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# **Packaging-free products: a lever of proximity and loyalty between consumers and grocery stores**

**Didier LOUIS, Cindy LOMBART, and Fabien DURIF**

## **Abstract:**

This research investigates the consequences for retailers and their stores of a new sustainable consumption trend—the purchase and consumption of bulk products. It examines the effects of offering packaging-free products on three subdimensions of perceived proximity (identity, process, and relational) and on transactional loyalty (satisfaction–loyalty) and relational loyalty (satisfaction–trust–loyalty). A total of 1,407 buyers and consumers of bulk products at a convenience store (of a university cooperative style) filled out an online questionnaire. These consumers were then divided into three subgroups (convinced, pragmatic, and wary). This research empirically establishes that unpacked products are a strategic tool for retailers and their stores to create or strengthen the relationships established with their customers. Unpacked products and the proximity they create between a consumer and a store are the first link in the development or preservation of a relational chain between the consumer and the store. Moreover, the step reached by the consumer in his process of purchasing and consuming packaging-free products (from the discovery stage to the already well-established habit) has a direct impact on the relational chain built.

## **Keywords:**

Food waste, Plastic waste, Packaging-free products, Proximity, Satisfaction, Trust, Loyalty

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## Introduction

Consumers believe they are being responsible. In Quebec, a predominantly French-speaking province in eastern Canada, 72.1% of consumers feel they are consuming responsibly. They recycle (89%), consume local products (60%), protect animals (56%) and the environment (52%), and are attempting “*deconsumption*” (53%)<sup>1</sup>. In France, the same trends are seen. French consumers also declare having changed their daily practices in order to reduce the impact of their consumption (67%). They favor local and seasonal fruits and vegetables (84%), as well as furniture made in France (68%). They no longer want to consume unnecessary products or services (30%), and they try to reduce their consumption (27%). They recycle, reuse, and repair products and materials (59%)<sup>2</sup>.

Recently, a new trend of socially responsible consumption has emerged—the purchase and consumption of bulk products (Beitzen-Heineke *et al.*, 2017; Rapp *et al.*, 2017; Fuentes *et al.*, 2019; Marken and Hörisch, 2020). At the end of 2019, Nielsen indicated that 40% of French households bought packaging-free products<sup>3</sup>. People under the age of 35 are slightly more enthusiastic participants in this trend than the average consumer is. According to the panel company, buyers of packaging-free products are more sensitive to the environment, and they buy fair trade, organic, and local products in larger quantities than the average consumer does<sup>4</sup>. Kantar, another panel company, finds that 47% of French households bought bulk products, with an average of 11.3 purchase orders in 2019, and there was a penetration rate of 47.6% among people under the age of 35<sup>5</sup>. According to Kantar, buyers of bulk products are sensitive to the prices of these products and, by consuming them, want to reduce food waste and the use of packaging. This current trend is also seen in Quebec, where consumers consider that buying and consuming packaging-free products are important (with an average of 4.87 out of 7-point scale)<sup>6</sup>.

At the same time, bulk products are offered increasingly often through all distribution channels (Beitzen-Heineke *et al.*, 2017; Fuentes *et al.*, 2019). Consumers can find them in specialized stores, such as Day by Day in France and La Récolte in Quebec. In France, according to the *Réseau Vrac*<sup>7</sup>, there were 215 stores entirely devoted to the sale of packaging-free products in 2019, and there could be up to 500 in 2022. Bulk products are also available in grocery stores. According to the *Observatoire 2019 du rayon vrac* (2019 Bulk Area Observatory), 71% of hypermarkets, supermarkets, and convenience stores have a bulk department<sup>8</sup>. According to the *Réseau Vrac*, the sale of bulk products has experienced strong growth in the past five years, reaching €1.2 billion in 2019.

From this context and the works of Beitzen-Heineke *et al.* (2017) and Fuentes *et al.* (2019), the following questions emerge: Why would a grocery store want to offer packaging-free products to its consumers? What impact does offering these specific products have on the relationships between a consumer and a hypermarket, a supermarket, or a convenience store? Determining beforehand the effects that offering bulk products in a grocery store has on the

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<sup>1</sup> <https://ocresponsable.com/barometre-de-la-consommation-responsable-edition-2019/>

<sup>2</sup> <https://www.greenflex.com/offres/produits-consommation-responsables/marketing-responsable/barometre-consommation-responsable-2019/>

<sup>3</sup> [https://reseauvrac.org/img/png/infographie\\_vf.png](https://reseauvrac.org/img/png/infographie_vf.png)

<sup>4</sup> <https://www.nielsen.com/fr/fr/insights/article/2019/bulk-buying-habit-that-settles-in-the-french/>

<sup>5</sup> <https://www.lsa-conso.fr/tendance-en-plein-boom-le-vrac-a-encore-du-chemin-a-faire,326941>

<sup>6</sup> <https://ocresponsable.com/barometre-de-la-consommation-responsable-edition-2018/>

<sup>7</sup> <https://reseauvrac.org/>

<sup>8</sup> <https://www.olivierdauvers.fr/2019/10/18/en-libre-telechargement-lobservatoire-du-rayon-vrac-2019/>

store's relationships with its consumers would indeed be advisable. These products would be offered within a dedicated area, and this offer would imply an investment from a retailer in new supply chains, in new equipment in stores, and in recruiting or training staff (to clean equipment, manage stocks, and provide information to customers).

Although there is a growing field of research on sustainable consumption (e.g., Webb *et al.*, 2008; Yan and She, 2011; Durif *et al.*, 2011; Villa Castaño *et al.*, 2016, 2018), less attention has been given to new forms of sustainable consumption, such as package free shopping (Fuentes *et al.*, 2019). Moreover, previous research on this topic is ethnographic (Rapp *et al.*, 2017; Fuentes *et al.*, 2019) or qualitative (Beitzen-Heineke *et al.*, 2017), with interviews and observations of consumers (Rapp *et al.*, 2017; Fuentes *et al.*, 2019) and/or store owners (Beitzen-Heineke *et al.*, 2017; Rapp *et al.*, 2017; Fuentes *et al.*, 2019). Their main goals were to understand how this new sustainable practice has emerged and to highlight the barriers and drivers explaining the adoption of the zero-packaging concept by consumers and store owners (of marked spaces for the packaging-free sale proposed in grocery stores or of stores entirely devoted to the sale of packaging-free products).

In this research, a quantitative approach was chosen to supplement previous qualitative studies and to highlight the ways to develop or increase consumers' loyalty to *bulk areas* in grocery stores and thus consumers' loyalty to unpacked products. Once this new sustainable practice has emerged, grocery stores need to stabilize it. Therefore, they need to know the incentives that could be used to create or maintain consumers' loyalty to their stores and the unpacked products offered. Beitzen-Heineke *et al.* (2017) called for additional research on the drivers of consumers' loyalty to zero-packaging stores and their products. Similarly, Marken and Hörisch (2020) indicated that models specific to the context of package free shopping are needed to explain the variance in behaviors and deduce interventions for encouraging this new sustainable practice.

Therefore, this study will establish the effects of offering packaging-free products in a grocery store on the store's relationships with its consumers. More specifically, this study postulates that packaging-free products contribute to increasing or strengthening the perceived proximity between a consumer and a retailer's stores and, ultimately, consumer loyalty to these stores and to the bulk products offered. To do so, this work will examine three subdimensions of perceived proximity (identity, process, and relational), which were suggested by the founding research of Beitzen-Heineke *et al.* (2017). Beitzen-Heineke *et al.* (2017) stated that consumers of bulk areas in grocery stores or stores entirely devoted to the sale of packaging-free products seek to live a different shopping experience. In these areas or stores, consumers appreciate having contacts with employees and receiving information on in-store operations (e.g., on the cleaning of the dispensers of bulk products) and on the values promoted by the zero-packaging concept, looking respectively for relational, process, and identity proximity (Bergadaà and Del Bucchia, 2009; Gahinet, 2014; Gahinet and Cliquet, 2018). However, from store owners' point of view, in bulk areas in grocery stores or in stores entirely devoted to the sale of packaging-free products, in-store operations are more time consuming (e.g., when handling the products and the stocks). Thus, retailers need consumers to come and make purchases regularly and become loyal consumers (Beitzen-Heineke *et al.*, 2017). Consequently, the current research will investigate consumers' loyalty to stores that offer unpacked products. To do so, it will differentiate transactional loyalty (satisfaction–loyalty) from relational loyalty (satisfaction–trust–loyalty) (Walsh *et al.*, 2004; Diawara, 2017; Hernández-Mogollón *et al.*, 2020) and examine the links between them. A relational chain will thus be highlighted (Aurier and N'Goala, 2010).

From a theoretical point of view, this study on bulk products will add to previous works dedicated to corporate social responsibility (Turker, 2009; Pérez and del Bosque 2013; Moisescu, 2015; Latif *et al.*, 2018; Chakraborty and Jha, 2019) and sustainable consumer behavior (Webb *et al.*, 2008; Yan and She, 2011; Durif *et al.*, 2011; Villa Castaño *et al.*, 2016, 2018). It will also suggest avenues of research on these topical subjects. From a managerial point of view, it will indicate to retailers the effects of offering bulk products on consumer loyalty to their points of sale through the perceived proximity between these consumers and the points of sale. It will also inform retailers about levers of action to use based on the different profiles of buyers and consumers of packaging-free products (convinced, pragmatic, and wary consumers) in order to increase or strengthen their intangible proximity to their points of sale (measured by three subdimensions: identity, process, and relational) and, ultimately, their transactional and relational loyalties to these retailers and to the bulk products they offer.

The rest of the article is organized into three parts. The first part will present the literature review. The second part will focus on the research model and hypotheses, as well as on the methodology used. Finally, in the third part, the research results, their theoretical and managerial implications, the study limitations, and future research avenues will be discussed.

## **Literature Review**

In this section, package free shopping will be linked to Corporate Social Responsibility (CSR) and sustainable consumer behavior (SCB) or socially responsible consumer behavior (SRCB). This section will also describe how companies, such as retailers, can use sustainable products, such as bulk products, to intensify the relationships established with their consumers and to develop or increase consumers' loyalty to their stores.

### ***Corporate Social Responsibility***

Many definitions of CSR exist in the literature, but none is unanimously established. The ISO 26000 standard defines CSR as “*the responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical behavior that: contributes to sustainable development, including health and the welfare of society; takes into account the expectations of stakeholders; is in compliance with applicable law and consistent with international norms of behavior; is integrated throughout the organization and practiced in its relations*”<sup>9</sup>.” Mohr *et al.* (2001) synthesized these commitments in a short statement: CSR is “*a company's commitment to minimizing or eliminating any harmful effects and maximizing its long-run beneficial impact on society*.” In their state-of-the-art literature review, Chakraborty and Jha (2019) defined CSR as “*the practice of favoring altruism over materialism, thinking beyond the shareholder to encompass all the stakeholders and giving back or maintaining the resources from where they are accrued*.” According to stakeholder theory (Freeman, 1984), this last definition stresses that the responsibility of a company concerns multiple stakeholders who are affected by the achievement of its objectives. Over time, CSR has evolved from a unidimensional construct to a richer multi-dimensional construct (Latif and Sajjad, 2018), which may integrate several objectives and different stakeholders, including consumers (Chakraborty and Jha, 2019).

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<sup>9</sup> <https://www.iso.org/obp/ui/#iso:std:iso:26000:ed-1:v1:en:term:2.18>

In their meta-analysis, Moisescu (2015) highlighted four main dimensions of CSR: philanthropic activities, respect for the environment, respect for consumers, and respect for workers. In their literature review, Chakraborty and Jha (2019) emphasized six dimensions of CSR: social, environmental, governance, employee, external stakeholder (i.e., consumers and suppliers), and economic. Table 1 presents the actions included in the respect for consumers dimension by Moisescu (2015) and the external stakeholder dimension, with a specific focus on consumers, by Chakraborty and Jha (2019). The table also includes items focused on consumers' CSR dimension from the works of Turker (2009) and Pérez and del Bosque (2013), who applied a systematic and complete methodology to develop a measurement scale of CSR image. Recently, Latif *et al.* (2018) developed a 30-item scale that is entirely dedicated to companies' responsibilities toward their consumers and comprises six dimensions: developmental responsibilities (with actions such as investing in innovations that provide an advantage to customers), ethical responsibilities (e.g., being concerned to fulfill company obligations toward customers), relationship-building responsibilities (e.g., making an effort to know customers' needs), responsiveness (e.g., showing concern to customers' interests), and information-sharing responsibilities (e.g., offering clear, precise, and required information).

From these works, the offer of quality bulk products to consumers at reasonable prices and with the required selling information in order to satisfy their needs (Turker, 2009; Pérez and del Bosque 2013; Moisescu, 2015; Latif *et al.*, 2018; Chakraborty and Jha, 2019) may be considered a part of companies' (e.g., retailers) CSR policy (Beitzen-Heineke *et al.*, 2017; Fuentes *et al.*, 2019). Companies that offer sustainable products, such as bulk products (Beitzen-Heineke *et al.*, 2017; Rapp *et al.*, 2017; Fuentes *et al.*, 2019; Marken and Hörisch, 2020), are expecting that consumers will reward their sustainable actions. CSR may indeed generate several positive outcomes for a company, such as positive perceptions of this company, (repeat) purchases of the sustainable products offered, and positive word-of-mouth, contributing to an increase in the company's benefits (Sen and Bhattacharya 2001; Luo and Bhattacharya 2006; Luo and Bhattacharya 2009; Vlachos *et al.*, 2009; Stanaland *et al.*, 2011; Olsen *et al.*, 2014; Lacey *et al.*, 2015; Huang *et al.*, 2017). The sustainable products proposed will also help consumers adopt more sustainable behaviors (Winterich *et al.*, 2019).

[insert table 1]

### ***Sustainable Consumer Behavior***

The literature gives different definitions of Sustainable Consumer Behavior (SCB) or socially responsible consumer behavior (SRCB). It is a dynamic and complex concept that varies according to the values and context of the country involved (Villa Castaño *et al.*, 2016). Webster (1975) proposed the first definition of this concept: "*it includes all behaviors where a consumer takes into account the public consequences of his or her private consumption or attempts to use his or her purchasing power to bring about social change.*" In 1994, at the Oslo Symposium, SCB was conceptualized as "*the use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations*" (UNEP, 2010, p. 12<sup>10</sup>). Recently, White *et al.* (2019) defined SCB in their literature review as "*actions that result in decreases in adverse environmental impacts as well as decreased utilization of natural resources across the*

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<sup>10</sup> UNEP (2010). ABC of SCP: Clarifying Concepts on Sustainable Consumption and Production. <https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=945&menu=204>

*lifecycle of the product, behavior, or service.*” These authors also specified that based on a holistic approach to sustainability (Norman and MacDonald 2004), the improvement of environmental sustainability results in social and economic progress.

Responsible consumers consider the impacts of their consumption on society in addition to their own interests. Their objective is to minimize the harmful effects of their consumption and to maximize its long-term beneficial effects on society (Webb *et al.*, 2008). Consumers can be concerned about the environment and/or the social aspect (Chernev and Blair 2015; Geiger *et al.*, 2018; Tascioglu *et al.*, 2019). These concerns are expressed in a restricted way through consumption choices based on companies’ more or less responsible behaviors or, in a broader way, through committed consumption behaviors, such as preserving the environment with recycling, helping small and medium-sized businesses, and favoring the purchase of *made in*, local, organic, fair trade, animal-friendly, and ecologically packaged products (François-Lecompte and Valette-Florence, 2006; Yan and She, 2011; Moser, 2016; Séré de Lanauze and Lallement, 2018; Winterich *et al.*, 2019).

Different dimensions of SCB have been postulated (see Table 2), and different measurement scales have been proposed to measure it. From these dimensions, different consumer groups can be identified according to their SCB behaviors (e.g., François-Lecompte and Valette-Florence, 2006; Gonzalez *et al.*, 2009; Durif *et al.*, 2011). However, the proposed measurement scales suffer from two main limitations. They do not allow for an exhaustive measurement of socially responsible behaviors. Some scales only measure purchasing attitudes and intentions; the results could therefore be biased by social desirability, leading to an overestimation of the amount of SCB (Walker *et al.*, 2010; François-Lecompte and Valette-Florence, 2006; Durif *et al.*, 2011; Ertz *et al.*, 2017). The scale developed in a Quebec context by Durif *et al.* (2011) avoids these pitfalls. The eight dimensions of the scale consider not only purchasing behaviors but also non-purchasing and post-purchasing behaviors, such as deconsumption, the use of sustainable transportation, recycling, and composting. In the same vein, the items of the scale of Geiger *et al.* (2018) cover the acquisition, usage, and disposal phases of consumers’ consumption journey.

In essence, the purchase and consumption of bulk products are sustainable behaviors that have been neglected by current research on SCB or SRCB. Package free shopping has been assessed only indirectly through SCB dimensions, such as deconsumption behavior (François-Lecompte and Valette-Florence, 2006; Durif *et al.*, 2011; Yan and She, 2011; Villa Castaño *et al.*, 2016, 2018) and care for the environment (Roberts, 1995; Webb *et al.*, 2008; Durif *et al.*, 2011; Yan and She, 2011; Balderjahn *et al.*, 2013; Quazi *et al.*, 2016; Geiger *et al.*, 2018; Quoquab *et al.*, 2019).

[insert table 2]

### ***Packaging-free Products***

Packaging-free shopping can be defined as a distribution system consisting of the sale of packaging-free consumer products (excluding fruit and vegetables) by weight or volume (depending on whether they are solid or liquid products), prepared at the point of sale either in simplified packaging provided by the store or in a container brought by the customer. Packaging-free shopping is both a responsible consumption method and a more ecological, sustainable, and environment-friendly distribution method (Binninger and Robert, 2008). According to Rapp *et al.* (2017), package free shopping has three main advantages. The first

and obvious advantage is a decrease in the production of plastic waste (Lindh *et al.*, 2015; Zeiss, 2018) and food waste (Beitzen-Heineke *et al.*, 2017; Fuentes *et al.*, 2019). The second advantage is a lower level of carbon dioxide emissions. The last advantage is a decrease in transport costs, as this type of trade generally promotes a local market distribution. However, package free shopping is often perceived by consumers as inconvenient and demanding (Beitzen-Heineke *et al.*, 2017; Zeiss, 2018; Fuentes *et al.*, 2019; Marken and Hörisch, 2020). It is inconvenient because there are few stores providing it, and these stores may be located away from consumers' shopping routes. It is demanding because consumers have to plan their shopping to know the amount of products they want to buy and thus the containers they have to bring with them to the stores.

Previous research on package free shopping pointed out how this new sustainable practice has emerged. Beitzen-Heineke *et al.* (2017) highlighted several barriers and drivers to explain the adoption of the zero-packaging concept by suppliers and consumers (see Table 2). Fuentes *et al.* (2019) stressed that the development of package free shopping requires breaking not only consumers' but also store owners' old habits/practices and establishing new ones. From consumers' point of view, the practice of shopping needs to be reinvented in three complementary ways. First, consumers need to re-think their shopping by making it meaningful in a new way (i.e., sustainable shopping). Second, they have to be re-skilled by acquiring new competencies (e.g., to use the dispensers of unpacked products, which are highly specific). Lastly, consumers need to re-equip by adopting reusable bags, jars, and other containers to bring with them to zero-packaging stores. From store owners' point of view, package free shopping requires the re-materialization of stores (changing the material arrangement that makes this mode of shopping possible). Stores have to introduce new display devices and signage to promote this new way of shopping. They also have to provide reusable containers (bought by the stores or left by other consumers of bulk products) or disposable containers (paper or plastic bags) to consumers to replace packages. Table 3 offers a synthesis of the main barriers to and drivers for the adoption of the zero-packaging concept by suppliers, store owners, and consumers.

In essence, the purchase and consumption of bulk products are sustainable behaviors that involve the formation of new habits (Fuentes *et al.*, 2019; Winterich *et al.*, 2019). Habits are behaviors that persist if they become automatic responses to specific contexts (Kurz *et al.*, 2014). However, they imply substituting automatic food consumption behaviors, which are often unsustainable, with new sustainable habits (Verplanken and Roy, 2016), such as replacing the purchase of packaged food with bulk products. These new sustainable behaviors require consumers to make some efforts, such as bringing containers with them to zero-packaging stores. These newly acquired sustainable habits are an opportunity for retailers to strengthen their relationships with consumers (Winterich *et al.*, 2019) and develop or increase consumers' loyalty to their stores.

[insert table 3]

### ***Relationship Development and Maintenance***

Empirical evidence has shown that retailers can benefit from creating and maintaining strong relationships with their consumers that enhance proximity, value, satisfaction, trust, attachment, and commitment, ultimately improving profitability (Morgan and Hunt, 1994; Garbarino and Johnson, 1999; Chaudhuri and Holbrook, 2001; Bolton *et al.*, 2004; Palmatier *et al.*, 2006; Srivastava and Singh, 2010; Aurier and N'Goala 2010). Constructs of quality,

proximity, value, and satisfaction are used in marketing strategies that are transactional. These strategies tend to attract more clients (Dwyer *et al.*, 1987; Grönroos, 1994). Constructs of trust and commitment are used in marketing strategies that are relationship based. These strategies tend to generate more business with existing clients (Dwyer *et al.*, 1987; Grönroos, 1994).

These two strategies exist in consumer research (Walsh *et al.*, 2004; Diawara, 2017; Hernández-Mogollón *et al.*, 2020); they form a continuum. At one extreme, consumers have punctual relationships with retailers, exchanging valuable goods and services for money that will determine their level of satisfaction and loyalty. This corresponds to transactional loyalty. At the other extreme, consumers have deeper relationships with retailers, expecting fair returns and making tangible and intangible investments based on their levels of satisfaction and trust that will then lead to commitment, which is often considered a measure of loyalty or attachment. This corresponds to relational loyalty.

To study the relationships between companies and consumers, Aurier and N'Goala (2010) proposed an integrative conceptual framework. It takes the form of a relational chain from quality, value, satisfaction, trust, and commitment to actual patronage behaviors. This relational chain thus explains to companies how they can influence consumers' patronage behaviors by leveraging the evaluations of products or services through the constructs of quality, value, and satisfaction, and then consumers' perceptions of the quality of the relationship established between them and the companies through the concepts of satisfaction, trust, and commitment.

Following this reasoning, the present study will propose an innovative proposal combining transactional loyalty and relational loyalty (Walsh *et al.*, 2004; Diawara, 2017; Hernández-Mogollón *et al.*, 2020). To supplement previous research, it will use the concept of proximity instead of the concept of value (Srivastava and Singh, 2010). The concept of proximity has received little attention in the literature (Lenglet and Mencarelli, 2020). This concept will be integrated into a relational chain that will distinguish and link transactional loyalty (satisfaction–loyalty) and relational loyalty (satisfaction–trust–loyalty) (Walsh *et al.*, 2004; Diawara, 2017; Hernández-Mogollón *et al.*, 2020).

## **Research Model and Hypotheses**

### ***Main Model***

The question of proximity is not based on a specific theory. Physical proximity between individuals is a social fact before it is a polysemic concept (Gomez *et al.*, 2011; Lenglet and Mencarelli, 2020), which can affect our understanding of it (Laut, 1998; Lenglet and Mencarelli, 2020). In addition, proximity is both a state and a feeling. There is no single proximity but rather different feelings of proximity depending on the individuals involved (Laut, 1998).

After an exhaustive review of the studies done on perceived proximity in different areas (economy of proximity, sociology, geography, marketing, and retailing), Gahinet (2014) recognized two supra-dimensions of this concept: a material aspect, or access proximity, and an intangible aspect. In marketing and retailing, the intangible aspect is broken down into three subdimensions: identity, relational, and process (Bergadaà and Del Bucchia, 2009; Capo and Chanut, 2013; Héroult-Fournier *et al.*, 2012, 2014). *Identity proximity* corresponds to the relationship between a consumer and a retailer and the values this relationship represents. The

customer sees himself in the values advocated by the retailer. *Process proximity* consists of the importance given to the store's internal functioning by the consumer. This guarantees the quality of the products and the expected service (store and department management). *Relational proximity* is the relationship between a consumer and the store's sales staff (reception, discussions, advice).

In this research, the concept of proximity will be applied to a grocery store and its bulk area (GS&BA). In the retailing field, proximity is a major concept because it plays an important role in establishing and maintaining long-term relationships between a company and its consumers (Bergadaà and Del Bucchia, 2009; Héroult-Fournier *et al.*, 2012; Capo and Chanut, 2013). However, studies on the concept of proximity in this field are scarce (Lenglet and Mencarelli, 2020). Studies essentially described the different dimensions of proximity for a point of sale (Bergadaà and Del Bucchia, 2009; Gahinet, 2014; Gahinet and Cliquet, 2018), a collective point of sale (Héroult-Fournier *et al.*, 2012), or a direct sales channel (Héroult-Fournier *et al.*, 2014).

Three subdimensions of this concept—identity, process, and relational—will be considered. The founding research of Beitzén-Heineke *et al.* (2017) pointed out that the bulk areas in grocery stores or stores entirely devoted to the sale of packaging-free products offer a different shopping experience and answer consumers' needs of identity, process, and relational proximities. The relationships between these three components of proximity and consumers' satisfaction, trust, and loyalty (Walsh *et al.*, 2004; Diawara, 2017; Hernández-Mogollón *et al.*, 2020) will be systematically investigated, including the relationships between satisfaction, trust, and loyalty. The literature on the concept of proximity in the retailing field and the literature on relationship marketing will be considered to posit the research hypotheses.

First, consumers of bulk products are generally committed to the values promoted by zero-packaging stores (Beitzén-Heineke *et al.*, 2017), looking for identity proximity (Bergadaà and Del Bucchia, 2009; Gahinet, 2014; Gahinet and Cliquet, 2018). These values are more often as follows (Beitzén-Heineke *et al.*, 2017; Rapp *et al.*, 2017; Fuentes *et al.*, 2019): 1° to reduce food over-consumption caused by brands, packaging, and promotional activities; 2° to improve food quality (by proposing products with organic production, regional origin, and fair trade commitments) and consumer health (by encouraging the substitution of processed foods with self-cooked meals); 3° to limit food and plastic waste by encouraging consumers to choose the right portion size and to bring reusable containers; and 4° to increase consumers' social and environmental awareness and practices through the information given in (through posters) and outside (through the store's website and applications) the store (e.g., amount of the product price the producer receives or the emissions saved by renouncing disposable packaging).

Extrapolating the results of previous works for a collective point of sale (Héroult-Fournier *et al.*, 2012) and a direct sales channel (Héroult-Fournier *et al.*, 2014), the authors of the present work posit a positive link between identity proximity and consumers' trust in a GS&BA. A link between identity proximity and consumers' satisfaction is also hypothesized. If this link has not yet been tested, Dampérat (2006) and Héroult-Fournier *et al.* (2014) suggested it. Lastly, a relationship between identity proximity and consumers' loyalty is postulated. If Gahinet and Cliquet (2018) did not establish this specific link for a convenience store of a large grocery retail group selling conventional products, the authors of the current study believe that it is relevant to posit it for a zero-packaging store that promotes sustainable values

and products (Beitzen-Heineke *et al.*, 2017; Rapp *et al.*, 2017; Fuentes *et al.*, 2019). Moreover, Gillani *et al.* (2019) showed that identity proximity is a crucial precondition for consumer engagement, which is often considered a measure of loyalty, with sustainable products, such as fair trade products.

From the preceding discussion, the following hypothesis is thus posited:

*H1. The perceived identity proximity of a grocery store and its bulk area has a positive effect on the satisfaction (a), trust (b), and loyalty (c) of a consumer toward this store and this area.*

Second, consumers of bulk products want to have information on zero-packaging store operations (e.g., the cleaning of dispensers to prevent food safety risks or the storage of unpacked products) (Beitzen-Heineke *et al.*, 2017), looking for process proximity (Bergadaà and Del Bucchia, 2009; Gahinet, 2014; Gahinet and Cliquet, 2018).

Considering the works of Héroult-Fournier *et al.* (2012) and Héroult-Fournier *et al.* (2014), the authors of the present research posit a positive link between process proximity and consumers' trust in a GS&BA. They believe that the results of (Héroult-Fournier *et al.* (2012) on a collective point of sale and a direct sales channel (2014) can be extended to a GS&BA. A link between identity proximity and consumers' satisfaction, based on Homburg's (1998) work, is also hypothesized. This author showed the impact of proximity (closeness), measured by its process and relational dimensions, on satisfaction for industrial markets. Lastly, the authors of the current study posit a positive link between process proximity and consumers' loyalty. Gahinet and Cliquet (2018) did not consider this specific component of perceived proximity in their study on the impact of proximity on loyalty. They deemed it inappropriate for a convenience store of a large grocery retail group selling packed products. However, they suggested that it would be adequate for other distribution channels and products, such as zero-packaging stores selling unpacked products.

With reference to the aforementioned works, the following hypothesis is proposed:

*H2. The process identity proximity of a grocery store and its bulk area has a positive effect on the satisfaction (a), trust (b), and loyalty (c) of a consumer toward this store and this area.*

Lastly, the shopping experience in zero-packaging stores is less stressful, and consumers of bulk products appreciate having contacts with employees to help them (e.g., to be served and to get the unpacked products they want) and to have information on the products sold (e.g., their origin, the labels obtained, and how to prepare and consume these products) (Beitzen-Heineke *et al.*, 2017). They prioritize again the products and the human (Beitzen-Heineke *et al.*, 2017), looking for relational proximity (Bergadaà and Del Bucchia, 2009; Gahinet, 2014; Gahinet and Cliquet, 2018).

Héroult-Fournier *et al.* (2012) established a link between relational proximity and consumers' trust in a collective point of sale, and similarly, the authors of the current study hypothesize that this link will also be demonstrated for a zero-packaging store. In the same vein, the result of Gahinet and Cliquet (2018) for a convenience store will be extended for this kind of store. These authors indicated a positive and significant link between relational proximity and consumers' loyalty. Convenience store consumers attach great importance to relational proximity and the contacts they have with the staff and managers of the store, as suggested by Beitzen-Heineke *et al.* (2017) for a zero-packaging store; consequently, they become loyal customers of this store and its products. Mende *et al.* (2013) also indicated a positive impact of relational proximity (closeness) on loyalty for the insurance sector. Lastly, a link between

relational proximity and consumers' satisfaction is posited, as Barnes (1997) found a correlation between relational proximity and satisfaction in the bank sector.

Accordingly, the following hypothesis is proposed:

*H3. The perceived relational proximity of a grocery store and its bulk area has a positive effect on the satisfaction (a), trust (b), and loyalty (c) of a consumer toward this store and this area.*

### ***Mediating Effects***

Previous works have mainly studied the specific links between consumer satisfaction and loyalty (e.g., Stathopoulou and Balabanis, 2016; Diawara, 2017), between trust and loyalty (e.g., Frassetto *et al.*, 2017; Park *et al.*, 2017), and between satisfaction and trust (e.g., Park *et al.*, 2017; Fatima *et al.* 2018). Considering these works and the relational chain proposed by Aurier and N'Goala (2010) and basing on previous studies in the field of relationship marketing (Morgan and Hunt, 1994; Garbarino and Johnson, 1999; Chaudhuri and Holbrook, 2001; Bolton *et al.*, 2004; Palmatier *et al.*, 2006; Srivastava and Singh, 2010), the present research will focus on the relationships between these concepts and will investigate several mediating effects. The concept of proximity will be integrated into this relational chain (Srivastava and Singh, 2010), and transactional loyalty (satisfaction–loyalty) will be distinguished from relational loyalty (satisfaction–trust–loyalty) (Walsh *et al.*, 2004; Diawara, 2017; Hernández-Mogollón *et al.*, 2020).

From the aforementioned reasoning, the following hypotheses are then postulated:

*H4. The relationship between the three dimensions of perceived proximity (identity, process, and relational) of the bulk area of a grocery store and consumers' loyalty toward this store and this area is positively and partially mediated by consumers' satisfaction toward this store and this area.*

*H5. The relationship between the three dimensions of perceived proximity (identity, process, and relational) of the bulk area of a grocery store and consumers' loyalty toward this store and this area is positively and partially mediated by consumers' trust in this store and this area.*

*H6. The relationship between the three dimensions of perceived proximity (identity, process, and relational) of the bulk area of a grocery store and consumers' loyalty toward this store and this area is positively and partially mediated by consumers' satisfaction and trust toward this store and this area.*

### ***Moderating Effect***

According to Rapp *et al.* (2017) and Fuentes *et al.* (2019), three groups of consumers of unpacked products need to be distinguished. The first group consists of consumers of packaging-free products. The second group consists of consumers who are less used to this new mode of sustainable consumption. The last group consists of consumers who have just tried this trend.

The consumers of the first group have the ability to recognize the containers that are most suitable for each product and the steps needed to reuse/recycle such containers (washing and sterilization). They have the habits and skills to use the bulk dispensers in stores. They pay

attention to the quality of the products (e.g., they are looking for local or organic products). They want to reduce food waste and adopt a sustainable consumption lifestyle. In the same vein, Marken and Hörisch (2020) highlighted that pro-environmental personal norms encourage the purchasing of unpacked products.

The consumers of the second and last groups value less or do not value, respectively, the opportunity of recycling and reusing containers. The cleanup and transportation of containers are considered quite boring activities. Thus, the products bought are placed in disposable bags in paper. They mainly want to select the right amounts of products according to their needs. They pay attention to their health, but they also want to save money.

Based on the works of Rapp *et al.* (2017) and Fuentes *et al.* (2019), the following hypothesis is postulated:

*H7. The relationships previously posited are stronger for regular packaging-free consumers than for consumers who are less used to unpacked products and consumers who have just tried this new mode of sustainable consumption.*

Figure 1 shows the model and the research hypotheses.

[insert figure 1]

## **Methodology**

### ***Data Collection***

Our research focused on a bulk area or a marked space for packaging-free sale within a university cooperative convenience store. Thus, this store also proposes to its consumers a conventional assortment of packaged goods. The unpacked products sold are solid bulk products, such as pasta, lentils, cereals, nuts, sugar, and spices, and liquid bulk products, such as olive oil, vinegar, detergents, and hygiene products. These products are sold in dispensers in plastic. The receptacles of solid bulk products are transparent, so consumers may see the products. By contrast, the receptacles of liquid bulk products are not. Information on the product type, its origin, labels obtained, and how to prepare and consume the product is provided on the dispensers. The purchasing rules are clearly explained on a poster, so consumers have to follow the instructions given when buying. To purchase the products, consumers may bring their own containers, or the store offers them paper bags or containers often left by other consumers.

The link to an online questionnaire was sent by e-mail to the consumers of the university cooperative convenience store who have a loyalty card. After answering screening questions to check that they are buyers and consumers of unpacked products (solid and/or liquid) and that they buy these products at this store, the consumers answered the questionnaire. In total, 1,407 buyers and consumers of unpacked products at this store participated in the survey (response rate: 46%). Of this sample, 79.1% are women. In terms of age, 29.5% are less than 25 years old, 49.6% are 25 to 44 years old, 18.6% are 45 to 64 years old, and 2.3% are 65 years old and above. In terms of occupation, 52.8% are students, 31.4% are employees, 8.5% are professors, 4.6% are lecturers, and 2.8% are executives.

### ***Measurement Scales***

Four, two, and three items from Hérault-Fournier *et al.*'s (2012) study were used to measure the perceived identity, process, and relational proximities, respectively, of a GS&BA. Three items from the work of Oliver (1980) were used to measure satisfaction. Loyalty was measured with three items from the study of Zeithaml *et al.* (1996) that assesses consumers' intentions of future behavior toward a GS&BA. Finally, two items from Kaabachi's study (2015) were used to measure the level of consumer trust in the GS&BA.

As recommended by previous studies on bulk products (Rapp *et al.*, 2017; Fuentes *et al.*, 2019), psychographic and behavioral variables were integrated. Three items were used to measure the sensitivity to food waste (Le Borgne *et al.*, 2015) of buyers and consumers of bulk products, eight items to measure their level of socially responsible consumption (Durif *et al.*, 2011), three items to measure their resistance to the consumer society through bulk products (Roux and Guiot, 2008), and three items to measure their price sensitivity (Lichtenstein *et al.*, 1993). The purchase frequencies of solid and liquid bulk products were also measured (Rapp *et al.*, 2017; Fuentes *et al.*, 2019), as were eight drivers of and six barriers to buying and consuming bulk products (Beitzen-Heineke *et al.*, 2017; Rapp *et al.*, 2017; Marken and Hörisch, 2020).

In the survey, consumers were asked to indicate their level of agreement or disagreement with these items using a Likert-type scale with five possible responses (from 1, strongly disagree, to 5, strongly agree).

### ***Statistical Analyses***

In this research, partial least squares structural equation modelling (PLS-SEM) with a bootstrap procedure with 5,000 replications (Tenenhaus *et al.*, 2005) was used to analyze the data. PLS-SEM (with the software XLSTAT 2020), which is considered variance-based, was used instead of covariance-based structural equation modelling (CB-SEM) (Hair *et al.*, 2017) for two main reasons (Hair *et al.*, 2012, 2014). First, it does not require the variables to follow a multivariate normal distribution (computed coefficient Mardia  $> |3|$  in this research). Second, it allows working with exploratory models that may include many latent variables and relationships.

First, the measurement and structural models for the total sample ( $n = 1,407$ ) were tested following the recommendation of Hair *et al.* (2019) in reporting the results. To test the mediating effects, the authors of the current study followed the procedure advocated by Cepeda *et al.* (2018), which was specifically developed for PLS-SEM. According to the present research model, the significance of one direct ( $c'$ ) and four indirect effects ( $a_1 \times b_1$ ,  $a_2 \times b_2$ ,  $a_2 \times b_2$ , and  $a_1 \times a_3 \times b_2$ ) was estimated.

Second, an ascending hierarchical classification using Ward's method and squared Euclidean distance was used. The factor scores from a principal component analysis (PCA) were used on the four psychographic variables measured (price sensitivity, socially responsible consumption, sensitivity to food waste, and resistance to the consumer society) as input variables to distinguish subgroups of consumers. Thus, a typology based on psychographic variables has been favored to offer a deep understanding of consumer profiles (Rapp *et al.*, 2017; Fuentes *et al.*, 2019; Marken and Hörisch, 2020). However, the description of the three groups formed was completed with socio-demographic and behavioral variables (the purchase frequency of solid and liquid bulk products and eight drivers of and six barriers to the purchase and consumption of bulk products).

Lastly, the measurement and structural models for the subgroups distinguished (Henseler and Fassott, 2010) were tested. Multi-group analyses and permutation tests were performed. For each loading and path coefficient, it provided a test of significance on the difference between the values obtained for each subgroup (Chin and Dibbern, 2010).

## Results

### *Test of the Measurement Model*

Confirmatory factor analysis was performed for the variables of the research model (see Figure 1). This analysis validated the unidimensional factor structures of the measurement scales used, consistent with previous works. The loadings, which are greater than 0.708 and statistically significant at the 1% level, are satisfactory (Hair *et al.*, 2019) (Table 4). Then, Cronbach's alpha (Cronbach, 1951) and Jöreskog's  $\rho$  (Jöreskog, 1971) coefficients were used to evaluate the reliability of the measurement scales used. The coefficients calculated are satisfactory ( $> 0.7^{11}$ ) (Hair *et al.*, 2019) (Table 5). Lastly, the approach advocated by Fornell and Larcker (1981) was used to establish convergent (average variance extracted [AVE]) validity ( $> 0.5$ ) (Hair *et al.*, 2019) (Table 4). The discriminant validity of the measurement scales was established through the heterotrait–monotrait (HTMT) method, as recommended by Henseler *et al.* (2015) for variance-based SEM. The values in Table 5 are below the threshold of 0.90.

[insert tables 4 and 5]

### *Test of the Main Model*

Following the test of the measurement model, the links of the research model were tested (Figure 2 and Table 6). Regarding the total sample, the perceived identity (PC = 0.476,  $p < 0.01$ ), process (PC = 0.133,  $p < 0.01$ ), and relational (PC = 0.081,  $p < 0.01$ ) proximities of the GS&BA have a positive and significant influence on satisfaction with this store and this area. Therefore, Hypotheses 1a, 2a, and 3a are supported by the data. In terms of consumers' trust in the GS&BA and their intentions of future behavior toward them, only perceived identity (PC = 0.145,  $p < 0.01$ ; PC = 0.046,  $p < 0.01$ ) and process (PC = 0.161,  $p < 0.01$ ; PC = 0.047,  $p < 0.01$ ) proximities have a positive and significant impact. Therefore, only relational proximity has an effect on consumer satisfaction with a GS&BA; only Hypotheses 1b and c, as well as Hypotheses 2b and c, are supported by the data.

Satisfaction with the GS&BA has a significant positive influence on trust (PC = 0.614,  $p < 0.01$ ) and intentions of future behavior (PC = 0.630,  $p < 0.01$ ) toward this store and this area. Likewise, trust in the GS&BA has a positive and significant effect on the same variable (PC = 0.252,  $p < 0.01$ ). The different variables considered in the research model explain 25.4% and

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<sup>11</sup> Except for relational proximity for the Cronbach's alpha coefficient that is close to 0.7 but is below this standard

52.4% of satisfaction and trust, respectively, toward the GS&BA and 73% of the intentions of future behavior toward this store and this area.

[insert table 6 and figure 2]

### ***Test of the Mediating Effects***

The procedure advocated by Cepeda *et al.* (2018) was used to test the mediating effects (Table 7 and Appendix 1). When the direct effect is not significant and the indirect effect is significant (see Table 6), the mediation is full. The effect via the mediator is only indirect. In this case, the confidence intervals (CI) for the studied mediation effects do not include the 0 value. This means that the mediating effect is significantly different from 0. When both the direct effect and the indirect effect are significant, the mediation is partial. According to this procedure, satisfaction with the GS&BA is a key variable in this model, as it is a full mediating variable in the relationship between the perceived relational proximity of the GS&BA and intentions of future behavior toward this store and this area. Therefore, H4 is not validated for the relational proximity–satisfaction–intentions of future behavior relationship, as the mediation is full and not partial for it.

Satisfaction and trust in the GS&BA are also full mediating variables in the relationship between the perceived relational proximity of the GS&BA and intentions of future behavior toward this store and this area. Therefore, H6 is not validated for the relational proximity–satisfaction–trust–intentions of future behavior relationship, as the mediation is full and not partial for it. Finally, first, satisfaction; second, trust; and, lastly, both satisfaction and trust, toward the GS&BA are partial mediating variables of the relationships between the perceived identity and process proximities of the GS&BA and the intentions of future behavior toward this store and this area. Therefore, H4, H5, and H6 are supported for identity and process proximities.

[insert table 7]

### **Test of the Moderating Effect**

#### ***Typological Analysis***

The typological analysis carried out (see above) highlighted three groups of consumers: those who are wary (n = 578; 41.1%), those who are pragmatic (n = 483; 34.3%), and those who are convinced (n = 346; 24.6%) of bulk products. Tables 8, 9, and 10 each show the groups' socio- psychographic, demographic, and behavioral characteristics. The three groups are homogeneous in terms of sex ( $\chi^2 = 3.183$ ; p-value = 0.204), age ( $\chi^2 = 7.487$ ; p-value = 0.278), occupation ( $\chi^2 = 6.923$ ; p-value = 0.545), and income ( $\chi^2 = 12,073$ ; p-value = 0.280).

The consumers who are wary of packaging-free products (n = 578) are those who are the least sensitive to food waste, the least resistant to the consumer society, the least socially responsible, and the least sensitive to price. The reliability measures (Cronbach's alpha and Jöreskog's  $\rho$  coefficients) and the convergent validity coefficient (AVE) are satisfactory because they are greater or close to 0.7 and 0.5, respectively (Hair *et al.*, 2019) (Appendix 2). They have the highest scores for the six studied barriers to the purchase and consumption of bulk products. The results of the ANOVA tests and of the comparisons of means for independent samples that support these claims are available in Table 7. Those consumers are

the ones who most rarely (29.8%) or sometimes (31.7%) consume solid bulk products ( $\chi^2 = 33.289$ ; p-value = 0.000) and never (49.5%) consume liquid bulk products ( $\chi^2 = 44.913$ ; p-value = 0.000). Conversely, convinced consumers of bulk products (n = 346) are those who are the most sensitive to food waste, the most resistant to the consumer society, and the most socially responsible. They have the highest scores for six of the eight studied drivers of the purchase and consumption of bulk products. These consumers often (23.4%; 14.5%) and regularly (32.4%; 13.9%) consume solid and liquid bulk products. Finally, the consumers who are pragmatic toward bulk products (n = 483) fall between the two other groups regarding these specific products. They are the most price sensitive, they consider bulk products as the best way to discover new products (along with the convinced consumers), and they are the ones who most want to serve themselves.

[insert tables 8, 9 and 10]

### ***Test of the Measurement Model***

Confirmatory factor analyses confirmed the unidimensional factor structures of the measurement scales used for the three subgroups considered (see Table 3). Multi-group analyses and permutation tests (Chin and Dibbern, 2010) were also performed. These analyses showed the partial invariance of the measures used for the three subsamples considered. Of 51 differences computed, four are significant at the 5% level. The reliability measures (Cronbach's alpha and Jöreskog's  $\rho$  coefficients) are also satisfactory ( $> 0.7^{12}$ ) (see Table 4). Lastly, the approaches of Fornell and Larcker (1981) and Henseler *et al.* (2015) established the convergent (AVE) and discriminant validities, respectively (see Table 4).

### ***Test of the Structural Model and the Mediating Effects***

For convinced consumers of bulk products (Figure 3), a model almost identical to the one highlighted for the 1,407 buyers and consumers of bulk products studied was obtained. However, it should be noted that for these consumers, the link between the perceived process proximity of the GS&BA and the intentions of future behavior toward this store and this area is not significant (see Table 5). For them, the values held by the GS&BA (identity proximity) are what will directly influence their intentions of recommending them, coming back, and buying bulk products there again, rather than information they could receive about the storage conditions of bulk products and/or the cleaning of the dispensers used (process proximity). For these convinced consumers of packaging-free products, process proximity only has an indirect effect on the intentions of future behavior through satisfaction, trust, and both satisfaction and trust toward this store and this area. These three mediations are full. Table 6 provides a summary of these mediating effects.

For pragmatic consumers of bulk products (Figure 4), in addition to the non-significant link between the perceived process proximity of the GS&BA and the intentions of future behavior toward this store and this area, the absence of a link between the perceived identity proximity of the GS&BA and the intentions of future behavior toward this store and this area can also be noted. For this group of consumers, who are not as far along as convinced consumers in their process of buying and consuming bulk products, the values held by the GS&BA (identity proximity) have only an indirect impact on this variable through satisfaction, trust, and both

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<sup>12</sup> Except for relational proximity for the Cronbach's alpha coefficients that are close to 0.7 but are below this standard

satisfaction and trust in this store and this area. These three mediations are full. Table 6 provides a summary of these mediating effects.

Finally, for wary consumers of bulk products (Figure 5), in addition to the non-significant link between the perceived identity proximity of the GS&BA and the intentions of future behavior toward this store and this area, the absence of a link between the perceived identity proximity of the GS&BA and the trust in this store and this area can also be noted. For this group of consumers, who are just starting to buy and consume bulk products, the values held by the GS&BA (identity proximity) have no direct effect on trust or intentions of future behavior; the effect is only indirect through satisfaction and both satisfaction and trust. These two mediations are full. Table 6 provides a summary of these mediating effects. It should also be noted that for consumers who are wary of bulk products, the perceived relational proximity of the GS&BA has no impact on their satisfaction with this store and this area. Paradoxically, the presence of a salesperson in the store to serve these inexperienced consumers and/or to give them information does not seem to have a positive influence on their satisfaction.

In addition to these differences in the significance of the links between the three groups studied, notable differences in their magnitudes also deserve to be highlighted. Thus, the relationship between the perceived identity proximity of the GS&BA and satisfaction with this store and this area is stronger for pragmatic consumers (at the 10% threshold) and convinced consumers (at the 5% threshold) than for wary consumers. As for the relationship between the perceived process proximity of the GS&BA and trust in this store and this area, it is stronger for wary consumers (at the 10% threshold) and pragmatic consumers (at the 10% threshold) than for convinced consumers. Therefore, process proximity (information given on product and store management) has the strongest influence on trust for wary and pragmatic consumers, who still need to be concretely reassured about the storage conditions and/or cleaning methods of bulk dispensers. Consequently, the data do not support H7. In the case of convinced consumers, who are already used to the concept and devices relating to packaging-free products, their trust is influenced by identity proximity or the values held by the GS&BA.

[insert figures 3, 4, and 5]

## **Discussion**

This research investigated the consequences for stores and retailers of a new trend—the purchase and consumption of bulk products (Fuentes *et al.*, 2019). It applies to this new research area previous works relating to the perceived proximity of a point of sale, a collective point of sale, and a direct sales channel. It confirms the links between perceived proximity and trust (Héroult-Fournier *et al.*, 2012, 2014), as well as between perceived proximity and intentions of future behavior (Gahinet and Cliquet, 2018). It also enriches these models by integrating satisfaction, a variable that is often suggested but not empirically tested (Dampérat, 2006; Héroult-Fournier *et al.*, 2014), and by establishing several effects of partial and full mediation.

### ***Theoretical Contributions***

First, this research has theoretically demonstrated that the purchase and consumption of bulk products are a part of companies' (e.g., retailers) CSR policies (Beitzen-Heineke *et al.*, 2017; Fuentes *et al.*, 2019) and sustainable behaviors (Beitzen-Heineke *et al.*, 2017; Rapp *et al.*, 2017; Fuentes *et al.*, 2019; Marken and Hörisch, 2020). It thus supplements studies in these

two fields of research, as well as studies focused on bulk products. Previous research on this topic followed qualitative methodologies (the ethnographic approach, e.g., Rapp *et al.*, 2017; Fuentes *et al.*, 2019) or interviews and observations of consumers (Rapp *et al.*, 2017; Fuentes *et al.*, 2019)) and was concentrated on highlighting the barriers and drivers that explain the adoption of the zero-packaging concept by consumers. The present research goes one-step further with a quantitative approach and highlights the major consequences of this sustainable behavior from retailers' point of view.

Second, this research empirically establishes that unpacked products are a new strategic tool for retailers to create or strengthen the relationships established with their customers. Unpacked products and the proximity they create between a consumer and a store are the first links in the development or preservation of a relational chain between the consumer and the store. Thus, they are prerequisites for serial mediations classically retained in the relational marketing literature (Chaudhuri and Holbrook, 2001), similar to satisfaction–intentions of future behavior (i.e., transactional loyalty) or satisfaction–trust–intentions of future behavior (i.e., relational loyalty), which will form a relational chain.

Third, according to social identity theory, a person can identify with and belong to a group because they share identical values, beliefs, and behaviors with other members of that group (Tajfel and Turner, 1986). These similarities can encourage that person to have positive perceptions and trust other members of the group (Edwards *et al.*, 2019). The person will then act in accordance with the social norms of the group in order to maintain and strengthen her identity in the group (Ambrose *et al.*, 2018). The current research supplements this reasoning. It stresses the importance of distinguishing different consumer profiles within a group of buyers and consumers of packaging-free products (convinced, pragmatic, and wary consumers). Indeed, the effects of perceived proximity and its component (identity, process, and relational) on transactional loyalty and relational loyalty vary according to these consumer profiles. The step reached by a consumer in his process of purchasing and consuming packaging-free products (from the discovery stage to the already well-established habit) has a direct impact on the relational chain built between a consumer and a retailer and its store.

### ***Managerial Contributions***

From a managerial point of view, this study indicates that bulk products are a strategic tool (Beitzen-Heineke *et al.*, 2017; Fuentes *et al.*, 2019) that allows companies (e.g., retailers) to build strong relationships with their different groups of consumers (Du *et al.*, 2007; Marin *et al.*, 2009; Hérault-Fournier, 2013; Lenglet and Mencarelli, 2020). Packaging-free products contribute to increasing or strengthening either the identity, process, or relational components of the proximity perceived between a consumer and a retailer's stores (depending on the consumer profile: wary, pragmatic, and convinced consumers) and, ultimately, the consumers' loyalty (transactional and relational) to these stores and to the bulk products they offer.

In the case of consumers who are still wary of buying and consuming bulk products, priority should be given to strengthening process proximity. The GS&BA must provide concrete information on its internal functioning, thus guaranteeing the quality of the packaging-free products and the services offered. This information is even more important for wary consumers, as their two main barriers to buying bulk products are the lack of information on the cleaning of containers in which bulk products are held (e.g., how often they are cleaned

and what cleaning products are used) and the lack of information on store management (e.g., where the bulk products are stored and how).

For those who are already convinced buyers and consumers of bulk products, strengthening identity proximity might be relevant. To do so, the GS&BA must display the values they share with this group of consumers. They can point out that the bulk products offered make it possible to reduce food waste by controlling the quantities purchased and to respect the environment by reducing plastic waste. These are the two main drivers that convince consumers to buy and consume bulk products.

These two specific lines of communication, which relate to the concrete operation of a bulk area and to its SRC values, can be portrayed on different supports (i.e., posters, point-of-purchase advertising, QR codes, flyers, etc.) in order to reassure or influence pragmatic consumers, who are halfway between their wary and convinced counterparts in their adoption of packaging-free products.

Finally, the store should seek to develop its relational proximity with pragmatic and convinced consumers by encouraging its sales staff to discuss with these consumers and give them information about the bulk products offered (e.g., where they come from, how to prepare and preserve them). The lack of information on these products is the most important barrier for these two groups. Conversely, engaging in a model of assisted sales does not seem to be a preferred solution. Convinced consumers, and pragmatic consumers even more so, wish to serve themselves for fun, to make sure they take the quantities they want, or to discover new products.

Providing concrete information (on the management of a GS&BA, its values, and the bulk products offered) would ultimately increase satisfaction and, depending on the profiles of the buyers and consumers of bulk products studied (convinced, pragmatic, and wary), directly or indirectly increase their loyalty toward the store, its bulk area, and the bulk products offered. This way, the GS&BA could increase or strengthen consumer loyalty, depending on which of the three groups highlighted the consumers belong to. If transactional loyalty (satisfaction–loyalty) is the first step in this approach, relational loyalty (satisfaction–trust–loyalty) is the second one (Diawara, 2017).

The recommendations given at the end of this study seem even more important today. Indeed, consumers are facing a global health crisis linked to COVID-19. This crisis could have a negative effect on the sale of bulk products<sup>13</sup>. However, it should be noted that in France, during the health crisis, 97% of bulk stores maintained their sales activities, and 98% of bulk departments in grocery stores remained open so as not to lose their loyal or newly recruited consumers<sup>14</sup>. On the other hand, 96% of stores selling packaging-free products reorganized their sales methods (e.g., assisted service, pre-ordering) and imposed strict hygiene measures (e.g., asking customers not to touch products unless they are buying them, disinfecting the containers brought by the consumers themselves)<sup>15</sup>.

### *Limitations*

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<sup>13</sup> <https://www.actu-retail.fr/2020/06/13/vente-vrac-secteur-developpement-confronte-crise-sanitaire/>

<sup>14</sup> <https://reseauvrac.org/actualites/article/covid19-l-infographie-de-reseau-vrac-pour-revenir-sur-le-vrac-avant-pendant-et>

<sup>15</sup> [https://reseauvrac.org/actualites/article/deconfinement-mise-a-jour-des-preconisations-d-hygiene-reseau-vrac-destinees?var\\_mode=calcul](https://reseauvrac.org/actualites/article/deconfinement-mise-a-jour-des-preconisations-d-hygiene-reseau-vrac-destinees?var_mode=calcul)

This study has a number of limitations that open avenues for new research. The first is linked to the university cooperative convenience store studied. Thus, replicating this research protocol on other types of stores (specialized stores vs. bulk areas in grocery stores) might be relevant by distinguishing the types of bulk products (solid [pasta, flour, etc.] vs. liquid [olive oil, soap, etc.]) even if, up to now, solid products mainly drive the sale of bulk products, both in France<sup>16</sup> and in Quebec<sup>17</sup>. The second limitation is linked to the sample of consumers used and its composition, even if the over-representation of women corresponds to the purchasing situation in most households (Nilsson *et al.*, 2015). A more diverse sample of consumers representative of the Quebec population could be used. Finally, this study retained the intentions of future purchase of bulk products and not the actual behaviors of consumers, but a gap may exist between the two (Lombardot and Mugel, 2017; Séré de Lanauze and Lallement, 2018; ElHaffar *et al.*, 2020; Louis *et al.*, 2020). Consequently, further research should focus on actual behavior.

### ***Avenues for Future Research***

First, the purchase and consumption of bulk products should be more systematically included (Fuentes *et al.*, 2019) in studies on CSR. Their contribution to retailers' CSR image should be investigated, as well as their contribution to retailers' benefits through the repeat purchases of these bulk products and positive word-of-mouth on retailers, their stores, and the bulk products proposed. In the same vein, the purchase and consumption of bulk products should be more systematically included (Fuentes *et al.*, 2019) in studies on SRCB. Consequently, more current and exhaustive measurement scales that will include this new sustainable consumption could be developed and proposed.

Second, the understanding of the decision-making processes of bulk product buyers (Beitzen-Heineke *et al.*, 2017; Marken and Hörisch, 2020) should be deepened. Package free shopping is not just a question of consumers limiting their consumption (e.g., of meat), but of consuming their usual products in a different way by going further than just reducing products' protective packaging (e.g., by limiting the purchase and consumption of individually prepackaged products).

The antecedents of this SCB should be investigated (Rapp *et al.*, 2017; Fuentes *et al.*, 2019; Marken and Hörisch, 2020) according to the profiles highlighted in this study (wary, pragmatic, and convinced consumers). For instance, the importance given by consumers to factors linked to their socially responsible behavior, real or wished (e.g., pro-environmental self-identity), factors linked to the price of bulk products and to consumers' price consciousness, factors linked to peer pressure and the desire to be positively perceived by others (e.g., subjective norms), their personality traits (e.g., the Big Five personality traits of openness, extraversion, conscientiousness, agreeableness, and neuroticism), and values (e.g., Schwartz's [1999] values) could play a key role in predicting consumer decision making.

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<sup>16</sup> <https://www.greenflex.com/offres/produits-consommation-responsables/marketing-responsable/barometre-consommation-responsable-2019/>

<sup>17</sup> <https://www.nielsen.com/fr/fr/insights/article/2019/bulk-buying-habit-that-settles-in-the-french/>

The consequences of this SCB should also be investigated. For instance, its impact on consumers' self-actualization and well-being (Sheth, 2015) could be examined, as well as its consumers' perceived congruence or identification (Huang *et al.* 2017) with retailers that offer bulk products. The relational chain proposed in this research could also be fulfilled. The concepts of value could be integrated with the concepts of proximity and satisfaction to complete the first extreme of the continuum (Walsh *et al.*, 2004; Diawara, 2017; Hernández-Mogollón *et al.*, 2020). In the same vein, the concepts of commitment and attachment could enrich the other extreme of this continuum (Walsh *et al.*, 2004; Diawara, 2017; Hernández-Mogollón *et al.*, 2020).

Third, future works could focus on current issues on the merchandizing of bulk products in order to analyze the reactions of potential buyers to different types of bulk display stands. Indeed, the receptacles of bulk products are extremely specific, both for solid and liquid products, in terms of their appearance and in the way they are used (Rapp *et al.*, 2017; Fuentes *et al.*, 2019). Furthermore, bulk products are mainly non-branded products, but some conventional brands tend to present their branded products in bulk displays (e.g., Kellogg's with Asda in Leeds<sup>18</sup>, Heineken with Monoprix in France<sup>19</sup>). It could be interesting to measure the legitimacy and credibility of conventional brands that present branded bulk products and to identify their impacts on these brands' images (price, CSR, etc.) and on the relationships established with consumers who may or may not consume bulk products. In the same vein, consumers' perceptions of the quality of branded and non-branded bulk products could be compared.

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<sup>18</sup> <https://www.thegrocer.co.uk/store-design/unilever-and-kelloggs-link-with-asda-for-sustainability-store-trial/601059.article>

<sup>19</sup> <https://www.lsa-conso.fr/gallia-et-heineken-proposent-de-la-biere-en-vrac.358828>

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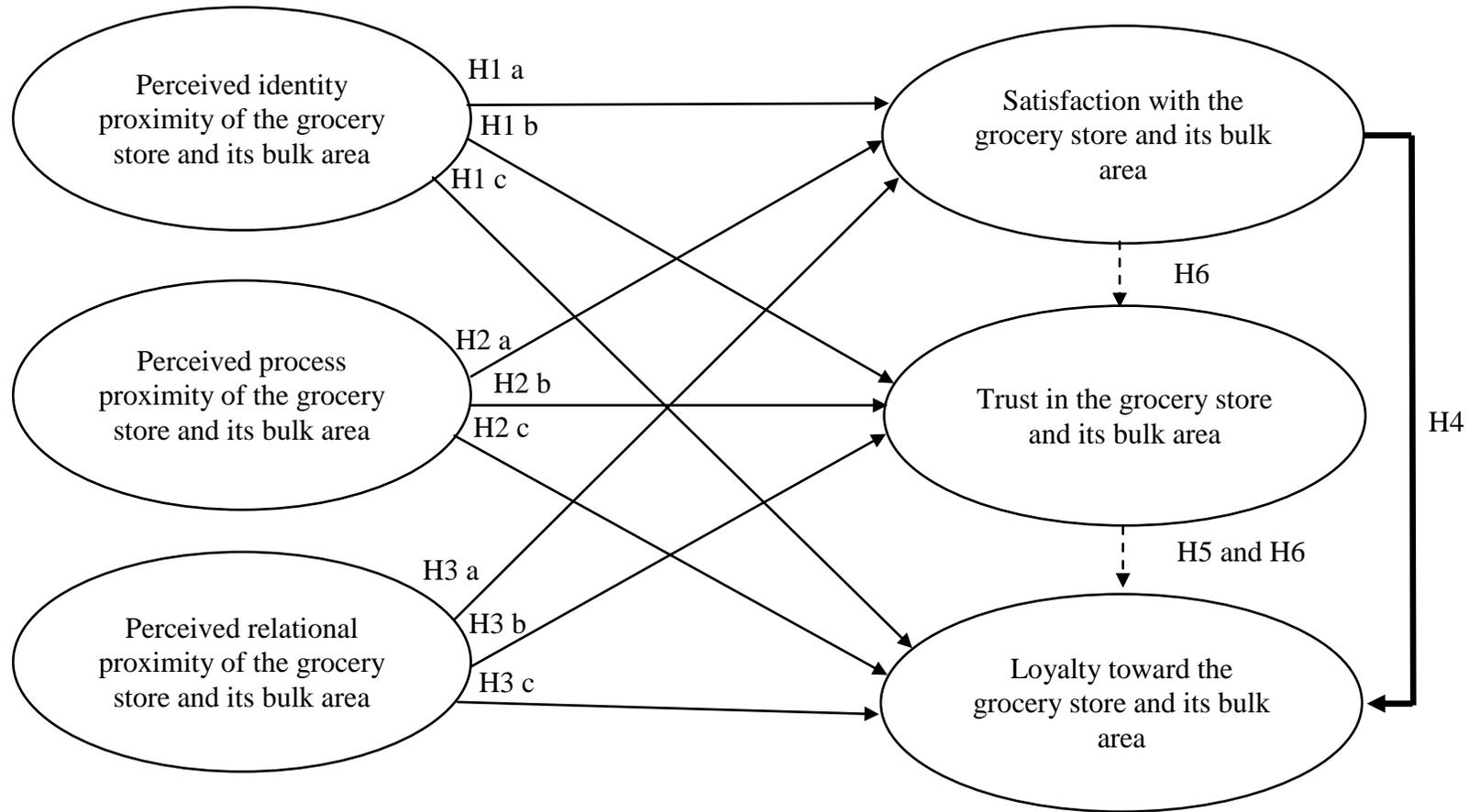
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**Figure 1: The research model**

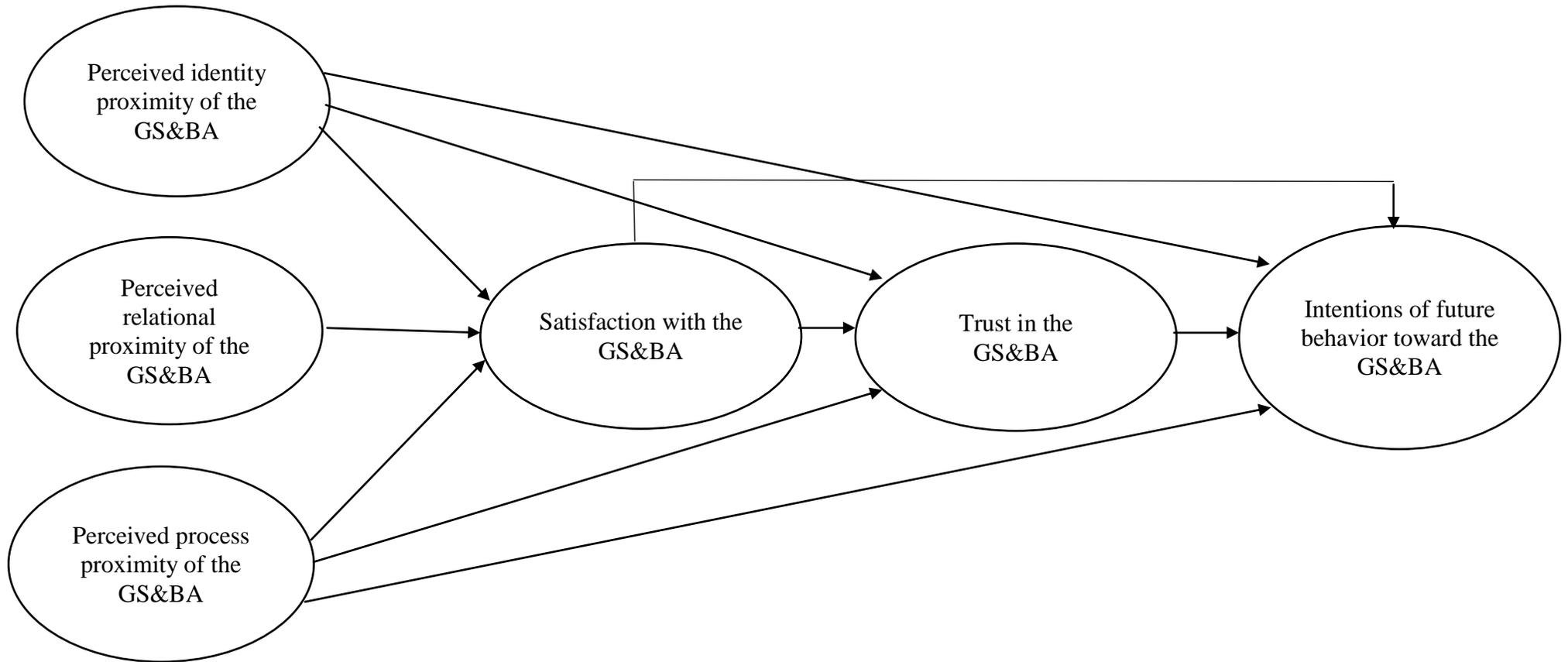


H4, which postulates a positive and partial mediating effect of satisfaction on the proximity–loyalty relationship, is represented by the links between proximity and satisfaction, proximity and loyalty, and satisfaction and loyalty in a bold line.

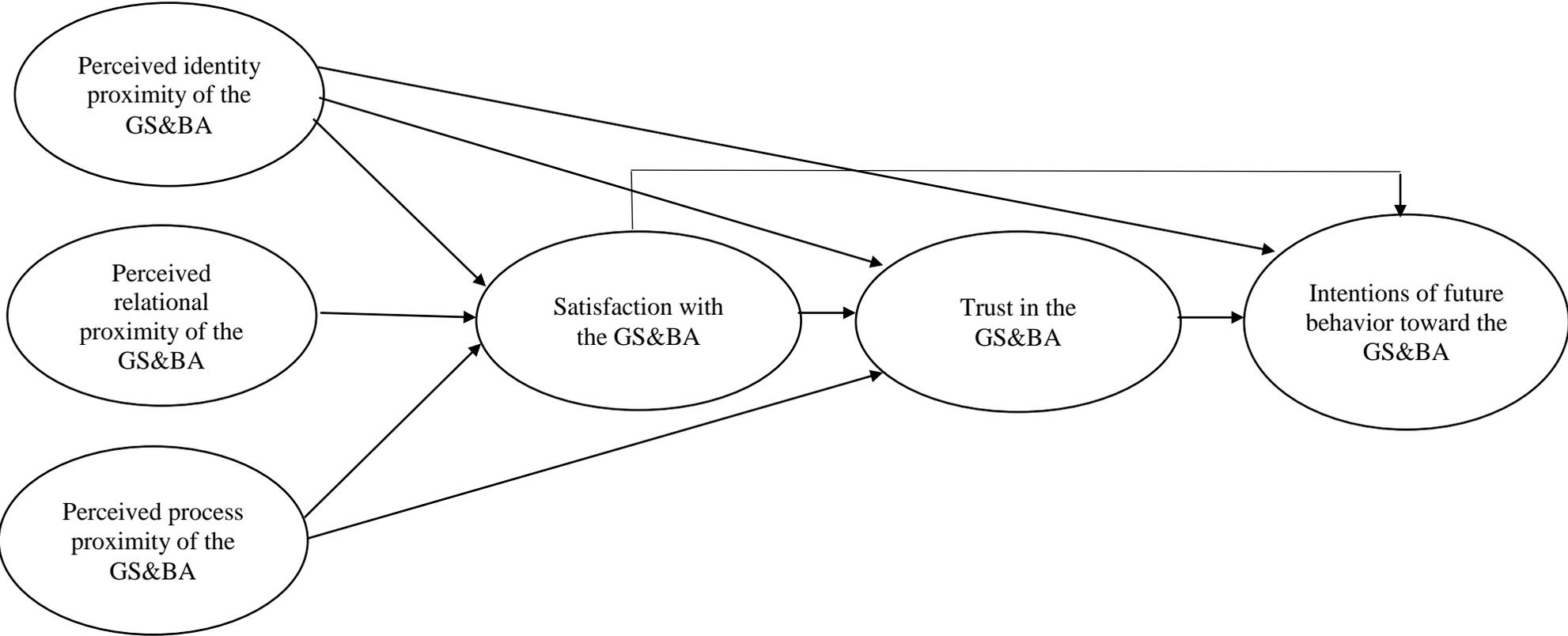
H5, which postulates a positive and partial mediating effect of trust on the proximity–loyalty relationship, is represented by the links between proximity and trust, proximity and loyalty, and trust and loyalty in dotted lines.

H6, which postulates a positive and partial mediating effect of satisfaction and trust on the proximity–loyalty relationship, is represented by the links between proximity and satisfaction, proximity and loyalty, and satisfaction and trust in dotted lines and between trust and loyalty in dotted lines, too.

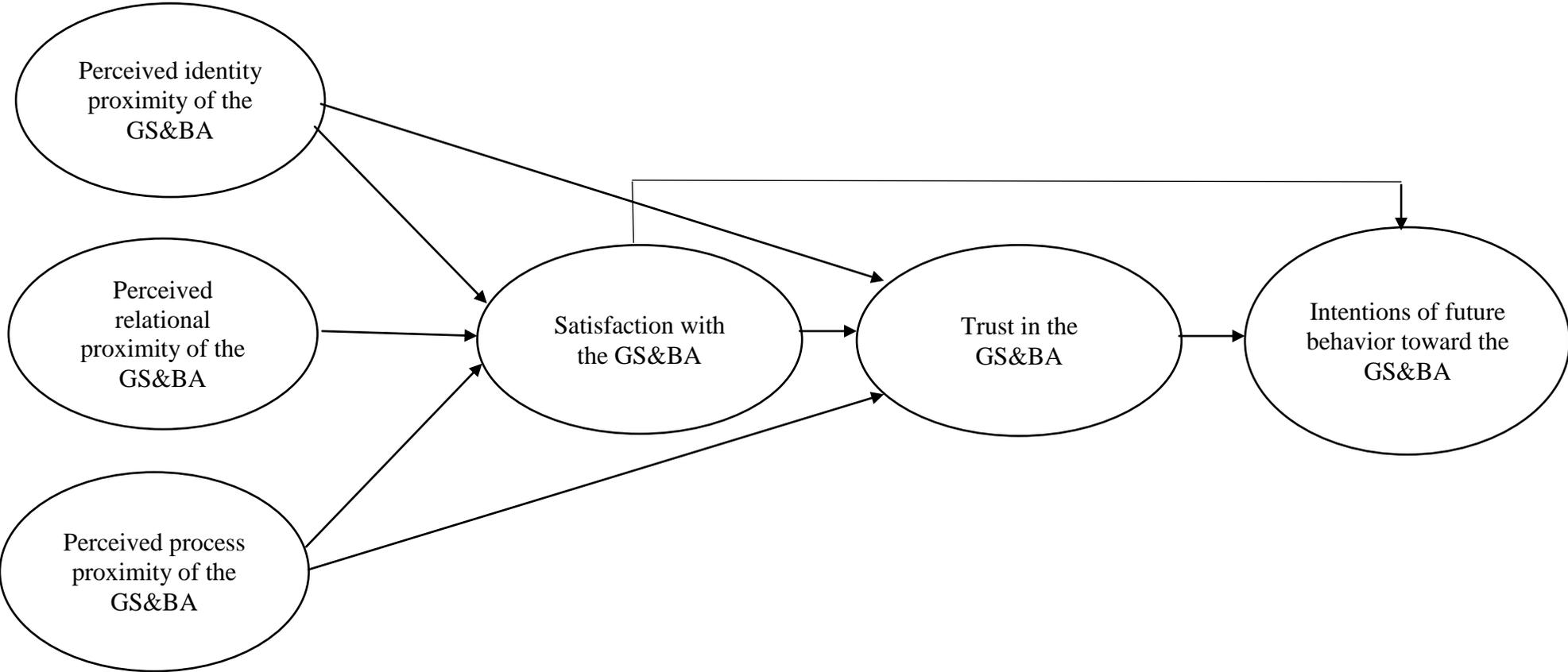
**Figure 2: Total sample (n = 1407)**



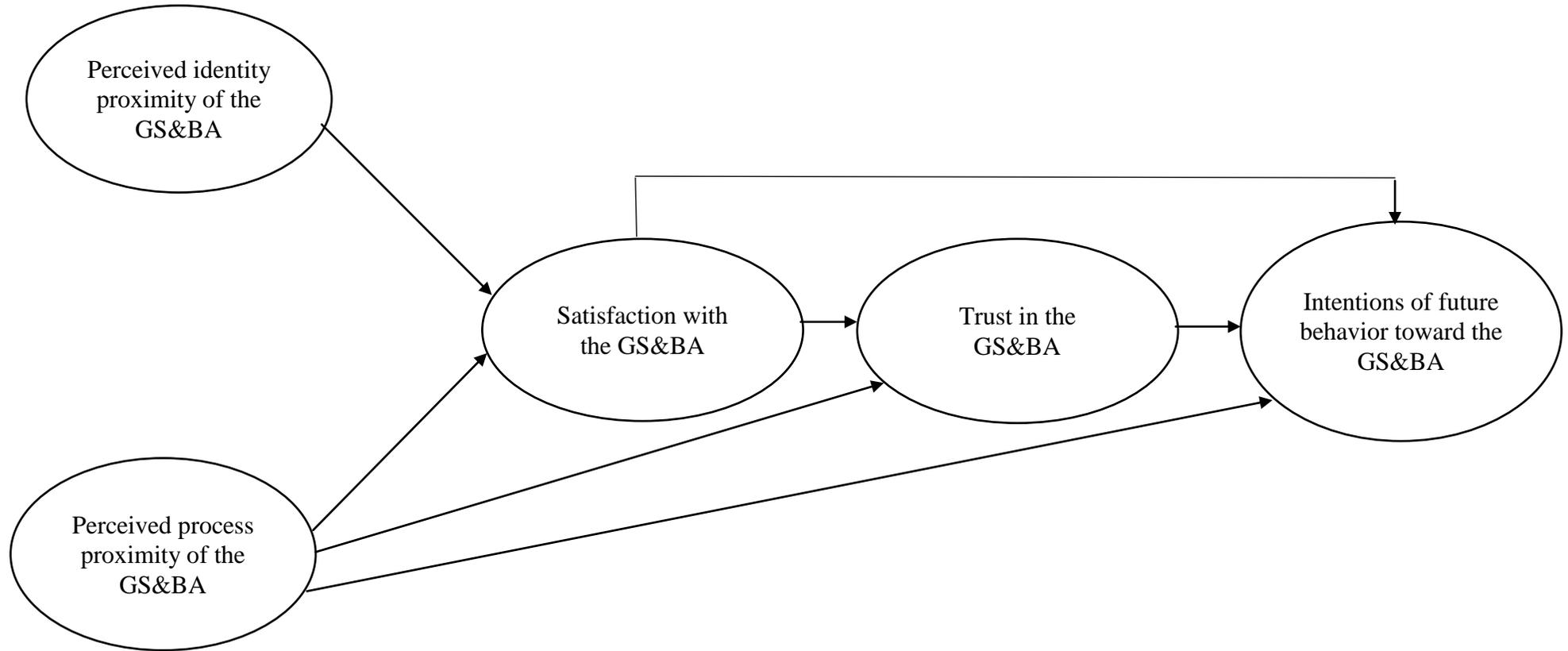
**Figure 3: Convinced consumers (n = 346)**



**Figure 4: Pragmatic consumers (n = 483)**



**Figure 5: Wary consumers (n = 578)**



**Table 1: Actions in the respect for consumers (external stakeholders) dimension**

Authors	Actions
Turker (2009)	Providing full and accurate information about products to customers, respecting customer rights beyond legal requirements, and positioning customer satisfaction as a highly important consideration of the company
Pérez and del Bosque (2013)	Establishing procedures to address customer complaints, treating customers honestly, having employees who provide complete information about corporate products/services to customers, using customer satisfaction as an indicator to improve product/service marketing, and making an effort to know customer needs
Moisescu (2015)	Offering products of reasonable quality to customers, considering customers' satisfaction, providing honest and complete information about activities and products, charging fair and reasonable prices for products, providing safe products that do not threaten the physical health of buyers, and working diligently to handle and solve customer complaints
Chakraborty and Jha (2019)	Ensuring quality, R&D and innovation, customer health and safety, candid labeling, responsible marketing communication, and customer privacy

**Table 2: The dimensions of sustainable consumer behavior**

Authors	Number of dimensions	Dimensions
Roberts (1995)	2	1° ecologically conscious consumer behaviors; 2° socially conscious consumer behaviors
François-Lecompte and Valette-Florence (2006)	5	1° refusing to buy from organizations whose behavior they deem irresponsible; 2° buying shared products; 3° helping small businesses; 4° caring about the geographical origin of the products (local product; “made in France”); 5° reducing their consumption to only what is really necessary
Webb <i>et al.</i> (2008)	3	1° CSR performance; 2° consumer recycling behavior; 3° environmental impact purchase and use criteria
Durif <i>et al.</i> (2011)	8	1° citizen behavior; 2° behavior focusing on protection of the environment; 3° recycling behavior; 4° composting behavior; 5° local consumption behavior; 6° behavior taking into account animal protection; 7° deconsumption behavior; 8° sustainable transport behavior
Yan and She (2011)	9	1° environmental protection; 2° animal protection; 3° energy conservation; 4° supporting small and medium-sized enterprises; 5° supporting national brands; 6° monitoring misconduct and claiming consumers’ rights; 7° moderate consumption; 8° supporting socially responsible businesses; 9° resisting irresponsible businesses
Balderjahn <i>et al.</i> (2013)	3	1° environmental; 2° social; 3° economic (with simplicity, debt-free consumption, and collaborative consumption)
Quazi <i>et al.</i> (2016)	6	1° social impacts; 2° solidarity; 3° critical appraisal; 4° supporting business growth; 5° environmental impacts; 6° action
Villa Castaño <i>et al.</i> (2016) and Villa Castaño <i>et al.</i> (2018)	4	1° external-CSR; 2° internal-CSR; 3° consumption rationalization; 4° healthcare
Geiger <i>et al.</i> (2018)	2	1° ecological; 2° socio-economic
Quoquab <i>et al.</i> (2019)	3	1° quality of life; 2° care for environmental well-being; 3° care for the future generation

**Table 3: Main barriers and drivers for the adoption of zero-packaging concept by suppliers, store owners and consumers**

	Barriers	Drivers
For suppliers	<ul style="list-style-type: none"> <li>- To change their packaging practices (i.e., to renounce to disposable packaging and to adopt reusable packaging practices)</li> </ul>	<ul style="list-style-type: none"> <li>- Price advantage due to avoided cost in production and to reduced food waste</li> </ul>
For store owners	<ul style="list-style-type: none"> <li>- To introduce new display devices and signage to promote this new way of shopping</li> <li>- To provide reusable containers or disposable containers to consumers to replace packages</li> </ul>	<ul style="list-style-type: none"> <li>- To recruit new consumers and improve the loyalty of actual consumers</li> <li>- To improve their image</li> </ul>
For consumers	<ul style="list-style-type: none"> <li>- Lifestyle change and cooking skills required to use bulk products</li> <li>- Important change of the shopping activity (i.e., to bring containers with them to the store)</li> <li>- Doubt in food safety</li> </ul>	<ul style="list-style-type: none"> <li>- The demand for more transparency and sustainability on products and the way they are produce</li> <li>- Price advantage due to the limit of food waste</li> <li>- The demand to adopt low-impact and healthy consumer behavior</li> </ul>

**Table 4: Results of confirmatory analyses**

Constructs	Items	Total sample (n = 1407)		Wary consumers (n = 578)		Pragmatic consumers (n = 483)		Convinced consumers (n = 346)	
		PC	<i>t</i>	PC	<i>t</i>	PC	<i>t</i>	PC	<i>t</i>
Perceived identity proximity of the GS&BA	I agree with the values held by this GS&BA.	0.852	56.491***	0.854	76.855***	0.836	53.894***	0.839	51.661***
	The values of this GS&BA are important to me.	0.879	58.711***	0.876	73.011***	0.875	71.276***	0.863	47.174***
	My personal values and those held by this GS&BA are similar.	0.893	58.200***	0.889	72.005***	0.891	65.448***	0.883	52.268***
	I share the vision advocated by this GS&BA.	0.897	53.881***	0.884	64.912***	0.900	62.698***	0.892	47.107***
Perceived process proximity of the GS&BA	I must have all the information on the storage conditions of bulk products in this grocery store.	0.937	56.548***	0.933	69.475***	0.941	72.390***	0.936	50.860***
	I must have all the information on the cleaning conditions for the bulk product dispensers used in this grocery store.	0.937	56.548***	0.933	69.475***	0.941	72.390***	0.936	50.860***
Perceived relational proximity of the GS&BA	I appreciate having a salesperson in this GS&BA to give me information about the bulk products offered.	0.783	29.040***	0.784	35.930***	0.781	34.736***	0.776	24.572***
	I appreciate having a salesperson in this GS&BA to serve me.	0.763	31.412***	0.768	39.394***	0.767	38.699***	0.742	25.381***
	I appreciate that a salesperson from this grocery store gives me information on how to consume more responsibly, namely thanks to bulk products.	0.814	30.028***	0.810	38.132***	0.822	35.723***	0.803	26.087***
Satisfaction with the GS&BA	I am satisfied with this GS&BA.	0.911	66.708***	0.918	86.544***	0.906	78.735***	0.893	50.758***
	I think shopping at this GS&BA is a good choice.	0.919	59.297***	0.917	92.807***	0.926	59.914***	0.896	47.076***
	I am happy with this GS&BA	0.892	63.941***	0.893	92.115***	0.895	66.104***	0.856	64.311***
Trust in the GS&BA	I trust this GS&BA.	0.946	60.807***	0.944	74.805***	0.935	64.350***	0.955	68.444***
	I trust the quality of the bulk products sold in this grocery store.	0.946	60.807***	0.944	74.805***	0.935	64.350***	0.955	68.444***
Intentions of future behavior toward the GS&BA	I could recommend this GS&BA to my loved ones.	0.892	42.008***	0.886	53.916***	0.900	57.404***	0.865	28.727***
	I could visit this GS&BA again.	0.873	44.925***	0.876	56.149***	0.888	58.862***	0.840	28.952***
	I could buy the bulk products (solid and/or liquid) offered in this grocery store again.	0.829	55.556***	0.829	69.559***	0.839	77.405***	0.761	32.657***

Notes: PC: Path Coefficient; \*\*\*Coefficient significant. Student's *t* test values higher than |2.575| indicate parameters significant at the 1% level.

**Table 5: Composite reliability and convergent and discriminant validities**

		Cronbach alpha coefficient	Jöreskog coefficient	Average variance extracted	Identity proximity	Process proximity	Relational proximity	Satisfaction	Trust	Intentions of future behavior
Total sample (n = 1407)	Identity proximity	0.903	0.932	0.775	1					
	Process proximity	0.859	0.935	0.878	0.177	1				
	Relational proximity	0.683	0.830	0.620	0.427	0.382	1			
	Satisfaction	0.893	0.933	0.823	0.537	-0.031	0.231	1		
	Trust	0.881	0.944	0.894	0.483	-0.159	0.191	0.788	1	
	Intentions of future behavior	0.820	0.899	0.748	0.547	0.016	0.271	0.862	0.821	1
Wary consumers (n = 578)	Identity proximity	0.899	0.929	0.767	1					
	Process proximity	0.849	0.931	0.870	0.174	1				
	Relational proximity	0.685	0.830	0.620	0.422	0.350	1			
	Satisfaction	0.895	0.935	0.827	0.548	-0.026	0.216	1		
	Trust	0.878	0.943	0.891	0.487	-0.194	0.171	0.796	1	
	Intentions of future behavior	0.823	0.898	0.746	0.548	0.011	0.245	0.866	0.824	1
Pragmatic consumers (n = 483)	Identity proximity	0.899	0.929	0.767	1					
	Process proximity	0.869	0.939	0.885	0.266	1				
	Relational proximity	0.688	0.833	0.625	0.391	0.441	1			
	Satisfaction	0.894	0.935	0.826	0.503	-0.024	0.182	1		
	Trust	0.854	0.932	0.873	0.491	-0.067	0.169	0.782	1	
	Intentions of future behavior	0.837	0.908	0.768	0.555	0.038	0.242	0.837	0.828	1
Convinced consumers (n = 346)	Identity proximity	0.891	0.925	0.756	1					
	Process proximity	0.858	0.934	0.877	0.060	1				
	Relational proximity	0.654	0.818	0.600	0.407	0.348	1			
	Satisfaction	0.857	0.913	0.778	0.432	-0.076	0.227	1		
	Trust	0.902	0.954	0.912	0.313	-0.273	0.139	0.723	1	
	Intentions of future behavior	0.734	0.863	0.678	0.376	-0.031	0.256	0.887	0.758	1

**Table 6: Results of the structural equation modelling test**

	Total sample (n = 1407)			Wary consumers (n = 578) (1)			Pragmatic consumers (n = 483) (2)			Convinced consumers (n = 346) (3)			Results (p-value) of tests of differences between the 2 PC		
	PC	t	R <sup>2</sup>	PC	t	R <sup>2</sup>	PC	t	R <sup>2</sup>	PC	t	R <sup>2</sup>	(1) vs (2)	(1) vs (3)	(2) vs (3)
Identity proximity → Satisfaction	0.476	19.350***		0.351	6.743***		0.455	10.673***		0.483	12.723***		<b>0.095</b>	<b>0.033</b>	0.606
Process proximity → Satisfaction	0.133	5.506***	0.254	0.156	3.722***	0.163	0.135	3.649***	0.230	0.115	2.228**	0.268	0.711	0.833	0.816
Relational proximity → Satisfaction	0.081	3.178***		0.071	n.s.		0.115	2.120**		0.090	2.299**		<b>0.096</b>	<b>0.085</b>	0.733
Identity proximity → Trust	0.145	6.543***		0.054	n.s.		0.142	4.166***		0.170	4.439***		<b>0.095</b>	<b>0.075</b>	0.621
Process proximity → Trust	0.161	8.230***	0.524	0.189	6.368***	0.451	0.219	5.194***	0.542	0.091	2.639***	0.496	0.695	<b>0.066</b>	<b>0.082</b>
Relational proximity → Trust	0.037	n.s.		0.051	n.s.		0.029	n.s.		0.017	n.s.		0.576	0.826	0.714
Satisfaction → Trust	0.614	28.787***		0.592	13.491***		0.619	18.748***		0.598	16.166***		0.651	0.923	0.716
Identity proximity → Intentions of future behavior	0.046	2.741***		0.022	n.s.		0.037	n.s.		0.092	3.166***		0.182	<b>0.018</b>	<b>0.086</b>
Process proximity → Intentions of future behavior	0.047	3.083***		0.058	2.458**		0.057	n.s.		0.008	n.s.		0.099	<b>0.089</b>	<b>0.168</b>
Relational proximity → Intentions of future behavior	0.025	n.s.	0.730	0.042	n.s.	0.676	0.016	n.s.	0.733	0.042	n.s.	0.725	0.547	0.996	0.505
Satisfaction → Intentions of future behavior	0.630	31.050***		0.646	15.440***		0.641	19.972***		0.603	17.735***		0.929	0.478	0.445
Trust → Intentions of future behavior	0.252	12.508***		0.248	5.956***		0.250	7.818***		0.248	7.337***		0.982	0.996	0.975

Notes: PC: Path Coefficient; \*\*\*/\*\*Coefficient significant. Student's *t* test values higher than |2.575/1.96| indicate parameters significant at the 1/5% level; n.s.: the coefficient is not significant.

**Table 7: Synthesis of the mediating effects**

	Total sample (n = 1407)	Wary consumers (n = 578)	Pragmatic consumers (n = 483)	Convinced consumers (n = 346)
a11Xb1 (identity proximity—satisfaction—intentions)	Significant and partial mediation	Significant and full mediation	Significant and full mediation	Significant and partial mediation
a12Xb1 (process proximity—satisfaction—intentions)	Significant and partial mediation	Significant and partial mediation	Significant and full mediation	Significant and full mediation
a13Xb1 (relational proximity—satisfaction—intentions)	Significant and full mediation	Non-significant mediation	Significant and full mediation	Significant and full mediation
a21Xb2 (identity proximity—trust—intentions)	Significant and partial mediation	Non-significant mediation	Significant and full mediation	Significant and partial mediation
a22Xb2 (process proximity—trust—intentions)	Significant and partial mediation	Significant and partial mediation	Significant and full mediation	Significant and full mediation
a23Xb2 (relational proximity—trust—intentions)	Non-significant mediation	Non-significant mediation	Non-significant mediation	Non-significant mediation
a11Xa3xb2 (identity proximity—satisfaction—trust—intentions)	Significant and partial mediation	Significant and full mediation	Significant and full mediation	Significant and partial mediation
a12Xa3xb2 (process proximity—satisfaction—trust—intentions)	Significant and partial mediation	Significant and partial mediation	Significant and full mediation	Significant and full mediation
a13Xa3xb2 (relational proximity—satisfaction—trust—intentions)	Significant and full mediation	Non-significant mediation	Significant and full mediation	Significant and full mediation

**Table 8: Psychographic characteristics of the three groups of bulk product consumers**

The scores have been recalculated between 0 and 100	Total sample (n = 1407)	Wary consumers (n = 578) (1)	Pragmatic consumers (n = 483) (2)	Convinced consumers (n = 346) (3)	ANOVAs		Comparison of means tests for independent samples					
					F	p-value	(1) vs (2)		(1) vs (3)		(2) vs (3)	
							t	p-value	t	p-value	t	p-value
Variables linked to the psychographic profile												
Sensitivity to food waste	86.26	81.25	88.17	<b>91.98</b>	103.094	0.000	-8.983	0.000	-15.723	0.000	-5.377	0.000
Socially responsible consumption	85.08	80.43	85.83	<b>91.79</b>	152.144	0.000	-8.553	0.000	-19.348	0.000	-9.119	0.000
Price sensitivity	73.29	68.19	<b>81.73</b>	70.02	90.130	0.000	-13.210	0.000	-1.516	0.130	9.541	0.000
Resistance to consumer society	72.79	65.82	73.61	<b>83.29</b>	101.191	0.000	-6.544	0.000	-16.146	0.000	-8.220	0.000
Drivers for buying and consuming bulk products												
Reducing packaging waste	96.01	94.19	96.36	<b>98.55</b>	19.270	0.000	-3.165	0.002	-6.810	0.000	-3.593	0.000
Avoiding food waste by controlling the quantities purchased	90.28	88.86	90.19	<b>92.77</b>	7.178	0.001	-1.367	0.172	-4.081	0.000	-2.490	0.013
Discovering new products (e.g., by first buying a small quantity of a new product to taste it)	83.41	81.56	<b>84.93</b>	84.39	5.532	0.004	-3.120	0.002	-2.366	0.018	0.429	0.668
Buying better quality products (e.g., organic, fair trade, local, etc.)	79.66	76.82	80.66	<b>83.01</b>	15.404	0.000	-3.623	0.000	-5.335	0.000	-1.950	0.050
Seeing the products purchased better	78.37	76.33	79.63	<b>80.00</b>	5.523	0.004	-2.823	0.005	-2.806	0.005	-0.270	0.787
Preserving one's health	76.96	74.91	77.56	<b>79.54</b>	6.638	0.001	-2.264	0.024	-3.556	0.000	-1.435	0.152
Buying fresher products (because these products are purchased more regularly)	73.75	71.90	73.71	<b>76.88</b>	7.274	0.001	-1.520	0.129	-3.823	0.000	-2.347	0.019
Serving oneself	76.43	74.74	<b>78.34</b>	76.59	4.912	0.010	-2.859	0.004	-2.278	0.020	2.159	0.024
Barriers to buying and consuming bulk products												
Lack of information on bulk products (e.g., origin, price per kilo, labels, expiration date, product composition, nutritional value, preparation instructions, etc.)	62.67	<b>64.26</b>	64.06	58.09	7.988	0.000	0.132	0.895	3.653	0.000	3.367	0.001
Lack of information on store management (e.g., where and how the bulk products are stored, etc.)	57.07	<b>58.75</b>	57.56	53.58	5.016	0.007	0.796	0.426	3.165	0.002	2.270	0.023
Difficulty of estimating the cost of chosen products before paying	56.97	<b>58.48</b>	57.23	54.10	3.598	0.028	0.846	0.398	2.651	0.008	1.796	0.073
Lack of information on the cleaning of the bulk product containers (e.g., the cleaning frequencies and the products used, etc.)	55.22	<b>57.54</b>	55.32	51.21	6.738	0.001	1.428	0.154	3.649	0.000	2.238	0.025
Need to bring one's own boxes/bottles to put the chosen products in	51.76	<b>54.08</b>	51.64	48.03	6.350	0.002	1.569	0.117	3.621	0.000	2.065	0.039
Lack of confidence in the cleanliness of the bulk product dispensers	46.03	<b>48.51</b>	46.63	41.04	11.653	0.000	1.329	0.184	4.809	0.000	3.431	0.001

**Table 9: Socio-demographic characteristics of the three groups of bulk product consumers**

		Total sample (n = 1407)	Wary consumers (n = 578)	Pragmatic consumers (n = 483)	Convinced consumers (n = 346)
Sex	Female	79.1%	77.0%	79.7%	81.8%
	Male	20.9%	23.0%	20.3%	18.2%
Age group	Under 25	29.5%	26.1%	35.0%	27.5%
	25–44	49.6%	51.7%	44.9%	52.6%
	45–64	18.6%	19.9%	18.4%	16.8%
	Over 65	2.3%	2.2%	1.7%	3.2%
Occupation	Student	52.8%	49.5%	55.6%	54.3%
	Employee	31.4%	32.9%	30.9%	29.8%
	Executive	2.8%	3.5%	2.1%	2.6%
	Professor	8.5%	8.8%	7.9%	8.7%
	Lecturer	4.6%	5.4%	3.5%	4.6%

**Table 10: Behavioral characteristics of the three groups of bulk product consumers**

		Total sample (n = 1407)	Wary consumers (n = 578)	Pragmatic consumers (n = 483)	Convinced consumers (n = 346)
Purchase frequency, in one year, of solid bulk products	Never	0.9%	0.9%	1.2%	0.6%
	Rarely (Fewer than 5 times over the past 12 months)	27.4%	<b>29.8%</b>	28.2%	22.5%
	Sometimes (5 to 6 times over the past 12 months)	27.1%	<b>31.7%</b>	25.9%	21.1%
	Often (7 to 11 times over the past 12 months)	20.7%	18.9%	20.9%	<b>23.4%</b>
	Regularly (12 times or more over the past 12 months)	23.9%	18.9%	23.8%	<b>32.4%</b>
Purchase frequency, in one year, of liquid bulk products	Never	42.0%	<b>49.5%</b>	40.4%	31.8%
	Rarely (Fewer than 5 times over the past 12 months)	24.2%	24.2%	25.5%	22.5%
	Sometimes (5 to 6 times over the past 12 months)	14.1%	11.9%	14.3%	17.3%
	Often (7 to 11 times over the past 12 months)	10.8%	7.8%	11.8%	<b>14.5%</b>
	Regularly (12 times or more over the past 12 months)	8.9%	6.6%	8.1%	<b>13.9%</b>

## Appendix 1: Tests of mediating effects

	Total sample (n = 1407)					Wary consumers (n = 578)					Pragmatic consumers (n = 483)					Convinced consumers (n = 346)				
	Direct effects					Direct effects					Direct effects					Direct effects				
	Coef- ficient	Bootstrap 90% CI				Coef- ficient	Bootstrap 90% CI				Coef- ficient	Bootstrap 90% CI				Coef- ficient	Bootstrap 90% CI			
		Percentile	BC				Percentile	BC				Percentile	BC				Percentile	BC		
c1 (identity proximity—intentions)	0.046 (sig)	0.018	0.076	0.017	0.075	0.022 (nsig)	-0.076	0.039	-0.033	0.082	0.037 (nsig)	-0.005	0.082	-0.006	0.080	0.092 (sig)	0.035	0.139	0.041	0.145
c2 (process proximity—intentions)	0.047 (sig)	0.016	0.071	0.019	0.074	0.058 (sig)	-0.002	0.098	0.006	0.106	0.057 (nsig)	0.002	0.106	0.005	0.108	0.008 (nsig)	-0.076	0.043	-0.052	0.068
c3 (relational proximity—intentions)	0.025 (nsig)	0.000	0.053	-0.001	0.052	0.042 (nsig)	-0.010	0.102	-0.013	0.098	0.016 (nsig)	-0.022	0.062	-0.027	0.057	0.042 (nsig)	-0.009	0.084	-0.004	0.089
a11 (identity proximity—satisfaction)	0.476 (sig)	0.434	0.513	0.436	0.515	0.351 (sig)	0.268	0.438	0.267	0.437	0.455 (sig)	0.388	0.523	0.386	0.521	0.483 (sig)	0.419	0.539	0.422	0.541
a12 (process proximity—satisfaction)	0.133 (sig)	0.085	0.176	0.086	0.177	0.156 (sig)	-0.039	0.237	-0.013	0.264	0.135 (sig)	-0.001	0.201	0.005	0.207	0.115 (sig)	0.022	0.214	0.018	0.211
a13 (relational proximity—satisfaction)	0.081 (sig)	0.037	0.128	0.036	0.127	0.071 (nsig)	0.001	0.142	-0.001	0.141	0.115 (sig)	0.021	0.233	0.009	0.221	0.090 (sig)	0.026	0.161	0.022	0.158
a21 (identity proximity—trust)	0.145 (sig)	0.104	0.184	0.105	0.185	0.054 (nsig)	-0.018	0.134	-0.020	0.132	0.142 (sig)	0.076	0.201	0.079	0.204	0.170 (sig)	0.099	0.246	0.097	0.243
a22 (process proximity—trust)	0.161 (sig)	0.110	0.192	0.115	0.198	0.189 (sig)	0.069	0.239	0.084	0.254	0.219 (sig)	0.144	0.291	0.145	0.292	0.091 (sig)	-0.012	0.151	0.001	0.164
a23 (relational proximity—trust)	0.037 (nsig)	-0.003	0.073	-0.001	0.074	0.051 (nsig)	-0.019	0.120	-0.019	0.120	0.029 (nsig)	-0.035	0.086	-0.032	0.088	0.017 (nsig)	-0.049	0.083	-0.048	0.084
a3 (satisfaction—trust)	0.614 (sig)	0.573	0.653	0.573	0.653	0.592 (sig)	0.508	0.671	0.509	0.672	0.619 (sig)	0.559	0.680	0.558	0.678	0.598 (sig)	0.523	0.674	0.522	0.672
b1 (satisfaction—intentions)	0.630 (sig)	0.594	0.666	0.595	0.666	0.646 (sig)	0.562	0.720	0.565	0.723	0.641 (sig)	0.587	0.693	0.587	0.694	0.603 (sig)	0.537	0.661	0.539	0.663
b2 (trust—intentions)	0.252 (sig)	0.209	0.292	0.210	0.292	0.248 (sig)	0.168	0.334	0.166	0.332	0.250 (sig)	0.186	0.307	0.189	0.311	0.248 (sig)	0.181	0.328	0.176	0.323
	Indirect effects					Indirect effects					Indirect effects					Indirect effects				
Point estimate	Bootstrap 90% CI				Point estimate	Bootstrap 90% CI				Point estimate	Bootstrap 90% CI				Point estimate	Bootstrap 90% CI				
	Percentile	BC				Percentile	BC				Percentile	BC				Percentile	BC			
a11Xb1 (identity proximity—satisfaction—intentions)	0.300	0.268	0.331	0.269	0.332	0.227	0.170	0.286	0.171	0.286	0.292	0.244	0.343	0.243	0.342	0.291	0.243	0.335	0.245	0.338
a12Xb1 (process proximity—satisfaction—intentions)	0.084	0.054	0.111	0.055	0.112	0.101	0.025	0.155	0.008	0.173	0.087	0.001	0.130	0.003	0.134	0.069	0.013	0.130	0.011	0.128
a13Xb1 (relational proximity—satisfaction—intentions)	0.051	0.023	0.080	0.023	0.080	0.046	0.000	0.092	0.000	0.091	0.074	0.013	0.151	0.005	0.143	0.054	0.015	0.097	0.013	0.096
a21Xb2 (identity proximity—trust—intentions)	0.037	0.025	0.049	0.025	0.049	0.013	-0.004	0.034	-0.005	0.034	0.036	0.018	0.053	0.019	0.054	0.042	0.022	0.070	0.020	0.068
a22Xb2 (process proximity—trust—intentions)	0.041	0.026	0.051	0.027	0.053	0.047	0.016	0.068	0.019	0.072	0.055	0.032	0.078	0.033	0.079	0.023	0.003	0.041	0.002	0.044
a23Xb2 (relational proximity—trust—intentions)	0.009	-0.001	0.019	0.000	0.019	0.013	-0.005	0.031	-0.005	0.031	0.007	-0.009	0.021	-0.008	0.022	0.004	-0.013	0.020	-0.013	0.021
a11Xa3xb2 (identity proximity—satisfaction—trust—intentions)	0.074	0.059	0.088	0.060	0.088	0.052	0.031	0.076	0.031	0.076	0.070	0.049	0.092	0.050	0.093	0.072	0.049	0.099	0.048	0.098
a12Xa3xb2 (process proximity—satisfaction—trust—intentions)	0.021	0.012	0.029	0.012	0.029	0.023	0.006	0.039	0.002	0.043	0.021	0.001	0.034	0.002	0.035	0.017	0.003	0.035	0.002	0.034
a13Xa3xb2 (relational proximity—satisfaction—trust—intentions)	0.013	0.005	0.021	0.005	0.021	0.010	0.000	0.023	0.000	0.023	0.018	0.003	0.038	0.001	0.036	0.013	0.004	0.026	0.003	0.025

Notes: sig: significant; nsig: not significant; BC: bias corrected; CI: Confidence Interval.

## Appendix 2: Psychometric qualities of psychographic variables

Constructs	Total sample (n = 1407)			Wary consumers (n = 578)			Pragmatic consumers (n = 483)			Convinced consumers (n = 346)		
	Cronbach alpha coefficient	Jöreskog coefficient	Average variance extracted									
<b><i>Sensitivity to food waste</i></b>												
I would be ashamed of spoiling food in someone else's presence.	0.746	0.862	0.676	0.729	0.851	0.656	0.756	0.868	0.687	0.680	0.758	0.511
One of my concerns is to manage food well to spoil as little as possible.												
It bothers me to see someone throw away food that is still edible.												
<b><i>Socially responsible consumption—Over the past 12 months...</i></b>												
I tried to buy products that are less harmful to the environment.												
I favoured local purchases.												
When I could, I bought products/services from companies that help those in need.												
I avoided buying products made from endangered animals.	0.702	0.931	0.631	0.778	0.896	0.523	0.724	0.938	0.654	0.795	0.905	0.557
I stopped buying products/services that I didn't really need.												
I recycled.												
I opted for means of transportation other than the car (walking, bus, bike, metro).												
I composted.												
<b><i>Resistance to consumer society</i></b>												
I consider that buying bulk products allows me to escape the consumer system a little.	0.895	0.936	0.829	0.893	0.933	0.824	0.888	0.932	0.820	0.823	0.898	0.747
I consider buying bulk products as being a form of revenge on the consumer system.												
Buying bulk products allows me to distance myself from the consumer society.												
<b><i>Price sensitivity</i></b>												
I like to make efforts to find low prices.												
I shop in several stores to take advantage of low prices.	0.815	0.894	0.738	0.792	0.880	0.709	0.794	0.884	0.718	0.799	0.886	0.722
I think the money I save is generally worth the time and effort that go into searching for low prices.												