***	0.83	0.75	0.51
	HEO2	0.74	***			
	HEO3	0.80	***			
Outcome expectancy (OE)	OE1	0.85	***	0.87	0.85	0.72
	OE2	0.82	***			
	OE3	0.85	***			
Attitude towards paying attentions (APA) to nutrition claims	ATT1	0.77	***	0.85	0.75	0.64
	ATT2	0.82	***			
	ATT3	0.83	***			
Subjective norm (SN)	SN1	0.86	***	0.88	0.93	0.76
	SN2	0.82	***			
	SN3	0.80	***			
Perceived behavioural control (PBC)	PCB1	0.77	***	0.82	0.82	0.67
	PBC2	0.80	***			
	PBC3	0.71	***			
Intention to pay attention (IPA) to nutrition claims	IPA1	0.84	***	0.89	0.76	0.53
	IPA2	0.89	***			
	IPA3	0.85	***			

Note(s): *** $p < 0.001$

Table 2.
Confirmatory factor
analysis (study 1)

orientation on outcome expectancy towards products containing NCs and on attitude towards paying attention to NCs was analysed. In both cases, this was statistically significant and amounted to $\beta = 0.661, p < 0.001$ and $\beta = 0.262, p < 0.01$, respectively. Hence, it can be assumed that hypotheses H4 and H6 have been confirmed. Additionally, the statistically significant influence of OE on APA was demonstrated ($\beta = 0.654, p < 0.001$), which confirms hypothesis H5. In the case of factors affecting IPA, all of them – APA, SN and PBC, also turned out to be statistically significant, the values of the influence exceeding 0.2, and respectively, APA: $\beta = 0.537, p < 0.001$, SN: $\beta = 0.25, p < 0.001$, PBS: $\beta = 0.226, p < 0.001$, which is in line with H1, H2 and H3. Pathway analysis of intention to pay attention to NCs on willingness to buy supports hypothesis H7 ($\beta = 0.66, p < 0.001$). All the analyses are presented in Table 3. Additionally, in Table A4, the results are presented of an alternative model analysis assuming a direct relationship between OE and HEO on IPA. On its basis, it cannot be indicated that there is such a direct relationship, which, at the same time, confirms that the proposed original theoretical model is added and consistent with the obtained empirical data.

4.2 Study 2

The second study was also preceded by CFA for the variables of attitude towards the label (ATL), product purchase intention (PPI) and health orientation (HO). As in the first study, all cut-off points were achieved for the loading values (all above 0.676), Cronbach's α (0.87–0.95), CR (0.87–0.95) and AVE (0.57–0.87) (Table A3). The heterotrait-monotrait (HTMT) ratio of correlations confirmed discriminant validity.

Analysis of variance revealed a statistically significant difference between people with varying levels of health orientation on perception of the product label: $t(483) = 6.89, p < 0.001$, $d = 0.637$ and purchase intention $t(483) = 5.94, p < 0.001$ and $d = 0.549$. At the same time, people with greater health orientation demonstrated better attitude towards the labels (mean $ATL_{HO-HIGH} = 5.64(1.33)$ vs. mean $(ATL_{HO-LOW}) = 4.80(1.29)$), and a higher tendency towards buying the presented product (mean $PI_{HO-HIGH} = 5.39(1.72)$ vs. mean $(PI_{HO-LOW}) = 4.48(1.57)$). Moreover, taking health consciousness into account, the relation of the influence regarding label perception on inclination towards a product was examined. The performed moderation analysis revealed that there was an interaction between ATL and HO on PPI. Estimation of the influence of perception concerning the label containing a NC on the propensity to buy this product, in 3 groups differing in health orientation, was performed: medium level, low (–1 SD) and high (+1 SD). A standard test was used to verify the hypotheses in linear regression, i.e. dividing the parameter by the standard deviation and the reference distribution for large samples that can be the standardised normal distribution. A high value may be due to small

H	Endogenous variable	Exogenous variable	Beta	B	SE	p-value	Hypotheses
H1	IPA	APA	0.54	0.56	0.08	***	Confirmed
H2	IPA	SN	0.25	0.48	0.12	***	Confirmed
H3	IPA	PBC	0.23	0.46	0.10	***	Confirmed
H4	APA	HEO	0.26	0.50	0.11	***	Confirmed
H5	APA	OE	0.65	0.94	0.15	***	Confirmed
H6	OE	HEO	0.66	0.88	0.09	***	Confirmed
H7	WB	IPA	0.66	0.44	0.04	***	Confirmed

Note(s): *** $p < 0.001$

IPA – intention to pay attention to nutrition claims, APA – attitude towards paying attention to nutrition claims, SN – subjective norm, PBC – perceived behavioural control, OE – outcome expectancy, HEO – healthy eating orientation, WB – willingness to buy

Table 3.
SEM results (study 1)

variance and that the differentiating variable causes a high level of separation. In our study, it was found that consumers with a higher level of consciousness make decisions more dependent on their attitude towards NC contained therein, compared to people with average or lower levels of consciousness (Table 4, Figure 2).

5. Discussion

The objective of the current study was to investigate how health orientation influences attitude towards paying attention (APA) to NCs, intention to pay attention (IPA) and the willingness to buy (WP) products containing NCs.

The first discovery resulting from this study concerns IPA dependence on APA. APA influence appeared to be twice as great as compared to other predictors. This result is similar to that found by Al-Swidi *et al.* (2014), who proved that the relationship between attitudes and intentions may be high. Moreover, according to Spence *et al.* (2018), attitude may be the primary determinant factor influencing intentions, which was also confirmed by Wong *et al.* (2018). Such a high dependence of intentions on attitudes may be explained in many ways.

Health is a very personal “asset” which cannot be bought or borrowed, and is, therefore, the most valued of all. This means that the motivation to eat healthy can largely be explained as an intrinsic factor. In TPB-based research on health-related behaviours (Godin and Kok, 1996), it has been shown that attitude towards a certain behaviour and perceived behavioural

	Estimate	SE	Lower	Upper	Z	p
Average	0.972	0.035	0.903	1.041	27.6	<0.001
HO (-1SD)	0.907	0.046	0.817	0.998	19.7	<0.001
HO (+1SD)	1.036	0.047	0.945	1.128	22.2	<0.001

Table 4.
Simple slope estimates
(study 2)

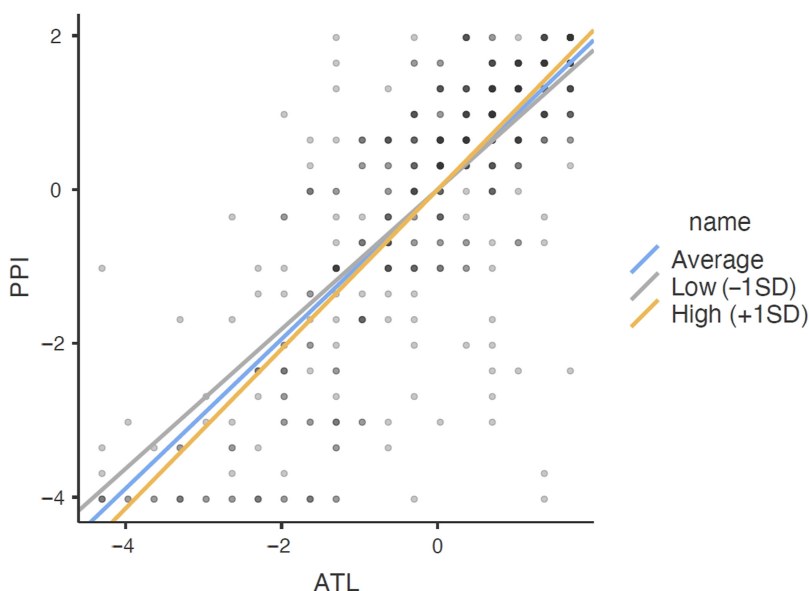


Figure 2.
Simple slope plot
(Study 2)

control were most often significant variables responsible for the explained variation of intention. With regard to the high prevalence of NCs on products in the USA (survey conducted in the USA), due to the fact that they appeared there a decade before doing so in the European Union, accessibility to NCs and knowledge about claims, which was found to be one of the top factors influencing the processing of NCs (Carrillo *et al.*, 2014), could remove barriers to NCs, thus, lowering the influence of PBC on APA. Secondly, the USA is a prime example of an individualistic country, so people often focus more on their own perception and attitudes rather than on collective ones (Hofstede, 2001). Therefore, customer intention concerning NC products may be significantly more dependent on their own attitudes than on externally driven factors such as SN or PBC. The high level of the relationship between APA and IPA – more generally affecting attitudes towards food labelling, and consequently, consumer behaviour – was proved in previous studies (Abdul Latiff *et al.*, 2016). This was confirmed by Tian *et al.* (2021), who claimed that apart from norms, attitudes and literacy about nutrition are the main predictors of intentions towards food labels, thus, in the case of the present study, also towards claims. An explanation for the small impact of SN concerning paying attention to NC can be connected with the type of behaviour it concerns. Paying attention to NCs is fairly, morally neutral, and also difficult to use in building one's identity and showing off, therefore, the little effect of feeling pressure from others to pay attention to NCs seems justified.

Another important observation concerns the relationship between HEO and APA, which was found to be both direct and indirect - moderated by OE. It turned out that although HEO has a visible effect on APA, the direct impact was not as strong as it is in the case of OE. It should be highlighted, however, that considering both the direct and indirect effects of HEO on APA, HEO influence was found to be larger than that of OE. Our second study also allowed to confirm the influence of health orientation (HO) on product labelling and NC product purchase intention. Therefore, in general, the influence of HEO on APA demonstrated in the current research may be considered consistent with that found in the work by Contini or Satiawati *et al.* (2018), who argued that there are positive relationships between health awareness and attitudes towards healthy food. In the case of OE (Shamsi *et al.*, 2020), the results indicate that this parameter has a significant effect on APA, which is somewhat similar to the results obtained by Xia *et al.* (2015), who stated that outcome expectancy may have positive and significant influence on attitudes. Finally, the authors managed to prove that OE may have a mediating role between HEO and APA. Thus, although the need to eat healthy affects APA, this may be largely due to the desire that a healthy product be the one carrying claims, and that such a product be easily purchased. Therefore, the fact that people who want to eat healthier have special expectations for the product and expect it to contain nutrition claims, may be considered the main practical implication of this paper. Nevertheless, this issue requires further investigation.

The final part of the analysis was focused on experimental verification of willingness to buy (WB) dependence on IPA. The results show that IPA strongly affects WB, which is a somewhat similar to the results obtained by Benson *et al.* (2019), who claimed that NCs influence consumer choices, as well as Kaur *et al.* (2017), who proved that there is a positive correlation between nutrition claims and purchasing/consumption. Additionally, Loebnitz and Grunert (2018) and Franco-Arellano *et al.* (2020) indicated that claims may influence intentions – also expressed as willingness to purchase/buy. This may mean that if someone takes notice of a product, there is a good chance that the product will be purchased. From a consumer perspective, this decision may not be appropriate because claims should only be helpful when a consumer decides to buy a product, but the purchase decision should be made consciously. Therefore, it would be beneficial for the customer if he/she could distinguish individual claims from one another or from marketing texts, and if he/she could resign from purchasing a product when considered of poor quality or value. This may not be simple as

many products contain a variety of marketing information. As a consequence, mistrust and confusion may arise, which can also significantly undermine the actual message conveyed by claims. This may further explain why exposure to claims does not always lead to the use of food labels (Kim *et al.*, 2021; Moreira *et al.*, 2019). In addition, the fact is that individuals may find it problematic to distinguish between different kinds of claims (Williams, 2005), and that generally, nutrition labels may be too difficult for them to understand (Grunert *et al.*, 2010). Therefore, it is particularly important to educate consumers about claim weight and content, especially so that they have a better view of products bearing claims they know (Miklavc *et al.*, 2015). It is also important to build awareness so that consumers can distinguish between nutrition and marketing claims, and to increase confidence in the message conveyed by them. This could also be achieved by modifying legislation to limit the use of nutrition claims on unhealthy products.

The final observation concerns the use of the TPB model in research concerning labelling. Although, according to Kiriakidis (2017), the model in its basic form may not be sufficient for every study, methods to improve its usability do exist. It has already been proved that the power of this framework may be enhanced when additional predictor variables are included (Donald *et al.*, 2014; Wong *et al.*, 2018). Therefore, as claimed by Abdul Latiff *et al.* (2016), the extended Ajzen model is well fit to studies on food labelling and purchasing behaviour. In addition, Tian *et al.* (2021) demonstrated its efficacy in understanding consumers' use of nutrition labels. Finally, the substantial (Cohen, 1988) level of the R^2 coefficient suggests that the enhanced model presented in this study is well-suited to the sample and the results are highly reliable.

6. Conclusions

The main objective of this article was to investigate the role of health orientation in explaining attitudes towards paying attention to NCs, intention to pay attention, and the willingness to buy products containing NCs. The major contribution and main implications pertain to the establishment of the fact that healthy eating orientation impacts the willingness to buy NC products and that this influence is mediated by outcome expectancy, attitude towards paying attention to NCs and intention to pay attention to NCs. It has been proved that intention to pay attention to NCs is predicted also by two other TPB variables: subjective norms and perceived behavioural control concerning NCs. Attitude towards paying attention to NCs, determined directly and indirectly by healthy eating orientation, was found to be the most important factor predicting intentions, the influence of which has been more than twice as large as in the case of perceived behavioural control or subjective norms. The influence of healthy eating orientation on the willingness to buy NC products was confirmed in our second study, in which it has been shown that health orientation moderates the relationships between attitude towards the label containing a NC and NC product purchase intention.

The strength of this article lies in an in-depth analysis based on the TPB and in the addition of new parameters and modifications to existing ones. The article may also contribute to a better understanding of motivation concerning paying attention to NCs and willingness to buy products bearing claims. This could lead to future improvement of consumers' eating habits, which was the intention behind the introduction of claims into the legislature of countries around the world. Moreover, the article may be used by business practitioners eager to use NCs on their products. Our research may also be a guide for policymakers. Knowing that consumers often do not understand or mistrust claims, they might think of modifying the legislature to simplify claims, but also to limit their use on unhealthy foods. Finally, our work opens space for the continuation of a relevant research agenda on the TPB, consumer behaviours, labelling and nutrition claims.

Although we provide a variety of implications in this study, some limitations must be addressed. The sample was not representative. The model could have contained additional variables – for example, knowledge about NCs or focus on health claims. Therefore, future research could be useful in verifying this item. In addition, it could be focused on the marketing aspect of claims and verifying at what level customers rate claims as an additional marketing tool, and as such, whether they trust them or not. This is also very important in the context of consumers' lack of sufficient knowledge of on claims. Moreover, it would be worthwhile to conduct a comparative analysis in a collectivised society. Finally, future studies could be focused on verifying the extent to which attitude towards one's own health and healthy eating, type of diet, or body mass index (BMI), influence attitudes.

References

- Abdul Latiff, Z.A.B., Rezai, G., Mohamed, Z. and Amizi Ayob, M. (2016), "Food labels' impact assessment on consumer purchasing behavior in Malaysia", *Journal of Food Products Marketing*, Vol. 22 No. 2, pp. 137-146, doi: [10.1080/10454446.2013.856053](https://doi.org/10.1080/10454446.2013.856053).
- Afshin, A., Sur, P.J., Fay, K.A., Cornaby, L., Ferrara, G., Salama, J.S., Mullany, E.C., *et al.* (2019), "Health effects of dietary risks in 195 countries, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017", *The Lancet*, Vol. 393 No. 10184, pp. 1958-1972, doi: [10.1016/S0140-6736\(19\)30500-8](https://doi.org/10.1016/S0140-6736(19)30500-8).
- Ajzen, I. (1991), "The theory of planned behavior", *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179-211.
- Ajzen, I. (2015), "Consumer attitudes and behavior: the theory of planned behavior applied to food consumption decisions", *Consumer Attitudes and Behavior: The Theory of Planned Behavior Applied to Food Consumption Decisions*, Vol. 70 No. 2, pp. 121-138, doi: [10.13128/REA-18003](https://doi.org/10.13128/REA-18003).
- Ajzen, I. and Sheikh, S. (2013), "Action versus inaction: anticipated affect in the theory of planned behavior", *Journal of Applied Social Psychology*, Vol. 43 No. 1, pp. 155-162, doi: [10.1111/j.1559-1816.2012.00989.x](https://doi.org/10.1111/j.1559-1816.2012.00989.x).
- Al-Swidi, A., Huque, S.M.R., Hafeez, M.H. and Shariff, M.N.M. (2014), "The role of subjective norms in theory of planned behavior in the context of organic food consumption", *British Food Journal*, Vol. 116 No. 10, pp. 1561-1580, doi: [10.1108/BFJ-05-2013-0105](https://doi.org/10.1108/BFJ-05-2013-0105).
- Armitage, C.J. and Conner, M. (2001), "Efficacy of the theory of planned behaviour: a meta-analytic review", *British Journal of Social Psychology*, Vol. 40 No. 4, pp. 471-499.
- Arvola, A., Vassallo, M., Dean, M., Lampila, P., Saba, A., Lähteenmäki, L. and Shepherd, R. (2008), "Predicting intentions to purchase organic food: the role of affective and moral attitudes in the Theory of Planned Behaviour", *Appetite*, Vol. 50 Nos 2-3, pp. 443-454, doi: [10.1016/j.appet.2007.09.010](https://doi.org/10.1016/j.appet.2007.09.010).
- Bagozzi, R.P. and Yi, Y. (2012), "Specification, evaluation, and interpretation of structural equation models", *Journal of the Academy of Marketing Science*, Vol. 40 No. 1, pp. 8-34, doi: [10.1007/s11747-011-0278-x](https://doi.org/10.1007/s11747-011-0278-x).
- Barreiro-Hurle, J., Gracia, A. and de-Magistris, T. (2010), "The effects of multiple health and nutrition labels on consumer food choices", *Journal of Agricultural Economics*, Vol. 61 No. 2, pp. 426-443, doi: [10.1111/j.1477-9552.2010.00247.x](https://doi.org/10.1111/j.1477-9552.2010.00247.x).
- Benson, T., Lavelle, F., McCloat, A., Mooney, E., Bucher, T., Egan, B. and Dean, M. (2019), "Are the claims to blame? A qualitative study to understand the effects of nutrition and health claims on perceptions and consumption of food", *Nutrients*, Vol. 11 No. 9, 2058, doi: [10.3390/nu11092058](https://doi.org/10.3390/nu11092058).
- Bhutto, M.Y., Zeng, F., Soomro, Y.A. and Khan, M.A. (2019), "Young Chinese consumer decision making in buying green products: an application of theory of planned behavior with gender and price transparency", *Pakistan Journal of Commerce and Social Science*, Vol. 13 No. 3, pp. 599-619.

- Bialkova, S., Sasse, L. and Fenko, A. (2016), "The role of nutrition labels and advertising claims in altering consumers' evaluation and choice", *Appetite*, Vol. 96, pp. 38-46, doi: [10.1016/j.appet.2015.08.030](https://doi.org/10.1016/j.appet.2015.08.030).
- Bimbo, F., Bonanno, A., Nocella, G., Viscecchia, R., Nardone, G., De Devitiis, B. and Carlucci, D. (2017), "Consumers' acceptance and preferences for nutrition-modified and functional dairy products: a systematic review", *Appetite*, Vol. 113, pp. 141-154, doi: [10.1016/j.appet.2017.02.031](https://doi.org/10.1016/j.appet.2017.02.031).
- Bitzios, M., Fraser, I. and Haddock-Fraser, J. (2011), "Functional ingredients and food choice: results from a dual-mode study employing means-end-chain analysis and a choice experiment", *Food Policy*, Vol. 36 No. 5, pp. 715-725, doi: [10.1016/j.foodpol.2011.06.004](https://doi.org/10.1016/j.foodpol.2011.06.004).
- Bloomberg (2019), "Dietary supplements market to reach USD 216.3 billion by 2026 | reports and data - Bloomberg", www.bloomberg.com, available at: <https://www.bloomberg.com/press-releases/2019-12-04/dietary-supplements-market-to-reach-usd-216-3-billion-by-2026-reports-and-data> (accessed 3 September 2020).
- Bryla, P. (2020), "Who reads food labels? Selected predictors of consumer interest in front-of-package and back-of-package labels during and after the purchase", *Nutrients*, Vol. 12 No. 9, 2605, doi: [10.3390/nu12092605](https://doi.org/10.3390/nu12092605).
- Carrillo, E., Fiszman, S., Lähteenmäki, L. and Varela, P. (2014), "Consumers' perception of symbols and health claims as health-related label messages. A cross-cultural study", *Food Research International*, Vol. 62, pp. 653-661, doi: [10.1016/j.foodres.2014.04.028](https://doi.org/10.1016/j.foodres.2014.04.028).
- Cavaliere, A., De Marchi, E. and Banterle, A. (2016), "Does consumer health-orientation affect the use of nutrition facts panel and claims? An empirical analysis in Italy", *Food Quality and Preference*, Vol. 54, pp. 110-116, doi: [10.1016/j.foodqual.2016.07.008](https://doi.org/10.1016/j.foodqual.2016.07.008).
- Chin, W.W., Gopal, A. and Salisbury, W.D. (1997), "Advancing the theory of adaptive structuration: the development of a scale to measure faithfulness of appropriation", *Information Systems Research*, Vol. 8 No. 4, pp. 342-367, doi: [10.1287/isre.8.4.342](https://doi.org/10.1287/isre.8.4.342).
- Cohen, J. (1988), *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed., Routledge, New York.
- Contini, C., Boncinelli, F., Marone, E., Scozzafava, G. and Casini, L. (2020), "Drivers of plant-based convenience foods consumption: results of a multicomponent extension of the theory of planned behaviour", *Food Quality and Preference*, Vol. 84, 103931, doi: [10.1016/j.foodqual.2020.103931](https://doi.org/10.1016/j.foodqual.2020.103931).
- Dean, M., Lampila, P., Shepherd, R., Arvola, A., Saba, A., Vassallo, M., Claupein, E., Winkelmann, M. and Lähteenmäki, L. (2012), "Perceived relevance and foods with health-related claims", *Food Quality and Preference*, Vol. 24 No. 1, pp. 129-135, doi: [10.1016/j.foodqual.2011.10.006](https://doi.org/10.1016/j.foodqual.2011.10.006).
- Dionysis, S., Chesney, T. and McAuley, D. (2022), "Examining the influential factors of consumer purchase intentions for blockchain traceable coffee using the theory of planned behaviour", *British Food Journal*, doi: [10.1108/BFJ-05-2021-0541](https://doi.org/10.1108/BFJ-05-2021-0541).
- Donald, I.J., Cooper, S.R. and Conchie, S.M. (2014), "An extended theory of planned behaviour model of the psychological factors affecting commuters' transport mode use", *Journal of Environmental Psychology*, Vol. 40, pp. 39-48, doi: [10.1016/j.jenvp.2014.03.003](https://doi.org/10.1016/j.jenvp.2014.03.003) YJEPV 847 To.
- Eagly, A.H. and Chaiken, S. (2007), "The advantages of an inclusive definition of attitude", *Social Cognition*, Vol. 25 No. 5, pp. 582-602, doi: [10.1521/soco.2007.25.5.582](https://doi.org/10.1521/soco.2007.25.5.582).
- Fenko, A., Kersten, L. and Bialkova, S. (2016), "Overcoming consumer scepticism toward food labels: the role of multisensory experience", *Food Quality and Preference*, Vol. 48, pp. 81-92, doi: [10.1016/j.foodqual.2015.08.013](https://doi.org/10.1016/j.foodqual.2015.08.013).
- Franco-Arellano, B., Vanderlee, L., Ahmed, M., Oh, A. and L'Abbé, M. (2020), "Influence of front-of-pack labelling and regulated nutrition claims on consumers' perceptions of product healthfulness and purchase intentions: a randomized controlled trial", *Appetite*, Vol. 149, 104629, doi: [10.1016/j.appet.2020.104629](https://doi.org/10.1016/j.appet.2020.104629).
- Godin, G. and Kok, G. (1996), "The theory of planned behavior: a review of its applications to health-related behavior", *American Journal of Health Promotion*, Vol. 11 No. 2, pp. 87-98.

- Grappe, C.G., Lombart, C., Louis, D. and Durif, F. (2022), "Clean labeling: is it about the presence of benefits or the absence of detriments? Consumer response to personal care claims", *Journal of Retailing and Consumer Services*, Vol. 65, 102893, doi: [10.1016/j.jretconser.2021.102893](https://doi.org/10.1016/j.jretconser.2021.102893).
- Gravel, K., Doucet, É., Herman, P.C., Pomerleau, S., Bourlaud, A.-S. and Provencher, V. (2012), "Healthy,' diet,' or 'hedonic'. How nutrition claims affect food-related perceptions and intake?", *Appetite*, Vol. 59 No. 3, pp. 877-884, doi: [10.1016/j.appet.2012.08.028](https://doi.org/10.1016/j.appet.2012.08.028).
- Grimmer, M. and Miles, M.P. (2017), "With the best of intentions: a large sample test of the intention-behaviour gap in pro-environmental consumer behaviour", *International Journal of Consumer Studies*, Vol. 41 No. 1, pp. 2-10, doi: [10.1111/ijcs.12290](https://doi.org/10.1111/ijcs.12290).
- Grunert, K.G., Fernández-Celemín, L., Wills, J.M., Bonsmann, S.S.G. and Nureeva, L. (2010), "Use and understanding of nutrition information on food labels in six European countries", *Journal of Public Health*, Vol. 18 No. 3, pp. 261-277, doi: [10.1007/s10389-009-0307-0](https://doi.org/10.1007/s10389-009-0307-0).
- Guido, G., Prete, M.I., Peluso, A.M., Maloumby-Baka, R.C. and Buffa, C. (2010), "The role of ethics and product personality in the intention to purchase organic food products: a structural equation modeling approach", *International Review of Economics*, Vol. 57 No. 1, pp. 79-102, doi: [10.1007/s12232-009-0086-5](https://doi.org/10.1007/s12232-009-0086-5).
- Hair, J., Black, W.C., Babin, B.J. and Anderson, R.E. (2017), *Multivariate Data Analysis*, 7th ed., Pearson Education, Harlow-Essex.
- Henseler, J., Ringle, C.M. and Sarstedt, M. (2015), "A new criterion for assessing discriminant validity in variance-based structural equation modeling", *Journal of the Academy of Marketing Science*, Vol. 43 No. 1, pp. 115-135, doi: [10.1007/s11747-014-0403-8](https://doi.org/10.1007/s11747-014-0403-8).
- Hieke, S., Kuljanic, N., Wills, J.M., Pravst, I., Kaur, A., Raats, M.M., van Trijp, H.C.M., Verbeke, W. and Grunert, K.G. (2015), "The role of health-related claims and health-related symbols in consumer behaviour: design and conceptual framework of the CLYMBOL project and initial results", *Nutrition Bulletin*, Vol. 40 No. 1, pp. 66-72, doi: [10.1111/mbu.12128](https://doi.org/10.1111/mbu.12128).
- Hofstede, G. (2001), *Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations Across Nations*, 2nd ed., SAGE Publications, Thousand Oaks, available at: <https://www.amazon.com/Culture's-Consequences-Comparing-Institutions-Organizations/dp/0803973241> (accessed 8 March 2021).
- Joshi, Y. and Rahman, Z. (2017), "Investigating the determinants of consumers' sustainable purchase behaviour", *Sustainable Production and Consumption*, Vol. 10, pp. 110-120, doi: [10.1016/j.spc.2017.02.002](https://doi.org/10.1016/j.spc.2017.02.002).
- Kaur, A., Scarborough, P. and Rayner, M. (2017), "A systematic review, and meta-analyses, of the impact of health-related claims on dietary choices", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 14 No. 1, pp. 1-17, doi: [10.1186/s12966-017-0548-1](https://doi.org/10.1186/s12966-017-0548-1).
- Kim, E.J., Ellison, B., Prescott, M.P. and Nayga, R.M. (2021), "Consumer comprehension of the nutrition facts label: a comparison of the original and updated labels", *American Journal of Health Promotion*, Vol. 35 No. 5, pp. 648-657, doi: [10.1177/0890117120983128](https://doi.org/10.1177/0890117120983128).
- Kiriakidis, S. (2017), "Perceived behavioural control in the theory of planned behaviour: variability of conceptualization and operationalization and implications for measurement", *Springer Proceedings in Business and Economics*, pp. 197-202, doi: [10.1007/978-3-319-33865-1_25](https://doi.org/10.1007/978-3-319-33865-1_25).
- Lähteenmäki, L. (2013), "Claiming health in food products", *Food Quality and Preference*, Vol. 27 No. 2, pp. 196-201, doi: [10.1016/j.foodqual.2012.03.006](https://doi.org/10.1016/j.foodqual.2012.03.006).
- Lähteenmäki, L., Lampila, P., Grunert, K., Boztug, Y., Ueland, Ø., Åström, A. and Martinsdóttir, E. (2010), "Impact of health-related claims on the perception of other product attributes", *Food Policy*, Vol. 35 No. 3, pp. 230-239, doi: [10.1016/j.foodpol.2009.12.007](https://doi.org/10.1016/j.foodpol.2009.12.007).
- Loebnitz, N. and Grunert, K.G. (2018), "Impact of self-health awareness and perceived product benefits on purchase intentions for hedonic and utilitarian foods with nutrition claims", *Food Quality and Preference*, Vol. 64, pp. 221-231, doi: [10.1016/j.foodqual.2017.09.005](https://doi.org/10.1016/j.foodqual.2017.09.005).

- Loera, B., Murphy, B., Fedi, A., Martini, M., Tecco, N. and Dean, M. (2022), "Understanding the purchase intentions for organic vegetables across EU: a proposal to extend the TPB model", *British Food Journal*, doi: [10.1108/bfj-08-2021-0875](https://doi.org/10.1108/bfj-08-2021-0875).
- Marsh, H.W. and Hocevar, D. (1985), "Application of confirmatory factor Analysis to the study of self-concept. First- and higher order factor models and their invariance across groups", *Psychological Bulletin*, Vol. 97 No. 3, pp. 562-582, doi: [10.1177/1559827611425762](https://doi.org/10.1177/1559827611425762).
- Maubach, N., Hoek, J. and Mather, D. (2014), "Interpretive front-of-pack nutrition labels. Comparing competing recommendations", *Appetite*, Vol. 82, pp. 67-77, doi: [10.1016/j.appet.2014.07.006](https://doi.org/10.1016/j.appet.2014.07.006).
- Miklavac, K., Pravst, I., Grunert, K.G., Klopčič, M. and Pohar, J. (2015), "The influence of health claims and nutritional composition on consumers' yoghurt preferences", *Food Quality and Preference*, Vol. 43, pp. 26-33, doi: [10.1016/j.foodqual.2015.02.006](https://doi.org/10.1016/j.foodqual.2015.02.006).
- Moreira, M.J., García-Diez, J., de Almeida, J.M.M.M. and Saraiva, C. (2019), "Evaluation of food labelling usefulness for consumers", *International Journal of Consumer Studies*, Vol. 43 No. 4, pp. 327-334, doi: [10.1111/ijcs.12511](https://doi.org/10.1111/ijcs.12511).
- Norberg, H.M., Maehle, N. and Korneliussen, T. (2011), "From commodity to brand: antecedents and outcomes of consumers' label perception", *Journal of Product and Brand Management*, Vol. 20 No. 5, pp. 368-378, doi: [10.1108/10610421111157892](https://doi.org/10.1108/10610421111157892).
- Oluka, O.C., Nie, S. and Sun, Y. (2014), "Quality assessment of TPB-based questionnaires: a systematic review", *PLoS ONE*, Vol. 9 No. 4, e94419, doi: [10.1371/journal.pone.0094419](https://doi.org/10.1371/journal.pone.0094419).
- Paul, J., Modi, A. and Patel, J. (2016), "Predicting green product consumption using theory of planned behavior and reasoned action", *Journal of Retailing and Consumer Services*, Vol. 29, pp. 123-134, doi: [10.1016/j.jretconser.2015.11.006](https://doi.org/10.1016/j.jretconser.2015.11.006).
- Provencher, V. and Jacob, R. (2016), "Impact of perceived healthiness of food on food choices and intake", *Current Obesity Reports*, Vol. 5 No. 1, pp. 65-71, doi: [10.1007/s13679-016-0192-0](https://doi.org/10.1007/s13679-016-0192-0).
- Putrevu, S. and Lord, K.I. (1994), "Comparative and noncomparative advertising: attitudinal effects under cognitive and affective involvement conditions", *Journal of Advertising*, Vol. 23 No. 2, pp. 77-91, doi: [10.1080/00913367.1994.10673443](https://doi.org/10.1080/00913367.1994.10673443).
- Roberto, C.A., Bragg, M.A., Seamans, M.J., Mechulan, R.L., Novak, N. and Brownell, K.D. (2012), "Evaluation of consumer understanding of different front-of-package nutrition labels, 2010-2011", *Preventing Chronic Disease*, Vol. 9 No. 9, pp. 2010-2011, doi: [10.5888/pcd9.120015](https://doi.org/10.5888/pcd9.120015).
- Salmani, F., Norozi, E., Moodi, M. and Zeinali, T. (2020), "Assessment of attitudes toward functional foods based on theory of planned behavior: validation of a questionnaire", *Nutrition Journal*, Vol. 19 No. 1, pp. 1-9, doi: [10.1186/s12937-020-00574-4](https://doi.org/10.1186/s12937-020-00574-4).
- Schumacker, R.E. and Lomax, R.G. (2017), *A Beginner's Guide to Structural Equation Modeling*, 3rd ed., Routledge, New York.
- Setiawati, H., Hartoyo, H. and Simanjuntak, M. (2018), "Analysis on intention of purchasing organic foods by the undergraduate students of IPB using the theory of planned behavior approach", *Jurnal Manajemen Dan Agribisnis*, Vol. 15 No. 2, pp. 198-207, doi: [10.17358/jma.15.2.198](https://doi.org/10.17358/jma.15.2.198).
- Shamsi, H.R., Najafabadi, M.O. and Hosseini, S.J.F. (2020), "Designing a three-phase pattern of organic product consumption behaviour", *Food Quality and Preference*, Vol. 79, 103743, doi: [10.1016/j.foodqual.2019.103743](https://doi.org/10.1016/j.foodqual.2019.103743).
- Siegrist, M., Leins-Hess, R. and Keller, C. (2015), "Which front-of-pack nutrition label is the most efficient one? The results of an eye-tracker study", *Food Quality and Preference*, Vol. 39, pp. 183-190, doi: [10.1016/j.foodqual.2014.07.010](https://doi.org/10.1016/j.foodqual.2014.07.010).
- Spence, M., Stancu, V., Elliott, C.T. and Dean, M. (2018), "Exploring consumer purchase intentions towards traceable minced beef and beef steak using the theory of planned behavior", *Food Control*, Vol. 91, pp. 138-147, doi: [10.1016/j.foodcont.2018.03.035](https://doi.org/10.1016/j.foodcont.2018.03.035).
- Sreen, N., Purbey, S. and Sadarangani, P. (2018), "Impact of culture, behavior and gender on green purchase intention", *Journal of Retailing and Consumer Services*, Vol. 41, pp. 177-189, doi: [10.1016/j.jretconser.2017.12.002](https://doi.org/10.1016/j.jretconser.2017.12.002).

- Stancu, V., Grunert, K.G. and Lähteenmäki, L. (2017), "Consumer inferences from different versions of a beta-glucans health claim", *Food Quality and Preference*, Vol. 60, pp. 81-85, doi: [10.1016/j.foodqual.2017.03.001](https://doi.org/10.1016/j.foodqual.2017.03.001).
- Sultan, P., Tarafder, T., Pearson, D. and Henryks, J. (2020), "Intention-behaviour gap and perceived behavioural control-behaviour gap in theory of planned behaviour: moderating roles of communication, satisfaction and trust in organic food consumption", *Food Quality and Preference*, Vol. 81, 103838, doi: [10.1016/j.foodqual.2019.103838](https://doi.org/10.1016/j.foodqual.2019.103838).
- Talati, Z., Norman, R., Kelly, B., Dixon, H., Neal, B., Miller, C. and Pettigrew, S. (2018), "A randomized trial assessing the effects of health claims on choice of foods in the presence of front-of-pack labels", *American Journal of Clinical Nutrition*, Vol. 108 No. 6, pp. 1275-1282, doi: [10.1093/ajcn/nqy248](https://doi.org/10.1093/ajcn/nqy248).
- Talwar, S., Jabeen, F., Tandon, A., Sakashita, M. and Dhir, A. (2021), "What drives willingness to purchase and stated buying behavior toward organic food? A Stimulus–Organism–Behavior–Consequence (SOBC) perspective", *Journal of Cleaner Production*, Vol. 293, 125882, doi: [10.1016/j.jclepro.2021.125882](https://doi.org/10.1016/j.jclepro.2021.125882).
- Tian, Y., Yoo, J.H. and Zhou, H. (2021), "To read or not to read: an extension of the theory of planned behaviour to food label use", *International Journal of Consumer Studies*, Vol. 46, pp. 984-993, doi: [10.1039/C4SC01393J](https://doi.org/10.1039/C4SC01393J).
- Tomić Maksan, M., Kovačić, D. and Cerjak, M. (2019), "The influence of consumer ethnocentrism on purchase of domestic wine: application of the extended theory of planned behaviour", *Appetite*, Vol. 142, 104393, doi: [10.1016/j.appet.2019.104393](https://doi.org/10.1016/j.appet.2019.104393).
- European Union (2020), "Nutrition claims | food safety", *ec.europa.eu*, available at: https://ec.europa.eu/food/safety/labelling_nutrition/claims/nutrition_claims_en (accessed 29 August 2020).
- U.S. Food and Drug Administration (2020), "Label claims for conventional foods and dietary supplements | FDA", *www.fda.gov*, available at: <https://www.fda.gov/food/food-labeling-nutrition/label-claims-conventional-foods-and-dietary-supplements> (accessed 29 August 2020).
- Vermeir, I. and Verbeke, W. (2008), "Sustainable food consumption among young adults in Belgium: theory of planned behaviour and the role of confidence and values", *Ecological Economics*, Vol. 64 No. 3, pp. 542-553, doi: [10.1016/j.ecolecon.2007.03.007](https://doi.org/10.1016/j.ecolecon.2007.03.007).
- Wansink, B. and Chandon, P. (2006), "Can 'low-fat' nutrition labels lead to obesity?", *Journal of Marketing Research*, Vol. XLIII, pp. 605-617.
- Waters, A.J., Burgess, A., Hughes, D.L., Jovanovic, J.L., Miller, E.K., Li, Y. and Basen-Engquist, K.M. (2012), "Outcome expectancies and expectancy accessibility in exercise behavior", *Journal of Applied Social Psychology*, Vol. 42 No. 2, pp. 414-439, doi: [10.1111/j.1559-1816.2011.00894.x](https://doi.org/10.1111/j.1559-1816.2011.00894.x).
- Williams, P. (2005), "Consumer understanding and use of health claims for foods", *Nutrition Reviews*, Vol. 63 No. 7, pp. 256-264, doi: [10.1301/nr.2005.jul.256-264](https://doi.org/10.1301/nr.2005.jul.256-264).
- Wong, S.L., Hsu, C.C. and Chen, H.S. (2018), "To buy or not to buy? Consumer attitudes and purchase intentions for suboptimal food", *International Journal of Environmental Research and Public Health*, Vol. 15 No. 7, 1431, doi: [10.3390/ijerph15071431](https://doi.org/10.3390/ijerph15071431).
- Xie, B., Wang, L., Yang, H., Wang, Y. and Zhang, M. (2015), "Consumer perceptions and attitudes of organic food products in eastern China", *British Food Journal*, Vol. 117 No. 3, pp. 1105-1121, doi: [10.1108/BFJ-09-2013-0255](https://doi.org/10.1108/BFJ-09-2013-0255).
- Yazdanpanah, M. and Forouzani, M. (2015), "Application of the Theory of Planned Behaviour to predict Iranian students' intention to purchase organic food", *Journal of Cleaner Production*, Vol. 107, pp. 342-352, doi: [10.1016/j.jclepro.2015.02.071](https://doi.org/10.1016/j.jclepro.2015.02.071).

Variable	Coding	Statement	Source
<i>(Study 1)</i>			
Healthy eating orientation (HEO)	HEO1	The healthfulness of food has impact on my food choices	Bialkova <i>et al.</i> (2016) and Contini <i>et al.</i> (2020)
	HEO2	I am very particular about the healthfulness of food I eat	
	HEO3	I always follow a healthful and balanced diet	
Outcome expectancy (OE)	OE1	I am convinced that food producers should put nutrition claims on the packaging	Shamsi <i>et al.</i> (2020)
	OE2	I am convinced that food products should contain more nutrition claims on the packaging	
	OE3	I am convinced that nutrition claims should be more visible on food packaging	
Attitude towards paying attention (APA) to nutrition claims	APA1	Paying attention to nutrition claims pays off	Ajzen and Sheikh (2013)
	APA2	Paying attention to nutrition claims is wise	
	APA3	Paying attention to nutrition claims is useful	
Subjective norm (SN)	SN1	Most of my family expects me to pay attention to nutrition claims	Joshi and Rahman (2017) and Vermeir and Verbeke (2008)
	SN2	Most of my friends expect me to pay attention to nutrition claims	
	SN3	Most people whose opinions I value expect me to pay attention to nutrition claims	
Perceived behavioural control (PBC)	PBC1	Nutrition claims are readable enough for me in most cases	Ajzen and Sheikh (2013), Arvola <i>et al.</i> (2008) and Tomić Maksan <i>et al.</i> (2019)
	PBC2	I feel I may easily find a nutrition claim on a package	
	PBC3	In my opinion nutrition claims are easily visible on a package	
Intention to pay attention (IPA) to nutrition claims	IPA1	When shopping, I plan to pay attention to nutrition claims visible on product packaging	Ajzen and Sheikh (2013), Bialkova <i>et al.</i> (2016) and Shamsi <i>et al.</i> (2020)
	IPA2	I intend to pay attention to nutrition claims	
	IPA3	The likelihood that I will pay attention to nutrition claims is high	
Willingness to buy (WTB)	WB	I buy food with nutrition claims	Tomić Maksan <i>et al.</i> (2019)
<i>(Study 2)</i>			
Attitude towards the label (ATL)	ATL1	I have a favourable perception of this label	Norberg <i>et al.</i> (2011)
	ATL2	I like this label	
	ATL3	This is a useful label	

(continued)

Table A1.
Surveys statements

Table A1.

Variable	Coding	Statement	Source
Product purchase intention (PPI)	PPI1	It is very likely that I would buy this product	Putrevu and Lord (1994)
	PPI2	I would buy this product the next time the next time I go shopping	
Health orientation (HO)	PPI3	I would definitely try this product	Talwar <i>et al.</i> (2021)
	HO1	I reflect about my health a lot	
	HO2	I'm very self-conscious about my health	
	HO3	I'm alert to changes in my health	
	HO4	I'm usually aware of my health	
	HO5	I take responsibility for the state of my health	

Table A2.

Description of the study group (study 2); *N* = 485

Variable	Option	Frequency	Percent
Gender	Female	239	49.3
	Male	241	49.7
Education	Prefer not to say	5	1.0
	Less than high school	2	0.4
	High school or equivalent	97	20.0
	Bachelor's degree	277	57.1
	Master's degree	88	18.1
	Doctorate	12	2.5
Household size	Other	9	1.9
	1	65	13.4
	2	96	19.8
	3	109	22.5
	4	154	31.8
	5	45	9.3
Employment	More than 5	16	3.3
	Full-time	331	68.2
	Part-time	47	9.7
	Retired	23	4.7
	Self-employed	39	8.0
	Student	8	1.6
Income	Unable to work	11	2.3
	Unemployed	26	5.4
	≤ \$19,999	52	10.7
	\$20,000–\$29,999	57	11.8
	\$30,000–\$39,999	49	10.1
	\$40,000–\$49,999	76	15.7
	\$50,000–\$59,999	72	14.8
	\$60,000–\$69,999	35	7.2
	\$70,000–\$79,999	43	8.9
	\$80,000–\$89,999	26	5.4
	\$90,000 ≥	75	15.5

Construct	Item	Loading	<i>p</i> value	Cronbach's α	CR	AVE	Health orientation's impact on consumers
Attitude towards the label (ATL)	ATL1	0.900	***	0.90	0.90	0.76	
	ATL2	0.911	***				
	ATL3	0.792	***				
Product purchase intention (PPI)	PI1	0.958	***	0.95	0.95	0.87	
	PI2	0.935	***				
	PI3	0.901	***				
Health orientation (HO)	HO1	0.777	***	0.87	0.87	0.57	
	HO2	0.753	***				
	HO3	0.808	***				
	HO4	0.751	***				
	HO5	0.676	***				
Note(s): *** <i>p</i> < 0.001							

577

Table A3.
Confirmatory factor analysis (study 2)

Endogenous variable	Exogenous variable	Beta	B	SE	<i>p</i> -value	Table A4. Alternative model SEM results
OE	HEO	0.66	0.88	0.09	***	
APA	HEO	0.27	0.50	0.11	***	
APA	OE	0.64	0.88	0.14	***	
IPA	APA	0.37	0.39	0.10	***	
IPA	SN	0.11	0.21	0.30		
IPA	PBC	0.18	0.35	0.17	*	
IPA	OE	0.15	0.23	0.12		
IPA	HEO	0.21	0.41	0.46		
WB	IPA	0.66	0.45	0.04	***	

	HEO	OE	APA	SN	PBC	IPA	WB	Table A5. Variable correlation matrix
HEO								
OE	0.659							
APA	0.690	0.815						
SN	0.839	0.553	0.579					
PBC	0.667	0.440	0.460	0.483				
IPA	0.772	0.728	0.781	0.666	0.605			
WB	0.508	0.479	0.514	0.438	0.398	0.658		

Corresponding author

Marcin Adam Antoniak can be contacted at: marcin.antoniak@phd.ue.poznan.pl

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgrouppublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com