Preprint version. Please cite as: Raimondo, M., Hamam, M., D'Amico, M., & Caracciolo, F. (2022). Plastic-free behavior of millennials: An application of the theory of planned behavior on drinking choices. Waste Management, 138, 253-261. doi: 10.1016/j.wasman.2021.12.004

Plastic-free behavior of Millennials: An application of the theory of planned behavior on drinking choices

Maria Raimondo[a], Manal Hamam[b], Mario D'Amico[b], Francesco Caracciolo[a,*]

[a]Department of Agricultural Sciences, University of Naples Federico II, Via Università, 100, 80055 Portici, Naples, Italy
[b]Department of Agriculture, Food and Environment (Di3A), University of Catania, Via Santa Sofia 98-100, 95123 Catania, Italy
* Corresponding author: francesco.caracciolo@unina.it

Abstract

This study explores the factors that influence millennials' intentions and behavior regarding reduced plastic consumption. An extended theory of planned behavior was established as a conceptual model that explicitly analyzed both the role of past and stated behaviors. The stated behavior was measured using a projective technique. The data obtained from a survey of 741 Italian respondents were analyzed through multiple correspondence analysis and partial least squares structural equation modeling. The results of the projective technique characterized "plastic-free" behavior as a unidimensional construct, while structural equation modeling showed that attitudes, subjective norms, and perceived behavioral control influence with a different impact the intention of millennial consumers to reduce the use of plastic drinking bottles. Finally, "plastic-free" behavior is mostly affected by intention. Based on the results, actions and incentives for reducing plastic consumption were provided.

Keywords: Plastic free, TPB, PLS-SEM, Millennials, consumer behavior.

1.Introduction

Plastics are extensively used in daily life as food and drink containers and grocery bags (Hopewell et al., 2009); given its various properties, such as affordability, lightness, versatility, and durability, plastic use and production have increased over the last 60 years (Alam et al., 2018; Sang et al., 2021). For instance, global plastic production reached 368 million tons in 2019, with Europe and Asia contributing 16% and 51%, respectively, while approximately 480 billion plastic drinking bottles were sold worldwide (PEMRG, 2020). On the demand side, 40% of plastics in Europe are used for packaging and 8% as plastic bottles for water, soft drinks, and juices (PEMRG, 2020). According to recent forecasts, the amount of plastic drinking bottles is expected to increase by approximately 15% per year (Laville and Taylor, 2017), reaching 12 billion tons of plastic in 2025. When plastic is not treated using an appropriate waste disposal stream, it may negatively influence natural ecosystems, causing problems for humans, plants, and animals (Caracciolo and Lombardi, 2012). If plastic is burned or buried, chemical compounds are toxic to air and soil (Ilyas et al., 2018). Most plastic chemical compounds are also persistent in the environment and are potentially hazardous to the human food chain, posing great concerns for ocean pollution (Laville and Taylor, 2017; Halden, 2010). Therefore, plastic pollution is considered among the main environmental threats by the United Nations, and plastic problems are a major concern for governments and other stakeholders (Paletta et al., 2019; Seltenrich, 2015).

Society acknowledges the negative impact of plastic waste on the environment, and it has been proven that consumers consider contamination of water, air, and food due to plastic pollution as harmful to human health (Tudor and Williams, 2003; Kiessling et al., 2017; Joseph et al., 2016). In consumers' perception of food products, plastic packaging leads to a reduction in perceived product quality and an increase in perceived safety risk (Fernqvist et al., 2015; Omari et al., 2018). This would result in an increased likelihood of consumers choosing more

sustainable choices (Gifford and Nilsson, 2014; Bamberg and Möser, 2007) and asking for more eco-friendly packaging solutions aimed at reducing the environmental pressure linked to plastic consumption.

Following this increased interest, scientific literature has focused on consumer perception and behavior related to plastic use and disposal (Zwicker et al., 2020; Rhein and Schmid, 2020). More specifically, several studies have investigated consumers' behavioral intention to recycle (Khan et al., 2019; Roy et al., 2020) or reuse plastics (Martinho et al., 2017; Madria and Tangsoc, 2019; Liu et al., 2021). For example, Khan and colleagues (2019) found that different consumer attitudes lead to different behaviors toward plastic recycling. The latter has been largely investigated in the United Kingdom, where Roy and colleagues (2020) discussed psychological, pragmatic, and social drivers for plastic recycling. Apart from individual-level determinants, personal attitudes and other challenges for promoting the reuse of plastics have also been investigated; for instance, Madria and Tangsoc (2019) investigated features of packaging design that allow reusing plastic to be as simple as throwing the item away, while Martinho et al. (2017) and Liu et al. (2021) illustrated that a plastic bag tax helps reduce the single-use of plastic bags.

Although both recycling and reuse practices should be promoted to decrease plastic waste, they do not guarantee a reduction in plastic production or use in general (Heidbreder et al., 2019). Unexpectedly, according to Heidbreder et al. (2019), recycling might push people to use more plastic than they usually would since recycling may allow consumers to feel exonerated from being responsible for plastic pollution. Therefore, more recently, researchers have focused on how plastic use can be reduced (Sun et al., 2017; Heidbreder et al., 2020; Nabila and Nurcahyo, 2020). Some have investigated demographic characteristics—such as gender, age, and education (Madigele et al., 2017; Sharp et al., 2010)—and psychological factors (Sun et al., 2017; Nabila and Nurcahyo, 2020) associated with the use or non-use of plastic items like

plastic bags or bottles. Others have analyzed the efficacy of plastic taxes, legislative initiatives, or "plastic-free" promotional campaigns as possible strategies aimed at reducing plastic use (Walker et al., 2020; Heidbreder et al., 2020). However, little attention has been focused on reducing plastic use; quantitative studies are quite scarce (Heidbreder et al., 2019) and do not approach the issue with a well-documented and formalized behavioral model.

Therefore, the current study attempts to fill this gap in the literature, aiming to understand how to stimulate the reduction of plastic drinking bottles of future generations (i.e., millennial consumers[1]) by investigating psychological and behavioral factors through an extended model of the theory of planned behavior (TPB; Ajzen, 1991). This was accomplished through a structured survey involving 741 Italian millennials; afterward, behavioral constructs were analyzed through multivariate statistical tools such as multiple correspondence analysis (MCA) and partial least squares structural equation modeling (PLS-SEM). TPB has been widely used to study behavioral intentions regarding environmental protection, education, and health and has also been applied to a wide range of behaviors, including food refusal (Graham-Rowe et al., 2015; Visschers et al., 2016), healthy eating (McEachan et al., 2011), and recycling behavior (Greaves et al., 2013; Rhodes et al., 2015; Stancu et al., 2016; White and Hyde, 2012). Many scholars have also extended the TPB framework by incorporating other constructs (Alhassan et al.,2018; Ding et al.,2018; Wan et al.,2012; Sun et al., 2017). In the current study, an extended theory of planned behavior was applied since the model hypothesized considers an additional predictor: what is called "past behavior." Previous scientific researchers have included past behavior predictors within the TPB (Canova et al., 2020; Hagger et al., 2018), especially if the behavior could be influenced by habits (Canova et al., 2020; Conner and Armitage, 1998). Indeed, according to Conner and McMillan (1999), repeated behavior may convert the behavior from a reasoned to an automatic process. Given that past behavior does not capture overall

1 There are several definitions of millennials (Formánková et al., 2019). Individuals born in or after 1982 show high sensitivity toward sustainability (Connell et al., 2012), thus in the current study, Millennials refers to people born in or after 1982.

habits (Knussen and Yule, 2008; Verplanken, 2006), this study has also adopted a projective technique—what are called "completion tasks" (Steinman, 2009)—to capture automatic or non-conscious processes that affect consumer behavior (Steinman, 2009; Bargh, 2002). Projective techniques encourage respondents to reveal unconscious feelings and attitudes by providing responses to verbal or visual stimuli (Will et al., 1996). "Completion tasks" are a kind of projective technique where respondents complete a partial sentence, story, argument, or conversation (Steinman, 2009; Gordon and Langmaid, 1988). This type of projective technique has been widely applied by consumer researchers to reveal consumers' feelings toward a specific product or brand (Sass et al., 2018; Sales et al., 2020). Therefore, in the current study, the "completion task" was used to capture the respondents' stated behavior toward use or non-use of plastic drinking bottles.

Once analyzed millennials' stated behaviors about the use of beverage containers, the current study aims at pointing out psychological and behavioral drivers and barriers to the reduction of plastic drinking bottle use.

The remainder of this paper is organized as follows. In the methodology, the survey and data collection process are described, and the measured behavioral constructs and empirical models are presented. The results present the outcomes provided by the projective techniques on plastic drinking bottle use and the estimated relationships between the TPB constructs and "plastic-free" behavior. The discussion elucidates the results of this study vis à vis current literature, as well as study limitations, while the last section provides concluding remarks and suggests potential future research directions.

2.Methodology

2.1 Data collection and survey

The convenience sample used in this study was drawn from a population of Italian millennials, from 18 to 39 years old. Data collection took four months (was from January to May 2020) and involved administering a web-based structured questionnaire. To reach a wider number of participants in the population target, the questionnaire was sent through different messaging and communication platforms (e.g., Facebook, Twitter, WhatsApp, email). The sample size was set at 700 to satisfy a level of effect size (correlation between variables) $|\rho|$ equal to 0.15, and a power of 99, according to the a priori power analysis (Faul et al., 2009). Moreover, to account for any potential attrition, allowing for respondent drop-out, the sample size was inflated by 10%, resulting in a sample size of 770 responses. The questionnaire was anonymous to avoid social desirability biases. Furthermore, the suitability of the questionnaire language was tested by performing a pilot test with 30 participants belonging to the target population of the study. The pilot test did not detect any misinterpretation of the questions or critical issues, supporting the choice of language used.

The survey had three sections. The first attempted to capture the behavioral constructs of millennial consumers to reduce the use of plastic drinking bottles and follow the standard structure of the TPB. The latter was developed by Ajzen (1991) who considers human behavior as a consequence of intention (Armitage and Conner, 1999), which in turn is influenced by three constructs: attitudes (Armitage and Conner, 1999), social norms (Armitage and Conner, 1999), and perceived behavioral control (PBC; Armitage and Conner, 1999). Owing to its flexibility and high predictive value, the TPB is a theoretical approach largely adopted to examine any form of human behavior (Despotović et al., 2019; Raimondo et al., 2021), particularly sustainable and healthy food purchases (Dorce et al., 2021; Li et al., 2021; Choi and Johnson,

2019). While intention captures people's motivation to adopt a behavior, indicating the probability of executing it (Honkanen and Young, 2015; Dorce et al., 2021), attitudes are based on personal evaluations and opinions about the consequences of the decision. Social norms include what others may think about one's behavior, and finally, PBC represents a subjective evaluation of one's internal and external capabilities and/or limitations that may influence the actual behavior. Moreover, in addition to the classical constructs of the TPB, the "past behavior" and the "stated behavior" constructs have been included in the model to improve the overall explanatory capacity of the model (Conner and Armitage, 1998; De Bruijn, 2010) in understanding factors influencing millennial behavior to reduce the use of plastic drinking bottles.

Overall, 13 items were used to measure the TPB dimensions: three items for each classical construct (intention, attitudes, social norms, and PBC) and one item for the "past behavior" construct. A 7-point Likert scale was used to rank each item from 1 ("strongly agree") to 7 ("strongly disagree"), except for the attitude items where the anchors were 1 ("not at all") and 7 ("very much;" Table 1).

Table 1. Description of the items included in the TPB constructs.

Constructs and Items	End-point anchors
Attitudes	
A.1 Reducing the consumption/waste of plastic drinking bottles in the next month would be satisfying	not at all (1) – very much (7)
A.2 Reducing the consumption/waste of plastic drinking bottles in the next month would be convenient	not at all (1) – very much (7)
A.3 Reducing the consumption/waste of plastic drinking bottles in the next month would be positive	not at all (1) – very much (7)

Social Norms	
SN.1 Most people important to me would like for me to reduce the consumption/waste of plastic drinking bottles	strongly disagree (1) – strongly agree (7)
SN.2 Most people I know and appreciate would approve of my choice to reduce the consumption/waste of plastic drinking bottles	strongly disagree (1) – strongly agree (7)
SN.3 Most people important to me have reduced the consumption/waste of plastic drinking bottles	strongly disagree (1) – strongly agree (7)
Perceived Behavioral Control (PBC)	
PBC. 1 If I wanted to, I could reduce the consumption/waste of plastic drinking bottles	strongly disagree (1) – strongly agree (7)
PBC. 2 I have no difficulty reducing the consumption/waste of plastic drinking bottles	strongly disagree (1) – strongly agree (7)
PBC. 3 Reducing the consumption/waste of plastic drinking bottles or not is up to me	strongly disagree (1) – strongly agree (7)
Intention	
I.1 I want to reduce the consumption/waste of plastic drinking bottles in the next month	strongly disagree (1) – strongly agree (7)
I.2 I plan to reduce the consumption/waste of plastic drinking bottles in the next month	strongly disagree (1) – strongly agree (7)
I.3 I will try to reduce the consumption/waste of plastic drinking bottles in the next month	strongly disagree (1) – strongly agree (7)
Past Behavior	
During the last year, I have reduced the consumption/waste of plastic drinking bottles	strongly disagree (1) – strongly agree (7)

The second section of the questionnaire aimed to measure millennials' stated behaviors regarding the use of beverage containers and was developed following the procedure suggested by Steinman (2009) for implementing the projective technique. Three real-life scenarios regarding drinking were proposed to respondents (Table 2): i) out with friends, ii) at home, and iii) at university/work. For each scenario, the "completion task" technique was adopted. Three alternative images of beverage containers (one plastic bottle and two plastic-free beverage containers) were shown as stimuli to each respondent, who was then asked to finalize the scenario that better represented their everyday life. For instance, in the scenario "drinking out with friends," the respondent had to imagine being out with friends in a restaurant/pub and asking for something to drink. Pictures showing a well-known soft drink in three alternative containers were offered to the respondents (Table 2).

Table 2. Consumers' stated behavior

Scenario description	*Beverage container alternatives*
Scenario 1 "**out with friends**." Imagine you are out with some friends in a restaurant/pub and are going to ask for something to drink. What type of beverage container do you order?	1- Plastic bottle 2- Aluminum can 3- Glass bottle
Scenario 2 "**at home**." Imagine you are having a daily meal with your family. What beverage container do you find on the table?	1- Reusable jug 2- Glass bottle 3- Plastic bottle
Scenario 3 "**at university/work**." Imagine you are at university or your working environment and you are going to drink water. What will you use?	1- Plastic bottle 2- Reusable jug 3- Dispenser of water

Finally, the third section of the survey collected traditional socio-demographic information on the respondent (i.e., gender, age, level of education [high school/ university degree], and the city of origin).

2.2 Empirical analysis

Once the data were collected, two statistical analyses were performed. First, MCA was conducted to analyze millennials' stated behaviors through the projective technique regarding the use of beverage containers. MCA is a quantitative multidimensional statistical technique that processes qualitative data. Furthermore, it is an extension of the correspondence analysis method, allowing for the analysis of relationships between categorical variables (Abdi and Valentin, 2007). MCA can also be seen as principal component or factorial analyses when the variables to be analyzed are categorical (Hoffman and Leeuw, 1992). This statistical method allows the determination of the internal structure of dependence between frequencies through a graphical representation of a data matrix of qualitative variables and is largely used in the field of marketing, and, in particular, multidimensional mapping (Greenacre and Blasius, 2006). In the current study, the model will be used to analyze millennials' stated behaviors regarding

the use of beverage containers in three different scenarios: dining out with friends, at home, and at university/work. Accordingly, the "stated behavior" construct is the output of the MCA.

In the second analysis, PLS-SEM was used to investigate the intention of millennial consumers to reduce the use of plastic drinking bottles. PLS-SEM is a multivariate technique widely used for analyzing consumer preferences and buying behavior in both observational and experimental settings (Caracciolo et al., 2020; Pinto et al., 2019; Hair et al., 2019). It consists of two parts: the measurement (or outer) and structural (or inner) models. The former provides relationships between latent constructs (or latent variables) and the items they are defined by, while the structural model shows the relationships between latent constructs themselves (Venturini and Mehmetoglu, 2019). In other words, the structural part is similar to regression analysis, while the measurement part is a type of confirmatory factor analysis. The algorithm used to estimate the PLS-SEM model comprises two steps. First, latent construct scores are estimated by providing the measurement model parameters (weights/loadings). Subsequently, the structural model parameters (path coefficients) were estimated. Once the measurement model was specified, it was confirmed by checking factor loadings > 0.5, Cronbach's alpha > 0.7, and rho A > 0.7 (indicator reliability). Moreover, the convergent and discriminant validity of the constructs were assessed. Convergent validity is achieved when the average variance extracted (AVE) of the construct is equal to or higher than 0.5, while discriminant validity is achieved if the factor loading on the assigned construct is higher than all loadings of other constructs (Dorce et al., 2021; Venturini and Mehmetoglu, 2019). The structural model assessment was based on path coefficient values (Venturini and Mehmetoglu, 2019; Hair et al., 2014). All statistical analyses were performed using Stata 16 (Stata Corp LP, College Station, TX, USA).

3.Results

3.1 Descriptive statistics

Of the 770 respondents, 31 failed to complete the survey or reported missing information on key statements, giving a final sample of 741 millennials. Socio-demographic information shows that participants (251 male and 490 female) were aged 18–39 years (24.8 ± 4.4 years), living in Southern Italy (89.7%) and in Sicily (46.5%) and in Campania (41.4%) in particular. Half of the sample (50%) had a university degree, while the remainder had a lower level of education. Table 3 presents the descriptive statistics (mean, standard deviation, minimum, and maximum) of each item. All the mean scores of items were moderately high, ranging from 4.06 (SN.1) to 6.30 (A.2). In particular, the highest mean values can be seen for items related to millennials' attitudes toward reducing plastic beverage consumption.

Table 3. Descriptive statistics of items.

Items	Mean	Std. dev	Min	Max
A.1	6.04	1.23	1	7
A.2	6.30	1.08	1	7
A.3	6.24	1.05	1	7
SN.1	4.06	1.91	1	7
SN.2	5.59	1.55	1	7
SN.3	4.32	1.63	1	7
PBC.1	5.60	1.57	1	7
PBC.2	4.74	1.62	1	7
PBC.3	4.97	1.74	1	7
I.1	5.74	1.56	1	7
I.2	5.40	1.54	1	7
I.3	5.64	1.49	1	7
Past Behav	5.00	1.58	1	7

The output of millennials' stated behavior regarding the use of beverage containers is shown in Table 4. In the first column, there are absolute and percentage frequencies of the total responses; the last two columns distinguish between male and female responses. For *scenario 1* (drinking out with friends), 74% of interviewees preferred the glass bottle option, while 10% chose the plastic bottle. Conversely, the plastic bottle option was the most preferred (51%) in *scenario 2* (drinking at home). Finally, for *scenario 3* (drinking at university/work), 61% of the sample preferred the reusable jug, while 32% preferred the plastic bottle. Meanwhile, Pearson's chi-square test confirmed that differences between females and males were statistically significant in each considered scenario, particularly when respondents were at university or in their working environment (Scenario 3). Therefore, it is possible that females may prefer the plastic bottle option less than males in each scenario. In *scenario 1*, 8% of females chose the plastic bottle versus 14% of males. In *scenario 2*, 49% of females and 56% of males preferred plastic bottles, and 29% and 38% of females and males, respectively, preferred plastic bottles in *scenario 3*.

Table 4. Beverage container alternatives (scenarios 1, 2 and 3).

Beverage container alternatives		***Total***		***Female***		***Male***		
		Abs. frequency	*Perc. frequency*	*Abs. frequency*	*Perc. frequency*	*Abs. frequency*	*Perc. frequency*	*Pearson chi-square*
Scenario 1	1-Plastic bottle	74	10%	39	8%	35	14%	
	2- Aluminum can	119	16%	70	14%	49	19%	
	3- Glass bottle	548	74%	381	78%	167	67%	

	Total	**741**	**100%**	**490**	**100%**	**251**	**100%**	**11.61****
Scenario 2	1- Reusable jug	265	36%	194	40%	71	28%	
	2-Glass bottle	95	13%	56	11%	39	16%	
	3- Plastic bottle	381	51%	240	49%	141	56%	
	Total	**741**	**100%**	**490**	**100%**	**251**	**100%**	**9.79***
Scenario 3	1-Plastic bottle	236	32%	140	29%	96	38%	
	2-Reusable jug	451	61%	326	66%	125	50%	
	3- Dispenser of water	54	7%	24	5%	30	12%	
	Total	**741**	**100%**	**490**	**100%**	**251**	**100%**	**23.84*****

*Note: (*p < 0.05; **p < 0.01; *** p < 0.001) Abs=Absolute; Perc= Percentage*

3.2 MCA results

The output of the multiple correspondence analysis is shown in Table 5 and graphically represented in Figure 1 as a data matrix with three qualitative variables (drinking out with friends, at home, and at university/work) and nine categories in relation to the x-axis and y-axis, with the x and y axes representing latent dimensions orthogonal to each other. The sum of the inertias of the two dimensions is the total inertia, which represents the total variability. The first dimension (x-axis) accounts for most of the inertia (92.2%), while the second dimension (y-axis) accounts for only 3% (Table 6). This indicates that the projective technique reveals "plastic-free" behavior as a unidimensional construct. By examining the closeness among the categories, the figure makes it possible to identify the associations and disassociations between categories, wherein categories clustered together represented associations (Figure 1). For example, the plastic bottle option of the first scenario is close to the plastic bottle options of the second and third scenarios. Conversely, the alternatives to plastic bottle options are far from

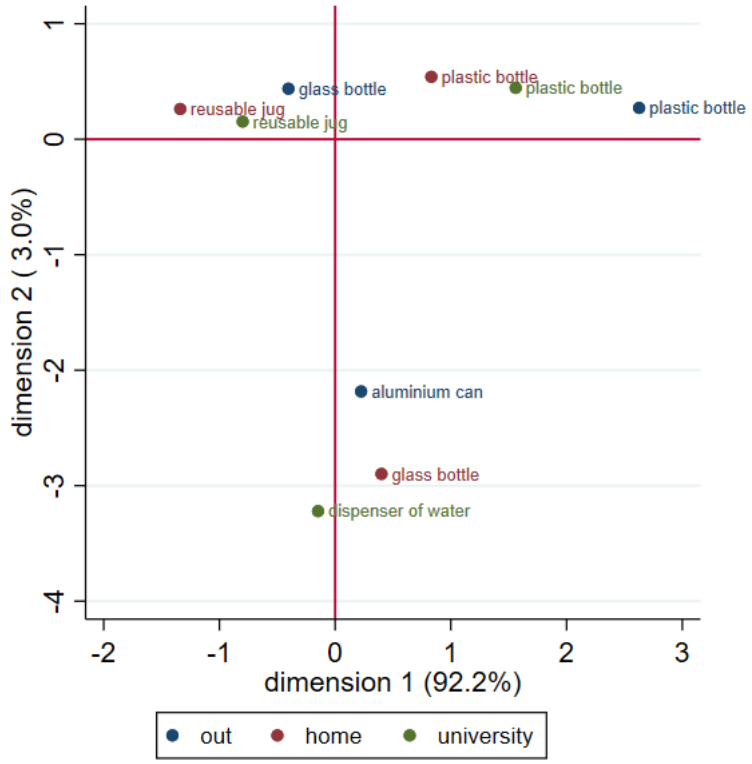
the three plastic bottle options but are associated with each other in two different clusters. Therefore, one (stated) dimension is pointed out. A positive value for this dimension indicates the "non plastic-free" behavior, referring to respondents who prefer the plastic drinking bottle option, while a negative value shows the "plastic-free" behavior that selects respondents who prefer alternatives to plastic drinking bottles. Given that the x-axis of the plot catches almost the total variability, the predicted scores of the first dimension were used as a construct (stated behavior) of the TPB model.

Table 5. Multiple correspondence analysis output.

	Dimension 1 coordinate (x)	**Dimension 2** coordinate (y)	**% Inertia**
Scenario 1 "out with friends"			
1-Plastic bottle	0.452	0.008	0.200
2-Aluminum can	0.039	-0.068	0.014
3-Glass bottle	-0.069	0.014	0.037
Scenario 2 "at home"			
1-Reusable jug	-0.230	0.008	0.206
2-Glass bottle	0.069	-0.090	0.020
3-Plastic bottle	0.143	0.017	0.118
Scenario 3 "at university/work"			
1-Plastic bottle	0.268	0.014	0.266
2-Reusable jug	-0.137	0.005	0.131
3-Dispenser of water	-0.025	-0.100	0.008

Note: Dimension 1, principal inertia: 0.0295 (92.21%); Dimension 2, principal inertia 0.0009 (2.98%).

Figure 1. MCA Plot



3.3 PLS-SEM output

3.3.1 The measurement model

Table 6 illustrates the results of the measurement model, showing strong relationships between the latent constructs and items with factor loadings >0.5, ranging from 0.6 to 0.9. The results of the final assessment of the model for internal consistency (Cronbach's alpha), indicator reliability (rho A), and convergent validity (AVE) are presented at the bottom of the table. The Cronbach's alpha for Social Normsis below the threshold value of 0.7, but Kline (2015) argues that values between 0.6 and 0.7 may be considered adequate. Moreover, the results could be

284 considered suitable for validating the measurement model because all constructs show indicator
285 reliability (rho A) and convergent validity above 0.7 and 0.5, respectively.

286

287

288

289 **Table 6.** Measurement model output.

Items	ATT	INT	SN	PBC	PB	ST-BEH
A.1	0.845					
A.2	0.893					
A.3	0.893					
I.1		0.916				
I.2		0.921				
I.3		0.921				
SN.1			0.683			
SN.2			0.858			
SN.3			0.64			
PBC.1				0.878		
PBC.2				0.807		
PBC.3				0.81		
PB					1	
ST-BEH						1
Cronbach's α	0.85	0.908	0.63	0.784	1	1
Rho A	0.909	0.942	0.774	0.871	1	1
AVE	0.853	0.909	0.738	0.835	1	1

290 **Note: ATT =attitude; INT=intention; SN= social norms; PBC =perceived behavioral control; PB =past*
291 *behavior; ST-BEH= stated behavior.*

292

293

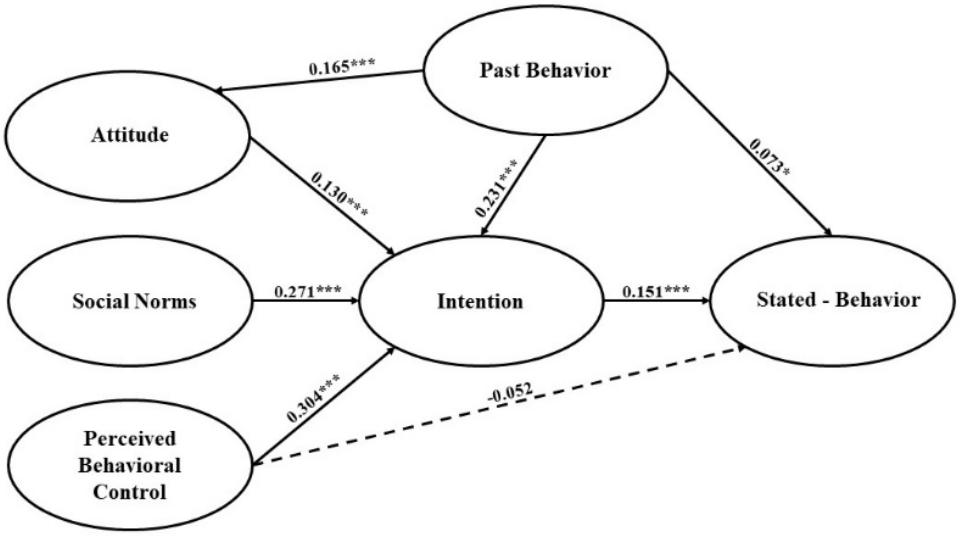
294 *3.3.2 The structural model*

295

296 Once a suitable measurement model was obtained, a hypothesized structural model was
297 estimated. Figure 2 presents the direct effects among the considered constructs, showing that
298 all path coefficients are significant and have the expected sign/direction, except for the
299 relationship between the PBC and the stated behavior characterized by a non-statistically
300 significant coefficient (p>0.05). Our findings confirmed that all classical TPB predictors

(attitudes, social norms, and PBC) influence the intention of millennial consumers to reduce the use of plastic drinking bottles, with PBC being the strongest predictor of intention (ß=0.304), followed by social norms (ß=0.271) and attitudes (ß= 0.130). Moreover, the past behavior construct positively and significantly affects attitude (ß=0.165), intention (ß=0.231), and stated behavior (ß=0.073) constructs. The latter is also positively predicted by intention (ß=0.151).

Figure 2. Structural model output.



*Notes: Significant relationships are marked by bold arrows, and non-significant relationships by dotted line arrows (*p < 0.05; **p < 0.01; *** p < 0.001).*

Furthermore, the second column of Table 7 illustrates indirect effects among the constructs. Indirect effects can be observed between attitudes and stated behavior (ß=0.020), as well as social norms and stated behavior (ß=0.041). Moreover, past behavior influences both intention (ß=0.022) through attitude and stated behavior (ß=0.038) through intention.

Table 7. Direct, indirect, and total effects

	Direct effect	*Indirect effect*	*Total*
ATT -> INT	0.13		0.13
ATT->ST-BEH		0.02	0.02
INT->ST-BEH	0.151		0.151
SN -> INT	0.271		0.271
SN -> ST-BEH		0.041	0.041
PBC -> INT	0.304		0.304
PBC -> ST-BEH	-0.052	0.046	-0.006
PB -> ATT	0.165		0.165
PB -> INT	0.231	0.022	0.253
PB -> ST-BEH	0.073	0.038	0.112

4. Discussion

The results regarding stated behavior provided by the projective technique illustrate that respondents prefer plastic beverage containers when they consume their daily meals at home. Otherwise, in the first and third scenarios, they prefer alternatives to plastic bottles. Indeed, in the first scenario, when with friends, millennials prefer to consume soft drinks (i.e., Coca-Cola) in glass bottles and prefer reusable jugs instead of plastic bottles if they are with colleagues at work or at university. This finding is in line with previous studies, which showed that plastic consumption is highly influenced by social desirability, contextual factors, and habits (Lam and Chen, 2006; Nørgaard Olesen and Giacalone, 2018; Romero et al., 2018). For instance, in an extensive literature review on plastic use, Heidbreder et al. (2019) identified several factors affecting plastic consumption behavior, including socio-demographic aspects, environmental attitude, convenience, context factors, habits, and social factors. Moreover, our study also shows that in each considered scenario, male choices are more than female, the plastic bottle is a beverage container. This result is in line with other studies showing gender-based differences in plastic use behavior. For instance, women are more willing to use alternatives to plastic bags than men (Madigele et al., 2017; Sharp et al., 2010).

The output of the MCA explains the differences among respondents revealing "plastic-free" behavior as a unidimensional construct. The "plastic-free" (stated) behavior refers to millennials who prefer non-plastic drinking containers in each scenario proposed (out with friends, at home and at university/work); conversely, "non-plastic free" includes respondents who prefer plastic drinking bottles.

As for the PLS-SEM output, the results confirmed all direct and indirect relationships proposed in the extended TPB model, except for the direct effect between the PBC and the stated behavior. Therefore, four key findings regarding the use of TPB are discussed here. First, the results confirmed that the three classical TPB predictors (attitudes, social norms, and PBC) influence the intention of millennial consumers to reduce the use of plastic drinking bottles. Furthermore, the strongest predictor of intention was PBC, followed by social norms and attitudes. Although this outcome does not fully reflect Ajzen's hypotheses (1991), which indicates that attitudes are the best predictor of intention, our findings are in line with scientific studies where the TPB has been used to analyze plastic consumption (Hasan et al., 2015; Sun et al., 2017). For example, Hasan and colleagues (2015) applied the TPB to measure students' behavior to reduce plastic consumption and found that PBC was the strongest predictor of students' intention to reduce plastic consumption, followed by social norms and attitudes. As in the current study, Hasan et al. (2015) judged attitude as the construct with the weakest relationship with intention. Similarly, Su et al. (2017) analyzed consumers' intention to use plastic bags and found that PBC had the highest impact on intention, followed by subjective norms and attitudes. However, the relative impact of the main TPB predictors on intention varies among studies (Dorce et al., 2021). While some studies confirmed this study's findings, showing the highest impact of PBC on intention (Hasan et al., 2015; Sun et al., 2017), others found the strongest impact of social norms on intention (Hassan et al., 2020) or no impact of attitudes on intention (Nabila and Nurcahyo, 2020).

The varying results regarding the influence of the three main TPB predictors on intention are unsurprising. For example, several studies have highlighted the importance of social pressure in influencing the use of plastic (Arı and Yılmaz, 2017; Carrigan et al., 2011; Musa et al., 2013), and social desirability has been considered critical for reducing plastic consumption (Sharp et al., 2010; Yeow et al., 2014). Moreover, the impact of constructs on intention may also vary across populations and time or may depend on the usage of different items to measure TPB constructs, thus influencing the correlations among them (Scalco et al., 2017; Ajzen, 1991).

The second key finding is that past behavior positively influences attitude, intention, and state behavior. According to some authors, the use of past behavior as a predictor of TPB is of particular interest because it increases the explained variance of intention and behavior as well (McEachan et al., 2011). Conversely, other researchers have shown that past behavior predictors may cloud the effect of intention on behavior and other TPB predictors (Hagger et al., 2018). In this case, our findings are consistent with those of researchers who included these constructs in the TPB (Smith et al., 2008; Knussen and Yule, 2008; Hamid and Cheng, 1995). More specifically, Hamid and Cheng (1995) found a direct effect of past behavior in predicting the intention of Chinese students to reduce the use of plastic bags. Furthermore, the direct effect of past behavior on intention and behavior is well known, especially in predicting food consumption (Canova et al., 2020) or when the type of behavior is performed repeatedly (Smith et al., 2008; Bamberg et al., 2003). The current study also pinpoints the positive and significant impact of intention on stated behavior (the third finding). Although this study measured stated behavior and not actual observed behavior (Ajzen, 1991), the results confirm the importance of intention in predicting behavior, as has been shown by several studies (Ajzen, 1991; Canova et al., 2020; Dorce et al., 2021). Finally, for the fourth finding, our results showed a non-significant relationship between the PBC constructs and state behavior. This finding is not new in scientific literature. For example, Canova et al. (2020) revealed the inconsistency of PBC

constructs in predicting behavior. Previous studies on healthy eating have also yielded comparable results (Carfora et al., 2016).

5. Conclusions

This study explored the intention of millennial consumers to reduce the use of plastic drinking bottles. An MCA was performed to analyze millennials' stated behaviors regarding the use of beverage containers, and then a PLS-SEM was applied to an extended model of the TPB, including past behavior and the stated behavior constructs. To the researchers' knowledge, this is the first study wherein an extended TPB model was tested for predicting millennials' intention to reduce the consumption of plastic drinking bottles; thus far, few studies have implemented a projective technique to capture consumers' stated behavior. The findings of the study revealed "plastic-free" behavior as a unidimensional construct. Moreover, it also highlighted the importance of socio-demographic (i.e., gender) and psychological factors (i.e., TPB constructs), as well as habits, in predicting the intention of millennials to reduce the use of plastic drinking containers. Finally, the study showed that the application of projective techniques to the TPB constructs could help reduce the social desirability bias of such constructs. Accordingly, future studies may combine TPB with projective techniques. However, the convenience nature of the sample, as well as the non-observed behavior, could be considered the main limitations of the current study that require further investigation.

Based on the study findings, several implications for both research and practice should be highlighted. First, PBC is the strongest predictor of intention to reduce the consumption of plastic drinking bottles. Accordingly, millennials (or individuals in general) must be supported

to facilitate the perception of control over obstacles and barriers (e.g., the high cost of non-plastic beverage containers). Further, to promote the development of intention to reduce the use of plastic drinking bottles, facilitating conditions should be introduced (e.g., providing water dispensers at work or at university), and social pressure may help reduce the use of plastic drinking beverage containers, especially outside the home. The current study also pointed out the importance of past and stated behavior for analyzing the millennial consumption of plastic drinking bottles thus indicating that the use of plastic drinking bottles is almost habitual. Therefore, educational programs aimed at reducing the consumption of plastic drinking bottles may help change the habits of millennials. Future researchers may focus on the determinants of "plastic-free" behaviors for both millennials and other generations. Moreover, future studies could investigate actual behavior instead of the "stated" behavior regarding the consumption of plastics jointly within the TPB and with other projective techniques. Indeed, the projective technique used in this study may also be used to evaluate other lifestyle habits and practices.

References

Abdi, H., & Valentin, D. 2007. Multiple correspondence analysis. Encyclopedia of measurement and statistics, 2(4), 651-657.

Ajzen, I. 1991. The theory of planned behavior. Organizational behavior and human decision processes, 50(2), 179-211.

Alam, O., Billah, M., & Yajie, D. 2018. Characteristics of plastic bags and their potential environmental hazards. Resources, Conservation and Recycling, 132, 121-129.

Alhassan, H., Asante, F. A., Oteng-Ababio, M., & Bawakyillenuo, S. 2018. Application of theory of planned behaviour to households' source separation behaviour in Ghana. Management of Environmental Quality: An International Journal.

Arı, E., & Yılmaz, V. 2017. Consumer attitudes on the use of plastic and cloth bags. Environment, Development and Sustainability, 19(4), 1219-1234.

Armitage, C. J., & Conner, M. 1999. Distinguishing perceptions of control from self-efficacy: Predicting consumption of a low-fat diet using the theory of planned behavior 1. Journal of applied social psychology, 29(1), 72-90.

Bamberg, S., Ajzen, I., & Schmidt, P. 2003. Choice of travel mode in the theory of planned behavior: The roles of past behavior, habit, and reasoned action. Basic and applied social psychology, 25(3), 175-187.

Bamberg, S., & Möser, G. 2007. Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. J. Environ. Psychol. 27, 14–25.

Bargh, J. A. 2002. Losing consciousness: Automatic influences on consumer judgment, behavior, and motivation. Journal of consumer research, 29(2), 280-285.

Canova, L., Bobbio, A., & Manganelli, A. M. 2020. Predicting fruit consumption: A multi-group application of the Theory of Planned Behavior. Appetite, 145, 104490.

Caracciolo, F., & Lombardi, P. 2012. A new-institutional framework to explore the trade-off between agriculture, environment and landscape. *Economics and Policy of Energy and the Environment* 3, 135-154.

Caracciolo, F., El-Nakhel, C., Raimondo, M., Kyriacou, M. C., Cembalo, L., De Pascale, S., & Rouphael, Y. 2020. Sensory Attributes and Consumer Acceptability of 12 Microgreens Species. Agronomy, 10(7), 1043.

Carfora, V., Caso, D., & Conner, M. 2016. The role of self-identity in predicting fruit and vegetable intake. Appetite, 106, 23-29.

Carrigan, M., Moraes, C., & Leek, S. 2011. Fostering responsible communities: A community social marketing approach to sustainable living. Journal of Business Ethics, 100(3), 515-534.

Choi, D., & Johnson, K. K. 2019. Influences of environmental and hedonic motivations on intention to purchase green products: An extension of the theory of planned behavior. Sustainable Production and Consumption, 18, 145-155.

Connell, J. A., McMinn, N. E., & Bell, N. 2012. How will the next generation change the business world? A report on a survey. Insights to a changing world journal, 2012(4).

Conner, M., & Armitage, C. J. 1998. Extending the theory of planned behavior: A review and avenues for further research. Journal of applied social psychology, 28(15), 1429-1464.

Conner, M., & McMillan, B. 1999. Interaction effects in the theory of planned behaviour: Studying cannabis use. British journal of social psychology, 38(2), 195-222.

De Bruijn, G. J. 2010. Understanding college students' fruit consumption. Integrating habit strength in the theory of planned behaviour. Appetite, 54(1), 16-22.

Despotović, J., Rodić, V., & Caracciolo, F. 2019. Factors affecting farmers' adoption of integrated pest management in Serbia: An application of the theory of planned behavior. Journal of Cleaner Production, 228, 1196-1205.

Ding, Z., Jiang, X., Liu, Z., Long, R., Xu, Z., & Cao, Q. 2018. Factors affecting low-carbon consumption behavior of urban residents: A comprehensive review. Resources, Conservation and Recycling, 132, 3-15.

Dorce, L. C., da Silva, M. C., Mauad, J. R. C., de Faria Domingues, C. H., & Borges, J. A. R. 2021. Extending the theory of planned behavior to understand consumer purchase behavior for organic vegetables in Brazil: The role of perceived health benefits, perceived sustainability benefits and perceived price. Food Quality and Preference, 91, 104191.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. 2009. Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. Behavior research methods, 41(4), 1149-1160.

Fernqvist, F.; Olsson, A.; Spendrup, S. 2015. What's in it for me? Food packaging and consumer responses, a focus group study. Br. Food J. 117, 1122–1135.

Formánková, S., Trenz, O., Faldík, O., Kolomazník, J., & Sládková, J. 2019. Millennials' awareness and approach to social responsibility and investment—Case study of the Czech Republic. Sustainability, 11(2), 504.

Gifford, R., & Nilsson, A. 2014. Personal and social factors that influence pro-environmental concern and behaviour: A review. Int. J. Psychol., 49, 141–157.

Gordon, W., & Langmaid, R. 1988. Qualitative market research: a practitioner's and buyer's guide. Routledge.

Graham-Rowe, E., Jessop, D. C., & Sparks, P. 2015. Predicting household food waste reduction using an extended theory of planned behaviour. Resources, Conservation and Recycling, 101, 194-202.

Greaves, M., Zibarras, L. D., & Stride, C. 2013. Using the theory of planned behavior to explore environmental behavioral intentions in the workplace. Journal of Environmental Psychology, 34, 109-120.

Greenacre, M., & Blasius, J. (Eds.). 2006. Multiple correspondence analysis and related methods. CRC press.

Hagger, M. S., Polet, J., & Lintunen, T. 2018. The reasoned action approach applied to health behavior: Role of past behavior and tests of some key moderators using meta-analytic structural equation modeling. Social Science & Medicine, 213, 85-94.

Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. 2014. Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. European business review.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. 2019. When to use and how to report the results of PLS-SEM. European business review.

Halden, R. U. 2010. Plastics and health risks. Annual review of public health, 31, 179-194.

Hamid, P. N., & Cheng, S. T. 1995. Predicting antipollution behavior: The role of molar behavioral intentions, past behavior, and locus of control. Environment and Behavior, 27(5), 679-698.

Hasan, S. N. M. S., Harun, R., & Hock, L. K. 2015. Application of theory of planned behavior in measuring the behavior to reduce plastic consumption among students at Universiti Putra Malaysia, Malaysia. Procedia Environmental Sciences, 30, 195-200.

Hassan, N. N. N. M., Kadir, J. M. A., & Abd Aziz, N. N. 2020. Examining a TPB Model towards Intention to Use Biodegradable Drinking Straw Using PLS-SEM. Environment-Behaviour Proceedings Journal, 5(15), 13-18.

Heidbreder, L. M., Bablok, I., Drews, S., & Menzel, C. 2019. Tackling the plastic problem: A review on perceptions, behaviors, and interventions. Science of the total environment, 668, 1077-1093.

Heidbreder, L. M., Steinhorst, J., & Schmitt, M. 2020. Plastic-free July: An experimental study of limiting and promoting factors in encouraging a reduction of single-use plastic consumption. Sustainability, 12(11), 4698.

Hoffman, D. L., & De Leeuw, J. 1992. Interpreting multiple correspondence analysis as a multidimensional scaling method. Marketing letters, 3(3), 259-272.

Honkanen, P., & Young, J. A. 2015. What determines British consumers' motivation to buy sustainable seafood?. British Food Journal.

Hopewell, J., Dvorak, R., & Kosior, E. 2009. Plastics recycling: challenges and opportunities. Philosophical Transactions of the Royal Society B: Biological Sciences, 364(1526), 2115-2126.

Ilyas, M., Ahmad, W., Khan, H., Yousaf, S., Khan, K., & Nazir, S. 2018. Plastic waste as a significant threat to environment–a systematic literature review. Reviews on environmental health, 33(4), 383-406.

Joseph, N., Kumar, A., Majgi, S.M., Kumar, G.S., & Prahalad, R.B.Y. 2016. Usage of plastic bags and health hazards: A study to assess awareness level and perception about legislation among a small population of Mangalore city. J. Clin. Diagn. Res, 10, LM01–LM04.

Khan, F., Ahmed, W., Najmi, A., & Younus, M. 2019. Managing plastic waste disposal by assessing consumers' recycling behavior: the case of a densely populated developing country. Environmental Science and Pollution Research, 26(32), 33054-33066.

Kiessling, T., Salas, S., Mutafoglu, K., Thiel, M., & 2017. Who cares about dirty beaches? Evaluating environmental awareness and action on coastal litter in Chile. Ocean Coast. Manag., 137, 82–95.

Kline, R. B. 2015. Principles and practice of structural equation modeling. Guilford publications.

Knussen, C., & Yule, F. 2008. "I'm Not in the Habit of Recycling" The Role of Habitual Behavior in the Disposal of Household Waste. Environment and Behavior, 40(5), 683-702.

Lam, S. P., & Chen, J. K. 2006. What makes customers bring their bags or buy bags from the shop? A survey of customers at a Taiwan hypermarket. Environment and Behavior, 38(3), 318-332.

Laville, S., & Taylor, M. 2017. A million bottles a minute: world's plastic binge 'as dangerous as climate change'. The Guardian, 28(6).

Li, L., Wang, Z., Li, Y., & Liao, A. 2021. Impacts of consumer innovativeness on the intention to purchase sustainable products. Sustainable Production and Consumption, 27, 774-786.

Liu, C., Nguyen, T. T., & Ishimura, Y. 2021. Current situation and key challenges on the use of single-use plastic in Hanoi. Waste Management, 121, 422-431.

Madigele, P. K., Mogomotsi, G. E. J., & Kolobe, M. 2017. Consumer willingness to pay for plastic bags levy and willingness to accept eco-friendly alternatives in Botswana. Chinese Journal of Population Resources and Environment, 15(3), 255-261.

Madria, W., & Tangsoc, J. 2019. Factors to consider in the design of plastic packaging intended for reuse of consumers. In *2019 IEEE 6th International Conference on Industrial Engineering and Applications (ICIEA)* (pp. 877-882). IEEE.

Martinho, G., Balaia, N., & Pires, A. 2017. The Portuguese plastic carrier bag tax: The effects on consumers' behavior. *Waste management*, *61*, 3-12.

McEachan, R. R. C., Conner, M., Taylor, N. J., & Lawton, R. J. 2011. Prospective prediction of health-related behaviours with the theory of planned behaviour: A meta-analysis. Health psychology review, 5(2), 97-144.

Musa, H. M., Hayes, C., Bradley, M. J., Clayson, A., & Gillibrand, G. 2013. Measures aimed at reducing plastic carrier bag use: A consumer behaviour focused study. Natural Environment, 1(1), 17-23.

Nabila, Y., & Nurcahyo, R. (2020). The Key Factors in Reducing the Use of Plastic Bags. In 2020 IEEE 7th International Conference on Industrial Engineering and Applications (ICIEA) (pp. 197-201). IEEE.

Nørgaard Olesen, S., & Giacalone, D. 2018. The influence of packaging on consumers' quality perception of carrots. Journal of Sensory Studies, 33(1), e12310.

Omari, R., Frempong, G.K., & Arthur, W. 2018. Public perceptions and worry about food safety hazards and risks in Ghana. Food Control, 93, 76–82.

Paletta, A., Leal Filho, W., Balogun, A. L., Foschi, E., & Bonoli, A. 2019. Barriers and challenges to plastics valorisation in the context of a circular economy: Case studies from Italy. Journal of cleaner production, 241, 118149.

Pinto, G. A., Vieira, K. C., Carvalho, E. G., & Sugano, J. Y. 2019. Applying the lazy user theory to understand the motivations for choosing carpooling over public transport. Sustainable Production and Consumption, 20, 243-252.

PlasticsEurope's Market Research and Statistics Group (PEMRG), Plastics – the Facts 2020 An analysis of European plastics production, demand and waste data. Available at https://www.plasticseurope.org/application/files/5716/0752/4286/AF_Plastics_the_facts-WEB-2020-ING_FINAL.pdf

Raimondo, M., Caracciolo, F., Cembalo, L., Chinnici, G., Pappalardo, G., & D'Amico, M. 2021. Moving towards circular bioeconomy: Managing olive cake supply chain through contracts. Sustainable Production and Consumption, 28, 180-191.

Rhein, S., & Schmid, M. 2020. Consumers' awareness of plastic packaging: More than just environmental concerns. *Resources, Conservation and Recycling*, *162*, 105063.

Rhodes, R. E., Beauchamp, M. R., Conner, M., de Bruijn, G. J., Kaushal, N., & Latimer-Cheung, A. 2015. Prediction of depot-based specialty recycling behavior using an extended theory of planned behavior. Environment and Behavior, 47(9), 1001-1023.

Romero, C. B. A., Laroche, M., Aurup, G. M., & Ferraz, S. B. 2018. Ethnicity and acculturation of environmental attitudes and behaviors: A cross-cultural study with Brazilians in Canada. Journal of Business Research, 82, 300-309.

Roy, D., Berry, E., & Dempster, M. 2020. Don't confuse me!-Insights into householder decision making around recycling plastic waste. In *26th International Sustainable Development Research Society Conference: Production, consumption and innovation (sustainable consumption and consumers)*.

Sales, Y. J. D., Corrêa, F. J. B., Tavares-Filho, E. R., Soares, P. T. S., Durço, B. B., Pagani, M. M., ... & Esmerino, E. A. 2020. Insights of Brazilian consumers' behavior for different coffee presentations: An exploratory study comparing hard laddering and completion task. Journal of Sensory Studies, e12611.

Sang, W., Chen, Z., Mei, L., Hao, S., Zhan, C., bin Zhang, W., Min, L. & Liu, J. 2021. The abundance and characteristics of microplastics in rainwater pipelines in Wuhan, China. Science of the Total Environment, 755, 142606.

Sass, C. A. B., Kuriya, S., Da Silva, G. V., Silva, H. L. A., Da Cruz, A. G., Esmerino, E. A., & Freitas, M. Q. 2018. Completion task to uncover consumer's perception: a case study using distinct types of hen's eggs. Poultry science, 97(7), 2591-2599.

Scalco, A., Noventa, S., Sartori, R., & Ceschi, A. 2017. Predicting organic food consumption: A meta-analytic structural equation model based on the theory of planned behavior. Appetite, 112, 235-248.

Seltenrich, N., 2015. New link in the food chain? Marine plastic pollution and seafood safety. Environ. Health Perspect. 123, 34e41. https://doi.org/10.1289/ehp.123-A34.

Sharp, A., Høj, S., & Wheeler, M. 2010. Proscription and its impact on anti-consumption behaviour and attitudes: the case of plastic bags. Journal of Consumer Behaviour, 9(6), 470-484.

Smith, J. R., Terry, D. J., Manstead, A. S., Louis, W. R., Kotterman, D., & Wolfs, J. 2008. The attitude–behavior relationship in consumer conduct: The role of norms, past behavior, and self-identity. The Journal of social psychology, 148(3), 311-334.

Stancu, V., Haugaard, P., & Lähteenmäki, L. 2016. Determinants of consumer food waste behaviour: Two routes to food waste. Appetite, 96, 7-17.

Steinman, R. B. 2009. Projective techniques in consumer research. International Bulletin of Business Administration, 5(1), 37-45.

Sun, Y., Wang, S., Li, J., Zhao, D., & Fan, J. 2017. Understanding consumers' intention to use plastic bags: using an extended theory of planned behaviour model. Natural Hazards, 89(3), 1327-1342.

Tudor, D.T., & Williams, A.T. 2003. Public Perception and Opinion of Visible Beach Aesthetic Pollution: The Utilisation of Photography. J. Coast. Res., 19, 1104–1115. 33.

Venturini, S., & Mehmetoglu, M. 2019. plssem: A stata package for structural equation modeling with partial least squares. J. Stat. Softw., 88 (8), 10.18637/jss.v088.i08.

Verplanken, B. 2006. Beyond frequency: Habit as mental construct. British Journal of Social Psychology, 45(3), 639-656.

Visschers, V. H., Wickli, N., & Siegrist, M. 2016. Sorting out food waste behaviour: A survey on the motivators and barriers of self-reported amounts of food waste in households. Journal of Environmental Psychology, 45, 66-78.

Walker, T., Gramlich, D., & Dumont-Bergeron, A. 2020. The Case for a Plastic Tax: A Review of Its Benefits and Disadvantages Within a Circular Economy. Sustainability.

Wan, C., Cheung, R. & Qiping Shen, G. 2012, Recycling attitude and behaviour in university campus: a case study in Hong Kong, Facilities, 30 (13/14), 630-646. https://doi.org/10.1108/02632771211270595

White, K. M., Hyde, & M. K. 2012. The role of self-perceptions in the prediction of household recycling behavior in Australia. Environment and Behavior, 44(6), 785-799.

Will, V., Eadie, D., & MacAskill, S. 1996. Projective and enabling techniques explored. Marketing Intelligence & Planning.

Yeow, P., Dean, A., & Tucker, D. 2014. Bags for life: The embedding of ethical consumerism. Journal of Business Ethics, 125(1), 87-99.

Zwicker, M. V., Nohlen, H. U., Dalege, J., Gruter, G. J. M., & van Harreveld, F. 2020. Applying an attitude network approach to consumer behaviour towards plastic. Journal of Environmental Psychology, 69, 101433.