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Sustainable Consumer Behaviors: Revisiting and Integrating Mainstream Theories

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Coordinatore del Dottorato
ch. prof. Francesco Zirpoli

Supervisore
ch. prof. SooCheong (Shawn) Jang

Supervisore cotutela
ch. Dr. Pietro Lanzini

Dottorando
Sayed Elhoushy
Matricola 956397

DECLARATION

Hereby, I /*Sayed Elhoushy*/ assure that this dissertation is original and that it has not been previously used to obtain any academic degree at any other academic institution.

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My *mother*, the great woman who dedicated her entire life for us and now for our children, God bless you.

My *wife*, I am in debt for your unconditional love and support. I could never have made it through without you by my side. I am also jealous because, let's face it, while you spent the last few years investing in the holy and precious duty of raising our two amazing kids, I was doing a Ph.D.!!!

My kind *sisters* and dedicated *brothers*, I am so grateful for your support and prayers.

DEDICATION

To Adam and Rayan—my wonderful kids—whose smile makes life better.

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Introduction

Consumption of products and services has increased to extraordinary levels. On the one hand, this increased consumption can be attributed to population growth. On the other hand, unsustainable consumer behaviors can also influence increased consumption, which creates severe challenges for the environment. According to the United Nations, "should the global population reach 9.6 billion by 2050, the equivalent of almost three planets could be required to provide the natural resources needed to sustain current lifestyles." (United Nations, 2020, Goal 12, Facts & Figures section). These challenges will continue unless unsustainable behaviors are replaced by alternative sustainable behaviors that take into account environmental factors. Therefore, promoting *sustainable consumer behaviors* (SCBs) is currently center stage in the sustainable development agenda. SCBs refer to all forms of behavior that meet consumer needs and concurrently minimize environmental impacts or benefit the environment (Belz & Peattie, 2009; Trudel, 2019). Such behaviors include, but are not limited to, green purchasing behaviors, choosing sustainable restaurants, staying at green hotels, car-sharing, energy and water conservation, waste reduction, and recycling.

How to promote SCBs? This question has occupied the minds of many researchers and policy makers for decades. Some scholars indicate that sustainable behaviors were born with the Brundtland report. Others note that these behaviors are as old as humankind, and several historical events have contributed to their evolution over time (see Chappells & Trentmann, 2015). Beyond this debate, questions of *how* are of more concern to the present context: *How to motivate more individuals toward SCBs? How to transfer motivations into actions? How to ensure that SCBs continue over time?* The current thesis includes three original papers that contribute broadly to sustainability and marketing management and, specifically, to the literature on SCBs.

The first paper integrates and examines the impact of five antecedents—namely, attitudes, subjective norms, perceived behavioral control, personal norms, and activism—on consumer intentions to choose sustainable food at restaurants. In addition, this study investigates the subsequent outcomes of holding imbalanced motivations across the five proposed antecedents on intentions, under the conjecture that individuals who show consistent motivations will have greater intentions to choose sustainable food than those who experience motivational conflicts. A sample of 609 respondents participated in the study. Data were analyzed using a two-step approach of confirmatory factor analysis and structural models. Results show that motivational

imbalance has significant moderating effects, such that consumers who experience motivational imbalance showed consistently weaker intentions than consumers who experience motivational balance. The comparison of different motivational conflicts reveal that attitude–subjective norm and attitude–activism conflicts have the most substantial negative impact on consumer intentions. Thus, it is useful for marketers to understand that not all motivational conflicts can cause similar impacts on sustainable consumer choices. These results advance understanding of the ramifications of motivational imbalance and are of interest to businesses aiming to attract new consumers to the sustainable concept.

The second paper takes the conversation forward by focusing on the background variables that shape the direct antecedents of consumer intentions toward SCBs. Drawing on the theory of planned behavior (TPB), norm-activation model, and cultivation theory, this paper examines the consumers' intentions to reduce food waste and explore whether exposure to television (TV) cooking shows relates to food waste intentions. Data were collected from a convenience sample of 429 consumers who watch TV cooking shows, and take part in buying and/or cooking food at their households. Three competing models were developed and analyzed before testing the hypotheses using Structural Equation Modeling. The data support the theoretical integration of an extended TPB model and cultivation theory. In addition, the results provide first empirical evidence on the potential effects of TV cooking shows on consumer food waste. Specifically, the results show that more time spent watching TV cooking shows can lead to more food wasted. Furthermore, exposure diversity can tighten the negative influence of these shows on consumer food waste. These results question the growth of TV cooking shows across countries, given their indirect contributions to the food waste problem. Nevertheless, TV cooking shows can play an important role in cultivating food waste reduction if suitable communications are considered. The current thesis offers specific implications to marketers and policy makers in this regard.

Following these two empirical studies, the third paper is a theoretical piece that provides added value to consumer behavior and marketing literature by proposing a new theoretical perspective for looking at SCBs. This paper critically reviews and integrates existing models, and previous empirical findings to identify their merits and shortcomings and highlight the need for a new theoretical perspective. Then, this paper proposes a multi-stage model—the ***M**otivation-**A**doption-**C**ontinuance (MAC) Model*, to delineate the different facets of the sustainable consumer journey over time. Specifically, the MAC model includes factors that motivate consumers to adopt sustainable behaviors (motivation), translate motivations into committed actions (adoption), and influence post-adoption outcomes and future sustainable

behaviors (continuance). Thus, compared to the first two papers, paper three goes beyond behavioral intentions and also focuses on the adoption and post-adoption stages. At each stage, the paper proposes a set of testable propositions and puts forward a constructive discussion of each link. The MAC model is unique in that it takes into account both short-term and long-term perspectives. This temporal perspective for looking at sustainable behaviors as a consumer journey can generate richer insights to inform consumer-based strategies. (Hamilton, 2016; Hamilton & Price, 2019).

As a whole, this thesis contributes to knowledge in three ways. *First*, integrating different theoretical perspectives from rational and altruistic-based streams to expand their boundaries and assessing the validity of this integrated model in two different contexts. In the first context of sustainable food, this thesis examines the concept of motivational imbalance and discusses its ramifications on consumer sustainable choices. Then, in the food waste context, the current thesis theorizes the potential effects of exposure to TV cooking shows on consumer food waste. *Second*, introducing the concept of *relevance*—a positive state of mind that reflects the extent to which a consumer maintains activated self-, social-, and environmental-relevant goals and the subjective belief that a given sustainable product, behavior, or service can attain these goals—that is essential to guiding motivations to adopt SCBs. *Third*, proposing and discussing a testable and generalizable multi-stage model to guide consumer policy and behavior change aimed at motivating, facilitating, and maintaining SCBs. Just as importantly, each paper in the thesis suggests and discusses implications for research and practice, as well as defining avenues for future research.

Toward this end, this thesis is organized as follows. After this introductory part, the main body of the thesis is divided into three parts. Each part covers the components of one of the three papers from the introduction to the conclusion. Part one covers sustainable food choices and motivational imbalance. Part two focuses on consumer food waste and TV cooking shows. Then, part three covers the core components of the newly proposed theoretical model. Finally, this thesis offers a general conclusion that focuses on its main contributions and limitations.

Paper 1

Sustainable Food Choices: Antecedents and Motivational Imbalance[1]

Abstract

This paper examines the antecedents of sustainable food choices by restaurant consumers and investigates the differences between consumers based on their state of motivational imbalance. A sample of 609 respondents from Egypt took part in the study. Data were analyzed using a two-step approach of confirmatory factor analysis and structural models. Results indicate that attitudes, perceived behavioral control, personal norms, and activism are significant antecedents of consumers' sustainable food choices. However, the data reveal a non-significant relationship with subjective norms. Motivational imbalance has significant moderating effects, such that consumers who experience motivational imbalance showed consistently weaker intentions than consumers who experience motivational balance. Furthermore, there are significant differences between consumers under various scenarios of motivational imbalance. Specifically, the comparison of different motivational conflicts showed that attitude–subjective norm and attitude–activism conflicts have the most substantial negative impact on intentions. These results advance understanding of the ramifications of motivational imbalance and provide fresh insights for researchers and managers in the domain of sustainable food.

Keywords: Sustainable food choice; Consumer intention; Motivational imbalance; Theory of planned behavior; Restaurant industry

1.1. Introduction

Consumers' food choices at restaurants have an impact on not only the individual consumer and business success but also the environment. Many studies emphasizing the environmental impact of these choices reveal that current restaurant operations have a detrimental effect (Hu et al., 2010; Kim et al., 2015; Wang & Wang, 2016). The restaurant business has grown quickly in the past two decades, and continued growth is expected. Thus, appeals have increased for sustainable food service that considers both the consumers' needs,

[1] Published version: https://www.sciencedirect.com/science/article/abs/pii/S0278431920301067?dgcid=author

and the planet's boundary limits. In the modern marketing era, in which business success is subject to identifying and meeting consumer needs, consumers' sustainable food choices represent an important element for expanding sustainable food service. In other words, each time consumers choose a given sustainable menu item, they are inherently supporting that line of production. Therefore, understanding the determinants of sustainable food choices from the consumer perspective is important.

The food service literature has a plethora of studies on consumers' intentions to choose sustainable restaurants and organic menu items (e.g., Dewald et al., 2014; Hu et al., 2010; Jang et al., 2011; Kim et al., 2013; Kwok et al., 2016; Namkung & Jang, 2017; Shin et al., 2018; Wang & Wang, 2016). These studies have largely focused on the reasoned action approach and therefore can be classified into two streams. The first considers *self-interest motives* the best predictor of sustainable behaviors. For example, if someone expects desirable personal outcomes (e.g., health, approval of others) from sustainable dining, it is more likely that he or she will choose this option. This stream is based mainly on the theory of planned behavior (TPB: Ajzen, 1991). The second stream suggests that *moral motives* are more pertinent to the sustainable domain, in which people consider not only personal gains but also others' well-being. This stream is based on normative theories (Schwartz, 1977; Stern et al., 1999). Combining both lines of reasoning is important in sustainability contexts, such as food choices, because sustainable food choice is a complex decision in which many factors can influence consumer choices, including rational elements of food taste, service quality, and price (Hu et al., 2010; Jang et al., 2011; Namkung & Jang, 2013), as well as moral issues related to animals welfare, food waste, and adverse environmental impacts. Though, still, only a few food service studies have combined moral-based and self-interest motives (Kim et al., 2013; Shin et al., 2018). Furthermore, Sheth et al. (2011) argue that to date, research on sustainable consumer behavior has focused on personal or self-consequential benefits while neglecting the community and environmental dimensions. Thus, in line with a recent theoretical development that proposes activism—a distinct type of environmental attitude—as an important determinant of sustainable behaviors (Elhoushy & Jang, 2019), this study addresses this gap by examining the impact of activism on sustainable food choices at restaurants.

Researchers have argued that individuals may experience a state of *motivational imbalance* in which they believe a particular choice has positive personal outcomes but is subject to disapproval by important social referents (Ajzen & Kruglanski, 2019) or that choice does not comply with one's moral standards (Sparks et al., 2001). Simply put, individuals may have conflicting motives when making a single choice. For example, an individual may feel

morally obligated to choose sustainable food but concurrently hold negative beliefs about the taste of the food. These conflicting views or motives can lead to a state of dissonance due to the differences in cognitions (Thøgersen, 2004). Recently, researchers have claimed that such situations of conflict can generate further ramifications on one's actions and behaviors (Ajzen & Kruglanski, 2019; Kruglanski et al., 2018), though few studies have addressed motivational imbalance in this context. In particular, no studies, to the author's knowledge, have examined the outcomes of holding conflicting motivations in the domain of sustainable food choices.

Furthermore, the literature on sustainable consumer behavior in general and sustainable food choices particularly is geographically concentrated in developed countries (see Hu et al., 2010; Jang et al., 2011; Kim et al., 2013; Kwok et al., 2016; Namkung & Jang, 2017; Shin et al., 2018), while studies in less developed regions are very scarce (Elhoushy & Lanzini, 2020). This lack of research justifies the increasing calls by scholars (in and outside hospitality, e.g., Morren & Grinstein, 2016; Shin et al., 2018) for further studies in other cultural and economic conditions. The current study, therefore, focuses on a sample of restaurant consumers from Egypt: a populated country with a distinctive culture and economic conditions. As such, this study addresses, in part, the need for examining the capacity of Western-based models in predicting consumer behaviors in non-Western cultures.

Overall, the current study integrates and examines the impact of five antecedents—namely, attitudes, subjective norms, perceived behavioral control (PBC), personal norms, and activism—on the intention to choose sustainable food at restaurants. In addition, this study investigates the subsequent outcomes of holding imbalanced motivations across the five proposed antecedents on intentions. More specifically, the objectives of this paper are twofold: (1) to examine the factors that motivate Egyptian consumers to choose sustainable food at restaurants and (2) to investigate the differences between individuals based on their state of motivational imbalance, under the conjecture that individuals who show consistent motivations will have greater intentions to choose sustainable food than those who experience motivational conflicts.

1.2. Literature review

1.2.1. Sustainable food choice

Scholars repeatedly note the lack of a standard definition for sustainable restaurants (Kim, Yoon, & Shin, 2015), and several terms are used interchangeably in the literature, including "sustainable," "green," "eco-friendly," and "environmentally friendly" (Jang et al.,

2015a; Jang et al., 2011; Kim et al., 2016; Kim et al., 2013). However, most scholars agree that these restaurants can be identified by their menu offerings and environmental practices. For example, Jang et al. (2011, p. 804) describe a green restaurant as "one that offers a selection of green food menu items that use locally grown or organic certified food…[and] implements green practices, such as a recycling program, the efficient use of energy and water, and the reduction of solid waste." Likewise, focusing on menu offerings, Shin et al. (2018, p. 24) describe sustainable choices as "menu items made with certified organic ingredients partially or exclusively." Ultimately, sustainable food entails two prominent features: it is healthy and environmentally friendly (Barone et al., 2019; Garnett, 2014). From a consumer-centered view, Wang and Wang (2016) distinguish two forms of consumer behaviors in food and beverage contexts: civic and individual. This distinction implies that a consumer can take both private sustainable choices, such as choosing sustainable restaurants and menu items, and public behaviors, such as advocating sustainable restaurants and supporting their environmental actions. The current study defines "sustainable food choices" as consumers' mindful selection and consumption of menu items that meet his or her needs while minimizing environmental impact. Such menu items use local ingredients or organic food, either partially or in full, and offer more plants and less meat.

There is an increasing trend of sustainable, organic, and plant-based food concepts, which put delicious, local, and seasonal produce into the hands of consumers. In Egypt, for example, this trend has been introduced by food entrepreneurs and established restaurants. A successful example is a food entrepreneur, hereinafter referred to as YN, who decided to provide affordable and accessible food items to consumers who want to pursue a more healthful and sustainable lifestyle. YN started KAJU, and Earth Deli as outlets that produce and sell sustainable food items. In addition to using local and organic products, these outlets are furnished with upcycled wood and have committed to recycle leftovers and minimize packaging. Like many other countries, eating out behavior is rapidly accelerating in Egypt, and the restaurant business ranks among the fastest growing sectors in this country (Santander, 2016). However, a key challenge facing sustainable food entrepreneurs is to stimulate customer demand. Therefore, it becomes important to understand the motivations of consumers toward sustainable food choices. Table 1 summarizes some of the previous studies that tackled the determinants of sustainable choices in the foodservice literature.

1.2.2. Theoretical background

Gao et al. (2016) identify the TPB as the most applied framework to examine consumers' sustainable behaviors in hospitality and restaurant settings. The TPB postulates that people will take a certain action if they intended or planned to do so (Ajzen, 1991). Thus, intention, which reflects the consumer's overall motivation to act, is the direct antecedent of actual behavior (Ajzen, 1991). The TPB proposes three predictors—attitudes, subjective norms, and PBC—that form intentions toward a given behavior (Ajzen, 1991). Despite showing great success in predicting a wide range of behaviors, the TPB has been criticized for neglecting personal norms (Kim et al., 2016; Shin et al., 2018) and activism (Elhoushy & Jang, 2019) as possible determinants in the domain of sustainable behaviors. Furthermore, Gao et al.'s (2016) recent synthesis of the literature concludes that future applications of the TPB require significant improvements to the original framework to better understand sustainable behaviors in the hospitality and restaurant contexts. The current study, therefore, applies an extended model that incorporates personal norms and activism into the TPB's original predictors. Overall, this study suggests that combining the five proposed antecedents can advance understanding of consumers' sustainable food choices at restaurants. Fig. 1 depicts the model of the study.

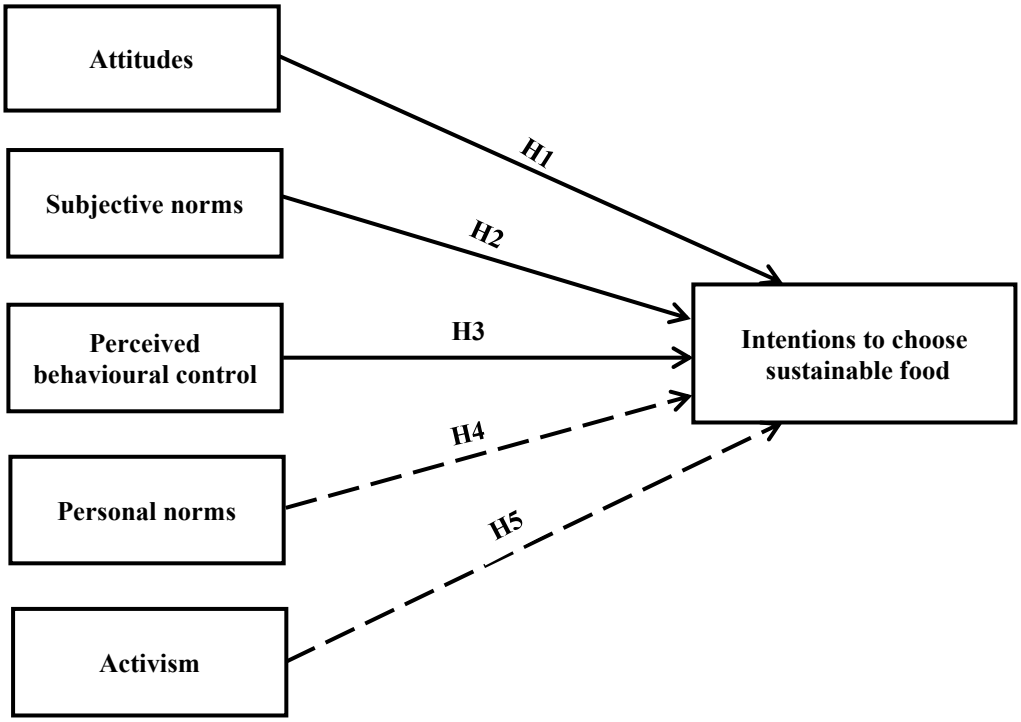

Fig. 1. Conceptual model

Note: *Dotted arrows represent added constructs to the TPB original model.*

Table 1. Key findings from the foodservice literature on the determinants of sustainable choices.

Author/ year	Focus	Key findings	Sample	Country	Type
Chen et al. (2017)	Factors affecting intentions to dine at green restaurants	The findings revealed that attitude, subjective norm, perceived difficulty, food quality, service quality, and balance of nature are the core factors that affect consumer intentions to dine at green restaurants.	Random sampling/ 511 consumers	Taiwan	Cross-sectional
Dewald et al. (2014)	Consumer perceptions of green restaurants	More than half of consumers were willing to pay more for the green restaurant experience. Fresh ingredients, healthy, value, easy access, and good for the environment are, respectively, important considerations for choosing green restaurants.	Convenience /349 consumers	US	Cross-sectional
DiPietro et al. (2013a)	Green practices in upscale foodservice and consumers' perceptions	Gender and education influenced the consumers' perceptions. Besides, people who adopt green practices at home showed stronger intentions to visit green restaurants.	Convenience /600 consumers	US	Cross-sectional
DiPietro et al. (2013b)	Customer green perceptions and Willingness to pay (WTP) in quick-service restaurants (QSR)	Consumers believed that QSR should apply green practices, but most consumers were not willing to pay higher prices for those green practices. Consumers who implement green practices at home tend to have the intention to visit green restaurants more often.	Convenience /260 consumers	US	Cross-sectional
Dutta et al. (2008)	Intentions toward green restaurant practices and WTP	Significant differences exist between the US and India regarding the determinants of intentions and WTP. In the US, environmental and social concerns are the most significant predictor of WTP. In contrast, health concern is the major driver of Indian consumers' WTP.	Convenience /396 consumers	US & India	Cross-sectional
Hu et al. (2010)	Consumers' willingness to patronize green restaurants	Consumers' knowledge and environmental concern were important determinants of their intentions to patronize green restaurants. Ecological behavior also had a significant influence on green restaurant patronage intention.	Convenience / 393 consumers	Taiwan	Cross-sectional
Jang et al. (2011)	Intentions toward green restaurants	They identified four different consumer segments according to their food-related lifestyles namely, the adventurous, the convenience-oriented, the health-conscious, and the uninvolved consumer segment. Significant differences were identified between the four segments regarding their behavioral intentions toward green restaurants.	Convenience / 337 students	US	Cross-sectional

Author/ year	Focus	Key findings	Sample	Country	Type
Jang et al. (2015a)	Intention to visit an environmentally friendly restaurant.	Attitude, subjective norms, and PBC are significant determinants of intentions. Perceived consumer effectiveness (PCE) also had a direct and indirect impact on intentions.	Convenience /347 consumers	South Korea	Cross-sectional
Jang et al. (2015b)	Effects of green practices on coffee shop consumers' loyalty to green stores/products	Green practices had a significant influence on consumers' attachment to a store. Consumers' attachment to green stores had a positive effect on store loyalty, and the latter was significantly associated with product loyalty. Green consciousness moderated the links between green practices and green store attachment and green store attachment and green product loyalty.	Convenience / 312 consumers	US	Cross-sectional
Jeong and Jang (2018)	Price premiums for organic menus at restaurants	Higher price premiums lead to lower purchase intentions. This link also varies based on the type of restaurant; wherein casual dining consumers showed higher purchase intentions toward organic menu items across various levels of price premium. Health consciousness positively moderates the price premiums and purchase intentions link. Female consumers reported higher purchase intentions across different premium price percentages. Older people also showed higher purchase intention in casual dining.	Convenience / 215 MTurk users	US	Experimental
Jeong et al. (2014)	Impact of green restaurant practices on green image and customer attitudes	Examined the interaction effects between green practices, green image, PCE, and attitudes toward green restaurants. Perceived green image mediated the link between green practices and customers' attitudes. As for PCE, no significant moderating effect was found.	Random/ 361 (over 90% students)	US	Cross-sectional
Kim et al. (2013)	Intentions toward selecting eco-friendly restaurants	Subjective norm is the best predictor of consumer's intentions to select eco-friendly restaurants, followed by attitudes and anticipated regret. However, PBC has no significant impact on intention.	Convenience / 411 students	US	Cross-sectional
Kim et al. (2015)	WTP to sustainable business and industry foodservice	Sixty six percent of consumers were willing to pay a premium for sustainable foodservice. Consumers' gender and eco-friendly dietary lifestyle were significant determinants in predicting consumers' WTP.	Convenience / 548 consumers	South Korea	Cross-sectional
Kim et al. (2016)	Intentions to patronize sustainable foodservice	Attitude, subjective norms, PBC, and personal norms are significant predictors of intention toward patronizing sustainable foodservice.	Convenience / 548 consumers	South Korea	Cross-sectional
Kwok et al. (2016)	Intentions to pay more, wait longer, or travel	Classified green restaurant attributes into three categories: food-focused environmental-focused, and administrative-focused attributes. Consumers valued environment-focused more highly than food-and administrative-focused	Convenience /382 consumers	US	Cross-sectional

Author/ year	Focus	Key findings	Sample	Country	Type
	further for a green restaurant	attributes. Food- and administrative-focused attributes positively affect intentions to pay more, wait longer, or travel further for a green restaurant, yet environmental attributes were not significant.			
Namkung and Jang (2013)	Green restaurant practices and customer-based brand equity	Green practices (food and environmental-focused) significantly affect the consumer's perceived green brand image and green behavioral intentions (e.g., revisit). The effect of green practices varies following the type of restaurant.	Convenience /512 consumers	US	Cross-sectional
Namkung and Jang (2017)	WTP more for green practices in restaurants	More than two-thirds of consumers were willing to pay premium for green restaurant practices. Age, previous experience, involvement, and self-perception were found to be significant in accessing consumers' WTP more for green practices.	Convenience /334 consumers	US	Cross-sectional
Sarmiento and El Hanandeh (2018)	Customers' expectations and attitudes toward green restaurants	Seventy-eight percent were willing to pay an extra 5%, on average, in a green restaurant. However, the value they attached to the service was generally low (~5% on average). More females were willing to pay more for environmental practices however, men were willing to pay higher than females. Education has a positive impact on the green tendency. Younger people were more willing to pay. income had a non-significant impact on green perceptions.	Convenience / 141 consumers	Australia	Cross-sectional
Shin et al. (2018)	Intention toward organic menu items	This study supported the merging of both TPB and NAM. They found that attitude, subjective norm, perceived behavioral control, and personal norms are significant determinants of intention to choose organic menu items.	Convenience / 461 MTurk users	US	Cross-sectional
Teng et al. (2014)	Intentions to visit green restaurants	Personal values and general attitudes positively influence consumers' intentions to visit a green restaurant, while environmental concern exerts an indirect rather than a direct effect on intentions through attitude.	Convenience /254 consumers	Taiwan	Cross-sectional
Wang and Wang (2016)	Factors affecting green food and beverage behavior	They distinguished two types of green consumer behaviors in food and beverage settings: civic and individual. The former refers to public behaviors, such as advocating sustainable restaurants and supporting environmental actions. The latter includes the individual's private choices, such as choosing sustainable restaurants and menu items.	Cluster sampling/ 793 students	Taiwan	Cross-sectional

1.2.3. Relationships and hypotheses development

1.2.3.1. Attitudes–intention relationship

Jeong et al. (2014) define attitudes as consumers' general evaluation of a particular restaurant or item expressed in favorable or unfavorable terms. "Such attitudes are determined by customers' subjective values or beliefs" (Jeong et al., 2014, p. 13). Empirically, studies have solidly supported the impact of attitudes on intentions to choose sustainable food service (Chen et al., 2017; Jang et al., 2015a; Kim et al., 2016; Kim et al., 2013; Teng et al., 2014). Jang et al. (2015a) show that in South Korea, consumers' attitudes have a positive influence on their choice of environmentally friendly restaurants, and Shin et al. (2018) show that consumers' attitudes are positively related to their intention to select organic menu items at US restaurants. These findings can be attributed to the positive beliefs associated with sustainable food service, such as providing healthy food or supporting local production (Barone et al., 2019; Garnett, 2014). Mohamed et al. (2012), for instance, found that Egyptian consumers were motivated to buy organic products mainly because of their health concerns. However, sustainable choices can also be associated with negative beliefs in terms of the cost, time, and effort required to locate those products (Kwok et al., 2016; Shin et al., 2018). Therefore, this study hypothesizes the following:

> **H1.** Consumers' attitudes have a positive and significant influence on their intention to choose sustainable food at restaurants.

1.2.3.2. Subjective norms–intention relationship

Subjective norms reflect the perceived social pressure to perform (or not to perform) a particular behavior (Ajzen, 1991). In general, the role of important others is critical in shaping consumers' food choices. For example, Dewald et al. (2014) find that word of mouth is the most preferred search method for both green and non-green restaurants. In a similar vein, restaurant reputation as shaped by others' opinions was one of the most important attributes for selecting green restaurants (Jang et al., 2011). Several other studies show similar results, identifying a substantial influence of "others" on consumers' choice of green restaurants (Jang et al., 2015a; Kim et al., 2013) and organic menu items (Shin et al., 2018). This influence could be due to the uncertainty related to such a relatively new food concept (Kim et al., 2016), which motivates consumers to seek support from others. Herein, this study, therefore, hypothesizes the following:

H2. Consumers' subjective norms have a positive and significant relationship with their intentions to choose sustainable food at restaurants.

1.2.3.3. PBC–intention relationship

The concept of PBC captures the individual's perceived ability to act (Ajzen, 1991). Empirically, the literature has shown the profound role of PBC in shaping sustainable behaviors (Jang et al., 2015a; Kim et al., 2016; Yadav & Pathak, 2016). For example, Shin et al. (2018) find that choosing organic menu items is positively associated with high PBC. Likewise, Kim et al. (2013) and Jang et al. (2015a) show the considerable impact of PBC on consumers' intentions to choose sustainable restaurants. At the same time, few studies found no significant link between PBC and behavioral intentions (Chen et al., 2017; Kim et al., 2013). Nevertheless, given the large number of factors that can hinder sustainable consumption, especially in less developed countries like Egypt, such as knowledge barriers, availability, premium prices, and consumer skepticism (Mohamed et al., 2012; Mostafa, 2006), as well as the subsequent burdens of waiting longer or traveling farther to reach sustainable restaurants (Kwok et al., 2016), PBC is expected to play a significant role in predicting sustainable food choices among consumers. Therefore, this study hypothesizes the following:

H3. Consumers' PBC has a positive and significant relationship with their intentions to choose sustainable food at restaurants.

1.2.3.4.Personal norms–intention relationship

Another literature stream shows that using altruistic reasoning, individuals may decide to behave sustainably when triggered by personal norms or perceived moral obligations (Kim et al., 2013; Shin et al., 2018). This line of literature is based on the norm-activation model (Schwartz, 1977) and its successor the value–belief–norm theory (Stern et al., 1999), which positions personal norms as the most important predictor of pro-environmental behaviors. Compared to attitudes, which stem from the evaluation of anticipated gains or losses, personal norms stem from one's internal feelings of moral obligations and his or her judgments of what is right and what is wrong (Stern et al., 1999). Empirically, food service scholars have found similar evidence, showing a significant impact of personal norms on consumers' intentions to choose sustainable food over and above attitudes (Kim et al., 2016; Shin et al., 2018). For example, Kim et al. (2016) include personal norms as a predictor of consumers' intention to choose sustainable food service in South Korea. Their results reveal a significant impact of

personal norms on intention over and above the TPB original predictors. Mostafa (2006) has also found a significant link between altruism and green purchase behavior among Egyptian consumers. This significance may be due to the nature of sustainable consumption, which involves not only rational but also moral and altruistic aspects. In line with this concept, this study hypothesizes the following:

> **H4.** Consumers' personal norms have a positive and significant relationship with their intentions to choose sustainable food at restaurants.

1.2.3.5. Activism–intention relationship

Several studies have referred to the intra-individual transfer of effect across sustainable behaviors (DiPietro et al., 2013; Hu et al., 2010; Margetts & Kashima, 2017). For example, in the food service literature, Tan and Yeap (2012) speculate that pro-environmental behaviors can be operationalized as a predictor of the specific green restaurant intention rather than a dependent variable. In support, DiPietro et al. (2013a) find a positive relationship between a person's green practices at home (e.g., recycling) and intention to visit green restaurants. Hu et al. (2010) find similar results: consumers' ecological behavior (e.g., environmental purchasing) positively affects their intentions to dine at a green restaurant. Taken together, these studies share a common claim about the possible intra-individual transfer of effect across behaviors: they attribute it to the spillover effect; in other words, behaving sustainably in a certain context affects an individual's choices in other contexts (Lanzini & Thøgersen, 2014; Margetts & Kashima, 2017). Previous studies, however, focus on activism from a behavioral perspective as a positive function of engagement in other pro-environmental behaviors. Stern (2000) also classifies activism (i.e., active involvement in environmental organizations and demonstrations) as a significant type of environmental behavior that is different from private-environmental consumption. From another perspective, Elhoushy and Jang (2019) introduce activism as an attitude object that reflects individuals' intentional mindset to engage in the public well-being as well as the value of doing so. This inclination can be attributed to humans' organismic tendency toward doing good for both the self and others (Sheldon et al., 2003). So, while Stern and his colleagues consider activism as a behavioral outcome, looking at activism from an attitudinal perspective recognizes the individual's need for activism and identity concerns, which is consistent with the current paper's conceptual departure from the TPB. This discussion leads to the expectation that higher levels of activism will be associated with greater intentions to choose sustainable food at restaurants. Thus:

H5. Consumers' activism has a positive and significant relationship with their intentions to choose sustainable food when eating at restaurants.

1.2.3.6. Moderating effects of motivational imbalance

As indicated previously, several studies show that individuals may experience motivational imbalance (Ajzen & Kruglanski, 2019; Kruglanski et al., 2018; Sparks et al., 2001) or, in other words, hold mixed views or conflicting beliefs about a given choice. For example, Sparks et al. (2001, p. 56) note that "people may have mixed feelings about consuming animal products because the sensory appeal of such products may be accompanied by moral concerns with animal welfare issues." Ajzen and Kruglanski (2019, pp. 780–781) state that "even when individuals believe that a given behavior will further attainment of desired goals, they may also believe that it will result in certain undesirable outcomes or that it will be disapproved of by certain social referents." Kruglanski et al. (2018) describe motivational imbalance as a psychological state of mind in which a certain need or factor may dominate others while deciding. Ajzen and Kruglanski (2019) refer to such a situation of imbalance as the avoidance–approach conflict, which can have further consequences on the intention–behavior gap (Ajzen & Kruglanski, 2019).

Empirically, food choice has long been associated with motivational conflicts (Povey et al., 2001; Sparks et al., 2001). For example, Sparks et al. (2001) find that ambivalence weakens the attitude–intention relationship. In other words, the relationship between attitudes and intention was weaker for individuals who showed greater ambivalence. Similarly, Povey et al. (2001) indicate that attitudinal ambivalence moderates the attitudes–intention relationship, such that attitudes provide a greater explanation in intention at lower levels of ambivalence. However, they found no significant interactions between ambivalence and other antecedents, including subjective norms, PBC, and self-identity (Povey et al., 2001).

The existing evidence generally supports a prediction that holding bi-dimensional views could have effects on behavioral intentions. A question to be raised now is *what if individuals experience motivational imbalance across the five proposed antecedents, what would be the ramifications?* To address this question, the current study investigates the *moderating effect* of motivational imbalance on the intention to choose sustainable food. That is, it is expected that the variance explained in intention will be stronger for motivationally balanced individuals than for individuals who experience motivational imbalance because evaluations and compromises made in situations of motivational conflicts are different from those made with balanced motivations. In addition, this study expects that different scenarios of motivational

imbalance will lead to different behavioral outcomes, such that individuals who score high in attitudes and low in personal norms should differ from those who score low in attitudes and high in personal norms. This is due to the different subjective values that people may attach to each motive (Dutta et al., 2008). For example, in the domain of organic food choice, UK consumers assign a higher value to self-interest motives (e.g., health), while Germans focus more on environmental factors (Baker et al., 2004). These findings imply that someone may associate higher value to act in line with his or her personal norms than personal gains, or vice versa. Thus:

H6. Consumers who experience motivational balance have stronger intentions to choose sustainable food than consumers who experience motivational imbalance.

H7. Significant differences are present between individuals across different scenarios of motivational imbalance.

1.3. Methodology

1.3.1. Sample setting

This study surveyed a convenience sample of Egyptian consumers who are (1) aged 18 years or older and (2) eat out at restaurants at least once per month. Of the 623 responses received, 14 were eliminated after data screening, leaving 609 valid responses for further analyses. This sample size is ideal considering that 10–20 cases for each item is a reasonable criterion (Kline, 2011). As Table 2 shows, respondents were 38.9% male and 61.1% female and ranged in age from 18 to 70 years (the majority were between 18 and 40 years of age). This age range represents an accurate representation of the Egyptian population, where according to the Central Agency for Public Mobilization Statistics, the majority of people are younger than 40 years old (CAPMAS, 2020). In terms of education, 69.8% of the sample were currently enrolled at college, 19.5% had a bachelor's degree, 5.7% had completed high school, and the rest (4.9%) had obtained a master's or doctoral degree. For income, most respondents (83.4%) had a personal monthly income below 5,000 E£, which is consistent with the 4,904.5 E£/month average income of Egyptian households (CAPMAS, 2020), followed by 11.8% with an income level between 5,000 and 10,000 E£. Respondents were asked, "How often do you eat out at a restaurant?", and their responses showed familiarity with food choices at restaurant contexts: 22.9% dine out "at least once a month," 23.6% "twice a month," 23.8% "once a week," and 29.6% "more than once a week."

1.3.2. Data collection

A self-administered survey served as the data collection tool. The survey was first developed in English and then back-translated from English to Arabic by two language professionals. Then, three academic experts and five students reviewed the survey items, commenting on the wording and understandability of the topic. As a result, the survey was amended to include a description of sustainable food, and some words were rewritten to fit the Egyptian dialect. Ultimately, the survey consisted of four sections covering (1) attitudes toward sustainable food; (2) subjective norms, PBC, personal norms, and activism; (3) intention to choose sustainable food; and (4) demographics. The survey started with a brief description of sustainable food as "menu items that use local ingredients or organic food, either partially or in full, and offer more plants and less meat."

Table 2. Characteristics of the respondents.

Characteristics	N= 609	%
Sex		
Male	237	38.9
Female	372	61.1
Age		
18-29	520	85.4
30-39	50	8.2
40-50	15	2.5
Above 50	24	3.9
Education		
High school	35	5.7
Currently enrolled at college	425	69.8
Bachelor	119	19.5
Master	21	3.4
PhD	9	1.5
Monthly personal income *(E£)* *		
Less than 5000	508	83.4
5000-9999	72	11.8
10000-14,999	17	2.8
Above 15,000	12	2.0

*As of May 30, 2019, USD1.00 = E£18.63 (Source: Central Bank of Egypt).

Data were collected between mid-February and the end of May 2019. The survey was distributed in two ways. First, a web-based survey was distributed as a URL link (using Qualtrics) with the help of YN, who sent the link to all her Egyptian followers on social media accounts, mainly Facebook. The survey link was accompanied by a message stating the purpose of the study and assuring the confidentiality of data. One week later, non-respondents received a reminder to encourage them to participate in the study. Second, a paper-based survey was

distributed to individuals in public areas with food outlets, including universities, libraries, and shopping malls. The author and a master's student recruited to help in data collection approached potential respondents while they were standing or waiting in those public areas and asked them if they would like to participate in scientific research related to food. Those who agreed were given a one-page survey and a pen to fill out the survey. It is worth noting that the survey was identical in both cases. However, the use of both online and paper-based surveys allowed a better representation of the population. Further, an Independent Samples *t*-test was performed to determine whether the associated sample means are significantly different between groups coming from different sources. The results showed insignificant differences between groups.

1.3.3. Measurements

This study used validated scales and measurement items adopted from the reviewed literature (e.g., Jeong et al., 2014; Kim et al., 2013; Shin et al., 2018; Wang, 2016). A 7-point semantic differential scale measured attitudes, including five bipolar items adopted from Jeong et al. (2014) (e.g., "For me, to choose sustainable food when eating out at a restaurant in the next week is…" "Unfavorable/Favorable"). Eleven survey items were based on Shin et al. (2018): three measured subjective norms (e.g., "Most people who are important to me think I should choose sustainable food when eating out at a restaurant"), four measured PBC (e.g., "I am confident that if I want, I can choose sustainable food when eating out at a restaurant"), and four measured personal norms (e.g., "I believe I have a moral obligation to choose sustainable food when eating out at a restaurant"). Four items that measured activism were based on Wang (2016) (e.g., "I actively try to persuade others to adopt sustainable eating"). Finally, three items adopted from Kim et al. (2013) and Shin et al. (2018) measured intention to choose sustainable food (e.g., "I intend to choose sustainable food when eating out at restaurants in the next week"). Unless stated otherwise, all items were answered on a 7-point format (1 = "strongly disagree," and 7 = "strongly agree").

As for the motivational imbalance, it was measured by splitting the participants into two groups, balanced and imbalanced, based on the five antecedents as follows. **First,** for each of the five antecedents (attitude, subjective norm, PBC, personal norm, activism), the mean value was computed. Subsequently, the respondents were divided into two groups, high scoring, and low scoring, by using a median split for each antecedent. That is, for PBC, for example, there will be two groups, high PBC and low PBC. **Second,** comparing the five antecedents, respondents were assigned to the balanced group (n = 141: male = 67, female= 74, average age

= 22 years) if they showed consistent scores across all the five antecedents or the imbalanced group (n = 468, male = 170, female = 298, average age = 22 years) if they showed inconsistent scores across any of the antecedents. For example, a participant who showed inconsistency (e.g., high, high, high, low, high) was assigned to the imbalanced group. While the balanced group included only the sub-sample of participants who had consistent scores across the five motives. This grouping allows testing the general differences between motivationally balanced and imbalanced consumers, as anticipated in H6.

It is worth noting that one potential limitation to this grouping criteria is that a participant who scores "low" or "high" in only one antecedent ends up in the imbalanced group. Although the five antecedents are distinctive and scoring inconsistently in one of them is still a form of imbalance, this one antecedent may be less important to the person, and so it could have an overall negligible effect on his or her behavioral intention. To remedy this potential limit, the current study takes a further step and identifies four scenarios of motivational imbalance using a two-motive dichotomy. Simply put, each scenario of imbalance was created by grouping respondents on the basis of only two antecedents at a time (e.g., (in)consistency across attitudes and personal norms). For example, in the attitude-personal norm scenario, respondents are assigned either to the balanced (high-high and low-low) or imbalanced group (high-low and low-high). This two-motive dichotomy reveals informative insights on the potential effects of various scenarios of motivational imbalance on behavioral intentions (H7.).

The four scenarios were created to represent potential situations of conflict in which attitude is compared with the other four antecedents. Thus, each scenario representants every possible combination with attitude always included. This is particularly relevant to the context of food in which attitudes were found to play a prominent role in consumer choices (see, e.g., Chen et al., 2017; Jang et al., 2015a; Kim et al., 2016; Kim et al., 2013; Povey et al., 2001; Sparks et al., 2001; Teng et al., 2014). For example, a consumer may choose sustainable menu items motivated by his or her personal norms or a recommendation by a friend (subjective norms), but he or she will not repeat the purchase unless the food quality and taste are satisfactory. This example highlights the prominence of one's personal attitude about food choices. Thus, the four scenarios of motivational imbalance are created to represent the consistency or inconsistency between an individual's attitude and his or her (1) personal norm, (2) activism (3) subjective norm, and (4) PBC.

1.3.4. Data analysis

The analysis began with data screening. With regard to missing data, no rows had extreme missing data, while in columns, 11 variables had missing values (all less than 2%). Missing data were imputed using the median for ordinal variables. A principal component analysis tested for potential common method bias. The results revealed six distinct factors, with no single factor accounting for more than 40% of the variance (the largest factor accounted for 31.48%). Thus, it can be concluded that common method bias is not a critical issue in this dataset (Podsakoff et al., 2003). Furthermore, multicollinearity tests confirmed that all constructs had variance inflation factor values less than 1.342.

Next, two subsequent stages of analysis proposed by Anderson and Gerbing (1988) tested the model. The first tested the measurement model using confirmatory factor analysis (CFA). Furthermore, the reliability and validity of the model were assessed through factor loadings, composite reliability (CR), average variance extracted (AVE), and inter-construct correlations. The second stage tested the proposed causal links to address building and assessing a structural model. In addition, multi-group analysis using the chi-square difference test examined the moderation effect.

1.4. Results

1.4.1. CFA

Using maximum likelihood estimation, CFA was conducted. The initial model showed a reasonable fit to the data (χ^2 = 636.179, df = 237, p < .001; χ^2/df = 2.684; root mean square error of approximation [RMSEA] = .053; comparative fit index [CFI] = .941; Tucker–Lewis index [TLI] = .931). However, two survey items from the PBC construct had poor factor loadings. Thus, these items were eliminated. After exclusion of these items, a second CFA conducted with the remaining items showed a better fit to the data (χ^2 = 407.421, df =174, p < .001; χ^2/df = 2.342; RMSEA = .047; CFI = .963; TLI = .955).

Tables 3 and 4 summarize the qualities of the measurement model. All survey items had high factor loadings, ranging from .605 to .931, and were significantly associated with their specified constructs (p < .001). The CR values ranged from .719 to .890, which exceed the recommended thresholds of .60, thus indicating internal consistency (Bagozzi & Yi, 1988). Furthermore, the AVE values ranged from .515 to .731, which exceed the recommended value of .50 (Fornell & Larcker, 1981), and thus confirm convergent validity. Last, the AVE values for each construct were greater than the squared correlation between constructs and thus indicate discriminant validity (Fornell & Larcker, 1981).

Table 3. Results of confirmatory factor analysis for measurement model.

Variables	Standardized loadings*	∝	Skewness	Kurtosis	CR	AVE
Attitudes		0.870			0.870	0.574
Bad-Good	0.731		-1.238	.613		
Unpleasant-Pleasant	0.799		-.745	-.589		
Unfavorable-Favorable	0.806		-.765	-.536		
Negative-Positive	0.605		-1.657	1.755		
Undesirable-Desirable	0.826		-.946	-.196		
Subjective norms		0.842			0.849	0.655
Most people who are important to me think I should choose sustainable food when eating out at a restaurant.	0.843		-.129	-.699		
Most people who are important to me would want me to choose sustainable food when eating out at a restaurant.	0.888		-.340	-.799		
People whose opinions I value would prefer me to choose sustainable food when eating out at a restaurant.	0.683		-.454	-.776		
PBC		0.705			0.719	0.566
I am confident that if I want, I can choose sustainable food when eating out at a restaurant.	0.641		-.628	-.440		
I am capable of choosing sustainable food when eating out at a restaurant.	0.849		-.579	-.548		
I have enough resources (money) to choose sustainable food when eating out at a restaurant.	(dropped)		-.521	-.390		
I have enough time to choose sustainable food when eating out at a restaurant.	(dropped)		-.470	-.523		
Personal norms		0.848			0.849	0.585
I believe I have a moral obligation to choose sustainable food when eating out at a restaurant.	0.703		-.430	-.759		
Choosing sustainable food when eating out is consistent with my moral principles.	0.779		-.482	-.558		
My personal values encourage me to choose sustainable food when eating out at a restaurant.	0.824		-.590	-.238		
I have a moral responsibility to choose sustainable food when eating out at a restaurant.	0.747		-.567	-.419		
Activism		0.806			0.810	0.518
I am someone who makes extra efforts to improve the state of the environment.	0.649		-.416	-.592		
I actively try to persuade others to adopt sustainable eating.	0.728		-.534	-.417		
I try to pass along the environmental knowledge I have gained through my experiences.	0.818		-.734	-.004		
Even if my action will result in a small change, I do what I should do.	0.672		-1.219	.981		
Intention		0.887			0.890	0.731
I am planning to choose sustainable food when eating out at restaurants in the next week.	0.820		-.444	-.607		
I intend to choose sustainable food when eating out at restaurants in the next week.	0.931		-.634	-.130		
I will expand effort on choosing sustainable food when eating out at restaurants in the next week.	0.809		-.877	.604		

*All factor loadings are significant at ($p < 0.001$).

Table 4. Means, standard deviations, and correlations between latent constructs.

Construct	Mean	SD	MSV	MaxR(H)	Correlations					
					Subjective norms	Attitudes	Personal norms	Activism	Intention	PBC
Subjective norms	4.52	1.477	0.137	0.876	**0.809**					
Attitudes	5.42	1.508	0.275	0.882	0.330	**0.758**				
Personal norms	4.68	1.402	0.257	0.855	0.308	0.436	**0.765**			
Activism	5.17	1.219	0.296	0.825	0.370	0.366	0.502	**0.720**		
Intention	5.01	1.358	0.296	0.913	0.343	0.524	0.507	0.544	**0.855**	
PBC	5.16	1.345	0.241	0.766	0.361	0.491	0.399	0.413	0.443	**0.752**

Note: Bold reflects the Square root of the AVE.

1.4.2. Structural model and hypotheses testing

The proposed model was structured to examine the relationship among the six proposed constructs—namely, attitudes, subjective norms, PBC, personal norms, activism, and intention to choose sustainable food at restaurants. The structural model showed a good fit to the data (χ^2 = 477.230, df = 234, $p < .001$; χ^2/df = 2.039; RMSEA = .041; CFI = .963; TLI = .952). Thus, this model was used for hypotheses testing. Table 5 shows the results of the structural model. The results indicated that attitudes (β = .274, t = 5.764, $p < .001$), PBC (β = .113, t = 2.148, $p < .05$), personal norms (β = .192, t = 3.893, $p < .001$), and activism (β = .290, t = 5.673, $p < .001$) had a positive and significant impact on intention to choose sustainable food. Thus, H1, H3, H4, and H5 were supported. By contrast, the subjective norm construct had a non-significant impact on intention (β = .044, t = 1.059, $p > .05$), offering no support for H2. Fig. 2 provides a schematic representation of the results.

Table 5. Structural model results– estimates and fit indices.

Hypothesized Paths	Standardized estimates	T-statistic	P-value	Decision
H1: Attitudes -> Intention	0.274	5.764	0.000***	Supported
H2: Subjective norms -> Intention	0.044	1.059	0.290	Not supported
H3: Perceived behavioral control -> Intention	0.113	2.148	0.032*	Supported
H4: Personal norms -> Intention	0.192	3.893	0.000***	Supported
H5: Activism -> Intention	0.290	5.673	0.000***	Supported
Goodness-of-fits statistics	Structural model results		Cut off value	
x^2	477.230		N/A	
x2/df	2.039		<3	
RMSEA	.041		<.05	
CFI	.963		>95	
TLI	.952		>95	

Note; *p<.05, **p<.01, ***p<.001

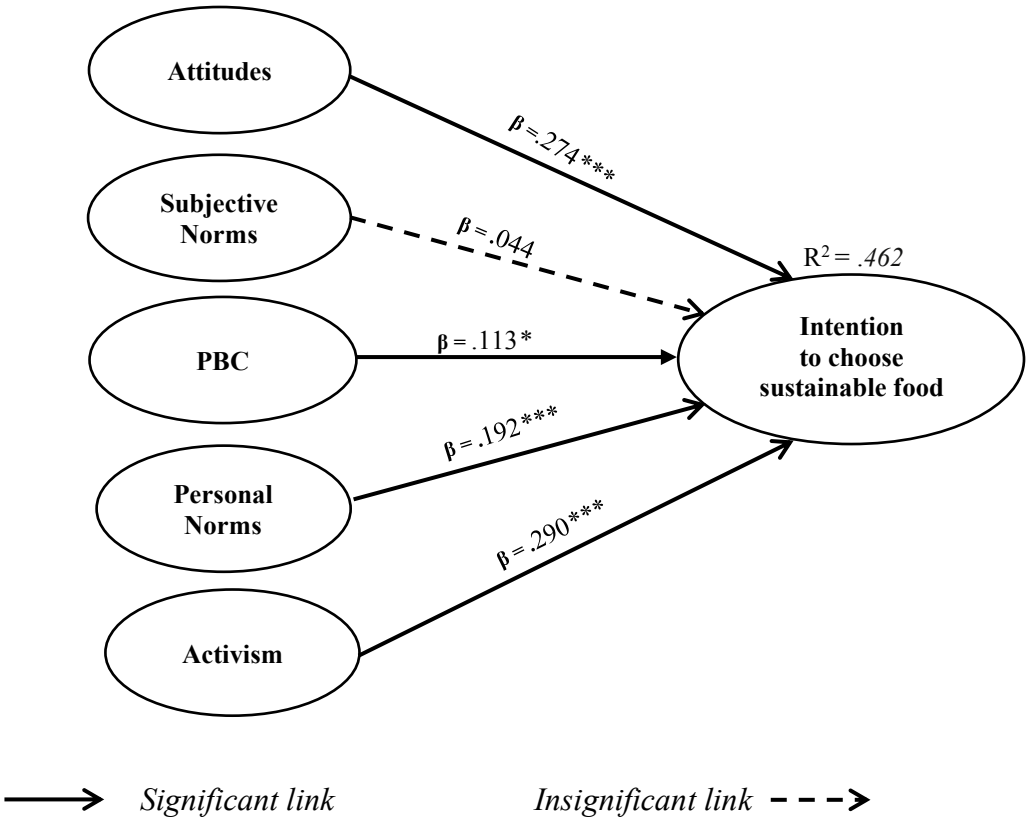

Fig. 2. The proposed model with standardized path estimates.

Note: *p<.05, **p<.01, ***p<.001

1.4.3. The moderating effects of motivational imbalance

1.4.3.1. Motivationally balanced versus imbalanced consumers

To examine the moderating effect of motivational imbalance, a multi-group analysis was performed. At first, a multi-group configural invariance test was performed and revealed a reasonable model fit ($\chi 2 = 747.968$, df = 348, $p < .001$; $\chi 2/df = 2.149$; RMSEA = .044; CFI = .934; TLI = .921). Further, a metric invariance test was conducted by constraining the two models to be equal. The chi-square difference was found to be non-invariant ($p < .05$). This indicates that there are item(s), which contribute to the latent construct in a different degree across groups. The source of non-invariance was checked for each item. Two items appeared to have the largest gap across groups (i.e., one item from PBC and another from activism). The analysis was repeated after omitting the two items, and no meaningful changes were found in the results. Thus, the two theoretical items were kept based on current evidence suggesting that a factor can be considered partially invariant if the majority of items are invariant (Vandenberg & Lance, 2000). Then, to statistically test the differential effects between balanced and

imbalanced groups, the chi-square difference between constrained and unconstrained models was assessed with the difference in degrees of freedom. As Table 6 shows, the chi-square difference ($\chi^2 = 41.645$) between the fully constrained model ($\chi^2 = 947.654$, df = 492) and the unconstrained model ($\chi^2 = 906.009$, df = 468) was significant ($p < .05$), indicating that the two models vary significantly depending on the state of motivational imbalance. Thus, H6 was supported.

Table 6. Results of moderating effect (balanced vs. imbalanced group)

Unconstrained model	Fully constrained model
$\chi^2 = 906.009$	$\chi^2 = 947.654$
df = 468	df = 492
Normed $\chi^2 = 1.935$	Normed $\chi^2 = 1.926$
Moderating effect was found to be statistically significant: p-value= 0.014	

Furthermore, to identify which path shows a significant difference (if any), a multi-group analysis on Smart-PLS (i.e., PLS-MGA) was performed. The advantage of reporting the PLS output (see Table 7) is that it shows not only the significance level, but it gives further information regarding the size of this difference on each path as well. Overall, the results revealed non-significant statistical differences in the links between antecedents of intention and intention across groups. However, as Table 7 shows, large differences were found in the coefficient values across the two groups. For example, the PBC-intention link has the largest difference followed by activism. Interestingly, although subjective norm continues to be insignificant, the PBC coefficient sign becomes insignificant in the case of the balanced group. This indicates that PBC has a more influential role in situations of imbalance. Overall, the estimated coefficients appear stronger under balanced than imbalanced motivations. These results indicate that motivational imbalance may dampen behavioral intentions.

Table 7. Results of the structural model for the motivationally balanced and imbalanced groups

	Path Coefficients (Balanced)	Path Coefficients (Imbalanced)	Path Coefficients (Difference)	p-Value
Attitude -> Intention	.334**	.222***	0.112	0.161
Subjective norm -> Intention	-.069	.066	0.135	0.817
PBC -> Intention	-.027	.119**	0.147	0.851
Personal norm -> Intention	.213*	.188***	0.024	0.419
Activism -> Intention	.336***	.227***	0.139	0.111

Note: *p<.05, **p<.01, ***p<.001
Note: PLS-MGA output.

1.4.3.2. Scenarios of motivational imbalance

Following the different scenarios of motivational imbalance, a multi-group analysis using the chi-square difference test was performed. In total, four scenarios of imbalanced motivations were checked (see Table 8). The results revealed both significant and non-significant differences under different pairs of motives. Thus, H7 is partially supported. More specifically, as Table 8 shows, the data indicate significant differences between respondents who had balanced attitudes–activism motives and those who had imbalanced attitudes–activism motives. Similarly, respondents with balanced attitudes–subjective norms varied significantly from those who experienced imbalanced motives. However, the other two scenarios revealed no significant differences between balanced and imbalanced groups under the chosen motives. In all cases, balanced consumers showed greater intentions toward sustainable food than imbalanced consumers.

Table 8. Results of the multi-group analysis for different scenarios of motivational imbalance.

Scenarios of imbalance	Results	Fit indices
1) *Attitudes and personal norms*		χ^2 =831.835, df =468, p< .001;
Balanced (N=365) imbalanced (N=244)		χ^2/df=1.77; RMSEA=.036;
df	24	CFI=.945; TLI=.929
χ^2	29.472	
p-value	0.203	
2) *Attitudes and activism*		χ^2 =826.799, df =468, p< .001;
Balanced (N= 355) imbalanced (N=254)		χ^2/df=1.76; RMSEA=.036;
df	24	CFI=.948; TLI=.933
χ^2	43.134	
P-value	0.010**	
3) *Attitudes and subjective norms*		χ^2 =856.771, df =468, p< .001;
Balanced (N= 355) imbalanced (N=254)		χ^2/df=1.85; RMSEA=.037;
df	24	CFI=.942; TLI=.926
χ^2	54.148	
P-value	0.000***	
4) *Attitudes and PBC*		χ^2 =891.635, df =468, p< .001;
Balanced (N= 370) imbalanced (N= 239)		χ^2/df=1.90; RMSEA=.039;
df	24	CFI=.939; TLI=.921
χ^2	25.067	
P-value	0.402	

Note1: *p<.05, **p<.01, ***p<.001

Note2: Each scenario was created by grouping respondents based on only two antecedents at a time. That is, for example, in scenario 1, the balanced group included subjects with the consistent scoring (high, high) or (low, low) while the imbalanced included subjects with the inconsistent scoring (high, low) or (low, high) across attitudes and personal norms, respectively.

Note3: The balanced group consistently showed stronger intentions in each scenario.

In addition, post hoc analyses showed notable results for the imbalanced group, where four additional opposite combinations of imbalance were examined (see Table 9). Results, for example, revealed significant differences between respondents who showed high attitude–low

personal norms and those who showed low attitude–high personal norms, with the former explaining more variance in intention. Significant variance in intentions was found also across the other combinations of imbalance. These findings imply that consumers give different subjective values to their motives. However, these post hoc results should be taken with caution because of the poor model fit across groups. Table 9 summarizes the results and fit indices.

Table 9. Results of the multi-group analysis for the motivationally imbalanced group.

Opposite scenarios	Results	Fit indices
1) *High attitudes–low personal norms* (N=209) VS low attitudes–high personal norms (N= 35) df χ^2 p-value	24 61.028 0.000***	χ^2 =764.238, df =468, p < .001; χ^2 /df=1.63; RMSEA=.037; CFI=.825; TLI=.775
2) *High attitudes–low activism* (N= 173) VS low attitudes–high activism (N=81) df χ^2 p-value	22 41.368 0.007**	χ^2 =582.844, df =408, p< .001; χ^2 /df=1.63; RMSEA=.041; CFI=.885; TLI=.857
3) High attitudes–low subjective norms (N=208) VS *low attitudes–high subjective norms* (N=46) df χ^2 p-value	24 45.433 0.005**	χ^2 =723.567, df =468, p< .001; χ^2 /df=1.54; RMSEA=.054; CFI=.873; TLI=.837
4) *High attitudes–low PBC* (N=177) VS low attitudes–high PBC (N=62) df χ^2 p-value	24 40 0.019*	χ^2 =790.153, df =468, p < .001; χ^2 /df=1.68; RMSEA=.054; CFI=.832; TLI=.785

Note1: *p<.05, **p<.01, ***p<.001
Note2: For each scenario, the differences within the *imbalanced group* were examined by comparing opposite sub-groups. That is, for example, in scenario 1, the imbalanced group (N=244) was divided into 2 sub-groups: subjects who showed highly positive attitudes, while weak personal norms (N=209) versus (VS) subjects who showed the opposite, that is, low positive attitudes, while strong personal norms (N= 35).
Note3: *Italic* represents groups that showed stronger intentions in each scenario.

1.5. Discussion

1.5.1. Theoretical implications

This study examined the relationships between five antecedents—attitudes, subjective norms, PBC, personal norms, and activism—and consumers' intentions to choose sustainable food. In addition, the study explored the moderating effect of motivational imbalance on the aforementioned relationships.

Consistent with previous studies showing that extended TPB frameworks have superior explanatory power in contexts of sustainable decisions (Jang et al., 2015a; Kim et al., 2016; Shin et al., 2018). Results of this study lend support to the proposed model, which incorporates personal norms and activism as additional predictors of sustainable food choices in restaurants.

This is likely due to the nature of sustainable behaviors, which involves not only rational but also moral and altruistic reasoning. On the construct level, the results provide further evidence to the relationship between attitudes and sustainable food choices among Egyptian consumers. This finding is in line with those of Jang et al. (2015a) and Shin et al. (2018) in the United States and South Korea, respectively. Similarly, PBC was significantly linked to intentions, such that higher PBC is associated with stronger intention to choose sustainable food, in line with previous studies (Jang et al., 2015a; Kim et al., 2016). For example, the correlation coefficient between PBC and intention was comparable to the results obtained by Shin et al. (2018). At the same time, this study confirms the importance of personal norms in the sustainable consumption domain, consistent with previous studies in this field (Kim et al., 2016; Shin et al., 2018). Interestingly, the study shows a superior impact of activism on intention compared to other antecedents. This finding confirms the rising claim regarding the importance of environmental motives in the sustainability context (Elhoushy & Jang, 2019; Sheth et al., 2011). In addition, this finding adds to arguments on the intra-individual spillover of effects across cognitions and behaviors (DiPietro et al., 2013a; Lanzini & Thøgersen, 2014). Together, these studies pinpoint that attitudes, PBC, personal norms, and activism are all important determinants for sustainable food choices.

Contrary to expectations, the results showed a non-significant relationship between subjective norms and intentions among Egyptian consumers. This result confirms the common finding that the subjective norms–intention link is weak (e.g., Armitage & Conner, 2001; Visschers et al., 2016). However, it contradicts Kim et al. (2013) and Shin et al. (2018); for example, Kim et al. (2013) show that subjective norms are the strongest predictor of consumers' intentions to select eco-friendly restaurants in the United States. A possible explanation for this result is related to the context investigated in this study: in Egypt, the sustainable food concept is still in its embryonic stage. Thus, the limited influence of others on sustainable food choice may be because this concept is still too new to constitute a social norm or something that the community expects someone to do. Furthermore, the power of attitude, subjective norm, and PBC may vary across contexts (Ajzen, 1991; Kim et al., 2013), since the current context is food choice and not restaurant choice, this may explain some differences in the findings from earlier research.

Results of this study provide the first empirical evidence of the negative impact of motivational imbalance on consumers' sustainable behaviors. In this regard, the results present some novel insights. First, significant differences exist between individuals in a state of motivational imbalance and those in a state of motivational balance: the data show that

motivationally balanced consumers had far stronger intentions to choose sustainable food than consumers who experienced motivational imbalance. This result indicates that motivational imbalance is a condition in which consumers resist sustainable options. This is likely due to the conflicting views they experience while deciding and their associated feelings of discomfort. This finding agrees with the dissonance theory (Festinger, 1962): people experience psychological discomfort when there are inconsistencies between cognitions, and Thøgersen (2004) finding that individuals prefer to avoid these inconsistencies. Further, although subjective norm continues to be insignificant across groups, which is consistent with the overall model results, a significant relationship between PBC and intention was not observed among the balanced group, while an imbalanced group showed a significant association. A possible explanation to this result is that under situations of imbalance consumers may attach higher values to their PBC in order to cope with the conflicting motives, which may, in turn, increase the importance of PBC. However, such speculation requires further examination.

Second, behavioral intentions vary significantly under different scenarios of motivational imbalance. Specifically, the comparison of different motivational conflicts showed that attitude-activism and attitude-subjective norm conflicts typically have the most substantial negative impact on behavioral intentions. This means that maintaining inconsistent attitude-activism leads to weaker intentions, which can be attributed to the ramifications of the inconsistency between one's own attitude toward the sustainable option and one's intentional engagement in advocating it. Put differently, individuals like to avoid negative feelings (e.g., hypocrisy), which result from acting against what they publicly say. In support, Dickerson et al. (1992) showed that individuals who made a public commitment to urge others to reduce water use ended up consuming less water. Likewise, maintaining inconsistent attitude-subjective norm leads to weaker intentions. If, for example, a consumer experiences a conflict between what he or she thinks about sustainable food and what his or her reference groups think, a significant drop in intentions is expected. This is interesting because while the link between subjective norm and intention was consistently found to be non-significant in the general model, it remains meaningful under situations of imbalance. The attitude-PBC and attitude-personal norm scenarios of imbalance showed no significant differences in intention. These findings can be attributed to the notion that one's PBC is measured against external factors (availability, premium prices) that might fall beyond his or her control. Thus, the inconsistency between one's attitude and his or her PBC is assumed to generate less discomfort (if any) because consumers can use several excuses to mitigate the associated feelings of

discomfort. However, the attitude-personal norm scenario represents an unexpected result where the inconsistency between these two aspects showed no significant difference in intention. An explanation to this result, however, starts from the fact that lack of statistical significance does not preclude the difference triggered by this conflict, where results indicated that imbalanced groups consistently showed weaker intentions. At the same time, additional insights could be inferred from focusing on the imbalance group, which revealed that consumers showed stronger intentions when they maintain a higher positive attitude and weaker personal norms compared to a lower positive attitude and stronger personal norms. This result implies that the same person attaches different values to his or her motives (cf. Baker et al., 2004), and that attitude seems to maintain a superior value while choosing food under opposite conflicts. Thus, it is useful for marketers to understand that not all motivational conflicts have similar effects on sustainable food choices. Overall, current findings advance understanding of the ramifications of motivational imbalance and provide fresh insights for researchers and practitioners in the domain of sustainable consumption.

1.5.2. Managerial implications

Attitudes and activism showed a superior role in shaping behavioral intentions. This result is indeed of interest to restaurateurs aiming to attract new customers to the sustainable concept. Thus, in their advertising strategies, sustainable restaurant operators should emphasize both self-associated benefits (e.g., health, enjoyment) and environmentally associated benefits (e.g., supporting local, reducing waste) related to sustainable food choices. Cultivating the two sides in consumers' minds should exert substantial influence on their intended actions. Efforts can also be directed toward participative approaches. For example, involving consumers in creating and/or sharing sustainable produce among their social networks can energize their activism and commitment. Furthermore, PBC and personal norms showed significant impacts on Egyptian consumers. Thus, efforts need to be directed to activate moral obligation through raising awareness of consequences and ascription of responsibility (see Stern et al., 1999). Given the significance of contextual factors, such as availability and prices among Egyptian consumers (see Mohamed et al., 2012; Mostafa, 2006), another path to reinforce sustainable food choices would be to enhance the consumer perceived control. As such, offering various sustainable options and incentives for consumers to eliminate such barriers are likely to be effective.

However, although marketers can effectively apply antecedents' strategies to cultivate and reinforce these motives, the selected strategies should carefully consider the negative

effects of motivational imbalance. Results showed strong support, proving the clear benefits of ensuring consistency across motives, thereby creating an overall stronger motivation. From a practical standpoint, future interventions should focus on a horizontal rather than vertical cultivation of beliefs. For example, rather than spreading many beliefs pertinent to one motive (e.g., sustainable food supports local people, saves the environment), an intervention can reinforce one belief (e.g., sustainable food is healthful) and relate it to several motives (e.g., healthful for yourself [attitude], healthful for others [environmental mindset], favored by referents [subjective norm], accessible [perceived control], the right thing to do [personal norm]). This horizontal approach of linking different motives to a single outcome can ensure balanced motivation. However, more research that takes into account evaluating these conjunctures would be valuable.

1.5.3. Limitations and future research directions

Similar to most studies in this area, this paper focuses on behavioral intention per se. Future studies therefore should address this issue by examining subsequent behavioral stages along the sustainable restaurant experience, including dining and post-dining outcomes. For example, the growing interest in sustainable food makes it timely and necessary to investigate how consumers evaluate their sustainable experiences at restaurants, what shapes their satisfaction, and how satisfaction affects their intention to continue. Moreover, this study focused on the direct antecedents of intentions but not the background variables that shape such antecedents (e.g., media, culture). In addition, this study measured subjective norms with a focus on what others expect an individual to do. However, it neglected the other descriptive dimension of what others actually do. Thus, future studies need to expand this construct and reveal its full range. Finally, the majority of the sampled population fell within the younger generation. Although this skewed age is not different from the general composition of people in Egypt (youth represents the extreme majority), it could limit the generalizability of results to a certain age range. The replication of this study at a larger scale is also recommended to provide further insights on motivational imbalance.

Paper 2

Consumer Food Waste and Television Cooking Shows:

A Multi-theoretical Perspective

Abstract

The phenomenological rise of television (TV) cooking shows presents a powerful media for shaping the food waste behavior of millions of consumers. Drawing on the theory of planned behavior (TPB), norm-activation model, and cultivation theory, this study examines consumer intentions to reduce food waste and whether exposure to TV cooking shows leads to food waste intentions. This study collected data from a convenience sample of 429 consumers using a survey and analyzed the data using covariance-based Structural Equation Modeling. The results reveal that the extended model, with five antecedents (attitudes, subjective norms, perceived behavioral control, personal norms, and activism), is a better predictor of intentions than the original TPB. The results also reveal the potential effects of exposure to TV cooking shows on consumer food waste. Specifically, the data indicate that more time spent watching TV cooking shows can lead to more food waste. Furthermore, exposure diversity can tighten the negative influence of TV cooking shows on consumer food waste. Yet, these shows can play a prominent role in cultivating food waste reduction if suitable communications are taken into consideration. These findings have specific implications for marketers and policy makers.

Keywords: Consumer food waste; Cultivation theory; Exposure diversity, Exposure time; Theory of planned behavior; TV cooking show

2.1. Introduction

Globally, almost one-third of all food produced is lost or wasted, which leads to high economic and environmental costs (see Scialabba et al., 2013). The difference between food loss and food waste depends on when the food is discarded along the supply chain. Food loss occurs in the first stages of the supply chain, such as harvesting, while food waste occurs in the final stages, including retailing and consumption (Parfitt et al., 2010). However, food waste is more critical because losses in the final stages include not only the discarded product but also

all the resources consumed and emissions released during the earlier stages (Abeliotis et al., 2014; Porpino, 2016). For example, food wasted after cooking entails more costs to the consumer and the environment in terms of money, effort, energy, and water consumed over the process of buying, preparing, and cooking the food. This adds further burdens to *food waste*, which is defined herein as all food and beverages that consumers discard despite being intended for human consumption (Abeliotis et al., 2014; Porpino, 2016; Stancu et al., 2016).

Researchers have argued that understanding and shaping the underlying elements of food waste can make considerable differences in how people behave (Quested et al., 2013). The motives driving food waste reduction can stem from different perspectives. First, a consumer may decide to reduce food waste after evaluating the benefits (e.g., saving money) and costs (e.g., efforts) (Quested et al., 2013) of doing so. This line of research is based on reasoned action models, mainly the theory of planned behavior (TPB: Ajzen, 1991). Second, consumers may also engage in reducing food waste out of moral obligations or personal norms (Graham-Rowe et al., 2015; Pakpour et al., 2014), which are based on normative theories, such as the norm-activation model (NAM: Schwartz, 1977). However, the food waste literature focuses largely on the first perspective. As such, it is not clear which perspective is more effective. Moreover, most studies have focused on the direct antecedents of food waste reduction, while marginalizing the background or underlying elements that cultivate these antecedents.

In this regard, cultivation theory (Gerbner et al., 1986) emphasizes the power of television (TV) as a major source of widely shared norms beyond education and religion. The comparison of TV with profound cultural sources, such as religion, reveals the power of TV in shaping people's minds. However, despite the phenomenological rise of TV cooking shows across many countries, little is known about their potential impact on consumer food waste. On the one hand, exposure to TV cooking shows may increase food waste. The reason for this is twofold: first, these shows may display explicit food waste images (see Thompson & Haigh, 2017) and implicit serving norms, such as the style and size of service wares. The use of large plates, for example, is associated with more food being served and, thus, wasted (Wansink & Van Ittersum, 2013). Second, the attractiveness of food that celebrity chefs cook may stimulate consumers to buy more and, in turn, waste more. Consistent with this view, research has found significant, positive associations between exposure to food on TV and overeating (Gore et al., 2003; Hebrok & Heidenstrøm, 2019). Likewise, visual exposure to desirable food images is associated with wanting food (Spence et al., 2016). On the other hand, several studies claim that adopting appropriate storing, preparing, and cooking procedures is crucial for reducing food waste (e.g., Graham-Rowe et al., 2015; Setti et al., 2018; Stancu et al., 2016). Thus, if TV

cooking shows convey messages and images, as well as tips and techniques, to reduce food waste, exposure to this content could cultivate viewers' beliefs over time (Gerbner et al., 1986), which in turn may guide their waste reduction intentions. Despite these possible opposing effects, research on whether TV cooking shows influence food waste positively or negatively is scant.

Overall, the current study attempts to integrate multiple theories (i.e., TPB, NAM, and cultivation theory) and their associated variables into a single model of consumer intentions to reduce food waste. Specifically, this study aims to answer three questions: (1) To what extent can the original TPB explain consumer intentions to reduce food waste? (2) To what extent, if any, does the addition of personal norms and activism explain intentions above and beyond the TPB model? and (3) To what extent, if any, does exposure to TV cooking shows affect food waste intentions and their associated antecedents?

2.2. Theoretical background and hypotheses

The TPB provides an appropriate theoretical basis for this study not only because of its many successful applications in predicting consumer behaviors, including food waste (e.g., Graham-Rowe et al., 2015; Karim Ghani et al., 2013), but also because, theoretically, both the TPB and cultivation theory can complement each other (Nabi & Sullivan, 2001). On the one side, the TPB proposes media as a background factor that can influence behavioral intentions indirectly through TPB's original predictors (Ajzen, 2005); on the other side, cultivation theory considers TV a unique type of media that cultivates viewers' beliefs over time (Gerbner et al., 1986). Nevertheless, research has criticized the TPB for marginalizing the role of *personal norms*, which can be relevant to food waste (Pakpour et al., 2014; Visschers et al., 2016). This is because food waste has negative environmental impacts that may prompt people to make moral judgments (right or wrong) based on their standards. Furthermore, researchers have recently revealed the important roles of *activism* and *intra-individual spillover effects* in shaping sustainable consumer behaviors (Elhoushy, 2020; Elhoushy & Jang, 2019; Filimonau et al., 2019; Lee, 2014). Accordingly, the current paper tests an extended TPB model that includes *personal norms* and *activism* as additional predictors of food waste reduction intention and merges this extended model with cultivation theory. As such, this paper examines the impact of cultivation variables not only on TPB's original predictors but also on an extended TPB model (Fig. 1).

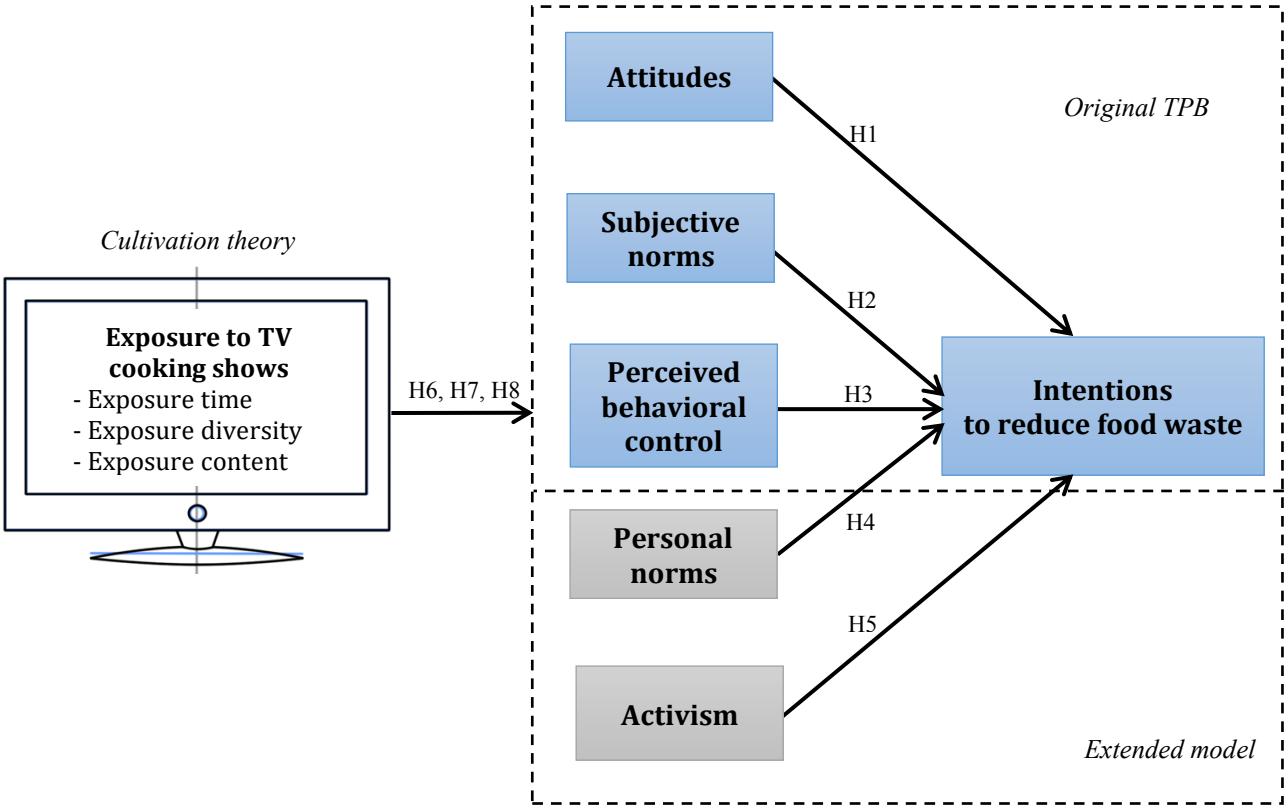

Fig. 1. A theoretical model of the relationships between TV cooking shows and consumer food waste.

2.2.1. TPB

The TPB posits that intentions are the most important predictor of behavior (Ajzen, 1991). Intentions reflect the overall motivation of an individual to engage in a given behavior. The formation of strong intentions requires a combination of three antecedents: positive *attitudes*, favorable *subjective norms*, and *perceived behavioral control* (PBC: Ajzen, 1991).

First, attitudes refer to the overall evaluation of behavioral consequences expressed in positive or negative terms (Ajzen, 1991). In general, the stronger the positive attitudes, the greater is the intention to take action. Several studies have confirmed this premise, showing the influence of maintaining positive attitudes on reducing food waste (Graham-Rowe et al., 2015; Stancu et al., 2016). This is due to the associated benefits, such as saving money and avoiding food shortages (Quested et al., 2013), which encourage consumers to waste less food. Other studies (e.g., Russell et al., 2017) have found non-significant associations between attitudes and intentions to reduce food waste. Yet this can be attributed to the lack of correspondence in

the measurement of attitudes and intentions (see Ajzen, 1991). Thus, current evidence suggests a positive association between consumers' attitudes and intentions to reduce food waste.

The second antecedent is subjective norms, which reflect pressure from important "others" to perform or not to perform a given action (Ajzen, 1991). Research has argued that favorable social pressure from one's social circle is positively associated with intentions to reduce food waste (Graham-Rowe et al., 2015; Stancu et al., 2016). If, for example, a family member expects other members to waste no food and if meeting this expectation is of value, these members are likely to feel pressured to reduce waste. However, Quested et al. (2013) claimed that social pressure can have less of an effect on food waste than more visible behaviors. In other words, food waste is presumed to be less visible to friends and neighbors than recycling or car use, which undermines the role of subjective norms in shaping food waste reduction. This notion has received scant research attention, though several food waste contexts, such as households and restaurants, are still visible to many social groups, such as partners, children, and friends. Thus, given that humans are social beings who seek approval and want to avoid disapproval of their actions, subjective norms are likely to improve waste reduction intentions.

The third antecedent is the PBC, which reflects an individual's perceived ability to take a given action (Ajzen, 1991); the more difficult the action, the less the individual will intend to act. Nevertheless, difficulty and ease vary across individuals (Ajzen, 1991). If, for example, a consumer lacks the resources or skills required to store and repurpose leftovers, he or she is more likely to regard food waste reduction as difficult. Quested et al. (2013) highlighted the habitual activities underlying food waste, which may position habits as a barrier to food waste reduction. Empirically, most studies have revealed that individuals who maintain higher levels of control over food waste show stronger intentions to minimize their waste (Graham-Rowe et al., 2015; Karim Ghani et al., 2013; Russell et al., 2017). Notably, Stancu et al. (2016) found no support for this PBC–intention link but rather a direct negative link between PBC and food waste behaviors, which suggests that food waste is under low volitional control (Ajzen, 2005).

Overall, given the previous discussion, attitudes, subjective norms, and PBC are all assumed to be significant predictors of consumers' intentions to reduce food waste. Thus:

> **H1.** *More positive attitudes are significantly associated with stronger consumers' intentions to reduce food waste.*

H2. *Higher subjective norms are significantly associated with stronger consumers' intentions to reduce food waste.*

H3. *Higher PBC is significantly associated with stronger consumers' intentions to reduce food waste.*

2.2.2. NAM

Schwartz (1977) introduced the NAM to explain pro-social or altruistic behaviors. This model's basic premise is that personal norms (not intentions) are the immediate antecedent of behavior. Personal norms reflect an individual's feelings of "moral obligation to perform or refrain from specific actions" (Schwartz & Howard, 1981, p. 191). The activation of an individual's personal norms, with application to food waste, requires several conditions (Schwartz, 1977), including *awareness of need* (e.g., millions of people go hungry every day), *awareness of the consequences* (e.g., generating billion tons of carbon dioxide), *ascribed responsibility* (i.e., holding oneself responsible for those consequences), and *ability to act* (e.g., skills, efforts, time). Several studies have revealed pronounced associations between personal norms and household food waste (Graham-Rowe et al., 2015; Pakpour et al., 2014; Quested et al., 2013). This is may be due to the negative consequences of wasting food, which urge people to make moral judgments based on their problem awareness and ascribed responsibility. Then, if they violate their moral obligations, wasting food comes with feelings of regret and guilt (Quested et al., 2013), and the innate desire to avoid these negative feelings, in turn, can stimulate waste reduction (Graham-Rowe et al., 2015). Yet previous studies have confirmed an indirect (vs. direct) relationship between personal norms and food waste behavior through intentions (cf. Schwartz, 1977). This finding supports the proposition of Ajzen (1991) that intention is the most immediate predictor of behavior. Accordingly, drawing on the normative logic and previous findings, this study proposes the following:

H4. *Personal norms have a positive and significant relationship with consumers' intentions to reduce food waste.*

2.2.3. Activism

A consumer is an active agent who engages in a variety of activities as part of his or her activism. In sustainable consumer behavior literature, several studies have operationalized

activism as a function of *involvement* in various pro-environmental actions (e.g., participating in environmental events, being a member of environmental organizations) and revealed positive associations between activism and sustainable behaviors (DiPietro et al., 2013; Lee, 2014). Yet, consistent with other theoretical constructs, Elhoushy and Jang (2019) operationalized activism as an environmentally active attitude that reflects the individual tendency to contribute to and engage in public well-being and recognize the value of doing so. The difference between activism and attitudes is that the latter reflects the general assessment of behavioral outcomes regardless of a person's active goals or needs: while the former captures the value of sustainable behaviors for the currently active goals of the individual. This implies that a consumer can commit to reducing waste motivated by their inherent need to maintain social and environmental roles, which also reflect other self-expressive goals, such as running an efficient house or being competent. If, for example, an individual wants to run an efficient house, he or she can engage in a nexus of actions, such as saving energy and water and reducing food waste. He or she may also take on an active role by committing to persuading and advising others and sharing personal experiences with them to advocate such environmental-supportive actions. The more environmentally active the individual's mindset is, the more he or she will be personally committed to the actions relevant to his or her activism (Elhoushy, 2020). If, for instance, a parent wants to set an example for his or her children by saving food, he or she is more likely to maintain an active tendency to advocate for food saving, which, in turn, may affect their food waste reduction intentions. This notion is supported by the logic of cognitive dissonance and the desire to be consistent across cognitions (Festinger, 1962) and actions with similar underlying goals (Thøgersen, 2004). For example, Filimonau et al. (2019) found that consumers who engage in pro-environmental behaviors at home maintain stronger intentions to reduce food waste at restaurants, with the effect spilling over across contexts. If individuals behave inconsistently, this can trigger negative emotions (Dickerson et al., 1992) or threaten an individual's self-image. Recently, Pelt et al. (2020) found that highlighting the gap between one's preaching (i.e., public expression of food waste reduction means) and mindfulness (i.e., recognizing one's food waste behaviors) is an efficient way to derive behavior change. Thus:

> **H5.** *Activism has a positive and significant relationship with consumers' intentions to reduce food waste.*

2.2.4. Cultivation theory and TV cooking shows

In general, cultivation theory posits that exposure to TV affects viewers' beliefs over time (Gerbner et al., 1986). Specifically, the greater the exposure, the more people will share the beliefs and opinions they see portrayed (Leggett & Shanahan, 1999). TV cooking shows represent a valuable source of information for food selection, preparation, and cooking (De Backer & Hudders, 2016). Thus, in a community in which much of what people hear about food is likely to come from TV cooking shows or others who watch those shows, it can be argued that exposure to those programs can affect food in general and food waste behaviors in particular.

2.2.4.1. Rise of TV cooking shows

TV cooking shows date back to the 1930s (De Backer & Hudders, 2016). However, recent decades have witnessed a phenomenological rise of TV cooking shows in several countries (Caraher et al., 2000; Clifford et al., 2009; De Backer & Hudders, 2016; de Solier, 2005). Several TV channels are even exclusively dedicated to cooking shows, such as the American Food Network, the French Cuisine TV, and the UK Food. In Egypt (the chosen case for this study), several TV channels, such as Panorama Food and CBC Sofra, now present cooking shows 24/7. The success of TV cooking shows can be traced to several signs that are not mutually exclusive but signal the penetration and integration of continued viewing, including the growing number of viewers and the large volume of advertisements. In addition, the chefs who present these shows have become community celebrities. Their innate phrases, which are repeated more than once during the show, have been used in films, TV series, plays, and the like, by locals. During the show, the chefs answer viewers' questions and give advice in story form, which enables them to attract a large audience (Matwick & Matwick, 2014). Studies have also revealed the changing roles of celebrity chefs and their increasing impact on food behaviors (Giousmpasoglou et al., 2019).

2.2.4.2. *TV cooking shows and consumer food waste*

Evidence suggests that TV cooking shows may have considerable effects on consumer food choices, overeating, and obesity (Bodenlos & Wormuth, 2013; Hebrok & Heidenstrøm, 2019; Neyens & Smits, 2017; Ngqangashe et al., 2018; Pope et al., 2015). In the context of food waste, Thompson and Haigh (2017) analyzed the content of TV cooking shows and found

that food waste was displayed many times during the shows. They categorized food waste moments into several types, including visual images of waste (e.g., putting food in garbage), connecting food with waste (e.g., "It looks like rubbish"), explicit advice to waste food (e.g., "Throw it away"), and classifying food as dangerous (e.g., "This could contaminate the whole place"). Yet advice to avoid wasting food had limited representations (Thompson & Haigh, 2017). According to the logic of cultivation, consumers' exposure to this waste-encouraging content may impact their food waste behaviors. From another angle, environmental concern can be relevant to food waste (see Schanes et al., 2018). Yet research on the link between watching TV and environmental concern has revealed mixed results (Shanahan et al., 1997). Some studies reported a positive impact (Dahlstrom & Scheufele, 2010), while others found an inverted relationship (Ostman & Parker, 1987). Overall, if TV exposure can affect eating behaviors, food choices, and environmental concern, a similar effect can be expected on waste behaviors.

Given the above discussion, the current study examines the links between exposure to TV cooking shows in terms of *time*, *diversity* and *content*, and consumer intentions to reduce food waste. First, *exposure time* refers to the amount of time spent watching TV cooking shows. According to cultivation logic (Leggett & Shanahan, 1999), the more a person spends time watching cooking shows, the more he or she will share the opinions displayed. Second, Dahlstrom and Scheufele (2010) argued that watching several shows can affect beliefs beyond the exposure time. Thus, *exposure diversity* reflects the variety or number of different shows the person watches. Third, the content displayed through TV cooking shows represents a meaningful aspect of consideration (Pope et al., 2015; Thompson & Haigh, 2017); in the food waste context, exposure to cooking shows may encourage (vs. discourage) waste reduction if consumers are exposed to encouraging (vs. discouraging) waste reduction content. Thus, the current study examines content from the consumer perspective to capture *the frequency of exposure to food waste reduction messages and activities in one's favorite cooking shows*. This study argues that the more frequent the exposure to supporting waste reduction activities (e.g., using leftovers, sharing appropriate freezing and storing instructions), the more a consumer will hold positive opinions to reduce food waste. The reason is that exposure to these waste-reduction encouraging content can keep waste reduction beliefs vivid or salient. Those salient beliefs represent the bedrock of behaviors (Ajzen, 1991). Theoretically, the TPB model (Ajzen, 2005) assumes that media exposure may be related to or influence behavior as a background factor, which may exert indirect (vs. direct) effects on food waste reduction intentions mediated by other antecedents (e.g., attitude). For example, if consumers are exposed to the information

that repurposing leftovers instead of throwing them away is an easy option that can save money and time, this may cultivate their positive attitudes (i.e., "Reducing food waste saves money"), favorable social norms (i.e., "Others reduce food waste"), and PBC (i.e., "Reducing food waste is not difficult"). The logic of cultivation supports a similar notion that exposure to TV should have a more basic effect on behavioral intentions through shaping the individual's primary beliefs and attitude. Thus, the current study proposes the following:

H6. *(a) Attitudes, (b) Subjective norms, (c) PBC, (d) Personal norms, and (e) Activism mediate the relationship between exposure time and intention to reduce food waste.*

H7. *(a) Attitudes, (b) Subjective norms, (c) PBC, (d) Personal norms, and (e) Activism mediate the relationship between exposure diversity and intention to reduce food waste.*

H8. *(a) Attitudes, (b) Subjective norms, (c) PBC, (d) Personal norms, and (e) Activism mediate the relationship between exposure content and intention to reduce food waste.*

2.3. Methodology

2.3.1. Research instrument

This study used the questionnaire survey strategy to collect data. The first step in data collection was to adapt the survey to the context of the study. The survey was first developed in English, drawing on the reviewed literature, then translated to Arabic and back-translated to English to ensure content consistency. In the second step, two academic experts who are also native Arabic speakers revised the survey to assess content validity. The revised version was sent to 20 students to check question understanding. They were asked to comment on the layout, clarity, and readability of the survey. Following feedback from both groups, slight modifications were made in the wording and the order of a few questions.

The revised survey included five sections. The first section measured exposure time to, diversity of, and content of TV cooking shows. The second section measured consumers' attitudes. The third section measured subjective norms, PBC, personal norms, and activism. The fourth section measured intentions to reduce food waste, and the fifth section covered demographics. The survey was administered both online and in pencil-and-paper format, between February 20 and June 10, 2019. In the former case, an invitation containing the survey link (using Qualtrics) was sent to a list of randomly selected contacts via social media. The latter case used the drop-off, pick-up method, in which printed copies were distributed to

houses and then picked up later. The survey was identical in both cases; the reason for the two distribution methods was to ensure a better representation of the population and to increase the sample size. As evidence of consistency, an independent samples *t*-test revealed that the associated sample means across both formats were not significant.

2.3.2. Sampling and respondents

This study targeted a convenience sample of consumers who (1) watch TV cooking shows, (2) take part in buying and/or cooking food, and (3) are aged 18 years or older. These inclusion criteria led to a sample of respondents who are closer to points of food waste and, as such, can provide relevant answers. In total, 675 consumers agreed to answer the survey. All responses (246) that violated the abovementioned inclusion criteria were eliminated, with 429 valid responses remaining for further analysis. This sample size is considered adequate following the 10-to-1 cases-to-parameters ratio (Kline, 2015). Table 1 reports respondents' characteristics.

Table 1. Characteristics of respondents.

Characteristics	N = 429	%
Gender		
Male	74	17.2
Female	355	82.8
Age		
18–24	164	38.2
25–44	230	53.6
44 and above	35	8.2
Education		
High school	31	7.2
Bachelor's	293	68.3
High studies (master's, doctorate)	105	24.5
Monthly income (E£)*		
Less than 5000	237	55.2
5000–9,999	145	33.8
Above 10,000	47	11

*USD1.00 = E£17.24 as of March 20, 2019 (Source: Central Bank of Egypt).

Of the 429 respondents, 82.8% were female, and the 25–44 (53.6%) age group was the largest. Given the high proportion of women and young people, two issues are notable. First, the majority of the Egyptian population (74.1%) is younger than 40 years of age (CAPMAS, 2020), which justifies the sample's inflated age. Second, consistent with previous food-waste studies that included more female than male respondents (e.g., Di Talia et al., 2019; Mallinson

et al., 2016), the current female majority represents an accurate depiction of the situation, because women in some contexts, including Egypt, are still responsible for managing the household. On average, the majority of respondents had four members in the household, which is consistent with the average household size of 4.2 (CAPMAS, 2020). Regarding income, more than half the respondents (55.2%) had a monthly income below 5000 E£, and the others (33.8%) had an income level between 5000 and 9,999 E£. This is consistent with the minimum wage of the Egyptian salary of 2000 E£ and the household average income of 4,904.5 E£ per month (CAPMAS, 2020).

Notably, Egypt represents an appropriate geographical context for two reasons. First, TV cooking shows in Egypt are followed by millions of viewers and are ranked among the most viewed shows, which provides a suitable setting to test the proposed model. Second, Egypt is among many developing countries that contribute highly to food waste (Food and Agriculture Organization, 2019). On average, the Central Agency for Public Mobilization Statistics (CAPMAS, 2020) reports that people in Egypt spend the majority of their annual income (37.1%) on food and non-alcoholic beverages. However, the literature on sustainable consumer behaviors in general and food waste in particular continues to focus mostly on developed countries (see Abiad & Meho, 2018; Elhoushy & Lanzini, 2020). Thus, the choice of Egypt adds value not only by addressing this geographical bias in the literature and proposing country-specific insights but also by examining Western-based theories under different economic and cultural conditions.

2.3.3. Measures

All measures were based on previously validated scales. Specifically, attitude was measured with a bipolar semantic differential 5-point format with verbal end points (e.g., "For me reducing food waste at my household over the next week is …" "bad/good") adapted from Graham-Rowe et al. (2015). The respondents were asked to tick one of five boxes anchored by these pairs of extremes. This bipolar numerical answer scale is considered appropriate for measuring attitude because the construct focuses on the overall evaluation of food waste reduction (Dolnicar, 2013). Another four items measuring subjective norms (e.g., "My family thinks I should reduce food waste") were adapted from Karim Ghani et al. (2013). Measurement items for PBC (e.g., "I have the feeling that I cannot do anything about the food wasted in my household"), personal norms (e.g., "I feel obliged not to waste any food"), and intentions (e.g., "I plan to waste no food at all") came from Visschers et al. (2016). For

activism, four items (e.g., "I am someone who makes extra efforts to reduce environmental problems") were adopted from Wang (2016). Unless stated otherwise, respondents answered all items on a 5-point bipolar Likert format (1 = "strongly disagree," 5 = "strongly agree").

Consistent with Lipsky and Iannotti (2012), exposure time was measured by asking, "How many hours a day do you usually watch TV cooking shows?" with the response categories 1 = "less than half an hour a day," 2 = "about half an hour a day," 3 = "about 1 hour a day," 4 = "about 1 and half hours a day," and 5 = "about 2 or more hours a day." Each choice was multiplied by 7 to calculate exposure time per week. This construction resulted in a range from 7 to 35, with higher numbers representing more exposure time. The weekly (rather than e.g., monthly) basis was used because it is consistent with the framing of other variables (e.g., attitudes, intentions). That is, according to Ajzen (2005), the measures were consistent across variables in terms of target (i.e., food waste), action (i.e., to reduce), context (i.e., household), and time (i.e., next week). Exposure diversity was calculated as the sum of TV cooking shows watched by the respondent (Dahlstrom & Scheufele, 2010). Respondents received a list of 10 choices, including the most popular TV cooking shows in Egypt[1] plus one option labeled "others." Each choice was coded as 1 if the respondents reported watching that show and 0 otherwise. This construction resulted in a range from 0 to 10, with higher numbers representing greater diversity of exposure. Last, in line with Harris and Bargh (2009), exposure content was measured by asking, "To what extent does your favorite TV cooking shows offer the following content/messages?" (1 = "never," 5 = "very frequently"). Respondents were provided with a list of items/messages adopted from Quested et al. (2013) (e.g., "Using up leftovers to make new dishes").

2.3.4. Statistical analyses

This study applied the covariance-based structural equation modeling. The two stages of analysis proposed by Anderson and Gerbing (1988) were followed. In stage 1, the measurement model was assessed using confirmatory factor analysis. The reliability and validity of the model were assessed through factor loadings, composite reliability (CR), average variance extracted (AVE), and inter-construct correlations. Stage 2 tested the proposed causal links to build and assess structural models. Competing models were also examined before testing the hypotheses.

[1] The complete list of cooking shows is available on request from the author.

2.4. Results

2.4.1. Measurement model

The measurement model showed a good fit with the data (χ^2 =543.256, *df* = 329, $p <$ .001; χ^2/df = 1.651; root mean square error of approximation [RMSEA] = 0.039; comparative fit index [CFI] = 0.961; Tucker–Lewis index [TLI] = 0.955). Table 2 shows that, as evidence of internal consistency, the CR for each construct was greater than the suggested threshold of .60 (Bagozzi & Yi, 1988). Furthermore, as evidence of convergent validity, the AVEs for the five constructs were above .50. Notably, PBC, personal norms, and exposure content showed lower AVEs than the other variables. However, Malhotra and Dash (2011, p. 702) noted that "AVE is a more conservative measure than CR. On the basis of CR alone, the researcher may conclude that the convergent validity of the construct is adequate, even though more than 50% of the variance is due to error." In addition, Table 3 shows that the square root of the AVE for each construct is greater than its correlation with other constructs, which provides evidence of discriminant validity (Fornell & Larcker, 1981).

Table 2. Results of confirmatory factor analysis for the measurement model.

Variables	Standardized loading*	Cronbach's alpha	CR	AVE
Attitudes		0.892	0.901	0.698
Pointless/worthwhile	.83			
Unenjoyable/enjoyable	.70			
Foolish/wise	.90			
Bad/good	.89			
Subjective norms		0.892	0.897	0.688
My family thinks I should reduce food waste.	.65			
My neighbors think I should reduce food waste.	.90			
My colleagues think I should reduce food waste.	.92			
The community in the area I live in thinks I should reduce food waste.	.83			
PBC		0.681	0.691	0.434
I have the feeling that I cannot do anything about the food wasted in my household.	.62			
Other household members make it impossible for me to reduce the amount of food wasted in my household.	.53			
Wasting some food becomes a habit that is difficult to control.	.80			
Personal norms		0.762	0.769	0.455
I feel obliged not to waste any food.	.67			
It is contrary to my principles when I have to discard food.	.68			
I have been raised to believe that food should not be wasted, and I still live according to this principle.	.66			
It is immoral to waste food while other people are starving.	.69			
Activism		0.854	0.854	0.662
I am someone who makes extra efforts to reduce environmental problems.	.79			
I actively try to persuade others to reduce food waste.	.85			
I advise my family to engage in environmentally friendly behaviors when buying or consuming foods.	.80			

Variables	Standardized loading*	Cronbach's alpha	CR	AVE
Exposure Content		0.823	0.828	0.453
Checking levels of food in cupboards and fridge before shopping.	.56			
Using up leftovers to make new dishes.	.51			
Storing meat and cheese in appropriate packaging or wrapping.	.83			
Storing apples and carrots in the fridge.	.75			
Using the freezer to extend the shelf life of food.	.76			
Using date-labels on food.	.57			
Intention		0.830	0.836	0.563
I plan to waste no food at all.	.79			
I intend to eat all purchased foods.	.65			
I intend to produce only very little food waste.	.80			
I aim to use all leftovers.	.75			

* All factor loadings are significant at ($p < .001$).

Table 3. Means, standard deviations, and correlations between latent constructs.

Construct	Mean	SD	Correlations						
			1	2	3	4	5	6	7
Attitude	4.50	.863	**0.835**						
Subjective norms	3.24	.950	-0.069	**0.829**					
PBC	3.52	.972	0.151	-0.244	**0.659**				
Personal norms	4.39	.642	0.202	-0.025	0.168	**0.674**			
Activism	3.89	.728	0.056	0.285	-0.027	0.417	**0.813**		
Exposure content	3.16	.963	0.009	0.275	0.026	0.132	0.255	**0.673**	
Intention	4.17	.694	0.201	0.209	0.157	0.590	0.571	0.177	**0.750**

Note: Exposure time (M = 16.07, SD = 8.94) and exposure diversity (M = 4.59, SD = 2.37) were not included because they were measured with a single item.
Note: Bold represents the square root of the AVE.

2.4.2. Structural (competing) models

Before testing the hypotheses, two competing models were tested independently. First, the original TPB model showed a good fit with the data ($\chi^2 = 146.670$, $df = 84$, $p < .001$; $\chi^2/df = 1.746$; RMSEA = 0.042; CFI = .980; TLI = .975). All links in the TPB model were significant ($p < .01$). The TPB predictors jointly explained approximately 12% of the variance in intention (see Fig. 2). By adding personal norms and activism to the original TPB model, the second model, the *extended TPB*, also showed a good fit with the data ($\chi^2 = 355.119$, $df = 194$, $p < .001$; $\chi^2/df = 1.831$; RMSEA = 0.044; CFI = .964; TLI = .957). All links in the model were significant ($p < .05$). This extended TPB model explained approximately 51% of the variance in intentions (see Fig. 3). The results of model comparisons indicate that though the two models show acceptable fit indices, they differ substantially in variance explained (see Table 4).

As a next step toward the *full model* proposed in this study, exposure time, diversity, and content were added to the extended TPB model. The full model showed a good fit with the

data ($\chi^2 = 662.266$, $df = 603$, $p < .001$; $\chi^2/df = 1.729$; RMSEA = 0.041; CFI = .950; TLI = .943). Thus, this full model served to test the proposed hypotheses further.

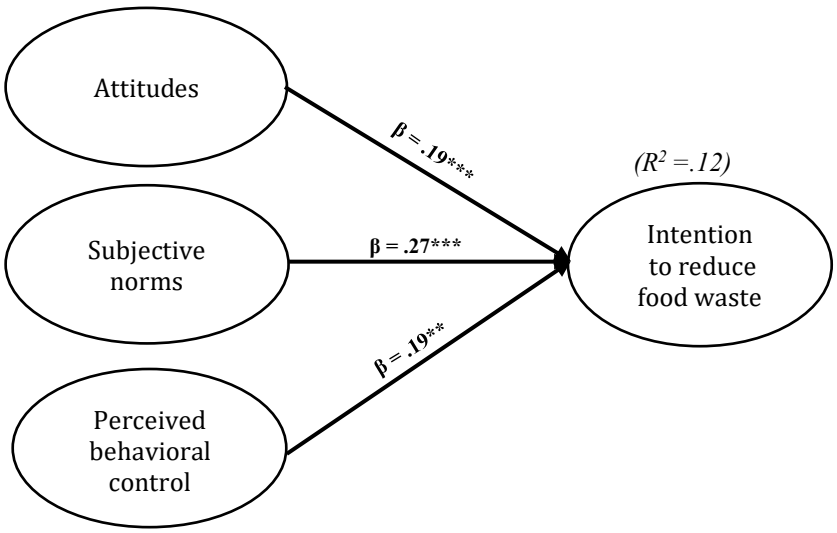

Fig. 2. TPB model results.
*$p < .05$, **$p < .01$, ***$p < .001$.

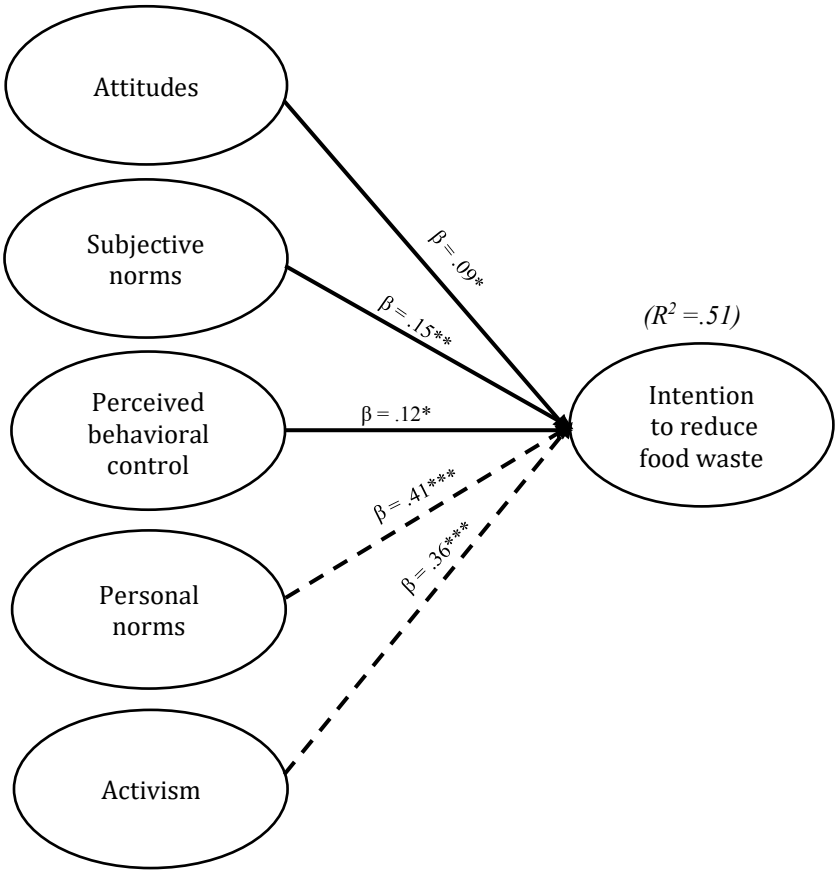

Fig. 3. The extended TPB model results.
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 4. Fit statistics and explanatory power of competing models.

Fit indices	χ^2	*df*	χ^2/df	TLI	CFI	RMSEA	Adjusted R^2
TPB model	146.670	84	1.746	.975	.980	.042	.12
Extended TPB model	355.119	194	1.831	.957	.964	.044	.51
Full model	662.266	383	1.729	.943	.950	.041	.50

2.4.3. Hypotheses testing

The results show that attitudes (β = .113, t = 2.559, $p < .01$), subjective norms (β = .150, t = 3.319, $p < .001$), and PBC (β = .131, t = 2.612, $p < .01$) were positively and significantly associated with consumers' intentions. Thus, H1, H2, and H3 are supported. The results also reveal a significant correlation between consumers' intentions and personal norms (β = .415, t = 6.659, $p < .001$) as well as activism (β = .364, t = 6.483, $p < .001$). Thus, H4 and H5 are supported. These results indicate that all the predictors contribute significantly to shape consumers' intentions to reduce food waste (see Table 5).

Table 5. Hypotheses results and standardized estimates of the full model.

Hypothesized paths	*Standardized estimates*	*T-values*	*Decision*
H1: Attitude → Intention	.113	2.559 **	*Supported*
H2: Subjective norms → Intention	.150	3.319***	*Supported*
H3: PBC → Intention	.131	2.612**	*Supported*
H4: Personal norms → Intention	.415	6.659***	*Supported*
H5: Activism → Intention	.364	6.483***	*Supported*

*** $p < .001$; ** $p < .01$; * $p < .05$.

2.4.4. Direct and indirect effects of TV cooking shows

The direct links between *exposure time* and attitudes (β = –.013, t = –.239, $p > .05$), subjective norms (β = –.012, t = –.229, $p > .05$), and personal norms (β = –.042, t = –.702, $p > .05$) were not significant. However, exposure time was significantly linked to PBC (β = .140, t = 2.207, $p < .05$) and activism (β = –.115, t = –2.041, $p < .05$). Consistently, mediation results showed that exposure time significantly affect intentions mediated by PBC (β = .001, $p < .05$) and activism (β = –.003, $p < .05$). These findings indicate that only PBC and activism significantly mediate the positive and negative link, respectively, between exposure time and intentions. Thus, H6c, and H6e are supported, while H6a, H6b, and H6d are not supported.

For *exposure diversity*, the relationship with attitudes (β = –.069, t = –1.250, $p > .05$), subjective norms (β = .085, t = 1.603, $p > .05$), and activism (β = –.028, t = –.604, $p > .05$) were not significant. By contrast, PBC (β = –.120, t = –1.957, $p < .05$) and personal norms (β = –.156, t = –3.053, $p < .01$) were significantly linked to exposure diversity. Mediation results also reveal a significant indirect link between exposure diversity and intentions through PBC

(β = –.004, $p < .05$) and personal norms (β = –.017, $p < .01$). This implies that PBC and personal norms mediate the negative link between exposure diversity and intentions. Thus, H7c, and H7d are supported, while H7a, H7b, and H7e are not supported.

Finally, the results show that *exposure content* is significantly associated with subjective norms (β = .268, t = 4.336, $p < .001$), personal norms, (β = .180, t = 2.770, $p < .01$), and activism (β = .309, t = 4.806, $p < .001$). However, the links with attitudes (β = .031, t = .531, $p > .05$) and PBC (β = .003, t = .039, $p > .05$) were not significant. The mediation results show three significant indirect paths through subjective norms (β = .033, $p < .001$), personal norms (β = .061, $p < .01$), and activism (β = .092, $p < .01$). Thus, H8b, H8d, and H8e are supported, while H8a, and H8c are not supported. These findings confirm the positive mediating effects of subjective norms, personal norms, and activism on the relationships between exposure content and consumers' intentions to reduce food waste. Fig. 4 summarizes results from the direct relationships and Table 6 shows mediation results.

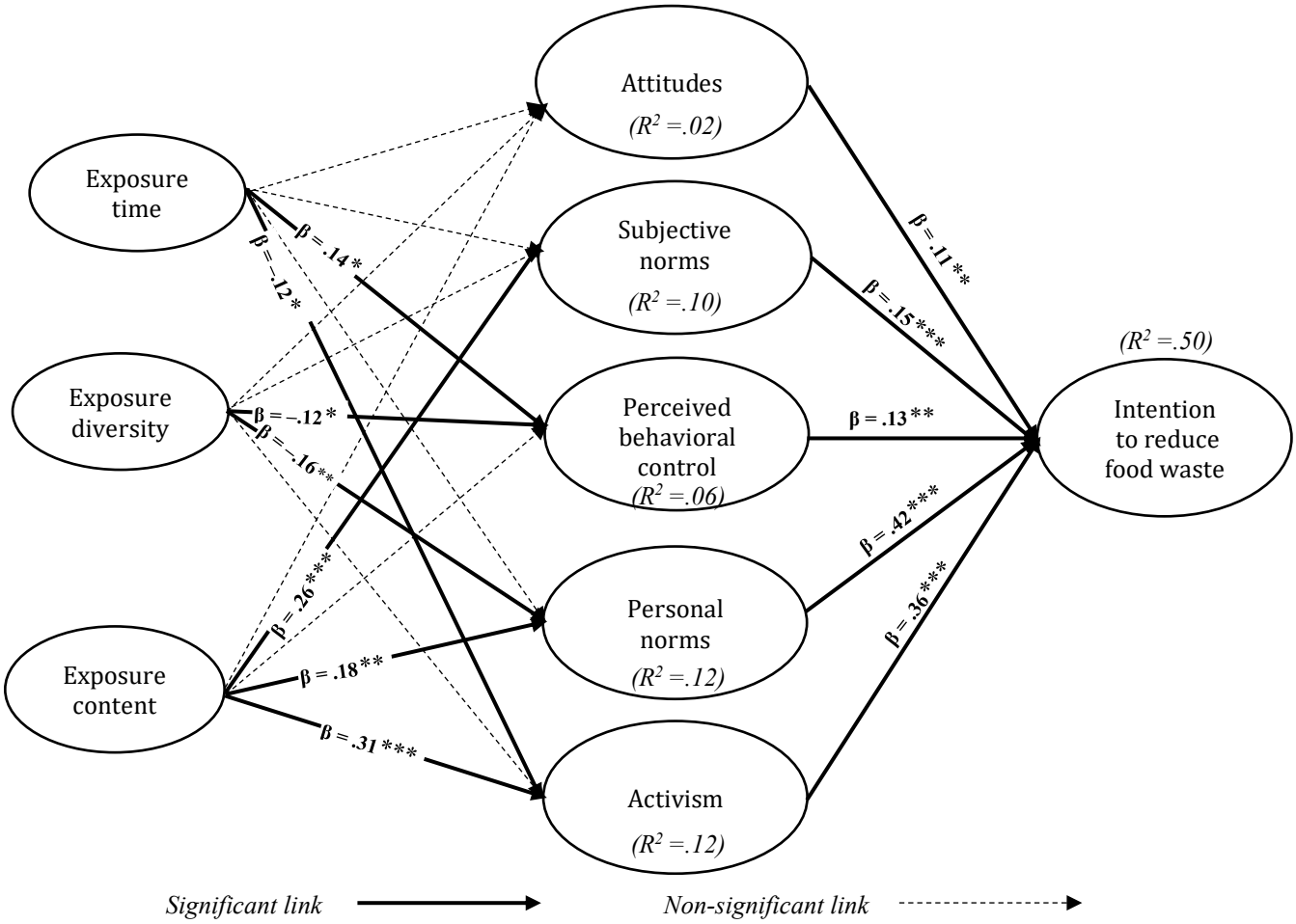

Fig. 4. Full model results of the *direct* relationships between exposure to TV cooking shows, antecedents and intentions to reduce food waste.
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 6. Indirect effects of exposure time, diversity, and content on consumers' intentions.

Mediation path	Exposure time	Exposure diversity	Exposure content
Attitude → Intention	.000	-.002	.003
Subjective norms → Intention	.000	.003	.033***
PBC → Intention	.001*	-.004*	.000
Personal norms → Intention	-.001	-.017***	.061**
Activism → Intention	-.003*	-.003	.092**

*** $p < .001$; ** $p < .01$; * $p < .05$.

2.4.5. Socio-demographic variables

The literature on consumer food waste has discussed the possible impacts of socio-demographic variables on consumer food waste, including gender (Secondi et al., 2015; Visschers et al., 2016), with women commonly wasting less food than men; age (Stancu et al., 2016; Stefan et al., 2013), with older people producing less waste than younger people; income (Stancu et al., 2016; Stefan et al., 2013), with higher income being associated with more waste; and education (Babaei et al., 2015; Mattar et al., 2018), with higher education levels being positively associated with less waste. Despite the lack of consensus on the effects of socio-demographics on sustainable consumer behaviors in general and the Middle East and North Africa context in particular (for a review, see Elhoushy & Lanzini, 2020), the current study addresses such potential impact in two ways. First, as a robustness check, this study estimated an alternative model that included four control variables (i.e., gender, age, income, and education). However, similar to the findings of Stancu et al. (2016), these control variables showed limited effects, while the links of the model's main variables appeared to be robust and consistent. Therefore, to maintain acceptable cases-to-parameters ratios, the more parsimonious model without socio-demographics served to test the hypotheses.

Second, beyond the direct effects of socio-demographic variables, this study conducted ad hoc analysis to uncover differences across study groups (e.g., male vs. female). Regarding gender, as Table 7 shows, there were significant differences between men and women in terms of activism and exposure time. The former reflects that women engage less in activism than men, while the latter shows that women spend more time watching TV cooking shows. This is consistent with the link between exposure time and activism in the full model, in which activism was negatively associated with time spent watching TV. Age appears to be relevant across different groups: the positive effect of attitude and personal norms on intentions is stronger for women than men. Intentions also showed significant differences across age groups, in that older people had stronger intentions to reduce food waste than younger people. For

education and income, the former showed no significant differences across groups at the 5% level, while the latter showed significant differences between consumers' PBC, with higher control being associated with the highest level of income. By contrast, higher incomes were associated with less exposure diversity and less frequency of exposure to waste reduction massages from TV cooking shows.

Table 7. Socio-demographic results.

Factors	Gender			Age (years)				Education				Income (LE).			
	Men	Women	Sig.	18-24	25-44	45 and above	Sig.	High school	Bachelor	High studies	Sig.	Less than 5000	5000 to 9,999	10,000 and above	Sig.
	M	**M**		**M**	**M**	**M**		**M**	**M**	**M**		**M**	**M**	**M**	
Attitude	4.51	4.50	.985	4.36	4.57	4.71	**.022**	4.43	4.45	4.68	.053	4.53	4.46	4.52	.712
Subjective norms	3.18	3.02	.260	3.07	3.05	2.88	.671	3.36	3.08	2.84	.052	3.11	2.97	2.95	.411
PBC	3.43	3.54	.387	3.44	3.56	3.65	.348	3.43	3.51	3.59	.648	3.47	3.46	3.97	**.003**
Personal norms	3.34	3.40	.446	4.26	4.45	4.63	**.001**	4.25	4.36	4.50	.088	4.35	4.44	4.45	.288
Activism	3.97	3.75	**.040**	3.75	3.79	3.89	.347	3.67	3.77	3.86	.487	3.80	3.78	3.74	.880
Intention	4.11	4.18	.401	3.99	4.28	4.29	**.000**	4.20	4.14	4.26	.271	4.13	4.17	4.36	.131
Exposure time	13.90	16.52	**.022**	16.30	15.7	17.0	.686	17.8	16.4	14.4	.064	16.4	16.1	14.0	.229
Exposure diversity	4.71	5	.350	4.96	4.87	5.40	.474	5.93	4.86	4.90	.056	5.18	4.82	4.14	**.016**
Exposure content	3.10	3.03	.529	3.08	3.01	3.01	.776	3.37	3.04	2.95	.100	3.14	3.00	2.64	**.003**

Note: Bold represents values significant at $p < .05$.

2.5. Discussion

The focus of this study was on whether consumer food waste is linked to TV cooking shows in a positive or negative way. Given this, a model of consumer intentions to reduce food waste based on integrating an extended TPB model with the cultivation theory was proposed. The results confirm the negative associations between TV cooking shows and intentions to reduce food waste mediated by different antecedents. Yet TV cooking shows have positive associations with food waste reduction as well. Thus, exposure to TV cooking shows can, paradoxically, induce both less and more food waste.

2.5.1. Theoretical implications

The results provide support for TPB's original predictors, thereby further validating the previous findings on attitudes, subjective norms, and PBC in shaping consumer intentions (Graham-Rowe et al., 2015; Karim Ghani et al., 2013; Quested et al., 2013; Stancu et al., 2016). Subjective norms had the strongest association with intentions among the TPB predictors. This finding contradicts previous studies showing that subjective norms often have a weaker impact than other TPB predictors (Visschers et al., 2016). It also calls into question the speculation that social pressures may have limited effects on food waste behavior due to its lower visibility to friends and neighbors (Quested et al., 2013; Schanes et al., 2018). Possible explanations are the close relationship of the Egyptian society with norms and the pronounced conformity to collective behavior. As such, consumers may attach greater weight to adhering to what is socially expected. Furthermore, this finding supports Hassan et al.'s (2016) conclusion that power distance explains systematic differences in the subjective norm–intention relationship across countries, with countries high in power distance (as in the case of Egypt) showing stronger correlations.

The results reveal a small explanatory power of TPB's original predictors in the context of food waste, with attitudes having the weakest correlation with intentions. This implies that the cost-benefit perspective of motivations may be necessary but not sufficient for forming strong intentions. This is consistent with the assertion that consumers in collectivist societies are less driven by their attitudes (Hassan et al., 2016; Morren & Grinstein, 2016). In this regard, the findings confirm the importance of *personal norms* and *activism* as additional predictors of intentions. Personal norms are the most important predictor of intentions in the current context. This means that an increase in moral obligations to reduce food waste might contribute substantially to consumer intentions. In addition, the results on activism underscore the proposition of Elhoushy and Jang (2019) and the logic of Thøgersen (2004) that the more active an individual is, the more he or she will be personally committed to relevant actions. This is perhaps because consumers who engage in advocating environmental issues try to avoid behaving inconsistently to maintain their self-image and avoid negative feelings of dissonance.

At the same time, this study provides initial empirical evidence for the indirect links between exposure to TV cooking shows and consumer food waste. Several inferences are important in this regard. First, more time spent watching TV cooking shows can lead to more food wasted. The results reveal a negative impact of exposure time on all antecedents to reduce food waste with the notable exception of PBC. This means that consumers who spent more

time watching cooking shows revealed weaker positive attitudes, subjective norms, personal norms, and activism to reduce waste. Concerning activism, for example, a possible explanation for this inverted result is that devoting more time to watch TV reduces the time available for other activities in general. Yet, overall, these results can be understood given the waste-encouraging environment currently presented through TV cooking shows (see Thompson & Haigh, 2017). These shows are among companies' marketing tools that provide funds in return for advertising their products. This may partly explain the current waste-encouraging model, which is based on providing "many exotic and fresh" recipes every day. This model puts at risk the traditional culture of using leftovers or eating the same dishes for several days, while creating a new norm for cooking fresh meals every day. By contrast, the results show a positive impact of exposure time on PBC. This finding is consistent with the educational role of TV cooking shows (De Backer & Hudders, 2016), in which exposure over time can improve kitchen skills.

Second, diversity of exposure adds to the negative influence of TV cooking shows on consumers' food waste. The results confirm the negative link between exposure diversity and intentions to reduce food waste mediated by personal norms. One way to explain this result is that watching several cooking shows may encourage shifting the responsibility of saving food to those (others) who replicate the recipes displayed on different shows. In other words, exposure diversity undermines the "ascription of responsibility" condition, which is necessary for activating an individual's moral obligation (Schwartz, 1977). Likewise, PBC was inversely related to exposure diversity. This result implies that following several shows may diminish a person's control of reducing food waste. This is counterintuitive and can be attributed to receiving conflicting messages or being exposed to different ways of doing the same thing from different shows. In addition, watching several shows that sometimes display state-of-the-art cooking methods and equipment may decrease a person's ability given his or her own available resources. Another speculation pertains to the goal of following TV shows in the first place. If, for example, watching several shows becomes pure entertainment for consumers, this main goal may affect the learning outcomes in general. However, such speculation requires further examination.

Third, TV cooking shows can play a prominent role in cultivating food waste reduction if supporting content is communicated. The results show that exposure to waste reduction content/messages was positively related to the antecedents of food waste reduction. This means that consumers who received messages or tips on food waste reduction from their favorite TV cooking shows had stronger intentions to reduce waste. This finding is consistent with that of

Lee (2011), who showed that media (exposure to environmental messages) can shape consumers' values and, in turn, environmental attitudes. The results also lend support to the cultivation logic, in which exposure to specific messages on TV can shape viewers' opinions (Leggett & Shanahan, 1999). Furthermore, this result implies that exposure to certain messages of waste reduction keeps them vivid in viewers' minds, which in turn can affect their accessible beliefs (Ajzen, 1991). More important, the results underscore the prominence of the content displayed. For example, the results are in line with the claims of Pope et al. (2015) that exposure to cooking shows can enhance healthful eating if viewers are exposed to skills for preparing healthful meals but have a negative impact if overconsumption and unhealthful norms are shared.

Fourth, the complex relationships between TV cooking shows and consumer food waste are notable. Exposure time, for example, was positively related to PBC but negatively related to other antecedents. Furthermore, subjective norms were positively related to exposure diversity but negatively related to time, though in both cases, the link was not significant. These results are consistent with those of Shanahan et al. (1997), who showed that watching TV had both negative and positive effects following the different components of environmental concern. These results, however, lend additional support to the uniqueness of the different cultivation variables (i.e., time, diversity, and content). As such, it is important for stakeholders to understand that TV cooking shows represent an important means to communicate food waste reduction, but if suitable communications are not taken into consideration, reverse outcomes are likely. Finally, although exposure variables showed insignificant correlation with attitudes, these results are consistent with previous studies (Nabi & Sullivan, 2001; Ngqangashe et al., 2018) and the cultivation literature in which small coefficients are generally reported (Dahlstrom & Scheufele, 2010; Shanahan et al., 1997).

2.5.2. Practical implications

This study provides fresh insights for marketers and policy makers. Although Zamri et al. (2020) identified various delivery methods that food waste reduction programs have used, the popularity of TV cooking shows presents another powerful platform for nudging millions of viewers. One particular advantage of using TV cooking shows as a delivery method to disseminate economic or environmental messages is that these shows are broadcasted 24/7. As such, the waste reduction message can be made salient. The results have three specific implications for marketers. First, TV cooking shows need to include waste-reduction ideas in

their recipes. For example, adding a new section on how to avoid waste, repurpose leftovers, and store food to extend their shelf life can help these shows cultivate a new norm for consumers. Cooking shows can also provide recipes for cooking remaining food items, peels, or leftovers that are commonly thrown away (e.g., a recipe for chips from potato skins). Second, TV cooking shows should communicate consequence-based messages, such as linking food waste with losing money and environmental degradation. Shows can help make ready-made items and leftovers socially acceptable or even desirable to use. In support, Närvänen et al. (2018) indicated that sharing positive meanings through *creativity* (e.g., creative items from waste) and *aesthetics* (e.g., presenting leftovers in a visually appealing way) can be useful tools. Third, TV cooking shows must avoid displaying any moments of food waste either visual (e.g., putting food in garbage) or by words (e.g., "Throw it away"). A wider sustainable perspective can be taken by, for example, displaying waste segregation and recycling bins and encouraging their use. These specific aspects require constructive training for chefs and their teams, as well as institutional changes. Accordingly, stakeholders (e.g., Ministry of Media affairs, cooking channels, FAO) can collaborate to launch a unified protocol that cultivates a waste-reducing environment along the food cycle from planning to use of leftovers.

The results also reveal another fresh insight for policy makers by confirming the potential negative effects of exposure diversity on consumer food waste. Accordingly, it is better for consumers to watch a single TV cooking show for a given time than several shows for the same amount of time. This result also challenges the increasing number of TV cooking shows across countries, which can contribute to increasing global food waste. Furthermore, both self-interest and moral-based motives had a significant role in shaping waste reduction intentions. Yet, given that personal norms are the most influential factor among consumers in Egypt, media campaigns should focus on activating moral obligations to the food waste problem by broadcasting its adverse consequences and the individual's responsibility to act. Notably, the results lend support to another mechanism for motivating food waste reduction through consumer activism. Consumers who take a participative role in advocating food waste reduction would likely increase their own personal commitment to reduce waste. As such, consumers should be encouraged not only to waste less food but also to actively engage in advocating waste reduction. Social media platforms such as Facebook represent a viable, engaging tool to encourage both small and large communities to advocate waste reduction. Social media platforms are not necessarily an alternative to TV but rather a complementary delivery method, on which famous TV cooking shows and chefs have their own official pages.

These pages are typically liked and followed by millions of followers and are used to share food-related content and cooking videos originally broadcast on TV.

2.5.3. Limitations and future research directions

First, this paper focuses on intentions to reduce food waste in general. Future studies could focus on more specific targets (e.g., using leftovers, making a shopping list). Doing so might reveal more precise information on specific food waste reduction practices. Second, this study evaluated TV cooking shows rather than total TV viewing. Researchers could address total TV viewing and compare the results. Further studies could also address TV consumption from a social consumer journey perspective, in which other people or social "companions" may influence the programs watched. Third, generalizing the findings of the current study to other age or cultursal groups should be made with caution until the findings are replicated. Fourth, this study used self-reported measures, which may add the risk of social desirability. The study also counted on the memories of respondents to reflect the messages/content displayed on TV cooking shows, which raises concerns with the actual content displayed. Thus, researchers could use observation or apply objective assessments of the content displayed on TV cooking shows to provide a deeper understanding of their positive versus negative contributions to the food waste problem. Finally, developing apps to help consumers generate ideas to reuse leftovers and manage household food waste is an important future path for both practitioners and researchers.

Paper 3

Consumers' Sustainable Behavior Formation: A Multi-stage Model

Abstract

This study proposes a multi-stage model that delineates the factors that influence sustainable consumer behaviors over time: *pre-adoption, adoption,* and *post-adoption*. Academically, a number of theories and models have been used to explain sustainable behaviors. However, each theory or model seems to over- and underestimate the importance of a distinctive aspect of the decision-making process. Furthermore, the literature to date has focused on the intention-adoption link rather than the adoption-continuance link. By critically reviewing and integrating the existing theories and empirical findings, this study suggests that motivation, adoption and continuance are distinctive stages of the sustainable consumer journey, which are influenced by different factors. We also introduce the concept of *relevance* as the main determinant of consumer motivations to adopt sustainable behaviors. Ultimately, this study discusses the *Motivation-Adoption-Continuance (MAC) Model*, which broadens the temporal scope of sustainable behaviors and offers a richer perspective in comparison with existing theories.

Keywords: Sustainable consumer behavior; Relevance; Motivation-Adoption-Continuance (MAC) model.

3.1. Introduction

Due to both population growth and extraordinary increases in consumption levels, motivating, facilitating, and maintaining *sustainable consumer behaviors* (SCBs*)* has become more critical than ever. SCBs are defined as any form of behavior that meets consumers' needs while concurrently minimizing environmental impacts or benefits the environment (Belz & Peattie, 2009; Trudel, 2019). Such behaviors include, but are not limited to, green purchasing, choosing sustainable restaurants/hotels, car sharing, energy and water conservation, waste reduction, and recycling.

The concept of sustainable consumption has a long history (see Chappells & Trentmann, 2015), but more recently it has moved to the forefront after being recognized by the United Nations as a high priority sustainable development goal for countries worldwide (United

Nations, 2020). With a range of interchangeable terms to describe consumers, such as "sustainable," "responsible," "green," "pro-environmental," and "mindful," scholars continue to debate what is sustainable and what is not. The current study had no intention of resolving this debate, and in reality, a 100 percent sustainable consumer does not exist. Typically, when individuals 'use' or 'consume' resources they impact the environment. Accordingly, the goal is to minimize the negative impact without compromising consumer needs. This also implies that an individual may be more sustainable in one area and less sustainable in another. If, for example, a commuter uses public transport instead of a private car, then he or she is more sustainable than someone who uses an electric car, but less sustainable than another person who uses a bicycle. The key challenge is to motivate, facilitate, and maintain sustainable behaviors on a vertical (i.e., toward the more sustainable option), horizontal (i.e., on a wide scale), and temporal (i.e., forward over time) dimensions.

The literature on consumer behavior presents a variety of models that have been used to predict and explain SCBs (for a review, see Jackson, 2005). However, scholars in this field have primarily used only two perspectives, or a combination of the two, to examine a wide range of SCBs. The main stream of research is based on the Theory of Planned Behavior (Ajzen, 1991). This reasoned action model (or an extension of it) has often been applied by scholars over the last two decades (Gao et al., 2016; Han & Stoel, 2017; Lanzini & Khan, 2017; Morren & Grinstein, 2016; Scalco et al., 2017; Schanes et al., 2018). The other stream of literature is based on the Norm–Activation Model (Schwartz, 1977) and its successor the Value–Belief–Norm Theory (Stern et al., 1999), which was introduced as a more specific pro-environmental model. These models, however, seem to over- and underestimate the importance of distinctive aspects of the decision-making process. For example, while Ajzen's theory emphasizes the role of cognitive intentions based on maximizing value, normative models propose personal norms that reflect internalized feelings of moral obligation as the immediate antecedent of behavior. Further, both perspectives are criticized for minimizing the *habitual stream* in which behaviors are presumed to be a function of habits (Verplanken & Aarts, 1999). This, in part, highlights why it was necessary to revisit these models in an attempt to propose a new model that integrates these different perspectives and overcomes their respective limitations.

Most importantly, previous studies on SCBs have paid little attention to the post-adoption stages of sustainable behavior. In other words, although considerable research efforts have been directed at understanding consumers' intentions to adopt sustainable behaviors, far too little is known about *how consumers evaluate their actual sustainable experiences* and *how adoption*

of sustainable behaviors affects subsequent reactions (i.e., routinization or dis/continuance). Thus, one questionable assumption made in the existing literature is that the decision criteria that leads people to adopt and sustain a behavior are similar (Rothman, 2000). Specifically, in a sustainability context, it may be a mistake to assume that once a consumer adopts a given sustainable behavior, then he or she will continue to behave the same way over time. Such assumptions are questionable due to the gap between expectations and perceptions in green contexts (Tseng & Hung, 2013).

In order to address the existing limits and clarify this aforementioned assumption, the purpose of this study is to introduce a *multi-stage model* that captures the factors that can influence consumers' decision-making over time. Specifically, the proposed model identifies the factors that (1) motivate consumers to consider SCBs in light of alternatives (*motivation*), (2) translate motivations into actions (*adoption*), and (3) shape post-adoption intentions and future behaviors (*continuance*). Accordingly, the term *sustainable* reflects not only that a behavior is environmentally friendly, but also that behaviors must be 'continued' or 'sustained' in order for SCBs to mitigate environmental problems. This paper is unique in that the proposed model takes into account short-term and long-term perspectives. This temporal perspective for looking at SCBs as a consumer's sustainable journey generates fresh insights that can inform consumer-based strategies (Hamilton, 2016; Hamilton & Price, 2019).

Overall, the current study makes two key contributions to the literature. First, it introduces the concept of *relevance* as the main determinant of consumer motivations to adopt sustainable behaviors. Second, this study proposes an alternative multi-stage model of consumer behavior to broaden the existing theoretical perspectives and guide consumer policy and behavior change in the sustainability domain. Just as importantly, this study develops theoretical propositions for future studies and offers implications for managers in terms of which consumer strategies should be used and when based on where consumers are at in their sustainable journey.

Toward this end, this study begins by reviewing mainstream theories and models to identify their merits and shortcomings in more detail, which also highlights the need for a new theoretical perspective. Then, the MAC model is introduced to classify three different temporal stages of the sustainable consumer journey. Finally, this study concludes by discussing the main implications for research and practice, as well as defining avenues for future research.

3.2.Theoretical background

The existing literature shows that a variety of models and variables have been used to explain individuals' sustainable behaviors. This study considered the following five theories and models to be most relevant to explain sustainable consumer behaviors: *Theory of Planned Behavior* (TPB: Ajzen, 1991), *Norm-Activation Model* (NAM: Schwartz, 1977) and *Value-Belief-Norm Theory* (VBN: Stern et al., 1999), *Goal-Framing Theory* (GFT: Lindenberg & Steg, 2007, 2013), Habits (Verplanken & Aarts, 1999), and the *Expectation-Disconfirmation Theory* (EDT: Oliver, 1980). Table 1 provides a summary of each theory's main argument and major focus.

Based on the TPB, a sustainable consumer behavior is the outcome of a decision-making process in which cognitive thinking plays an integral role. Hence, after an individual processes the available information, if he or she holds a positive attitude, favorable social expectations along with a desire to comply, and high perceived behavioral control, then the individual will form intentions, which in turn will lead to actions (Ajzen, 1991). TPB has had relative success in predicting a wide range of sustainable behaviors in general (see Kaiser et al., 2005; Klöckner, 2013; Yadav & Pathak, 2016), as well as service contexts in particular (Gao et al., 2016; Han et al., 2010; Han & Hyun, 2017). However, the TPB has been questioned because it marginalizes imperative factors, such as moral norms (Rivis et al., 2009) and habits (Verplanken & Aarts, 1999). This limitation is evident given the altruistic nature of most SCBs, which implies that an individual may engage in a behavior due to his or her moral obligations (Han & Stoel, 2017). Accordingly, having originated in cost-benefit and cognitive-based deliberations, the TPB was used in combination with other models to better explain the altruistic and habitual facets of SCBs.

The claim above calls attention to the importance of also using normative-based models that focus on altruistic reasoning. Compared to the TPB, both the NAM and VBN theory were developed for a more specific pro-environmental context. Therefore, they mitigate the meagre attention the TPB pays to altruism, which is particularly meaningful for sustainable behaviors (Stern et al., 1999). Furthermore, the formation of intentions in the planned sphere based on the expectancy-value paradigm differs from personal norms in the normative-based sphere. The former focuses on evaluating gains and losses and maximizing benefits, while the latter stems from personal values of what is right and what is wrong. In addition, while values represent larger and more universal principles (Schwartz, 1977; Schwartz & Howard, 1981), beliefs are more personalized and behavior specific (Ajzen, 2005).

Table 1. Summary of theories in the sustainable consumer behavior literature.

Theory	Main arguments	Major focus	Literature
Theory of Planned Behavior (Ajzen. 1991)	*Intention,* which reflects an individual's commitment to act, is the immediate predictor of behavior. The formation of intention is a function of three antecedents: *attitude, subjective norms,* and *perceived behavioral control*. Other variables are considered background factors that influence behavior indirectly through the original TPB predictors.	Reasoned and value maximizing actions	(Taufique & Vaithianathan, 2018; Bamberg & Schmidt, 2003; Han & Kim, 2010; Scalco et al., 2017; Kaiser & Scheuthle, 2003).
Norm-Activation Model (Schwartz, 1977) & Value-belief-norm theory (Stern et al., 1999)	*The NAM and its successor the VBN theory* position *personal norms,* or feelings of moral obligation, as the immediate antecedent of behavior. Personal norms are activated through a chain of causally related variables: *values, world view, awareness of others' needs, awareness of consequences, and ascription of responsibility.* Compared to the NAM, which considers the individual as the main subject valued by actors, the VBN theory focuses on a generalized form of valued actors (i.e., people or species).	Normative-based and altruistic actions	(Kaiser et al., 2005; Hansla et al., 2008; Han, 2015; Han et al., 2017; Stern et al., 1999; Kiatkawsin & Han, 2017; Choi et al., 2015; Han et al., 2015; De Groot & Steg, 2009; Han, 2014).
Goal-Framing Theory (Lindenberg & Steg, 2007; 2013)	Behaviors are a function of mixed motivations/goals. Three goal frames guide environmental behaviors: *hedonic goals*, which lead individuals to seek ways to improve their feelings; *gain goals*, which sensitize individuals to gains or losses in terms of financial or other resources; and *normative goals*, which are concerned with the correctness of behaviors.	Goals as guiding motives to actions	(Chakraborty et al., 2017; Steg & Vlek, 2009; Liobikiene & Juknys, 2016; Tang et al., 2019).
Habits (Verplanken & Aarts, 1999)	Cognitive evaluation of alternatives is deactivated, and *habits* emerge as a crucial driver of behavior. Three conditions facilitate the emergence of habits, namely *repetition, goal-directed automaticity,* and *stable contexts.*	Automatic/habitual actions	(Klöckner, 2013; Bamberg et al., 2003; Limayem & Hirt, 2003; Limayem et al., 2007; Bamberg & Schmidt, 2003; Amoroso & Lim, 2017).
Expectation-disconfirmation theory (Oliver, 1980).	Future behavior is a function of consumers' satisfaction with the encountered product or service. Satisfaction, in turn, follows the expectation-disconfirmation paradigm. If perceived performance meets expectations, then the consumer enters a state of satisfaction and vice versa.	Post-adoption evaluation and satisfaction-based actions	(Ha & Jang, 2010; Bhattacherjee, 2001; Han & Kim, 2010; Aarts et al., 1998; Amoroso & Lim, 2017; Limayem et al., 2007).

The validity of normative-based models has been tested and showed the important role of personal norms in shaping pro-environmental behaviors (e.g., Botetzagias et al., 2015; Han, 2014; Han et al., 2015; Klöckner, 2013; Van der Werff et al., 2013). Comparatively, current evidence suggests that personal norms do not influence behavior directly but instead were mediated by intentions (Klöckner, 2013; Rivis et al., 2009). Scholars (e.g., Bamberg & Schmidt, 2003; Klöckner & Blöbaum, 2010) argued that this holds theoretically because norms are more general and should have a basic impact on behavior. Further, it has been argued that these models are more useful in explaining low-cost behaviors (Sarkis, 2017), while they provide far less explanatory power in situations characterized by high behavioral costs or strong constraints (Steg & Vlek, 2009). Therefore, these models were criticized for emphasizing moral drivers while neglecting the non-moral drivers of behavior. This supports the efficacy of merging different perspectives, which have yielded greater sufficiency compared to the original models (e.g., Choi et al., 2015; Han, 2014; Kiatkawsin & Han, 2017).

Another cognitive perspective acknowledges that environmental behaviors also result from multiple motives or goal frames. According to the GFT (Lindenberg & Steg, 2007, 2013), three goal-frames that guide behaviors. First, the hedonic frame represents a goal or desire to enjoy life and feel better. Second, the gain frame represents a goal or desire to protect and increase one's resources. Third, the normative frame represents a goal or desire to act appropriately. Lindenberg and Steg (2007) argued that these goal-frames share common ground with the previously discussed models. For example, the TPB model coincides with gain goals in the sense that both seek to maximize gains. Further, normative goals align with normative-based models in that both emphasize the appropriateness of one's behaviors. Steg and Vlek (2009) claimed that the goal-based perspective provides a wider base for understanding sustainable behaviors. Yet, it is still applied less compared to mainstream models (Chakraborty et al., 2017; Tang et al., 2019). Only recently have scholars begun to combine goal theories with traditional models. Liobikiene and Juknys (2016), for example, integrated the GFT into the VBN theory to study pro-environmental behaviors. Another example is the theory of reasoned goal pursuit (Ajzen & Kruglanski, 2019), which represents a new wave of reasoned action models that link goal systems theory with the original TPB model.

Apart from the aforementioned cognitive standpoints, another perspective stems from the assumption that behaviors are often performed as automatic responses to familiar and recognized situations. In these situations, cognitive evaluation of alternatives is deactivated, and habits emerge as a crucial driver of behavior (Verplanken & Aarts, 1999). The habit-

behavior relationship has attracted considerable attention (Aarts et al., 1998; Klöckner, 2013; Moons & De Pelsmacker, 2015) but yielded inconsistent results. Ultimately, three main arguments should be noted. The first argument positions habits as a moderator of the intention-behavior relationship (Aarts et al., 1998; Limayem et al., 2007), where habits play a conditional role in the intention-behavior link. The second argument positions habits as a direct predictor of behavior (Limayem & Hirt, 2003; Verplanken & Aarts, 1999) in the sense that habits can predict behavior over and above intentions. The third argument positions habits as an indirect predictor of behavior mediated by intentions (Lanzini & Khan, 2017; Moons & De Pelsmacker, 2015). Despite these disagreements regarding the role of habits (for a review, see Limayem et al., 2007), taken together these studies emphasized the importance of habits in shaping behaviors. Accordingly, this study argued that the role of habits is twofold. On the one hand, habits (manifested in the degree of connection to traditional behaviors) may be an obstacle to adopting alternative sustainable choices because people tend to repeat familiar actions (Amoroso & Lim, 2017; Lanzini, 2018). On the other hand, *habit formation* is central to transforming sustainable choices from an exception into a norm. Put differently, for a sustainable behavior to become a part of a consumer's lifestyle, it must be repeated in a relatively stable context until it becomes habitual. Therefore, being interested in long-term sustainable behaviors, this study considered habit as an important element for maintaining SCBs.

However, as mentioned earlier, most theoretical and empirical studies in the SCB literature emphasized consumer intentions, while post-adoption behaviors have received very limited attention. Scholars (e.g., Bamberg, 2013) emphasized the importance of stage models in environmental contexts and proposed a four-stage model of behavior change through a linear process: pre-decision, pre-actional, actional and post-actional. Although this model identifies the determinants of the first three stages by combining the TPB and NAM, the post-actional stage is relegated to a negligible role. Also, Klöckner (2013) proposed a comprehensive action determination model of environmental behavior. Yet, this model is not an exception, because it focuses on the antecedents of intention while neglecting continuance behavior. To address this point, the EDT (Oliver, 1980) has its merits because it sheds light on the post-adoption processes of decision making. This theory postulates that expectations, confirmation, and satisfaction are key predictors of future behaviors. In short, after adopting a sustainable behavior, consumers then compare their perceptions with their expectations. If their perceptions meet or exceed expectations, then consumers experience confirmation and, subsequently, satisfaction (Oliver, 1980). Perceived performance was also introduced as

another antecedent to satisfaction over and above confirmation (Churchill & Surprenant, 1982). Although post-adoption models have also been criticized for neglecting the role of habits (Limayem et al., 2007), they do provide a fresh perspective from which to tackle sustainable behaviors by focusing on consumer satisfaction with (available) sustainable options (Ha & Jang, 2010; Han & Kim, 2010; Petrick et al., 2001) and shedding light on consumer-producer interactions.

3.3. The theoretical need for a sustainable consumer behavior model

Each of the aforementioned models seems to overestimate a specific element of the decision-making process while underestimating others. Taken together, they underlined the importance of *cost-benefit analysis, altruistic reasoning*, *individual's ability, current goals, habits*, *post-adoption evaluations* and *satisfaction* in the consumer decision-making processes. Yet, to date mainstream models have typically treated these elements in isolation. Thus, the theoretical underpinnings that motivated this study's new model are twofold. **First**, from a motivational lens, there is a need to integrate current distinct perspectives and introduce a coherent higher-order conceptualization of the motivational appeals toward SCBs to broaden existing theories in the sustainability domain. **Second**, most established theories, although useful in predicting behavioral intentions, have neglected post-adoption aspects (e.g., confirmation, continuance, routinization). Such theories implicitly assume that the decision criteria that lead people to *adopt* and *sustain* a behavior are similar, which is doubtful. For example, Limayem et al. (2007) distinguished between adoption and continuance suggesting that both decisions are based on different antecedents. Han and Ryu (2012, p. 787) argued that examining "the overall decision formation overlooks the difference between pre and post-purchase decision-making processes." Not surprisingly also, empirical studies on SCBs are by large static in nature; they predict behaviors at a specific point in time while neglecting the evolution of the underlying determinants. This is problematic as it limits our understanding of the subsequent stages in the consumer journey and marginalizes the ongoing interactions and evolutions throughout the adoption process (i.e., pre, during, and post). Accordingly, such models limit potential points of behavioral change.

In an attempt to address these shortcomings, this study proposed a *sustainable, dynamic*, and *comprehensive* model of consumer behavior. These three keywords meaningfully reflect the prominent features of the proposed model. The term *sustainable* encapsulates two different aspects. On the one hand, it refers to environmentally friendly consumer behaviors. On the

other hand, the term sustainable reflects that 'continuity' or 'long-term' behaviors are necessary to ensure that SCBs can ultimately mitigate environmental problems. The term *dynamic* reflects the model's attempt to capture how individuals behave across different stages of a sustainable experience. Thus, although most studies have referred to this stage simply as behavior, the premise of the current study is to emphasize the distinction between adoption and continuance. Specifically, adoption and continuance are conceptually and temporally distinct stages in the sense that continuance can occur only after an individual's prior successful experience (Bhattacherjee & Lin, 2015). This distinction allows the proposed model to provide a possible explanation for the *adoption-discontinuance anomaly* where an individual adopts a given behavior but then quits. The proposed model also addresses the typically presumed feedback loops by unfolding 'behavior' into two subsequent stages of adoption and continuance. Further, this model assumes that an individual is engaged in a continuous dynamic feedback interaction through both central (i.e., one's own experience) and peripheral (i.e., secondary information) systems, which allows individuals to continuously update their beliefs across various behavioral stages. Finally, the term *comprehensive* points to the integration of multiple elements (e.g., self-interest and altruistic motives, goals, habits, ability, and satisfaction) in order to map the determinants of pre- and post-adoption behaviors. Accordingly, this study proposed the ***M**otivation-**A**doption-**C**ontinuance* (MAC) model for sustainable consumer behavior formation.

3.4. Core components of the MAC model

The MAC model outlines the determinants of sustainable consumer behaviors and discusses the motivation-adoption-continuance relationships. This model combines: (1) a pre-adoption stage that focuses on motivating more people to adopt SCBs, (2) an adoption stage that focuses on translating motivations into actions, and (3) a post-adoption stage of sustainable behavior that presents the core variables determining the dis/continuity of sustainable behaviors. ***Fig. 1*** depicts the main components of the proposed model.

3.4.1. Pre-adoption: what motivates individuals to adopt SCBs?

Motivation development is an important stage in which individuals form prior willingness to take or not take a given action. This study defined motivation as a consumer's willingness to select sustainable rather than un- or less sustainable options. It is presumed that the basis for—

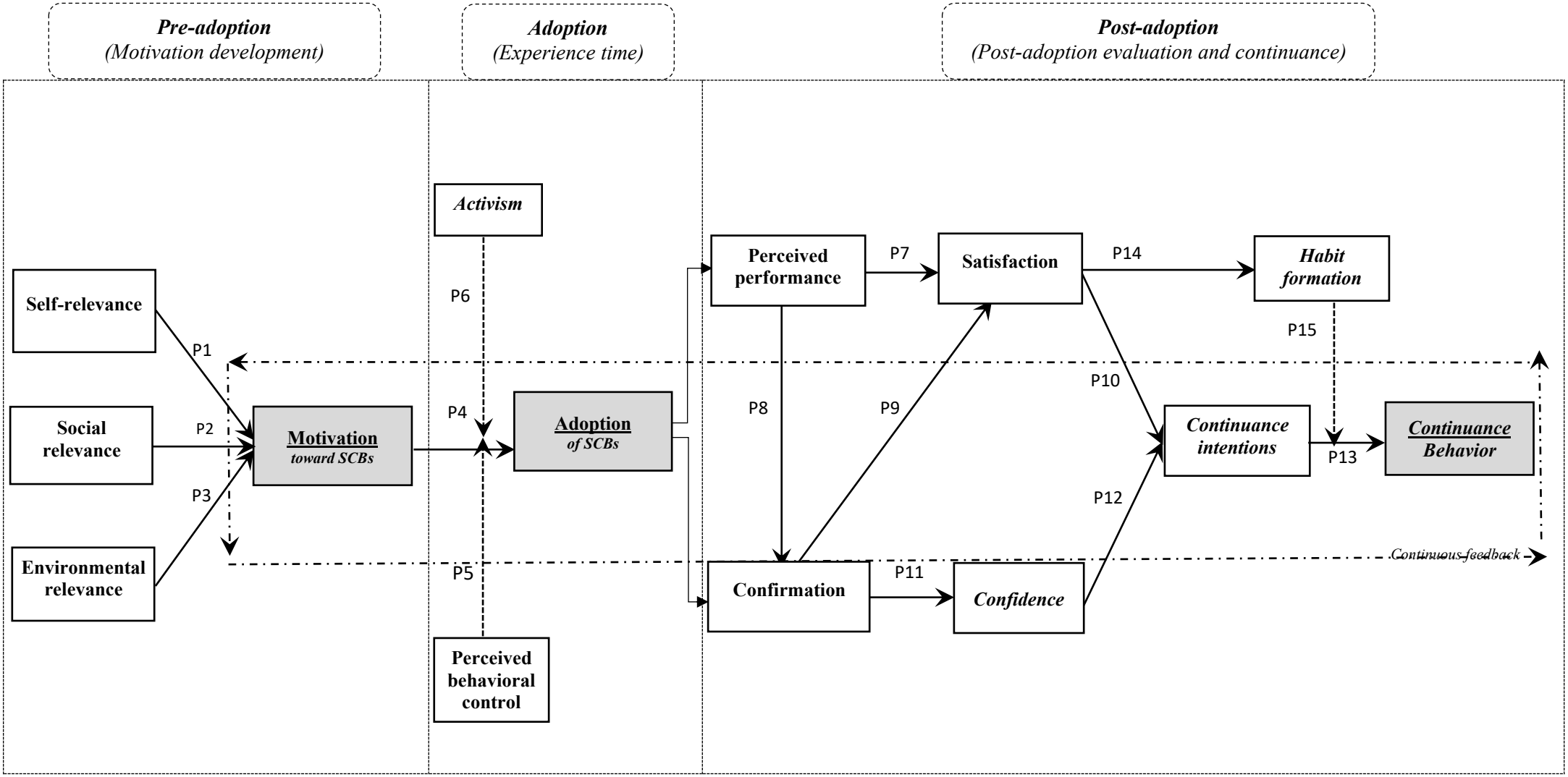

Fig. 1. The Motivation-Adoption-Continuance (MAC) Model for Sustainable Consumer Behavior Formation

sustainable motivation is principally an individual's active goals and the extent to which engaging in a particular SCB will help achieve those goals. Accordingly, individuals will have intentions to adopt a given SCB if they are interested in it. An individual's interest is a function of the degree to which a given SCB is perceived as relevant to one's active goals, hereafter referred to as *relevance beliefs*. For example, if someone has an active goal of being in shape, then it is expected that they will give more weight to healthy food options.

However, an individual who wants to reduce their food budget may be less interested in buying healthy products that require paying a premium. Thus, individuals active (rather than inactive) goals would be more relevant in decision making processes. *Relevance beliefs,* therefore, capture two aspects of motivation: (a) the extent to which an individual maintains relevant personal, social, and environmental goals and (b) the extent to which an individual believes that a given SCB will help achieve those goals in light of alternative options. This conceptualization of beliefs informs the measurement constructs by measuring the connections between current *goal strength* and an SCB as a means to achieving that goal (*goal mean)*. Thus, two distinct measures can be computed: first, by asking individuals about the extent to which they maintain certain goals, goal strength can be measured. Second, by asking individuals about the extent to which the targeted SCB allows them to attain that goal, goal mean can be measured (see *Appendix* for examples of measurements items).

Based on the GFT (Lindenberg & Steg, 2007, 2013), the current study defined consumer (active) goals as desired results that guide an individual's intended actions. While the GFT posits that an individual considers *oneself* as the central actor of value, this study focused on a more generalized form of valued actors, including the self but also the *community* and the *environment* (cf. Lindenberg & Steg, 2007). This conceptualization is based on Sheth et al. (2011) three-dimensions of a caring mindset in which an individual cares for the self, community, and nature (see Sheth et al., 2011). Further, within each of these three dimensions an individual can pursue hedonic, gain, and/or normative goals. For example, a self-hedonic goal leads the consumer to improve his or her feelings of pleasure, while a social-hedonic goal may lead the consumer to buy Fairtrade to support local farmers because he or she cares for *their* feelings. This implies that a hedonic goal frame does not necessarily mean that an individual will act in his or her self-interest (cf. Lindenberg & Steg, 2007). Thus, people with hedonic goals may be motivated to engage in a sustainable behavior because it is pleasurable, either for themselves or for others. Gain goals can also be related to the three different valued actors. For example, self-gain could involve an individual saving their own money, community gain could involve saving shared resources, or environmental gain could center on saving

endangered species. This perspective provides a generalization of the benefit maximization and cost minimization logic that goes beyond the self and can incorporate others as well. Overall, this implies that an individual can maintain various goals (i.e., hedonic, normative, and gain) toward different actors (i.e., self, community, and environment). This multi-motive perspective provides a wider lens to consider sustainable motivations.

Based on the above concept, the MAC model suggests that motivation is a function of three predictors—namely, self-relevance, social relevance, and environmental relevance, that jointly affect (explain) an individual's motivation to adopt sustainable behaviors.

3.4.1.1. Self-relevance

Self-relevance reflects the extent to which an individual considers a given SCB to be related to the self. As such, adopting the behavior allows an individual to attain one or more self-interest goals. Based on the assumption that individuals make reasoned choices and choose alternatives with the highest benefits versus the lowest costs (e.g., money, social approval, effort), many studies have touched on the self-aspect of sustainable behaviors. For example, applications of the TPB model have shown the important role of attitudes in choosing sustainable behaviors (e.g., Han et al., 2010; Han & Stoel, 2017; Kim et al., 2013; Morren & Grinstein, 2016; Scalco et al., 2017). According to Ajzen (1991), attitudes are reflected in a consumer's overall evaluation of a given behavior and based on beliefs about the likely benefits and costs of the behavior. This conceptualization, however, marginalizes the notion of active goals (Ajzen & Kruglanski, 2019). Moreover, applications of normative-based theories have shown that individuals pursue sustainable behaviors in order to act in a way that is consistent with their personal or social norms and to avoid negative feelings or social sanctions associated with violating such norms (Klöckner, 2013; Van der Werff et al., 2013). Thus, people have an organismic disposition to pursue goals that are beneficial to the self (Sheldon et al., 2003) and this care for the self stems from his or her natural being (Sheth et al., 2011). Accordingly, it is presumed that motivations toward SCBs rest largely on the desire to pursue one or more self-interest goals (e.g., feeling better, saving resources, acting appropriately). However, acting in favor of one's subjective well-being does not necessarily conflict with the well-being of others. In fact, they may actually be complementary (Brown & Kasser, 2005). For example, a commuter enjoying cycling home after work instead of driving a car also benefits the community. Further, hedonic (enjoyment) and gain-based (saving money) goals are also relevant to sustainable consumer behaviors. Sheth et al. (2011, p. 27) stated that, "Caring for oneself is not about being selfish or self-centered but is about paying heed to one's well-being".

Overall, the self-relevance concept is a function of an individual's active goal(s) and the extent to which a given SCB contributes (subjectively) to attaining those goals. The more SCBs are perceived as self-relevant in light of alternatives, the stronger the motivation to adopt these behaviors would be. This study, therefore, proposed the following:

Proposition 1. Consumer motivations to adopt sustainable behaviors are greatest when self-relevance is higher.

3.4.1.2. Social relevance

The second basis for sustainable motivations stems from an individual's care for his or her community, which reflects an inclination to do good for others or because of others. Based on the TPB model (Ajzen, 1991), previous studies have shown the impact of subjective norms on sustainable behaviors (e.g., Han & Kim, 2010; Kim et al., 2013; Yadav & Pathak, 2016). While another line of studies failed to support this link (Botetzagias et al., 2015; Taufique & Vaithianathan, 2018), this discrepancy may have occurred because people perceive less social pressure regarding some behaviors (Ajzen, 1991). Two distinctive types of subjective norms are crucial in shaping sustainable behaviors: injunctive norms, or what others *expect* you to do, and descriptive norms, or what others *actually* do (Manning, 2009, p. 651). Likewise, the GFT emphasizes the important role of normative-goal frames in guiding environmental behaviors (Lindenberg & Steg, 2007). Sheth et al. (2011) claimed that community care is one of the three core determinants of mindful consumption. Accordingly, it can be argued that people who care for the community's well-being are likely to engage in more sustainable behaviors. In an attempt to expand this social influence, this study operationalized *social relevance* as a function of maintaining social interest goals (e.g., contribute to public well-being, support local communities, or save common resources) and the extent to which adoption of a given SCB can help attain those goals. That is, the more a given SCB is perceived to be socially related in light of alternatives, the stronger the motivation would be to engage in this behavior. Thus, this study proposed the following:

Proposition 2. Consumer motivations to adopt sustainable behaviors are greatest when social relevance is higher.

3.4.1.3. Environmental relevance

The third basis for motivations to behave in a more sustainable way stems from an individual's care for the environment or nature more generally (Sheth et al., 2011). Normative-based theories are largely grounded in the assumption that the individual is caring and helpful and follows his or her internalized moral rules. Accordingly, human altruism is a powerful force behind behaviors (Stern et al., 1999). This is apparently the case for SCBs, where individuals are asked to consider not only their own gains but also the welfare of others (Nordlund & Garvill, 2002). Thus, a consumer can act in a sustainable way to protect the environment or make a difference in the life of others (i.e., species or future generations). A vast number of studies have shown that moral obligations and environmental responsibility affect sustainable behaviors (e.g., Han, 2014, 2015; Han et al., 2015; Klöckner, 2013). For example, Van der Werff et al. (2013) found that people with a strong environmental self-identity adopt environmental behaviors because they feel morally obliged to do so. Han (2015) also found that perceived moral obligation plays an important role in shaping travel behaviors. Thus, similar to self- and social relevance, environmental relevance reflects the degree to which an individual maintains active environmental-interest goals (e.g., protect the environment or reduce pollution) and the extent to which engaging in a given SCB can help the individual attain those goals. Based on the above concept, this study expected that the more a given SCB is perceived to be environmentally related, the stronger the motivation would be to engage in this behavior. Therefore, this study proposed the following:

> ***Proposition 3.*** Consumer motivations to adopt sustainable behaviors are greatest when environmental relevance is higher.

Although the three relevancies co-exist and each relevance is important for motivating SCBs, further questions can be raised: *Are the three predictors equally important? Is a given relevance more primary than others?* While the TPB model asserts the primacy of the self-well-being, and the normative theories assert the primacy of the well-being of others, the premise of the relevance concept is that "context" matters. This view asserts that none of the three relevancies is inherently primary. Rather, the relative primacy depends on the context (e.g., behavior of interest, active goals, subjective relevancy). Yet, an individual still can weight each of the three relevancies differently across and within contexts. Therefore, an individual could be vulnerable to motivational imbalance if they have conflicting motives regarding a specific behavior (Elhoushy, 2020). It has been argued that *focal* goals or motives will

dominate other goals during the decision-making process (Kruglanski et al., 2018; Lindenberg & Steg, 2007). Thus, although balancing the three spheres is presumed to guarantee stronger motivations, people would generally prioritize their self-relevance. That is, if consumers hold conflicting goals, it is more likely that they will favor their self-relevance. As such, ensuring consistent activation of both self, social and environmental goals is an optimal solution.

3.4.2. Adoption: how to turn motivations into actions

Adoption refers to when an individual initiates a sustainable action by acting on his or her intentions. Thus, the intentional action or fact of choosing to buy a sustainable product or engage in a sustainable behavior initiates the experience stage. It is worth noting that the time span for adoption varies among different behaviors. For example, it might range from a 1-hour meal at a sustainable restaurant to a couple of nights staying at a green hotel or an even longer period such as indefinitely using solar heaters at home. During this initial experience and after the fact, individuals form perceptions about the main attributes of the sustainable action.

Overall, turning motivated individuals into experiencers is an essential step in forming long-term sustainable behaviors. It is argued that taking a sustainable action is determined by an individual's motivation in light of the action's perceived relevance. Yet human behavior does not depend on motivations alone (Steg & Vlek, 2009). Thus, perceived behavioral control (PBC) and activism have been noted as factors that either strengthen or weaken this link.

3.4.2.1. Motivation-adoption link

This study considered motivation development as the first stage in forming and initiating sustainable behaviors. The original TPB model (Ajzen, 1991) postulates attitudes, subjective norms, and PBC as direct predictors of intentions, while intentions were presumed to mirror an individual's overall motivation. However, more recently Ajzen and Kruglanski (2019) considered the aforementioned presumption and instead posited motivation as an antecedent to behavioral intentions. Accordingly, this study expected that maintaining strong motivations toward a given SCB based on currently active goals and in light of alternatives is likely to be translated into action, ceteris paribus. This assumption is based on an individual's inherent desire to avoid inconsistencies between their cognitions (motivation) and actions and associated feelings of discomfort or dissonance (Thøgersen, 2004). Further, another line of speculation indicates that by cognitively identifying desired goal(s) and their associated goal mean(s), an individual set a desired or expected self-image that he or she is motivated to act on to achieve his or her desired or expected self. Thus, this study proposed the following:

Proposition 4. When motivations toward sustainable behaviors are stronger, consumers are more likely to adopt them.

3.4.2.2. PBC

PBC reflects the perceived ease or difficulty of engaging in a specific action given an individual's control over relevant conditions (Ajzen, 1991). Scholars have demonstrated positive associations between PBC and engagement in sustainable behaviors across different contexts (e.g., Han et al., 2010; Kim et al., 2016; Shin et al., 2018). This implies that beliefs about contextual factors (e.g., availability, affordability, or effort) can facilitate or hinder the intended action (see.g., Han & Stoel, 2017; Kwok et al., 2016). For example, Juvan and Dolnicar (2014) revealed that an individual might feel motivated to choose a sustainable vacation option, yet he or she may lack control due to limited information about alternatives, budget constraints, lack of infrastructure, or time. Moreover, shifting from unsustainable to sustainable choices might result in greater resistance due to being connected to traditional behaviors, which positions habit as a barrier to adopting alternative choices (Lanzini, 2018; Wiederhold & Martinez, 2018). Accordingly, this study argued that PBC has a moderating effect on the motivation-action link. That is, motivation will lead to action to the extent that an individual perceives that they can act. Thus, this study proposed the following:

Proposition 5. PBC moderates the motivation-adoption link, such that higher levels of control strengthen the link between motivations and action.

3.4.2.3. Activism

Activism reflects an individual's intentional and effortful engagement in sustainability-supportive behaviors to make positive changes. Activism is based on the assumption that individuals are "active agents who exercise informed and autonomous responsibilities in relation to their values and concerns" (Cherrier, 2006, p. 515). Previous studies have revealed that environmentally active consumers tend to adopt more sustainable behaviors (e.g., DiPietro et al., 2013a; Lee, 2014; Margetts & Kashima, 2017). For example, DiPietro et al. (2013a) found a positive link between engagement in green practices at home (e.g., recycling) and intentions to patronize green restaurants. These studies share common evidence regarding the potential transfer of effect across behaviors. Nevertheless, scholars often focus on a single behavior (e.g., reducing food waste at home). This single focus assumes that the targeted behavior exists in isolation from an individual's nexus of other activities and actions. In

actuality, an individual who wants to run an efficient house might engage in several actions at the same time, such as saving water, energy, and reducing food waste. Based on spillover logic (DiPietro et al., 2013a; Filimonau et al., 2019; Thøgersen & Ölander, 2003), these home-based sustainable actions are inseparable from how the same person would behave during a vacation. Consequently, this study introduced activism as a conditional variable in that motivation will lead to action to the extent that an individual is engaged in other actions/roles relevant to the targeted behavior.

The proposed moderating effect of activism is based on strong lines of logic. According to the cognitive dissonance theory (Festinger, 1962, p. 9), "[…] people experience psychological discomfort when there are inconsistencies between cognitions (attitudes, beliefs, values, opinions, knowledge) about themselves, about their behavior and about their surroundings." Thus, environmentally active individuals would adopt sustainable behaviors in order to seek self-consistency. In addition, Stern (2000) broadly categorized pro-environmental behaviors as public-sphere or private-sphere behaviors. Yet, Stern's categories raise a relevant question: to what extent does the public-sphere influence private sphere behaviors and vice versa? This question calls attention to the demonstration of positive *spillover* effects in the environmental domain across behavioral categories (Thøgersen & Ölander, 2003) and pro-environmental behaviors (Lanzini & Thøgersen, 2014). In other words, behaving sustainably in one context would affect behaviors in other contexts. This spillover may also be because individuals like to avoid feelings of 'hypocrisy' that result from acting in ways that are contradictory to how they present themselves in public. Dickerson et al. (1992) showed that individuals who were reminded of their wasteful water use in the past and made a public commitment to urge others to reduce water usage ended up taking shorter showers. Further, although Juvan and Dolnicar (2014) found discrepancies between environmental concerns and actual travel behaviors among activists, the participants used several excuses to mitigate the associated feelings of dissonance. Based on the above rationales, this study proposed the following:

> **Proposition 6.** Activism moderates the motivation-adoption link, such that higher levels of activism strengthen the link between motivations and action.

3.4.3. Post-adoption: To try or to continue?

Humans constantly engage in evaluating objects (Houwer, 2009). Thereby, evaluation is a main element of the post-adoption stage (Mano & Oliver, 1993). As such, having

experienced a sustainable option, an individual evaluates its performance and forms perceptions about this behavior. In consumption settings, continuance reflects a commitment to keep purchasing a product or service after a previous experience (Atchariyachanvanich et al., 2008). Thus, from a temporal perspective, continuation is maintained every time a consumer chooses the more sustainable option. Bhattacherjee (2001a) also defined continuance behavior as an individual's sustained usage over time. Researchers often operationalize continuance as the tendency to revisit, recommend, and spread positive word-of-mouth (e.g., Ha & Jang, 2010; Limayem et al., 2007; Lu & Chi, 2018). In this study, the post-adoption stage describes what happens after adoption starting with cognitive evaluations, confirmation or disconfirmation of beliefs, outcome states of satisfaction and confidence, continuance or discontinuance tendencies, advocation (support and promote), spillover (transfer to other behaviors), and routinization (when a given SCB becomes part of one's routine). Overall, this study argued that the formation of continuance intentions and behaviors is a causal chain of cognitive mechanisms: perceived performance, confirmation, satisfaction, and confidence.

3.4.3.1. Perceived performance

Perceived performance reflects post-adoption beliefs about how a product or service performed during the adoption stage (Lankton & McKnight, 2012). It is important to consider a consumer's post-adoption evaluation because it sheds light on the 'during the experience' aspect of the process (e.g., service process or staff interaction). McGill and Iacobucci (1992, p. 571) referred to the important role of experience-driven evaluations in which "people evaluate services by generating a comparison case after the fact." Simply put, consumers evaluate a behavior based on the gaps between what was and how it could have been otherwise. Thus, because a given sustainable action may be new (unfamiliar) to a consumer, certain attributes that were not part of their original expectations may still impact perceived performance. Furthermore, it has been argued that perceived performance is sometimes more relevant to satisfaction than confirmation of beliefs (Tse & Wilton, 1988) because an individual may adjust or forget his or her expectations following a lengthy adoption, which can result in a poor confirmation-satisfaction association (Churchill & Surprenant, 1982). Accordingly, this study built on the EDT as well as the existing empirical findings (e.g., Lankton & McKnight, 2012; Lu & Chi, 2018; Spreng & Page Jr., 2003) and proposed a positive link between perceived performance and satisfaction with a sustainable option, on one hand, and confirmation of beliefs, on the other hand. Thus:

Proposition 7. Perceived performance is positively and significantly linked to satisfaction.

Proposition 8. Perceived performance is positively and significantly linked to confirmation of beliefs.

3.4.3.2. Confirmation

According to Oliver (1980), confirmation or disconfirmation of beliefs is an outcome of a cognitive practice that involves comparing pre-adoption expectations with post-adoption perceptions. Bhattacherjee (2001a) revealed that confirmation is a fundamental determinant of satisfaction. Three possible outcomes can affect satisfaction levels (Oliver, 1980). *Positive disconfirmation* is when post-adoption perceptions outperform pre-adoption beliefs. That is, when a consumer finds the sustainable option to be better than expected. *Confirmation* is when perceptions meet initial beliefs. And *negative disconfirmation* is when perceptions fall short of initial beliefs. For example, when a consumer finds that using public transport instead of a private car is more time consuming. These three outcomes frame an individual's satisfaction level, respectively, as delighted, satisfied, or unsatisfied (Oliver, 1980). Accordingly, this study theorized that individuals who encounter confirmation of their initial relevance beliefs would show higher satisfaction with a sustainable action. This study, therefore, proposed the following:

Proposition 9. Confirmation/positive disconfirmation is positively and significantly associated with satisfaction.

3.4.3.3. Satisfaction

Satisfaction is a post-adoption state of mind that reflects a consumer's response to their perceptions of an experience (Oliver, 1980). Satisfaction is an attitude-like construct that is based on cognitive evaluations (Churchill & Surprenant, 1982). However, whereas attitudes can be a function of expected outcomes, satisfaction is more experience specific. Researchers have demonstrated a significant and positive link between satisfaction and future behaviors (e.g., Bhattacherjee, 2001a; Ha & Jang, 2010; Han & Kim, 2010). For example, Petrick et al. (2001) found that travelers' revisit intentions were a function of their satisfaction. The seminal work of Sheth et al. (2011) emphasized the importance of expanding the satisfaction construct in the sustainable domain in order to better reflect environmental and community aspects as well as needs of the customer. The current study proposed satisfaction with the perceived

results (in terms of attaining self-focused, as well as social and environmentally focused, goals) as an antecedent of consumer continuance intentions. That is, a consumer's intentions to continue to act sustainably are a function of his or her overall satisfaction. Thus, this study proposed the following:

> ***Proposition 10***. Satisfaction is positively and significantly linked to continuance intentions.

3.4.3.4. Confidence

Confidence is a post-adoption state of mind that reflects an individual's maintained self-efficacy to continue behaving in a sustainable way. The important role of confidence is based on the premise that satisfaction alone can only provide limited predictive power in the context of high-cost or more difficult behaviors. For example, a consumer might be delighted with his or her dining experience at a sustainable restaurant but may not be able to afford to eat there every time. Furthermore, in Luszczynska and Schwarzer (2003) seminal study, the authors distinguished between pre-action and post-action self-efficacy. In other words, the scope of an individual's ability might differ before and after engaging in a given behavior (Luszczynska & Schwarzer, 2003). Such discrepancies could be due to uncovering conditions that either facilitate or make it difficult to repeat the behavior (Schwarzer et al., 2003). For example, a commuter might be satisfied with the quality of public transport but realize that more effort (time and planning) is required than what they initially expected. Accordingly, similar to satisfaction, confidence is a function of belief confirmation. That is, when an individual's post-adoption control beliefs fall short compared to his or her initial control beliefs, then the individual will not feel confident about repeating the behavior or vice versa. As such, the consistency between pre-adoption control beliefs and specific post-adoption beliefs creates a particular state of *confidence* about continuance. Based on this concept, this study theorized that individuals who encounter positive confirmation *(their sustainable experience was easier than expected)* will show higher levels of confidence, which in turn will affect their continuance intentions. This study, therefore, proposed the following:

> ***Proposition 11***. Confirmation is positively and significantly linked to confidence.
>
> ***Proposition 12***. Confidence is positively and significantly linked to continuance intentions.

3.4.3.5. Continuance intentions

Continuance intentions can be considered as the *evolved form* of an individual's initial intention to adopt a behavior in the first place (Bhattacherjee, 2001a). Previous studies measured continuance intentions as the tendency to repeat a behavior, recommend it to friends and family, and/or share positive word-of-mouth (e.g., Ha & Jang, 2010; Lu & Chi, 2018). However, the vast majority of studies have considered behavioral intentions as a surrogate for actual behaviors. Among the very limited number of studies that have tackled this association, the results have been inconsistent. While some scholars supported the intention-behavior link (e.g., Han & Hyun, 2017; Klöckner, 2013), others highlighted a gap between intentions and actions (Line & Hanks, 2016). Scholars have tried to bridge this gap (Ajzen & Kruglanski, 2019; Sheeran, 2002). However, a meta-analysis of environmental studies uncovered a reasonable effect size between intentions and behavior (Scalco et al., 2017; Schwenk & Möser, 2009). Thus, it can be argued that after a previous experience, the stronger the intention to continue adopting sustainable behaviors, then the greater the engagement in SCBs would be over time. This study, therefore, proposed the following:

> ***Proposition 13***. Continuance intentions is positively and significantly linked to continuance behavior.

3.4.3.6. Habit formation

Habits are "learned sequences of acts that have become automatic responses to specific cues, and are functional in obtaining certain goals or end states" (Verplanken & Aarts, 1999, p. 104). The strength of a habit, then, reflects not only frequency but also the degree of behavioral automaticity in stable contexts (Klöckner, 2013). According to Verplanken and Aarts (1999), habit formation requires three conditions: repetition, goal-directed automaticity, and a stable context. Bamberg et al. (2003) speculated that the introduction of new information may necessitate the development of a new habit. Simply stated, after experiencing the sustainable choice, consumers would then have access to new information and contextual cues and with a certain amount of repetition individuals can form new habits. Aarts et al. (1998) also claimed that satisfaction with previous behavioral outcomes is likely to trigger habit formation. Studies by Limayem et al. (2007) and Amoroso and Lim (2017) also supported the link between satisfaction and habit formation. Overall, turning a sustainable action into a habit is demanding (of frequent repetition, forming and maintaining contextual cues, and achieving goals across consecutive situations), yet satisfaction with a sustainable option is vital because

satisfaction triggers repetition of the same action, which is a necessary condition for habit formation. Thereby, this study proposed the following:

Proposition 14. Satisfaction is positively and significantly linked to habit formation.

3.4.3.7. Habit-intention interplay

As indicated in section 2, mainstream studies on SCBs were conducted under the implicit assumption that behaviors are mainly determined by cognitive mechanisms. Yet, this cognitive assumption may not apply to continued behaviors since the evaluation of alternatives may eventually be deactivated and instead the behavior would be prompted by habits (Limayem et al., 2007; Verplanken & Aarts, 1999). In other words, once a new habit is formed, the sustainable behavior would become more automatic and require limited cognition (Limayem et al., 2007; Wood et al., 2002). This assumption is based on the rationale that once consumers have consciously attached themselves to a behavior that aligns with their mindset and desired goals, they prefer repetition to avoid effortful cognition (Amoroso & Lim, 2017). This implies that the importance of cognitive mechanisms in determining behavior declines gradually as the sustainable behavior becomes habitual over time. Accordingly, it can be argued that habits play a moderating role in the link between continuance intentions and behavior. That is, continuance intentions are a determinant of behavior in light of habit strength. If, for example, a commuter started to use public transport instead of a private car, the link between his or her continuance intentions and actual use of public transport is moderated by the extent to which the use of public transport becomes habitual over time. If the habit is strong, then it is expected that intentions will exert a minor impact on continuance behaviors. Yet, intentions may again become a powerful predictor under changes in conditions (e.g., unsatisfactory outcomes, context becomes unstable, or a change in underlying goals) (Limayem et al., 2007). This notion implies that the moderating effect does not remove the relationship between continuance intentions and behavior. Instead, it suggests that this link varies based on habit strength. This study, therefore, proposed the following:

Proposition 15. Habits moderate the continuance intention-behavior link, such that stronger habits weaken the link between intentions and behavior.

3.5. Conclusion and implications

Many theories and models have been applied, extended, or developed to explain which factors influence consumers' sustainable behaviors (e.g., Ajzen, 1991; Schwartz, 1977; Stern et al., 1999). Despite decades of research on factors that affect consumer behaviors in general, and sustainable behaviors specifically, these issues continue to be debated among scholars. The current study integrated the existing literature and suggested a multi-stage model that maps the determinants of SCBs across the different stages of a sustainable consumer journey: pre-adoption, adoption, and post-adoption. This multi-stage model can be used to classify consumers based on their perceptions of relevance and current active goals to inform consumer-based strategies. Table 2 provides a summary of the key theoretical and managerial implications.

3.5.1. Theoretical implications

First, the MAC model indicates that *motivation, adoption*, and *continuance* are distinctive stages triggered by different antecedents. As such, forming a sustainable behavior is broken down into a number of subsequent stages of evolution from motivation development, to adoption, then post-adoption evaluations, and dis/continuance behaviors. This view considers both short and long-term perspectives and provides a more dynamic angle for promoting sustainable behaviors. Thus, it is clear that researchers must go beyond the current focus on consumers' intentions to better understand the subsequent stages of adoption and post-adoption. Unfolding the sustainable consumer journey based on the perspective that it is an evolution – pre-during-post – is of value for both firms and consumers (Seybold, 2001). Yet the exact temporal scope of each stage is specific to the context of the studied behavior. Previous evidence also acknowledged "the value of more adaptive and customized time frames depending on the consumer journey context" (Hamilton & Price, 2019, p. 191).

Second, this paper introduced the concept of relevance and argued that relevance, more than anything else, can motivate SCBs. That is, individuals will maintain strong motivations to engage in SCBs if these behaviors are perceived as relevant to their current active goals. Self-relevance, social relevance, and environmental relevance represent the bedrock of motivation. Although higher relevance generally produces stronger motivations, the importance of each of these three factors may vary across behavioral contexts. Hence, it is important to be aware of consumers' active goals and which goals can be realized by a firm's sustainable products and/or services.

Table 2. Summary of the key theoretical and managerial implications.

Conceptual stage and guiding question	Research implications	Managerial/policy implications
1. <u>Motivation</u> *How to motivate more consumers to consider sustainable behaviors?*	- Relevance, more than anything else, will trigger SCBs. - Relevance is subjective. It is a positive function of a consumer's active goals and subjective perceptions that a given SCB can help in achieving those goals. - Self-relevance, social relevance, and environmental relevance represent the bedrock of motivation. - Higher relevance means higher motivation. Yet, the importance/weight of each of factor varies based on the context/behavior. - Thus, beyond studying attitudes, researchers need to know: - Where are consumers in their sustainable journey? And is their current position based on a previous experience or general information? - What are the active goals of current and potential consumers? Which goals need to be activated, strengthened, or changed? - Which sustainable products/attributes can meet consumers' goals? How can existing sustainable products be positioned to align with consumers' current goals? Is it necessary to introduce new products?	- Firms need to focus attention on relevance as a different way of looking at consumer needs. - Managers need to understand consumers' current active goals and which products/attributes can meet these goals. - The sustainable market may need to target different sets of consumers. Hence, marketing actions/messages should be framed based upon a segmentation schema. - This study offers firms potential ways of doing so based on the relevance concept: - Active goals–relevance beliefs = motivated consumers who require no further motivational messages. More focus on motivation may have counter effects. - Active goals–no relevance beliefs = product repositioning/ new product/features. - Non-active goals–relevance beliefs = activate current goals/cultivate new ones. - Non-active goals–no relevance beliefs = Educate
2. <u>Adoption:</u> *How to translate consumer motivations into actions?*	- Motivation is presumed to trigger action. - Contextual factors are central for translating motivations into actions. - It is important to recognize behavior-specific impediments that can weaken the motivation action link.	- Managers need to focus attention on two conditional variables to strengthen the motivation-action link. - Attracting consumers to buy the sustainable option requires understanding the consumer's context (e.g., knowledge, accessibility, affordability).

Conceptual stage and guiding question	Research implications	Managerial/policy implications
	- Consumer choices should be understood in light of an individual's other "roles" as a citizen, colleague, parent, etc. - It is important to understand the different roles played by consumers. - What can firms do to support consumer-to-consumer communications and energize activism?	- Activism could play an important role by providing consumers with means and opportunities to communicate through technology such as social media platforms. - Managers should consider the connections between the varied activities/roles an individual performs, and the information needed to ensure consistency.
3. <u>Continuance</u> *How to ensure that consumer's sustainable journey continues?*	- Researchers need to know more about the subsequent stages of adoption and post-adoption - Marketing in earlier stages plays an integral role in continuation. - How do consumers evaluate their sustainable experiences, both compared to their initial expectations and compared to un- or less sustainable choices? - Initial relevance and control beliefs may differ across the sustainable consumer journey. - How much satisfied are consumers? How confident are they will continue to use a product or service? - How can sustainable choices be transformed into new norms/habits? - Why do some consumers discontinue? What are the characteristics of quitters?	- Firms are better off considering both short and long-term perspectives. - It is important to understand consumers' evaluation criteria. Tracking the way consumers perform the steps that matter most to them can reveal further opportunities to enhance their overall experience. - Compare initial pre-adoption beliefs with post-adoption perceptions. Offer satisfactory experiences by enhancing conventional attributes (e.g., quality) and sustainable attributes (e.g., recyclable). - Measure satisfaction, confidence to continue, and intentions to repeat/revisit. Managers can leverage insights from previous stages to increase satisfaction. - Track the number of consumers, quitters, and lifestylers. Offer incentives to consumers who have poor experiences, such as higher status in their rewards programs. - Transform sustainable behaviors into new habits through habit formation mechanisms (e.g., encouraging repetition, satisfaction, contextual cues).

Third, the notion that activism moderates the motivation-action link is central to the model presented in this paper. This proposition adds to the literature on spillover effects (Thøgersen & Ölander, 2003) and the theory of cognitive dissonance (Festinger, 1962). Thus, over and above defining the appropriate (sometimes costly) structural strategies for control (i.e., pricing, accessibility, etc.,), researchers can reinforce the motivation-action link by using strategies that encourage consumer participation and involvement. Including activism also implies that a consumer's role of choosing among alternatives is inseparable from his or her other roles in life.

Fourth, by broadening the temporal scope of sustainable behaviors, the MAC model provides a better understanding of the possible and often neglected *adoption-discontinuance anomaly*. That is, the model can provide insights on experiencers who decide to discontinue a behavior or shift to a less sustainable option by examining their post-adoption decision-making processes of performance evaluation, confirmation, satisfaction, and confidence. This adds to the concept of the sustainable consumer journey (Hamilton & Price, 2019) and highlights the consequential nature of sustainable behaviors.

Fifth, another implication of this multi-stage perspective is that different sets of consumers can be defined based on where they are at in their sustainable journey: *non-motivated* (i.e., holds non-active goals and/or does not think of SCBs as a goal mean) vs. *motivated* (i.e., thinks of SCBs as relevant); *supporters* (i.e., motivated but have not acted yet) vs. *experiencers* (i.e., personally tried or experienced the SCB); and *quitters* (i.e., adopted the SCB but then quit) vs. *lifestylers* (continuing to behave sustainably over time). This classification adds to the multi-level behavioral intensity of sustainable behaviors (Paswan et al., 2017; Stern, 2000).

Accordingly, beyond focusing on consumer attitudes, researchers need to know where the consumer stands in their sustainable journey. Is the individual's current position based on a previous experience or general information? What are the active goals of current and potential consumers? Which goals need to be activated, strengthened, or changed? Which sustainable products/attributes can help consumers achieve their goals? How can SCBs be positioned as relevant to consumers' current active goals? And is there a need to introduce new products to help consumers achieve their goals?

3.5.2. Managerial implications

Although marketers have become more and more familiar with consumer behaviors, the key question for sustainability stakeholders is: *Does promoting SCBs require different*

consumer-based strategies? The MAC model provides managers with a new set of insights that can help to create more effective consumer strategies. Specific managerial implications can be derived from the three overarching functions of *motivating*, *facilitating*, and *sustaining* SCBs. In each stage of the proposed model, there is a unique outcome variable that is of interest to decision makers. To put each of these outcome variables in action, firms need to consider each variable's distinctive set of antecedents.

The first outcome variable, *motivation,* is particularly important when managers are speaking to new consumers or introducing new sustainable products. Based on an individual's relevance tendency (high relevance vs. low relevance) and goal activeness (active vs. non-active), consumers can be divided into four different groups that require different marketing actions (see Fig. 2). Accordingly, it is important for firm managers to first understand where consumers stand in their sustainable journey and then identify the appropriate actions.

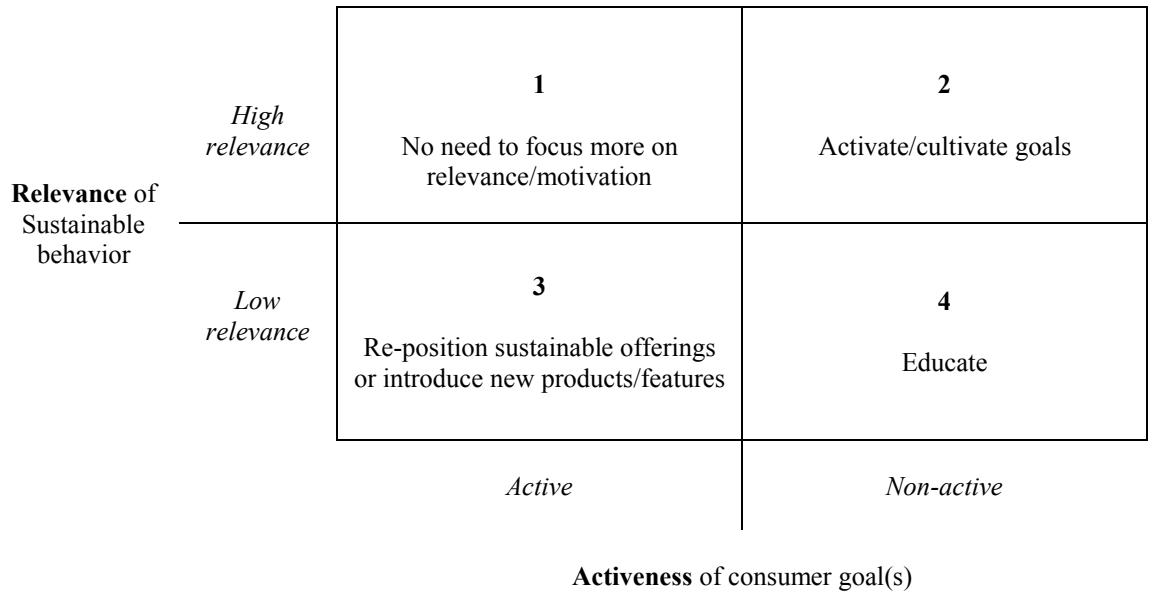

Fig. 2. The relevance-activeness interaction between sustainable behaviors and consumer goals as a determinant of motivation.

The *upper left quadrant* (high relevance and active goals) represents the best scenario where the consumer holds active goals and considers SCBs as a relevant goal mean. For these consumers, it would be useful to shift a firm's attention toward transforming motivations into actions through structural strategies (e.g., reinforcing control or engagement in activism). Yet, investing resources to affect consumers' underlying relevance beliefs is presumed to be

unnecessary in such a case. The other three quadrants, however, represent strategic opportunities for applying motivational strategies.

The *upper right quadrant* represents consumers who have a high relevance tendency but non-active goals. Thus, the focus of marketers needs to be on "activating" the consumer's goals rather than product relevance. A marketing campaign, for example, could attempt to activate community goals by emphasizing buying local products. *The lower left quadrant* represents consumers who have active goals but a low relevance tendency. In this case, the first step for marketers would be to establish links between the consumer's currently active goals and the firm's sustainable options. Marketing campaigns need to focus on persuading consumers that sustainable options are effective means for achieving their goals. Firms could also reposition their sustainable products and services to fit the consumer's current goals. For example, if a consumer wants to save money (self-gain) and the sustainable product has a higher initial cost compared to alternatives, then the focus needs to be on long-term savings. Yet, the same strategy is not expected to work for consumers represented by *the fourth, lower right quadrant*. In this case, consumers hold non-active goals, and the sustainable option is also not considered relevant. This provides a challenge for marketers because their job is not only to create and market sustainable options but also to educate the consumer. Thus, two strategies are suggested. One is to cultivate individuals' self, social, and environmental goals through long-term educational strategies. The other is to position sustainable products and services as a way to achieve the goals cultivated by the educational strategies above. Such efforts consume more time compared to consumers in the other three quadrants and require a collaborative approach from several actors (e.g., firms, policy makers).

Overall, the concept of relevance presents an alternative way of looking at consumer needs and motivations. Although the overarching goal is the same (i.e., motivating more consumers to choose sustainable options), not all consumers will respond to the same strategy. Thus, the one size fits all approach assumed in current theories is far less effective in ensuring sustainable consumption.

The second outcome variable, *adoption,* requires a different set of strategies. In short, marketers should focus on transforming consumer motivations into successful actions. Since motivations may not necessarily be actualized, marketers can employ two additional reinforcement strategies. One is related to contextual factors (Ajzen, 1991) that can make it difficult for motivated consumers to adopt SCBs. For example, a consumer may be motivated to buy an electric car but lack the needed infrastructure in his or her city. On a smaller scale, consumers may want to buy sustainable food, but doing so may require paying premiums or

driving farther. As such, the focus needs to be on structural policies to facilitate such obstacles. Although it varies from one SCB to another, structural reforms can be costly and time-consuming. Thus, a collaborative approach among different sustainability actors may be needed. Activism also presents a viable consumer-based strategy to reinforce actions. Marketers need to create and encourage consumer-to-consumer communications through social media platforms. For example, a marketing campaign aimed at reducing consumer food waste at the household level can activate consumers' "other" roles and induce them not only to reduce waste but to advocate for waste reduction within their networks.

The aim of the third outcome, *continuance,* is to ensure that sustainable choices continue overtime. One of the important implications of this multi-stage perspective is that the desired results and expectations determine post-adoption continuation. That is, if the consumer holds unreasonable (or false) expectations in the first place, then it might be difficult to meet those expectations, which would threaten the intended outcome of continuance. From a marketing lens, greater marketing efforts in the motivation stage may lead to negative outcomes such as discontinuance. As such, marketers need to make strategic decisions because exaggeration will only heighten consumer expectations, which will render them harder and more costly to meet. Failure to meet these increased expectations could ultimately push consumers to shift to traditional or less sustainable options. This argument posits two new insights. First, it is vital to understand where consumers are at in their sustainable journey to determine the appropriate action. Second, marketing efforts should be balanced across sustainable consumer journey. In contrast to previous stages, the post-adoption stage speaks to consumers who are making re-purchase decisions. In this stage, marketers need to focus their attention on another set of strategies: (1) understanding consumers' evaluation criteria: How do consumers evaluate their sustainable experience compared to both their initial expectations and to un- or less sustainable choices?; (2) confirmation and disconfirmation of beliefs: Do consumers have unreasonable expectations? Do our products and services meet their expectations or not?; (3) satisfaction and confidence levels: How satisfied were consumers? How confident are they about continuing to use a firm's products and services?; (4) continuance intentions: How many consumers repeat/revisit a firm? How many new consumers discontinue?; and 5) habit formation: How can sustainable choices be transformed from an exception to the norm?

These insights highlight the importance of understanding the overall sustainable consumer experience. Appropriate interventions can vary based on the behavioral stage, knowing which factors influence each stage can help design more effective ways to change behaviors. Thus, the one size fits all approach assumed by existing models and theories is

questionable given that different strategies are required for different motivations and antecedents of continuance vs. motivation. These insights can also help inform policy makers and sustainable associations that want to go beyond "intentions" and focus on other measures and performance indicators that are critical to sustainable consumption (e.g., satisfaction levels, number of supporters, experiencers, lifestylers, and quitters).

As a whole, the proposed model is applicable to a wide range of sustainable consumer behaviors in various business contexts. To motivate, facilitate, and maintain sustainable behaviors, firms need to consider the different stages of the sustainable consumer journey and the different marketing roles/functions associated with each stage. Another point of practical relevance is whether the MAC model can be applied to non-sustainable behaviors, such as other positive or health-related behaviors. Given the departure point of this model, which is based primarily on the domain of SCBs, the proposed set of relationships are assumed to hold within the boundaries and idiosyncratic nature of sustainable behaviors. White et al. (2019), for instance, argued that sustainable behaviors entail unique elements and challenges that set them apart from other positive behaviors, such as the degree of tangibility and long-term horizon of outcomes, and the collective-individual trade-off. Consequently, although facets of the MAC model can be applied to other contexts, it is best to leave this question open for future researches that examine the applicability of the MAC model in both sustainable and unsustainable contexts and how the latter can benefit and help support this model.

3.5.3. Future research

Future research, both empirical and theoretical, is needed to validate and build on the concept of relevance and the MAC model across different SCBs and in diverse populations. Developing and testing scales and measurement items for this purpose represent an urgent line of research. From the lens of the relevance concept, future studies can revisit the traditional question: How to motivate consumers to adopt sustainable behaviors? Researchers should also examine how individuals can be segmented following the proposed perspective. For example, profiling consumers who have engaged in a certain sustainable behavior but no longer have intentions to continue is crucial.

Since the newly proposed model captures different stages of the sustainable consumer journey, testing this model can be challenging in some ways. The first challenge is that not all of the proposed links across stages can be analyzed using cross-sectional data and instead require longitudinal data. The latter allows the compilation of more methodologically reliable evidence on whether beliefs are updated through stages and whether different outcome

variables are explained by different factors. Although this challenge is not unique to this study's model and other scholars have referred to similar issues (e.g., Bamberg, 2013; Klöckner & Blöbaum, 2010), collecting data across time is a resourceful research activity that may thrust researchers to take a shorter way and focus on selective parts of a theory or model. In the TPB model, for example, most studies focus on behavioral intention and its direct predictors while neglecting the underlying combinations of beliefs, actual behavior, and how behavior affects beliefs and subsequent actions. Still, cross-sectional data could be used to grasp more stages; Bamberg (2013) tested a stage-based model by assigning respondents of a cross-sectional study into groups that represent the different stages of the model, but it produces some flaws. Thus, experimental studies appear to be more effective in manipulating and testing stage models. For example, to examine the role of activism, experimental designs could help establish causality by testing how different levels of activism shape the motivation-adoption link. Researchers can also develop interventions that target the set of factors affecting each stage and examine if the manipulations can succeed in shaping each stage-specific outcome variable leading to the next stage.

The second methodological challenge is that focusing on mono-methods (e.g., surveys) or designs (e.g., correlation) can limit the richness of insights and may lose the story behind them. Therefore, applying mixed methods is encouraged in future research. For example, a researcher could start by interviewing consumers or engaging in a content analysis of data from consumer blogs related to the SCB of interest. This way, the researcher can develop a richer understanding of the consumer's position within the sustainable journey and the underlying mechanisms of each stage. Then, surveys could be employed to quantify the variables.

Finally, facing the complexity of stage-based models is inevitable. These models tend to focus on outlining various phases in the decision-making process, which makes them more complex. The MAC model (Fig. 1) is not an exception; however, it does have some advantages. First, the model identifies a distinct set of factors, which can affect each stage independently. Thus, researchers, depending on their specific context, may decide to focus on a single stage (e.g., motivation or continuance). However, as indicated above, intervention studies provide a promising design to test the full model and allow temporal comparisons. For example, it would be valuable to understand how beliefs of relevance and control evolve along the sustainable consumer journey. Second, the introduction of the concept of relevance integrates previous models into a new higher-order construct, which reduces complexity. Accordingly, instead of joining many theoretical models to study motivations toward SCBs, the new model proposes only three types of relevance as the main predictors of motivation.

Conclusions

The current thesis contributed to a deeper understanding of sustainability decisions from a consumer perspective. Consumer decisions are guided by many, sometimes conflicting, factors that shape decision-making processes. This thesis applied literature review and survey-based methods and analyzed data sets to understand these underlying factors with applications to sustainable food choices and food waste behaviors generating insights and suggesting new mechanisms to inform theory and practice. The overarching question was: *How to promote SCBs?* The first and second papers addressed this question by identifying the factors that influence consumer intentions to choose sustainable food and intentions to reduce food waste, respectively. These two papers were built based on merging mainstream theories of consumer behavior in the domain of sustainability. The third paper extended the range of questions in this area of research by shifting the focus from behavioral intentions to other relevant and timely questions: How to translate motivations into actions? How to ensure that consumers' sustainable journey continues over time?

Overall, the current thesis contributed to knowledge and practice in three main areas: sustainable food choices, consumer food waste, and the broader literature on SCBs. First, concerning *sustainable food choices*, consumer activism, attitudes, personal norms, and perceived behavioral control were all important determinants of sustainable food choices in restaurants. To the knowledge of this thesis, the results provided the first empirical evidence on the ramifications of experiencing a motivational imbalance across the different antecedents of sustainable food choices. Accordingly, although marketers can build various motivational strategies based on these antecedents, each strategy should carefully consider the negative effects of motivational imbalance. Future research can advance knowledge in this domain by examining: How does motivational imbalance affect consumer choices in different contexts? Are all scenarios of motivational imbalance equally important? Is one more negative than others? If so, which one? And how to overcome its ramifications? Second, for *consumer food waste*, this thesis is one of the first attempts to shed light on the phenomenological rise of TV cooking shows and their potential impact on consumer unsustainable food waste behaviors. The results question the growth of TV cooking shows, which may increase global food waste. Although communication strategies should always

consider the specific context of interest (e.g., country, culture), the implications discussed in this thesis are considered appropriate for countries that share similar consumption habits of TV cooking shows. Importantly, the results of this pre-COVID-19 study can also be linked to changes in consumer behavior during and after this pandemic. Recent evidence, for example, indicates that people have started cooking more with expectations that such changes will continue after the pandemic (Hunter, 2020; Kirk & Rifkin, 2020; Zwanka & Buff, 2020). Given this, academics can advance knowledge in this domain by addressing the links between the increasing consumption of TV cooking shows, home cooking, and food waste levels across countries. Third, *at a broader level*, the current thesis provided bases for a new theory of sustainable consumer behavior. It is presumed that *relevance* more than anything else would motivate consumers to adopt sustainable behaviors. Furthermore, this thesis underlined the importance of understanding the overall sustainable consumer journey: motivation, adoption, and continuance. Accordingly, the term sustainable reflected not only that a given behavior is considering environmental aspects but also that behaviors must continue or be maintained to mitigate environmental problems.

Conclusively, the current thesis provided added value to consumer behavior and marketing management by delimiting and integrating mainstream theoretical models and introducing an alternative perspective to guide consumer motivations and maintenance of sustainable behaviors over time. The conclusions of this thesis are pertinent to a wide range of SCBs in various contexts. However, this thesis faced some limitations. The research was based primarily on theories that have been applied to SCBs. Although the conclusions may apply to other contexts, the generalization requires further testing. The empirical analysis was also based on cross-sectional data and correlational tests, which do not fully capture the dynamics of decision making and causality. Although the third paper attempted to overcome such limits, the new model was conceptually developed but not empirically tested. Therefore, future studies are needed to validate this model across SCBs.

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Appendix

Applying the MAC model—Methodological considerations

This appendix provides general guidelines and examples of measures, response formats, and research designs for applying/testing the MAC model. It is organized in the same order as the model's three stages of *motivation, adoption, and continuance*. Testing the full model requires collecting data across different stages in time. Yet researcher(s) can decide to examine one stage following the context/behavior of interest.

Stage 1: Motivation	
Key question	How to motivate consumers toward SCBs?
Variables	Self-relevance, social relevance, environmental relevance, and motivation.
Methods	Mixed
Data collection tools	Qualitative, e.g., interview, focus group. Quantitative, e.g., survey
Unit of analysis/rater	Individual/consumer/user
The behavior being studied AND its attributes	Behavior of interest[1] Attributes, e.g., g*eneral* (i.e., buying organic) versus *specific* (i.e., buying organic tomato for my household next week).
Procedures	• *Qualitative work:* Having identified the behavior of interest, the researcher(s) is recommended to start with a priori qualitative work to unveil fresh information from a sample of the targeted population. This initial step aims to identify the current active goals relevant to the behavior of interest, understand the specific context under investigation, and inform the measurement items. • *Survey:* Based on this prior stage, the researcher(s) builds and distributes the research instrument to collect primary data and test the propositions.
Qualitative: Questions/measures/ response formats	Examples of questions: • What are your personal goals or most desired results when (e.g., patronizing sustainable restaurants)? Considering your personal goals, what do you believe are the advantages of the sustainable option in attaining each of those goals? • What are your social goals or desired community results when (e.g., patronizing sustainable restaurants)? Taking in mind your social goals (if any), are there any advantages to the sustainable option in attaining those goals? • What are your environmental goals or desired environmental results when (e.g., patronizing sustainable restaurants)? Taking in mind your environmental goals (if any), are there any advantages to the sustainable option in attaining those goals? This initial stage can also include questions on control beliefs (Ajzen, 1991) and activism to identify contextual factors that can make it easy or difficult to perform the behavior of interest and other supportive activities that individuals pursue.

[1] Examples of SCBs can be classified based on life functions; nutrition (e.g., food waste reduction, sustainable diets, etc.,), mobility (e.g., use of environmentally friendly transport, fuels, and vehicles, car sharing, etc.,), housing (e.g. sustainable building, energy, and water conservation, etc.,), clothing (e.g. preference for ethical clothing, organic fabrics), education (e.g., teaching sustainable living, promoting sustainability, healthy lifestyles), and leisure (e.g., sustainable tourism, leisure practices with low resource intensity).

Example: Food waste Reduction	Following the qualitative stage, the researcher(s) can end up with several prevalent goals related to food waste reduction, as follows: • Self-interest goals (e.g., to save money, to avoid food shortages, to feel pride, or avoid feelings of guilt). • Social goals (e.g., to adhere to social expectations, maintain a good image, set an example to other family members). • Environmental goals (e.g., to save the environment, save natural resources, reduce pollution). These goals represent the basis to form the measurement items for the subsequent quantitative stage, as specified in the following rows.
Self-Relevance = Sum of current self-interest goals × SCB as a mean to achieve each goal, as depicted in the following equation: $\propto \sum SG1 \times SB1$	<u>Self-interest goals (SG)</u> SG1: How much do you want to save money in your household? SG2: How much do you want to avoid feelings of guilt related to wasting food in your household? SG3: How much do you want to maintain a good image from saving food in your household? <u>Self-relevance beliefs (SB)</u> SB1: I think reducing food waste allows me to save money in my household. SB2: I think reducing food waste allows me to avoid feelings of guilt. SB3: I think reducing food waste improves my self-image.
Social Relevance = Sum of current social interest goals × SCB as a mean to achieve each goal, as depicted in the following equation: $\propto \sum CG1 \times CB1$	<u>Social interest goals (CG)</u> CG1: How much do you want to avoid food shortages in the community? CG2: How much do you want to set the social expectations of wasting no food in your community? CG3: How much do you want to contribute to the wellbeing of local people? <u>Social-relevance Beliefs (CB)</u> CB1: I think reducing food waste allows me to avoid food shortages. CB2: I think reducing food waste allows me to set an example for others. CB3: I think reducing food waste allows me to make a positive impact on my community.
Environmental Relevance = Sum of current environmental interest goals × SCB as a mean to achieve each goal, as depicted in the following equation: $\propto \sum EG1 \times EB1$	<u>Environmental interest goals (EG)</u> EG1: How much do you want to save natural/environmental resources? EG2: How much do you want to prevent waste-related negative impacts (CO_2 emissions)? EG3: How much do you consider the well-being of future generations/other species? <u>Environmental relevance Beliefs (EB)</u> EB1: I think reducing food waste allows me to protect the environment EB2: I think reducing food waste contributes to the well-being of the environment. EB3: I think reducing food waste is good for current and future generations.
<u>Stage 2: Adoption</u>	
Key question	How to translate motivations into action?
Variables	Motivation, perceived behavioral control (PBC), activism, and adoption
Methods	Mono/mixed methods: Quantitative; experimental; intervention.
Data collection tools	e.g., survey
Unit of analysis	Individual/consumer/user

Variables/measures/ response formats	Example: Choosing sustainable restaurants when eating out.
Motivation	I am motivated to choose a sustainable restaurant when eating out. I will try to choose a sustainable restaurant when eating out. Overall, my motivation to choose sustainable restaurants is high.
Adoption	• Intervention: Yes/NO (i.e., choosing or not choosing the sustainable option). • Survey: Self-report, multi-item scale: Out of your experiences of dining out over the last month, how many times have you visited a sustainable restaurant? (Never-Every time). Please estimate how many times have you chosen organic menu items when dining out over the last month? (Never-Every time). Out of your experiences of dining out over the last month, please estimate the percentage of sustainable choices you have made (0-1).
PBC	Choosing a sustainable restaurant when eating out is completely up to me. I have enough money to choose a sustainable restaurant when eating out. I have enough time to choose a sustainable restaurant when eating out.
Activism	I actively try to engage in public environmental activities. I actively participate in activities that protect the environment. I actively try to do things that have a positive impact on others. I actively try to set a good example for others. I actively try to pass along environmental knowledge that I gained through my experience. I actively try to persuade others to reduce food waste.
<u>Stage 3: Continuance</u>	
Key question	How to ensure that SCBs continue over time?
Variables	Perceived performance, confirmation, satisfaction, confidence, continuance intentions, continuance behavior, and habit formation.
Methods	Quantitative
Data collection tools	e.g., surveys
Unit of analysis	Individual/consumer/user
Procedures	• Identify targeted consumers/subjects who adopted/experienced the sustainable option. • **Time 1:** Subjects will be asked to assess their perceived performance, confirmation, satisfaction, confidence, and continuance intentions. • **Time 2:** Subjects will be followed for further use of the sustainable option to measure habit formation and continuance behavior.
Questions/measures/ response formats	Example: Choosing sustainable restaurants
Perceived performance (e.g., Kim et al., 2009b)	Overall quality of the food Service provided by staff Value for the price Dining room environment Location Overall sustainability performance
Confirmation (e.g., Bhattacherjee, 2001b; Kim et al., 2009a)	My experience with choosing sustainable restaurants was better than what I had expected. The product and service provided by this restaurant were better than what I had expected. Overall, most of my expectations from choosing sustainable restaurants were confirmed.

	The expectations that I have about this food concept were correct.
Satisfaction (e.g., Lu & Chi, 2018; Ryu et al., 2010)	I was pleased to dine in at the restaurant providing sustainable items. The overall feeling I got from dining at this sustainable restaurant was satisfactory. Dining at the sustainable restaurant put me in a good mood. I enjoyed myself at the restaurant offering sustainable food items. I was happy with the dining experience at the restaurant where I had sustainable dish/dishes. I was content with the dining experience at the restaurant where I had sustainable food.
Confidence (e.g., Luszczynska & Schwarzer, 2003)	I am confident I can continue choosing sustainable restaurants when eating out. I am confident I can continue affording sustainable food when eating out. I doubt my ability to find good sustainable restaurants when eating out (reverse code). I can maintain choosing sustainable food when I am eating out. Overall, I feel confident about maintaining sustainable food choices when eating out.
Continuance intentions (e.g., Bhattacherjee & Lin, 2015; Lu & Chi, 2018; Ryu et al., 2010)	I intend to continue selecting sustainable restaurants rather than discontinue their selection. My intentions are to continue selecting sustainable restaurants rather than unsustainable ones. I plan to continue selecting sustainable food when I am eating out at a restaurant. I would more frequently visit that restaurant featuring sustainable options.
Habit formation (A reduced form of the self-report habit index) (e.g., Honkanen et al., 2005; Verplanken & Orbell, 2003).	*Choosing sustainable restaurants when eating out is something…* I do frequently. I do without having to consciously remember. I feel weird if I don't do it. I don't have to think about doing it.
Continuance behavior (e.g., Bhattacherjee & Lin, 2015; Limayem et al., 2007; Lu & Chi, 2018).	Continuance behavior as (a) percentage of use over time, e.g., Please indicate the percentage of choosing sustainable restaurants when eating out over the last month. Response options can range from 1 (Under 10%) to 10 (90–100%), (b) spillover effect (transfer to other contexts), e.g., Please indicate the percentage of choosing organic food items for your household over the last month, (c) tendency to advocate (recommend, and spread positive word-of-mouth), e.g., I recommended this sustainable restaurant to others (e.g., family, friends), I communicated my experience with others to support this sustainable restaurant, (d) tendency to discontinue, e.g., I stopped visiting this sustainable restaurant. I do not want to visit this sustainable restaurant again.

Estratto per riassunto della tesi di dottorato

Studente: Sayed Elhoushy Matricola: 956397

Dottorato: Management

Ciclo: 33

Titolo della tesi : *Sustainable Consumer Behaviors: Revisiting and Integrating Mainstream Theories*

Abstract:

Promoting sustainable consumer behaviors (SCBs) is currently at the center of the sustainable development agenda. This thesis, which includes three papers on SCBs, provides added value to sustainability management and marketing literature by criticizing mainstream theories and introducing an alternative model to guide consumer policy and behavior change aimed at motivating, facilitating, and maintaining sustainable behaviors over time. In the first paper, we examine the concept of motivational imbalance and provide the first evidence on its ramifications on sustainable choices. The second paper explores and theorizes the effects of exposure to television cooking shows on consumer food waste from the lens of cultivation theory. The third paper provides a basis for a new theory of sustainable motivation. In this paper, we introduce a testable and generalizable multi-stage model that applies to a wide range of sustainable behaviors in various business contexts. Just as importantly, each paper concludes by discussing the main implications for research and practice, as well as defining avenues for future research.

La promozione di comportamenti di consumo sostenibili (CCS) è attualmente al centro dell'agenda di sviluppo sostenibile. Il presente lavoro di tesi, che include tre articoli sui CCS, fornisce un valore aggiunto alla letteratura sul marketing e management della sostenibilità, criticando le teorie tradizionali e introducendo un modello alternativo per guidare policies sui consumatori e cambiamenti comportamentali al fine di motivare, facilitare e mantenere comportamenti sostenibili nel tempo. Nel primo paper esaminiamo il concetto di *motivational imbalance* e forniamo evidenze sulle ramificazioni attinenti scelte sostenibili. Il secondo paper esplora e teorizza gli effetti dell'esposizione a spettacoli televisivi di cucina sullo spreco alimentare dei consumatori, dalla prospettiva della *cultivation theory*. Il terzo paper fornisce una base per una nuova teoria

motivazionale in ambito sostenibilità, introducendo un modello multistadio. In questo lavoro, si introduce un verificabile e generalizzabile applicabile ad un'ampia gamma di comportamenti sostenibili in diversi contesti. Ciascun paper si conclude inoltre con una discussione circa le principali implicazioni per la ricerca e la pratica, definendo al contempo percorsi di ricerca futuri.

Firma dello studente