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UNDERSTANDING YOUNG ADULTS' ORGANIC FOOD PURCHASE BEHAVIOR:

An application of the Theory of Planned Behavior

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ABSTRACT

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For decades, humans have gone out of their way to tailor the planet to serve their contemporary needs. As the pitiless exploitation of the world's finite resources has only increased, an apex has now been reached where the pace at which our natural ecosystem is able to keep up has been far exceeded. Exacerbating the already unfavorable situation are the detrimental individual consumption patterns that humans have gotten accustomed to. Highly unsustainable individual consumption behavior aggravates many complex environmental issues, such as climate change, biodiversity loss, eutrophication and acidification of soil.

The prevalent consumption patterns in today's societies must be intercepted, and young adults have been touted as the consumer cohort that is capable of doing that. Transboundary sustainable changes are needed that address all consumption domains. However, pro-environmental behaviors should not be assessed in aggregate. Studies have shown that intentions and perceived efficacy vis-à-vis a particular pro-environmental behavior are not uniform across all pro-environmental behaviors, and the antecedents that constitute a particular behavior should be examined. Given the rapidly increasing salience of organic agriculture in the European Union, this study strived to understand the antecedents that constitute organic food purchase behavior among young adults to further increase its prevalence.

To develop an understanding of young adults' organic food purchase behavior in the Finnish organic food market, this study employed the Theory of Planned Behavior as its conceptual framework and adhered to its tenets. The model was extended with two exogenous variables to allow for a closer examination of actual behavior and whether the stated intentions were congruent with subsequent behavior. Accompanying the research questions were seven hypotheses that were tested with the proposed model. The measurement items for the construct were obtained from previous studies that had strongly validated their viability.

Data was collected from 212 individuals with a self-administered online questionnaire. Rating scale questions were used to measure the respondents' attitudes, opinions and behavior. The data was quantified and analyzed with a set of statistical analyses. To test the hypotheses, structural equation modeling was conducted. Preceding the estimation of the structural model, the measurement model was assessed to ensure the observed data fit the hypothesized structure. Due to the limitations of AMOS, the moderation hypotheses of the model were run as their separate moderated multiple linear regressions on SPSS.

The study finds that young adults in Finland harbor highly positive attitudes toward the purchase of organic food and its pro-environmental facets. Furthermore, individual actions were considered to be of high importance in combating complex environmental problems. The findings contrast recent studies that have voiced concern over the lack of intention-behavior congruence, especially among younger consumers' pro-environmental behaviors. Respondents who had strong intentions to purchase organic food followed through with corresponding purchase behavior. Concomitantly, the application of the TPB in young adults' organic food purchase context was successful by proving its capability to predict behavior.

Keywords: organic food, young adults, green gap, pro-environmental behavior, purchase behavior, theory of planned behavior,

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CONTENTS

1. INTRODUCTION **6**
1.1 Background 6
1.2 Purpose of the research 8
1.3 Research gaps addressed 11
2. PRO-ENVIRONMENTAL BEHAVIOR **13**
2.1 The role of individuals in driving a sustainable change 13
2.2 Organic food consumption and sustainable change 15
2.3 Young adults' pro-environmental behavior 18
2.4 Understanding the green gap phenomenon 18
3. CONCEPTUAL FRAMEWORK **24**
3.1 Theory of Planned Behavior 24
3.2 Attitude 27
3.3 Subjective norms 28
3.4 Perceived Behavioral Control 29
3.5 Intention 30
3.6 Behavior 31
3.7 Perceived Consumer Effectiveness 31
3.8 Perceived Price 32
4. METHODOLOGY **35**
4.1 Theoretical model 36
4.2 Questionnaire development 38
4.3 Data collection 43
5. RESULTS **48**
5.1 Data characteristics 48
5.2 Confirmatory factor analysis 51
5.3 Structural equation modeling 58
5.4 Multiple linear regression 60
6. CONCLUSIONS AND DISCUSSION **66**
6.1 Summary of findings 66
6.2 Practical implications 69
6.3 Theoretical implications 71
6.4 Limitations of the study 72
REFERENCES **76**

LIST OF FIGURES

Figure 1. Theory of Planned Behavior (Ajzen, 1985) 25
Figure 2. Hypothesized model and hypotheses 26
Figure 3. Hypothesized latent variable model 38
Figure 4. Questionnaire landing page 45
Figure 5. Informed consent 46
Figure 6. Cook's distance 49
Figure 7. Q-Q Plot for subjective norms 50
Figure 8. Measurement model 53
Figure 9. Structural model and standardized path coefficients 58
Figure 10. Homoscedasticity with Loess fit line. 62
Figure 11. AMOS moderation model 64

LIST OF TABLES

Table 1. Measurement items 40
Table 2. Overview of the respondents' demographics 49
Table 3. CFA model fit indices and chi-square 54
Table 4. Reliability and convergent validity 55
Table 5. Discriminant validity 55
Table 6. Path relationships for the proposed hypotheses 69
Table 7. Linearity ANOVA table 62
Table 8. Overview of the results of the moderation analyses 63

1. INTRODUCTION

1.1 Background

The consumption behaviors that individuals have adopted and gotten accustomed to have had a highly detrimental effect on the environment (Ölander & Thøgersen, 1995), and the trajectory remains on a dangerous path (Rees, 2020). The impacts of individual consumption behavior on the planet are multidimensional and have led to the exacerbation of various environmental phenomena (Swim et al., 2011; Osbaldiston & Schott, 2012). Some of the negative impacts include, for example, loss of biodiversity, acidification of soil and water, exacerbation of climate change, eutrophication and the vast complications of excess waste creation (Ölander & Thøgersen, 1995). Consequently, consumers have been urgently encouraged to modify their consumption behavior toward a more sustainable direction (Gifford & Nilsson, 2014).

Historically, humans, as a highly protean species, have gone to lengths to extract resources from and exploit the planet to suit its prevailing needs and desires (Gifford & Nilsson, 2014). Novel paradigms and advances have been continuously and unscrupulously funded by liquidating the planet's biophysical systems (Rees, 2020). Other species have been pushed aside as more efficient production methods have led to increasingly more detrimental impacts on biodiversity and the destruction of ecosystems (Gifford & Nilsson, 2014; Miller & Rossman, 1995). Currently, humans are faced with the reality that the planet's capability to regenerate and recycle has far exceeded (Rees, 2020) while some of the most integral industries to securing prospering human life continue to have a dangerous impact on the environment (Campbell et al., 2017; Springmann et al., 2018).

One of these industries is agriculture, as the food system remains a primary driver of a variety of environmental issues (See e.g., Springmann et al., 2018), and its concomitant production means are some of the principal culprits to why the Earth system far exceeding planetary boundaries (Campbell et al., 2017). Alongside the considerable environmental phenomena, such as climate change, many smaller-scale complications arise from conventional agriculture, synergistically contributing to the Earth's declining prosperity (Kleijn & Sutherland, 2003; Miller & Rossman, 1995). An alternative to conventional agriculture that addresses the myriads of environmental complications that the common modern agricultural production causes and strives to mitigate them is organic agriculture, which has enjoyed substantial growth in the twenty-first century (Reganold & Wachter, 2016).

Further aiding the growth of the organic food industry in Europe, in particular, is the currently progressing Farm to Fork strategy (hereafter F2F) that aims to profoundly overhaul the European food system as a whole (Wesseler, 2022). The F2F strategy strives to make the food system more transparent, healthier and sustainable, with organic agriculture being at the heart of the transition (European Commission, 2023a). Fulfilling the complex puzzle of stakeholders that are imperative in ensuring that the transition can be successfully carried out are individual consumers. Without the participation from consumers, vast macro-level schemas are in danger of being rendered as partly inefficient or merely as theoretical tools (Osbaldiston & Schott, 2012; Saari et al., 2021). Significant behavioral changes are required from regular consumers to make the F2F strategy to achieve its ambitious objectives (König & Araújo-Soares, 2023). Recent examples have shown that new paradigms, for example, the progress of the circular paradigm have become entangled as consumers have not been willing to embrace the change and alter their consumption behavior (Kirchher et al., 2017).

For consumers to modify their consumption behavior, significant inhibiting barriers might make it challenging to accomplish the sought behavioral changes (Kaiser et al., 1999; Steg & Vlek, 2009; Verplanken et al., 1994). Fundamentally, each consumer in Western societies uses energy and materials in their everyday lives, making everyone capable of presenting a behavioral change toward a more sustainable direction (Osbaldiston & Schott, 2012). However, as Osbaldiston and Schott (2012) further posit, no behavioral changes will occur if consumers are not motivated to put in the effort. Intentions and motivations are often not enough either, as a variety of factors inhibit their implementation into concrete actions (See e.g., Gleim & Lawson, 2014; Schultz, 1999). As König and Araújo-Soares (2023) argue, the F2F strategy necessitates Europeans to alter their diets to be more sustainable to assist the strategy in achieving its vast goals. Achieving the behavioral changes will require interventions. However, such endeavors are often in vain if the antecedents of the behavior to be influenced are not understood (Steg & Vlek, 2009). Hence, to aid the shift toward a more sustainable society, the purchase behavior in the organic food context, which will play an essential role in the future of European food systems, Finland included, must be understood to be effectively intercepted.

Organic food has historically been purchased for its perceived health and nutritional benefits (Ekelund, 1989; Willkins & Hillers, 1994). A group of consumers who have preferred organic foods for their environmental benefits has always existed, but their role has remained rather inconsiderable (Schlegelmilch et al., 1996). In the twenty-first century, as environmental issues have become more salient to consumers (Helm et al., 2019) coupled with the growth in organic

agriculture and the increased abundance of organic foods (Reganold & Wachter, 2016), pro-environmental motives have become more prevalent in driving organic food purchase behavior as consumers have cognized the environmental benefits of organic agriculture (Hughner et al., 2007; Welsch & Kühling, 2009). Focusing on the growing salience of pro-environmental benefits in influencing purchase behavior, alongside aiming to develop and understanding of young adults' organic food purchase behavior, this study will put have an additional emphasis on the pro-environmental determinants of the behavior. To do this, the Theory of Planned Behavior (Ajzen, 1985) is employed as a conceptual framework and extended with two exogenous variables, of which perceived consumer effectiveness directly addresses consumers' perceived self-efficacy in relation to macro-level environmental phenomena.

1.2 Purpose of the research

This study aims to understand regular young adults' purchase behavior in the complex organic food context. Given the historically well-documented health and nutrition-related motivations for organic food purchase behavior (See e.g., Ekelund, 1989; Langerbein & Wirthgen, 1987; Willkins & Hillers, 1994; Winter & Davies, 2006), this study will put additional emphasis on the pro-environmental determinants of organic food purchase behavior that have become more salient, but have not enjoyed much attention from academics. Additionally, since price will always have a more or less central role in any purchase behavior and on the concomitant decision-making processes (See e.g., Völckner & Hoffmann, 2007; Zeithaml, 1988), the Theory of Planned Behavior is extended with perceived price to develop a more comprehensive understanding of the antecedents of young adults' purchase behavior. This application of the TPB allows the study to examine whether assigned subjective prices suppress otherwise favorable attitudes and perhaps intentions toward organics. Furthermore, assessing the role of perceived price is of timely importance because of the surges in inflation in the Eurozone that have led to price hikes in all food categories – increasing frugality among young adults (Pohjoinen, 2022).

Understanding the roles that perceived price, perceived consumer effectiveness and the TPB's default variables have in constituting young adults' organic food purchase behavior is integral in equipping marketers with valuable up-to-date information and a consumer profile young adult in the 2020s. Relevant insights about the intrapersonal and contextual determinants of young adults' organic food purchase behavior will help marketers to devise strategies to resuscitate the contemporarily hibernating Finnish organic food market.

At a more macro-level, as this study focuses on regular young adults and does not prefer pro-environmentalists, the findings can be of help for policymakers when governmental and EU-level policies are implemented to increase aggregate sustainable food consumption behaviors. Moreover, the insights can be of especial relevance in the in aiding the advancement of the F2F strategy. Given the consistently proven, utmost importance of individual consumer behavior in aiding macro-level policies to accomplish their objectives (See e.g., Kirchher et al., 2017; Osbaldiston & Schott, 2012; Saari et al., 2021; Ölander & Thøgersen, 1995), everyday consumers are an integral stakeholder group in the complex puzzle of actors that constitute the stakeholder network of the F2F strategy (König & Araújo-Soares, 2023). To assist the transition, consumers are required to adopt more sustainable diets, which requires persuasion and systematic interventions. Hence, the insights that this study yields could be used to understand how young adults, a substantial and environmentally conscious cohort could be persuaded to participate in the transition by using the fundamentally important understanding of the antecedents of their organic food purchase behavior as leverage (Steg & Vlek, 2009).

Research questions

In principle, this study aims to understand young adults' organic food purchase behavior by examining the attitudes, possible barriers, normative pressure, price perceptions and feelings of self-efficacy that young adults have concerning the purchase of organic food. Since the study focuses on regular young adults with no known propensity for pro-environmental behavior or organic food purchase habits, an essential objective is to understand how the behavioral decision is formed – adhering to the behavioral causality of the TPB. The additional focus on concrete behavior by using past behavior as a proxy to address future behaviors allows the study to concretely examine whether the TPB's causal sequence for predicting behaviors genuinely leads to concrete actions and is not limited to mere statement of intentions. The extended TPB model further allows the study to understand how the intention-behavior relationship might be moderated by PCE and PP that have been validated to be strong predictors of behavior in extant social sciences research on pro-environmental consumer behaviors.

To develop an understanding of young adults' organic food purchase behavior in Finland, adhering to the causality of the TPB, the following initial research question is employed:

RQ1: What are the antecedents of young adults' organic food purchase intention?

The fundamental idea for the employment of the Theory of Planned Behavior in this study is to have a psychological model of rational actions that allows for a more comprehensive understanding of the behavior. Using the TPB as a conceptual framework posits a default causality, where behavior is always preceded by intention and intention is formed by attitude, subjective norms and perceived behavioral control. With a focus on concrete organic food purchase behavior, this study aims to understand do positive intentions to purchase organic food translate to congruent purchase behavior or remain merely as stated intentions and positive feelings toward organic food. Given the substantial, historical evidence provided by recent meta-analyses on pro-environmental intentions and the prevalence of the green gap, it is fundamental to look at concrete behavior and not solely trust stated intentions in a particular pro-environmental consumption domain. *RQ1* helps the study to examine whether positive intentions to purchase organic food exist in the first place and what constitutes them, meaning that further focus on the stated intentions can subsequently be initiated. Hence, the second research question is:

> ***RQ2***: Do young adults' intentions to purchase organic food translate to congruent organic food purchase behavior?

Given the prevalence of the green gap in pro-environmental behaviors, especially among young consumers, this study aims to also understand how the formation of the green gap can be mitigated. By extending the default TPB-model with two additional exogenous variables that have been proven to significantly influence pro-environmental behaviors in extant academic literature, this study takes a closer examination at the dynamics of the intention-behavior relationship. Hence, to understand how the two alien variables, perceived consumer effectiveness and perceived price individually influence the intention-behavior relationship, the following sub-research questions complementing RQ2 are employed:

> ***SubRQ1***: Does perceived consumer effectiveness positively contribute to the congruence between intention to purchase organic food and actual organic food purchase behavior?
>
> ***SubRQ2***: Does perceived low price of organic food positively contribute to the congruence between intention to purchase organic food and actual organic food purchase behavior?

1.3 Research gaps addressed

Behavioral focus

An ongoing, current issue with pro-environmental studies using the Theory of Planned Behavior as a conceptual framework is the lack of studies that focus on actual behavior (See e.g., ElHaffar et al., 2020; Scalco et al., 2017; Yuriev et al., 2020). Despite the imperative nature of concrete actions, the relatively little focus on actual behavior in pro-environmental research employing the TPB is not a novel phenomenon. For some time, the TPB's predictive power in the pro-environmental context has been questioned (Schwenk & Möser, 2009). Concerns over the efficacy of the TPB in the pro-environmental context have been corroborated by recent meta-analyses on aggregate pro-environmental behaviors (See e.g., ElHaffar et al., 2020) and meta-analyses on organic food purchase and consumption behaviors (See e.g., Scalco et al., 2017). The concerns are not about the model, or its behavioral tenets, but about the model's ability to predict behaviors due to the increasingly low likelihood of stated pro-environmental intentions leading to corresponding pro-environmental behaviors (Gleim & Lawson, 2014).

The absence of studies that focus on actual behavior is somewhat perplexing, as Ajzen (1991) himself posited that the implementation of intentions into concrete actions is always contingent, to an extent, on the perceived personal and environmental barriers that a person faces. Furthermore, as research has consistently found (See e.g., Kaiser et al., 1999; Steg & Vlek, 2009), pro-environmental behaviors in particular are highly susceptible to various external influences that inhibit favorable intentions from translating to congruent behaviors. The prevalent discrepancy is often the result of low volitional control over a particular behavior (Kaiser et al., 1999). Alongside the personal and contextual barriers, other factors, such as normative pressure (See e.g., Schultz, 1999; White et al., 2009) and beliefs in individual efficacy (See e.g., Berger & Corbin, 1992; Roberts, 1996) have been proven to significantly influence motivations (conceptualized as intentions in the TPB) to perform or avoid a given pro-environmental behavior. Therefore, in an attempt to obtain comprehensive information of young adults' purchase behavior in the complex organic food domain – actual behavior must be examined, and mere intentions cannot be determined as definitive cues for theoretically congruent behavior.

To examine behavior, this study uses past behavior as a proxy to predict future behavior. This approach has been commonly adopted in previous studies that have employed the TPB to examine actual behavior when longitudinal data has not been obtained. Where the TPB is concer-

ned, its developer, Icek Ajzen (1985) has officially approved the method of using past behavior as a nexus to address future behaviors (Ajzen, 2011). Studies that have focused on actual purchase behavior in the organic food context have also opted for a similar approach (See e.g., Dean et al., 2012; Yadav & Pathak, 2017). Thus, the coupling of future-oriented intentions and self-reported past behavior is purposeful and will enable this study to achieve its objectives.

Young adults' green gap

The current young generations have been said to have the capability and motivations to intercept the current unsustainable consumption trajectories fostered by older generations, and to present a behavioral change in lifestyles (Ziesemer et al., 2021). Despite the younger cohorts being persistently touted as the next environmentally conscious cohort that has the capability to present the long-awaited sustainable behavioral changes – young adults have conversely developed an enigmatic nature when it comes to pro-environmental behaviors (Wiernik et al., 2013). Despite favorable attitudes and intentions, corresponding pro-environmental behavior seldom follows, creating a green gap. In essence, the green gap occurs when intentions to perform a particular pro-environmental behavior are not harmonious with the actions that follow in that specific consumption domain (Gleim & Lawson, 2014). The novel application of the TPB in this study enables it to tap into the dynamics of the green gap-phenomenon and to understand how perceived consumer effectiveness and perceived price moderates the intention-behavior relationship.

Young adults

Despite myriads of articles, and the non-stop flux of online posts about the current young generation being the next sustainable consumer cohort, academic research on young adults' pro-environmental behaviors is particularly scarce – in aggregate as well. Hence, this study also addressess a research gap concerning the scarcity of extant research on young adults' pro-environmental behaviors and tries to contribute to it with relevant information from the organic food purchase context.

2. PRO-ENVIRONMENTAL BEHAVIOR

Some of the negative impacts arising from modern-day consumption include the exacerbation of climate change, acidification of land and water, eutrophication, diffusion of hazardous chemicals into the environment, loss of biodiversity, water shortages and excess waste creation (Steg & Vlek, 2009; Ölander & Thøgersen, 1995). The antithesis of environmentally degrading consumer behavior is pro-environmental behavior. Pro-environmental behavior encapsulates all of the actions carried out to mitigate negative environmental impacts and the actions that are directly beneficial to the environment (Steg & Vlek, 2009).

2.1 The role of individuals in driving a sustainable change

Humans, as a highly protean species, have gone to lengths to shape the planet to suit their comfort and gradually evolving perceived needs. What this has meant is that humans have for long unscrupulously exploited the planet's finite, natural resources, pushed aside other species and allowed the byproducts of consumption to negatively influence the state of the planet (Gifford & Nilsson, 2014). At the moment, the economic growth in Western societies is essentially financed by liquidating the crucial biophysical systems that humans ultimately depend on (Rees, 2020).

Humans have adopted and become dependent on consumption behaviors and habits that are highly detrimental to the environment (Saari et al., 2021). Thus, the exacerbation of complex macro-level environmental issues has been accelerated due to them being deeply rooted in human behaviors (Steg & Vlek, 2009). Moreover, the already highly degrading consumption behavior patterns, intertwined with environmental problems have continued to evolve in an unfavorable direction, reaching an apex where they far exceed the pace at which our natural ecosystem is able to process, regenerate and recycle (Rees, 2020). Thus, consumers have been urgently called to alter their consumption behavior toward a more environmentally friendly direction to alleviate the intricate, interconnected issues arising from the current unsustainable consumption behaviors (Gifford & Nilsson, 2014).

The role of individuals in mitigating complex environmental issues might sound overexaggerated. This could be due to the existence of powerful macro-level approaches such as governmental policies, international agreements, and technological innovations (Osbaldiston & Schott, 2012). However, when it comes to the progress of the circular paradigm, for example,

the vital role of individual consumers has become clear. As of today, there have been numerous attempts to diffuse circular business models into modern societies. The endeavors have faced a shared, to an extent insurmountable challenge, which has been the resistance by consumers to alter their consumption patterns to provide the necessary support for the change (Kirchher et al., 2017). The struggles that the circular economy paradigm has faced highlight the difficulties that macro-level policies face when consumers are not willing to embrace a proposed change that directly affect their consumption domains (Saari et al., 2021; Ölander & Thøgersen, 1995).

Fundamentally, everyone consumes materials and energy in their everyday lives, subsequently contributing to different macro-level environmental phenomena with either an ameliorating or an exacerbating effect. For the most part, everyone is also able to alter their consumption behavior in one direction or another (Osbaldiston & Schott, 2012; Ölander & Thøgersen, 1995). However, considerable barriers that obstruct the adoption of pro-environmental behaviors exist. Generally, the barriers are attributed to the motivational and practical complexity of performing pro-environmental behaviors (Moisander, 2007). Contributing to the complexity is the perceived volitional control over the behavior itself (Kaiser et al., 1999). Such barriers or obstacles that an individual has no control over could be, for example, an obsolete public transport system, which makes the use of a private motorized vehicle significantly more convenient and contrasts an individual's pro-environmental preferences. Another typical example could be the unavailability of ecological alternatives in nearby supermarkets that the individual would have otherwise bought but obtaining them would now necessitate a significant extra effort (Padel & Foster, 2005).

Despite the tendency for humans to make rationalized choices (Ajzen, 1991), humans have developed ingrained habits that are steered by automated cognitive processes, which lack the antecedent of elaborate reasoning (Steg & Vlek, 2009). These ingrained behavioral patterns can make the adoption of a new behavioral alternative significantly more challenging. Nonetheless, despite the psychological and habitual factors' individual or synergistic resistance in relation to the adoption of novel behaviors, everyone is fundamentally capable of presenting a pro-environmental behavioral change if they are genuinely motivated to do so and genuinely willing to invest the effort required to the change process (Osbaldiston & Schott, 2012).

Motivation is of the essence when municipal or governmental policymakers employ a new schema devised to engage individuals in more environmentally friendly consumption beha-

vior. Despite the cogence, ambitious intentions and objective quality of the policy on the theoretical side of things, it is inevitably rendered partially inefficient or merely as a theoretical tool if individuals are not motivated to participate in its concrete implementation (Saari et al., 2021). Individuals could perceive the suggested changes to their accustomed behavior as burdensome and not worth the extra effort to carry out (Vining & Ebreo, 2000) or the novel behavior of being devoid of any attainable benefits valuable to the individual (Taylor & Todd, 1995).

Forcing consumers to adopt a novel pro-environmental behavior could introduce long-lasting behavioral changes (Fujii & Gärling, 2003), but there are very few scenarios where forcing a change is justifiable and non-forced behavioral interventions are more common (Stern, 2000). Although novel pro-environmental behaviors can be voluntarily adopted without a psychological genesis due to, for example, perceived convenience (Vining & Ebreo, 2000), if the presented novel behavior is perceived as a nexus to contribute to a greater problem that's important to the individual, the likelihood of the behavioral adoption is higher (Berger & Corbin, 1992).

Due to the vastness of extant intervention methods and their varying effectiveness (for an overview, see e.g., Stern, 2000), it is important to comprehensively understand the behavior that is to be influenced to devise an effective intervention strategy. A holistic understanding should be developed, where the antecedents that positively drive and also constrain the engagement in a particular pro-environmental behavior are recognized. (Steg & Vlek, 2009). Steg and Vlek (2009) further argue that devising an intervention strategy that targets the antecedents constituting a given pro-environmental behavior substantially amplifies its efficiency.

The current unsustainable economic paradigms will continue to reign if consumers are not willing to participate in the required changes (Saari et al., 2021). As Kirchher et al. (2017) argued, the circular economy paradigm has not been something that consumers have necessarily eagerly awaited, and its progress has stagnated. Hence, consumers' behavior and intent to alter their consumption behavior remain crucial as the EU's latest Circular Economy Action Plan (CEAP) progresses. Without widespread consumer participation, even the CEAP will be rendered as merely a theoretical tool with no concrete effects (Saari et al., 2021).

2.2 Organic food consumption and sustainable change

Alongside CEAP, the European Union's F2F strategy needs individual consumers' support. The current global food systems are in need of urgent and profound changes (Springmann et

al., 2018). In the EU, transitions are already being implemented (Wesseler, 2022). The F2F strategy strives to overhaul the European food systems as a whole to make them transparent, healthier and more environmentally friendly (European Commission, 2023a). Organic agriculture is an essential part of the strategy as it entails ambitious plans to significantly increase land under organic farming in the EU (Wesseler, 2022). Consequently, consumers must adopt more sustainable diets to ensure the increases in land for organic farming are not in vain.

Currently, ordinary agricultural practices in modern agrifood systems have devastating environmental impacts (Springmann et al., 2018). Unsustainable agricultural production is one of the primary drivers of climate change, with its impacts also exacerbating other environmental phenomena, such as biodiversity loss (Campbell et al., 2017). Organic agriculture takes these multidimensional negative impacts into account and improves them with sustainable production methods (Honkanen et al., 2006). For example, in organic agriculture production in the European Union, close attention is paid to the specific behavioral needs of different animal species, maintaining biodiversity, preserving regional ecological balances, preserving soil fertility and utilizing sustainable energy production process (European Commission, 2023b).

As posited by Gifford and Nilsson (2014), humans have pitilessly exploited the planet's finite resources to dynamically shape the planet to suit their changing needs. An example of this trajectory in the agricultural domain is the rapid decline in biodiversity. Some few decades ago, before the advent of agrochemicals, such as pesticides and inorganic fertilizers, it was mandatory to understand the biology and biological needs of agriculturally connected organisms and how they interact to comprise agricultural ecosystems (Miller & Rossman, 1995). Building on the arguments on modern agriculture's devastating impact on biodiversity, complications arising from agrochemicals' excess use were prognosticated by Kleijn and Sutherland (2003). The authors postulated that due to the intensification of conventional agriculture and the concomitant unsustainable production means, including the growing prevalence of agrochemicals – biodiversity will suffer a substantial decline in the near future. The arguments of Kleijn and Sutherland (2003) have very much realized, and the trajectory remains environmentally unfavorable today also (Campbell et al., 2017; Springmann et al., 2018).

Despite the possible differences in governmental standards between countries, a set of strict rules are mostly to be met in organic agricultural production. For example, the use of herbicides, pesticides and inorganic fertilizers is prohibited (Honkanen et al., 2006). Complementing the cultivation practices and production means enhancing soil fertility instead of wrea-

king havoc on it, organic agriculture entails a variety of additional positives, especially for livestock (Winter & Davies, 2006). Some of these benefits include the ban on synthetic hormones, antibiotics, genetically modified produce on farm animals and additional restrictions on bioengineered produce (Honkanen et al., 2006). Within the EU, organic food production must comply with strict standards. To enforce responsible agricultural production means, for example, the European Union's organic farming rules cover every stage of the production process, and the product-specific criteria must be met to label the end-product organic (European Commission, 2023c).

The growing salience of organic food's environmental benefits

Organic food differs from conventional food as the production process is mostly devoid of the possible risks posed by genetically modified feed (Dona, 2009) and toxic agricultural chemicals (Kudsk et al., 2003). Due to the absence of adverse elements in the production process, the perception of increased health benefits has historically been rather uniform across Western societies – in the Nordics (See e.g., Ekelund, 1989), Europe (See e.g., Langerbein & Wirthgen, 1987) and in the United States (See e.g., Wilkins & Hillers, 1994). The absence of pesticides, in particular, has been a major motivator for organic food purchase behavior as consumers have had fears of their conventional foods containing toxic pesticide residues (Winter & Davies, 2006). However, why the health benefits are stated as *perceived* here has to do with whether the health benefits are objectively true or not. Studies (See e.g., Williams et al., 2002; Winter & Davis, 2006) have emphasized that research has continuously struggled to find support for the claims that by preferring an organic diet individuals can achieve substantial health benefits. Addressing the arguments voiced by past research (See e.g., Williams et al., 2002) Hughner et al. (2007, p. 106) crowned the juxtaposition of perceived health benefits and the ambiguous evidence to support the perception as a *health paradox* in the organic food context.

Given the historical salience of perceived health benefits and perceived taste in driving organic food purchase behavior, environmental motives contributing to the purchase decisions for organic food have remained on the sidelines (Wilkins & Hillers, 1994). To some consumers environmental reasons have, however, always been the driving force behind their organic food purchase behavior (Schlegelmilch et al., 1996). Since the turn of the century, the previously smallish segment has been growing (Hughner, 2007; Padel & Foster, 2005), and organic food is bought increasingly more for its environmental benefits that consumers have progressively become more cognizant of (Scalco et al., 2017).

2.3 Young adults' pro-environmental behavior

Young adults are a central stakeholder group amidst the exacerbating state of our planet by bearing the consequences of past generations' consumption behaviors (Ziesemer et al., 2021). Moreover, the current young consumer cohorts are likely to be the first ones to bear the significant consequences of climate change (Helm et al., 2019). Young consumers of today have an imperative role in intercepting and modifying the reckless consumption habits that past generations have gotten accustomed to and present a profound change (Ziesemer et al., 2021).

Historically, pro-environmental studies have found younger individuals to be more sensitive to environmental issues than older consumers (See e.g., Samdahl & Robertson, 1989; Zimmer et al., 1994). As young consumers' exposure to different environmental issues has increased and the issues themselves have exacerbated, younger consumers have become even more sensitive to the environmental issues of today (Roberts & Straughan, 1999). Given the correlation between the salience of environmental issues and young adults' sensitivity to them, it is not surprising that the current young consumer cohorts have begun to express significant environmental concern and positive attitudes toward more pro-environmental consumption behaviors (Gifford & Nilsson, 2014; Helm et al., 2019; Wiernik et al., 2013; Ziesemer et al., 2021).

Despite their often-vehement pro-environmental stances and environmental concerns, young adults as a consumer cohort have developed a somewhat elusive reputation where actual pro-environmental behaviors are concerned. Recent studies have shown that despite the exhibited environmental concern and concomitant pro-environmental attitudes, younger consumers seldom follow through with congruent behavior (Ziesemer et al., 2022). A meta-analysis by Wiernik et al. (2013), compiling pro-environmental behavioral studies from the past 15 years, concluded that despite the environmental concerns and attitudes expressed by younger consumers, it has primarily been the older individuals who have exhibited green consumption behavior congruent with their attitudes and intentions.

2.4 Understanding the green gap phenomenon

This discrepancy between pro-environmental intentions, including attitudes and subsequent behavior is generally referred to as the "green gap" (Gleim & Lawson, 2014). The root cause for the prevalence of the "green gap"-phenomenon is the ever-growing volume of stated pro-environmental attitudes and intentions that are not complemented with congruent behavior (Gleim & Lawson, 2014; Yuriev et al., 2020). However, the reasons that contribute to the for-

mation of the attitude-intention-behavior incongruence are vast and often interconnected. Academic works (See e.g., Gleim & Lawson, 2014; Kaiser et al., 1999; Schultz, 1999; Steg & Vlek, 2009) among other intrapersonal factors, have emphasized habitual behavior, perceived costs, lack of perceived self-efficacy, normative pressure and the behavioral constraints posed by contextual factors as being some of the most common factors that inhibit a pro-environmental behavior from being performed despite favorable attitudes and intentions.

Contextual factors

Consumers with green attitudes are occasionally met with situations where sacrifices are required to follow through with their preferences (Stern, 2000). Unfortunately, the sacrifices are often perceived to be costly for reasons outside the consumer's control, leading to the avoidance of a particular pro-environmental behavior (Kaiser et al., 1999). For example, a consumer advocating for a greener future might be forced to rely on a vehicle powered by an internal combustion engine because no public transportation is provided where the person lives, and the person cannot afford to purchase a BEV due to financial restrictions. Another typical example could be the unavailability of organic alternatives in grocery stores in close proximity. Due to the absence of organics in nearby grocery stores, acquiring them would necessitate a lengthy trip to a more equipped supermarket for no other reason. Understandably, here, engaging in organic food purchase behavior might be rationally perceived as simply being too inconvenient. In these situations, the consumers face significant complexity regarding their pro-environmental motivations that are obstructed by contextual factors (Moisander, 2007).

The abovementioned examples, which are fairly regular everyday occurrences, exemplify the interplay between intrapersonal factors, such as attitudes and motivations and the role of contextual factors, that can facilitate or pose constraints on pro-environmental behaviors (Steg & Vlek, 2009; Kaiser et al., 1999). The examples also underline the relatively frequent situations where a particular pro-environmental behavior is beyond a consumer's control - causing constraints on the implementation of intentions to perform the behavior. Therefore, instead of blaming the consumers of, for example, not caring about the environment, the avoidance of a particular pro-environmental behavior might simply be the result of marginal volitional control over the behavior (Kaiser et al., 1999). Rarely are these entangling influences objectively insurmountable, but only a selected few will strive to follow their green intentions in all situations and follow through with the behaviors that necessitate sacrifices (Moisander, 2007).

Habitual behavior

Despite pro-environmental attitudes, ingrained habits might create significant barriers to pro-environmental behaviors from being performed and adopted (Samuelson & Zeckhauser, 1988). To exemplify the dynamic of the habit barriers, Verplanken et al. (1994) suggest the existence of trade-offs between attitudes and habits – when a habit is weak, the relationship between intention and behavior is stronger and vice versa. Ingrained habits are difficult to replace as engaging in habitual behavior does not generally include elaborate reasoning and the process is firmly guided by automated cognitive processes (Steg & Vlek, 2009). The automatized nature of the routine behavior makes it highly effortless to carry out. Therefore, in instances where behavioral changes are presented by introducing a novel behavior - despite the individual not fully understanding the particulars of the behavior in question – a change in habits can be immediately perceived as a hassle (Gleim & Lawson, 2014). The immediate negative perceptions concerning the replacement of convenient routines are likely to drastically reduce the propensity of the individual to even try the proposed behavior (Verplanken et al., 1994).

The strong guidance by automated cognitive processes and minimal elaborate reasoning can also continue to foster the continuity of habits which's effects have become averse to what the individual currently advocates for (Steg & Vlek, 2009). The lack of reflexivity in habitual behavior could result in unawareness of the environmental impacts of the ingrained behavior. Hence, the green gap can, due to deeply rooted habits, "unintentionally" continue to occur in an individual's specific consumption domain (Verplanken et al., 1994).

Perceived cost

Pro-environmental behaviors often include economic sacrifices (Steg & Vlek 2009). The economic sacrifices do not solely concern financial resources, however, but also time and overall effort that together constitute the cost of engaging in a particular behavior (Gleim & Lawson, 2014). Where buying behavior is concerned, significant price differences between a traditional and a green alternative could exist (Padel & Foster, 2005). As posited by Liechtenstein et al. (1988), consumers are exposed to the same objective price cues but assign subjective meanings to them. Hence, the role of price is ultimately contingent upon the consumers' perceptions and assigned cognitive meanings. For example, in the case of organic food, the perceived high price of an organic alternative has been found to deter the consumer from getting further acquainted with a particular organic offering despite pro-environmental attitudes and intentions (Hughner et al., 2007). In simpler words, some consumers might deem organic alternatives to be simply

too expensive and opt for conventional foods, even though they would like to purchase organics because of the attainable environmental benefits. In such decision-making scenario, the price sacrifice of the purchase behavior is seen as too substantial (Steg & Vlek, 2009).

Perceived costs can also entail a sense of risk or a set of risks (Kilbourne, 1998). Consumers might deem the engagement in a novel green buying behavior as convenient but risky and subsequently end up avoiding it (Samuelson & Zeckhauser, 1988). Kilbourne (1998) exemplified the dynamic of perceived risks associated with the adoption of a novel green purchase behavior by referring to the home insulation acquiring process. A consumer might get fixated on the immediate financial risk associated with the purchase of a more energy-efficient yet more expensive insulation alternative. In the heat of the moment, the long-term financial gains and, moreover, the environmental impacts of the required excessive heating are not salient in the individuals' decision-making process. Despite the likely synergistic – financial and economic long-term benefits – the perceived immediate risk leads to aversiveness – and the previously used, proven risk-free insulation option is selected (Kilbourne, 1998).

Consumers can also fear the negative outcomes of a new green purchase decision that necessitates a high economic risk (Gleim & Lawson, 2014). The effort, time and financial resources that a particular green purchase behavior requires and the fears of the invested effort not reaping the desired benefits can encourage consumers to play it safe (Samuelson & Zeckhauser, 1988). Using an application of the insulation example by Kilbourne (1998), the promised energy-efficient and more expensive home insulations could prove only marginally better than the standard alternatives and yield minimal long-term benefits. Therefore, the economic sacrifices were virtually in vain, leading to an adverse outcome that is likely to constrain the individuals from engaging in a similar pro-environmental behavior in the future (Gleim & Lawson, 2014).

Perceived lack of effectiveness

Given the integral multidimensional influence that attitudes have on pro-environmental behaviors (Stern et al., 1999), sometimes even the strongest of green attitudes and environmental concerns fail to translate to congruent behavior (Gleim & Lawson, 2014; Kaiser et al., 1999). Attitudes represent the consumers' summary of the evaluation of feelings and beliefs about a problem but lack the evaluation of self in the context of the problem (Berger & Corbin, 1992). Consumers who, on top of their pro-environmental attitudes, believe that consumption behavior congruent with their attitudes can positively affect a given environmental problem are more inclined to engage in a particular pro-environmental behavior (Lee & Holden, 1999).

Fundamentally, environmental problems are complicated macro-level phenomena (Ölander & Thøgersen, 1995), and a consumer might feel a sense of helplessness when it comes to mitigating actions to combat contemporary, complex environmental issues (Berger & Corbin, 1992). A consumer might be highly concerned about an environmental issue and have favorable attitudes and intentions toward mitigating it, but ultimately the lack of confidence in the effects of their own actions results in the environmentally favorable consumption behavior being systematically averted (Gleim & Lawson, 2014).

When beliefs in personal capability in mitigating a particular environmental issue are considered, it is advisable to not view pro-environmental behavior in aggregate, but to understand the distinctiveness of different behaviors (Ellen et al., 1991). Hence, if a consumer believes that recycling helps decrease CO2 emissions, it should not be taken for granted that the belief is uniform across all behaviors that have an objectively positive impact on emission reduction. The consumer might not be aware of the parallel environmental impacts of other behaviors or lack interest or belief in their effectiveness (Ellen et al., 1991; Moisander, 2007) or might be constrained by contextual barriers (Kaiser et al., 1999).

In conjunction with the lack of perceived individual effectiveness vis-à-vis the desired outcomes of a given pro-environmental consumption behavior, consumers might still have substantial faith in others' abilities to achieve the desired outcomes. Such consumers with low PCE and high FIO (faith-in-others) might be convinced that only governmental actors, businesses and other public institutions have the capability and power to mitigate a given environmental issue or issues important to the consumers (Berger & Corbin, 1992). Hence, consumers with pro-environmental attitudes and low PCE are more likely to seek ways to increase the capable actors' abilities to engage in pro-environmental actions (Lee & Holden, 1999).

Normative pressure

Schwartz (1977) famously argued that normative influences have a strong impact on altruistic behaviors. Although the author's arguments concern general prosocial behaviors, the Norm Activation Model proposed by Schwartz (1977) has been widely used in research focusing on aggregate, as well as on specific pro-environmental behaviors (See e.g., Schultz, 1999). According to the Norm Activation Theory, altruistic behaviors are a function of personal norms that are activated by the awareness of consequences and ascription of responsibility (Schwartz, 1977). Personal norms, in turn, represent the feelings of obligation to act in a specific manner in a particular situation, deriving from internalized self-expectations (Schultz, 1999).

Within the pro-environmental context, an example of personal norms and the feelings of obligation influencing decision-making could be consumers' motivation to preserve the environment through their consumption behavior (Arvola et al., 2008). The consumers cognize the environmental benefits of the organic food consumption behavior (awareness of consequences) and ascribe responsibility on themselves to try and change the status quo within the associated consumption domain (Honkanen et al., 2006). Ultimately, the pro-environmental consumption behavior is inherently altruistic as it lacks an immediate reward but is likely to bear fruit in the long run by helping to protect and secure a prospering planet earth for future generations to roam over (Lee & Holden, 1999).

Moreover, when motivations to engage in pro-environmental behaviors are further examined from the normative viewpoint, social norms, in particular, can play a pivotal role in contributing to the behavioral outcome (Lee & Holden, 1999; Schultz, 1999). Whereas personal norms can be conceptualized as self-expectations of specific actions in a given situation (Schultz, 1999), social norms represent the sets of beliefs about the behavior of others and are generally split into two domains, *injunctive* and *descriptive* (White et al., 2009). Injunctive social norms, in particular, are of interest as they represent the individuals' beliefs of what others expect and approve of them to do, whereas descriptive social norms are the set of beliefs that an individual has about what others are doing (Schultz, 1999).

Research has suggested that social norms can exert a significant inhibiting influence on the relationship between intentions and behavior in the pro-environmental context, subsequently contributing to the formation of the green gap (Gleim & Lawson, 2014). Consumers might opt not to engage in a particular pro-environmental behavior despite favorable attitudes because of beliefs of salient referents not engaging in similar behavior. Additionally, consumers might refrain from a desired behavior because of fears of disapproval by salient referents (White et al., 2009). Normative pressure can override the otherwise significant influence of various intrapersonal factors and inhibit a pro-environmental behavior from being performed (Gleim & Lawson, 2014).

3. CONCEPTUAL FRAMEWORK

Historically, one of the most common approaches to understanding pro-environmental behaviors has been to examine consumers' attitude-behavior relationships (Lee & Holden, 1999). The fabric of this approach is the supposed congruence of individuals' positive attitudes towards preserving the environment and the behavior that follows. However, researchers have long struggled to validate the relationship between consumers' pro-environmental attitudes and behavior (Padel & Foster, 2005). Decades of pro-environmental research have proven that in the pro-environmental context, the discrepancy between expressed attitudes, intentions and behavior is particularly prevalent (Gleim & Lawson, 2014; Wiernik et al., 2013).

3.1 Theory of Planned Behavior

Given the complexity of pro-environmental decision-making and the increasing elusiveness of consumers with pro-environmental attitudes, researchers have tried to develop a better understanding of their behavior and its antecedents with the aid of different psychological theories. One of the historically favored models has been the Theory of Planned Behavior (Ajzen, 1985). For decades, the TPB has continued to cement its validity in the pro-environmental context (Tarkiainen & Sundqvist, 2005). Today, the TPB remains one of the most commonly used psychological theories to understand behaviors (Schwenk & Möser, 2009), especially in the pro-environmental (ElHaffar et al., 2020) and the organic food contexts (Scalco et al., 2017).

In principle, the TPB (See **Fig.** 1) posits that humans act rationally, and intention is the most proximal and powerful predictor of behavior. Intention, in turn, is formed by attitude, subjective norms and perceived behavioral control (White et al., 2009). The three determinants of intention are influenced by so-called indirect predictors in the model: behavioral, normative and control beliefs (Ajzen, 1991). It's fundamental to acknowledge that the cognitive variables preceding intention are not necessarily at synergistic interplay during decision-making, but gradually form the foundation for a decision to perform a given behavior (Armitage & Conner, 2001).

Initially derived from the Theory of Reasoned Action (Fishbein & Ajzen, 1975), the two theories postulate the same tenets for individual behavior, which are that individuals are rational in considering their actions and the implications of their actions. The difference between the TRA

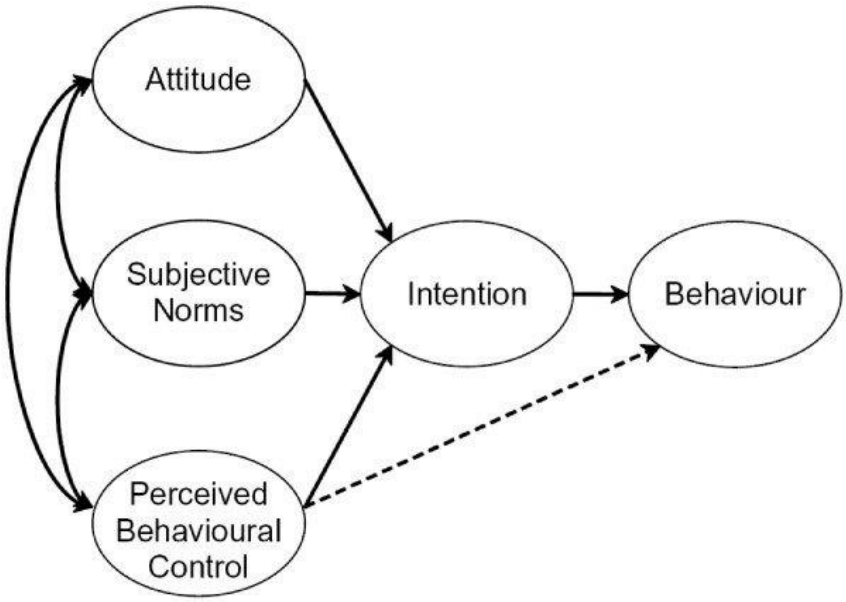

Figure 1. Theory of Planned Behavior (Ajzen, 1991)

and TPB is an additional cognitive variable, perceived behavioral control, which encapsulates the perceptions of volitional control over a particular behavior. Before the emergence of TPB, in instances where behavioral constraints were present, the TRA was proven to be an insufficient predictor of actions due to its initial focus being to examine more straightforward behaviors (Armitage & Conner, 2001). The incorporation of PBC into the theory makes it more applicable and comprehensive, as behaviors are seldom straightforward (Ajzen, 1991; Kaiser et al., 1999).

One of the central postulations of the TPB is that the cognitive variables' predictive power is contingent upon specific behaviors and situations (Ajzen, 1991). For example, when behavior A is examined, the predictive power of subjective norms can be greater than when behavior B is investigated. Furthermore, when behavior A is observed in a different setting, the role of subjective norm might be marginal in explaining the variance (predictive power) in that specific context. To further increase the TPB's explanatory power in different contexts, researchers often extend the model with additional variables. A lot of variation generally exists concerning the applications of the extended TPB's and their concomitant alien variables (For an overview, see Armitage & Conner, 1998). The constellation of variables is ultimately contingent on the research's objectives – determining where in the model's sequence the alien variables are inserted. Despite the flexible and relatively easily extendable nature of the TPB, its behavioral causality should be respected in all applications (Yuriev et al., 2020).

The TPB's most fundamental tenet is that behavior is a direct function of intention (Ajzen, 1991). Therefore, the TPB has been widely used in pro-environmental research to understand intention. However, the focus on intention has become problematic. Despite myriads of research that have increased the TPB's predictive power with additional variables, actual behavior has seldom been the focus (Yuriev et al., 2020). In their recent meta-analysis of the applications of the TPB in the pro-environmental context, ElHaffar et al. (2020) argue that the model is partly to blame for the green gap phenomenon. Since research has abundantly focused on intention, the void between stated intentions and behavior has continued to widen (Scalco et al., 2017; Schwenk & Möser, 2009). The prevalent green intention-behavior discrepancy contrasts the TPB's posited causality (Ajzen, 1991), which underlines the need to view actual behavior as the foci when the TPB is applied in pro-environmental contexts.

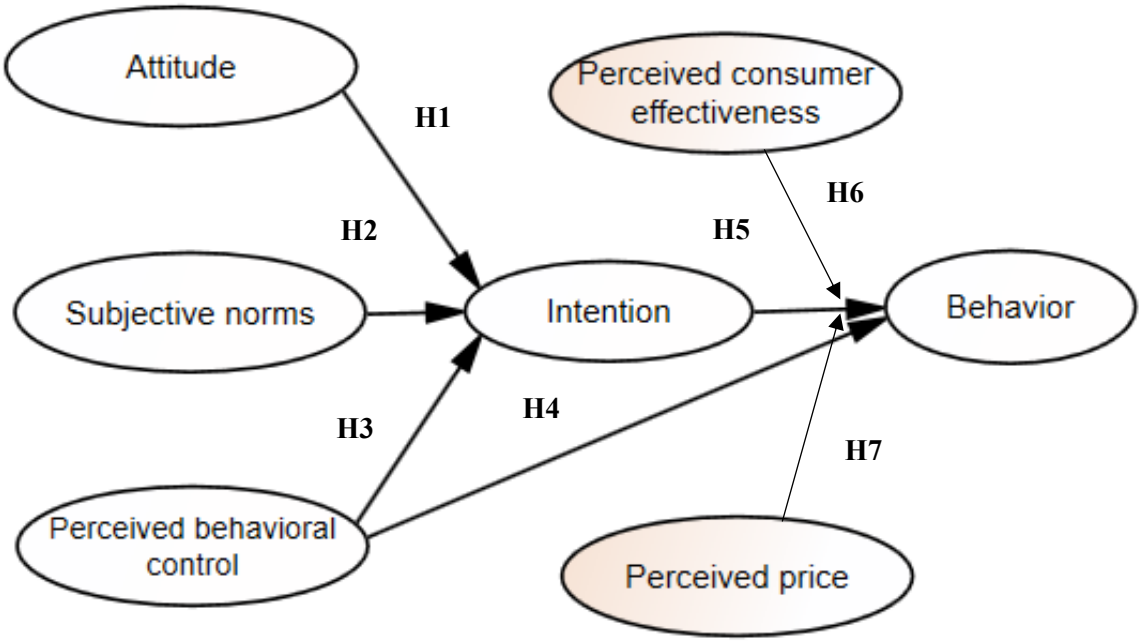

Figure 2. Hypothesized model and hypotheses

More recent meta-analyses focusing on aggregate pro-environmental behaviors (See e.g., ElHaffar et al., 2020; Yuriev et al., 2020) have urgently called for researchers planning to employ the Theory of Planned Behavior in their studies to put more emphasis on actual behavior. This call has also been corroborated by meta-analyses hailing from the organic food do-

main (Scalco et al., 2017). Thus, this study will utilize the TPB to understand the imperative antecedents of behavior, with an additional extension of the model that enables a deeper measurement of young adults' actual purchase behavior (See **Fig.** 2). The two alien variables are perceived consumer effectiveness (PCE) and perceived price (PP) – positioned as moderators of the intention-behavior relationship to allow the study to further examine the dynamics of the green gap.

3.2 Attitude

Ajzen (2011, p. 315) conceptualizes attitude toward a given behavior as: "*a function of readily accessible beliefs regarding the behavior's likely consequences, termed behavioral beliefs"*. Armitage and Conner (1999a) further clarify the conceptualization of attitude in the TPB by positing that attitude is a person's overall evaluation of a behavior. The evaluation entails the outcomes of the particular behavior and the process of performing the behavior itself (Ajzen, 2011). The evaluation is usually categorized as being either negative or positive. Thus, as per the TPB, when a person has a favorable attitude towards a specific behavior, the person tends to hold stronger intentions to perform that behavior. An identical pattern holds when the evaluation is negative, resulting in a stronger intention to not perform a particular behavior (Ajzen, 1991).

In the TPB, anticipated *outcomes* form half of the overall evaluation of a given behavior, and the *experience* of performing the behavior is the other half that completes a person's behavioral beliefs that constitute attitude (Ajzen, 1991). An example of the *experience* domain of attitudes in the organic food context concerns the actual purchase behavior itself. Thus, when a consumer perceives the experience of purchasing organic food products as arduous or as merely inconvenient, the consumer's attitude toward purchasing organic food is likely to be negative due to unfavorable perceptions of the behavior experience (Ajzen, 2011). Explicating positive, *outcome*-related perceptions of a particular pro-environmental purchase behavior could be the perceived health benefits due to the absence of pesticide residues in local organic blackberries (Winter & Davies, 2006) or the perceived environmental benefits achievable by purchasing the organic blackberries (Schlegelmilch et al., 1996).

Of the three variables responsible for forming behavioral intentions in the TPB, attitude has generally been found to have the strongest impact on intention (Armitage & Conner, 2001). Moreover, attitude alone has been found to sometimes influence behavioral intention signifi-

cantly and thwart the influence of the TPB's other variables during behavioral decision-making (Ajzen, 1991). The integral role of attitude in influencing intentions has also been validated in studies concerning the purchase and consumption of organic food (For an overview, see Scalco et al., 2017). Hence, the following hypothesis is proposed:

> **H1:** Attitude has a positive influence on young adults' intentions to purchase organic food

3.3 Subjective norms

Subjective norms, a function of salient normative beliefs, is defined as the perceived social pressure to engage or not engage in a specific behavior – entailing the likelihood of approval or disapproval of a particular behavior by salient referents (Armitage & Conner, 1999a, 1999b). Thus, when a person expects approval from important peers by performing a particular behavior, the intention to perform the behavior should be higher (Ajzen, 1991). Conceptualized as the normative social pressure to engage in a particular behavior (Sparks et al., 1997), subjective norm bears significant similarities to injunctive social norms that equivalently represent the beliefs of disapproval or approval by important peers when an individual is deciding to perform a behavior (Schultz, 1999). Addressing the homogeneity of the constructs, White et al. (2009) argued that injunctive social norms and their effect on rational decision-making are analogous to subjective norms and its effects in the Theory of Planned Behavior.

Armitage and Conner (2001), in their meta-analysis, found subjective norm to often be the weakest predictor of intention, which has resulted in some studies abandoning the variable from the TPB model and incorporating other variables into it. Consequently, this practice has been sometimes adopted in the organic food purchase and consumption context as well (Tarkiainen & Sundqvist, 2005). However, Ajzen (1991) highlights the relative importance of all the cognitive variables in predicting behavioral intention. The salience of attitude, subjective norms and perceived behavioral control are highly behavior-specific and vary in different behavior settings (Armitage & Conner, 2001).

Where organic food purchase behavior is concerned, despite the alternating role of subjective norm in influencing purchase intentions (Scalco et al., 2017), previous studies on organic food consumption in the Nordics have found subjective norms to be a significant predictor of intention (See e.g., Arvola et al., 2008; Magnusson et al., 2001; Tarkiainen & Sundqvist, 2005).

Given the significance of social influence in exerting an effect on behavioral intentions (White et al., 2009), the significant influence that perceived social pressure can exert on motivations to perform a particular behavior (Schultz, 1999), and the track record of subjective norms being a fundamental predictive variable in influencing organic food purchase intention in the Nordics, the following hypothesis is proposed:

> **H2:** Subjective norms has a positive influence on young adults' intention to purchase organic food

3.4 Perceived Behavioral Control

Perceived behavioral control is defined as a person's perception of being capable of performing a specific behavior (Ajzen, 1991). More specifically, PBC in the Theory of Planned Behavior is a multi-dimensional cognitive variable that entails internal and external dimensions that form the perception of how difficult or effortless it is for a consumer to perform a particular behavior (Sparks et al., 1997). As per Sparks et al's (1997) multidimensionality of PBC, where organic food purchase behavior is concerned, the internal factors of PBC that are at interplay can include, for example, the perceived control over performing the behavior and the perceived difficulties associated with the efforts. External factors are likely to be the perceived availability of organic alternatives in supermarkets in close proximity.

Studies that have not used the TPB as a conceptual framework to examine pro-environmental behavior have posited that contextual factors pose significant barriers to pro-environmental behaviors when volitional control over the behavior is low (See e.g., Kaiser et al., 1999; Steg & Vlek, 2009). Analogous to the arguments of Kaiser et al. (1999) and Steg and Vlek (2009), Ajzen (1991) originally posited that the implementation of intentions to concrete actions is, to an extent, always contingent on personal and contextual barriers. Thus, the role of PBC in exerting influence on behavior is twofold (Armitage & Conner, 2001). PBC primarily affects behavior non-directly, meaning that perceived behavioral control over a particular behavior leads to a stronger intention to engage in that behavior (Ajzen, 1991). PBC's direct influence on behavior occurs when volitional control over the behavior decreases due to perceived internal and external constraints (Armitage & Conner, 2001). The direct effect of PBC on behavior is indicated by the dashed line in the TPB (See **Fig**. 1). Hence, the role of PBC becomes more salient when a particular behavior is not fully under volitional control (Ajzen, 1991).

Given the multidimensionality of PBC, its effects on behavioral intention and subsequent behavior are often significant, as research (See e.g., Armitage & Conner, 2001; Sparks et al., 1997) has found. Therefore, the following hypothesis is proposed:

> **H3:** Perceived behavioral control has a positive influence on young adults' intention to purchase organic food

Furthermore, contributing to the salience of PBC in pro-environmental behaviors is the behaviors' high susceptibility to external influences (Kaiser et al., 1999). Hence, consumers often face situations where their volitional control over a particular pro-environmental behavior is not completely within their grasp, resulting in constraints to implement favorable behavioral intentions to congruent pro-environmental behaviors (Gleim & Lawson, 2014).

Also, as argued by Ajzen (1991), the implementation of intentions to corresponding actions, following the behavioral tenets of the TPB, is always dependent on the perceived barriers pertinent to a given behavior. Therefore, perceptions of control or the perceived absence of constraining barriers should bolster the formation of favorable intentions to perform a behavior subject of evaluation. Thus, it's reasonable to assume that when young adults perceive sufficient control over purchasing organics, their favorable intentions, if exhibited, are likely to result in congruent purchase behavior. Hence, the following second hypothesis for the PBC construct is proposed:

> **H4:** Perceived behavioral control has a positive direct influence on young adults' organic food purchase behavior

3.5 Intention

The TPB model posits that intention is formed by attitudes, subjective norms and perceived behavioral control, with intention being the most proximate antecedent of behavior (Ajzen, 1991). Fundamentally, the stronger the intention to perform a particular behavior, the more likely the behavior is performed (Armitage & Conner, 1999a). Where straightforward behaviors are concerned, a strong intention to perform a behavior should, as posited by the TPB, lead to congruent behavior (Sparks et al., 1997). Thus, intention in the TPB encapsulates a person's motivation to engage in a particular behavior (Armitage & Conner, 1999a). In other words, as argued by Ajzen (1991), intention to perform a behavior indicates how willing and how much effort a person would exert to implement the intention into actions.

Where organic food purchase behavior is concerned, Scalco et al. (2017), in their comprehensive meta-analysis, found correspondence between intentions to purchase organic food and congruent purchase behavior. However, shadowing the findings is the scarcity of studies that have actually focused on behavior as most of the works in their meta-analysis focused solely on intention and the formation of intention (Scalco et al., 2017).

Given the imperative role of intention in predicting behavior in the TPB and the evidence that strong intentions to purchase organic food have led to congruent purchase behavior (Tarkiainen & Sundqvist, 2005), it is plausible to assume that intention has a positive influence on organic food purchase behavior. Moreover, as this study examines the moderating effect of PCE and price on the relationship between intention and behavior, the positive relationship between intention and behavior has to be verified. Therefore, the following hypothesis is proposed:

> **H5*:*** Intention to purchase organic food has a positive influence on young adults' actual organic food purchase behavior

3.6 Behavior

The TPB's cognitive variables, in conjunction with an individual's normative and behavioral beliefs, form the cognitive structure that ultimately leads to behavior (Armitage & Conner, 2001). The implementation of intentions into concrete actions is, however, always dependent on the personal and contextual barriers that an individual perceives (Ajzen, 1991). Hence, when volitional control over a particular behavior is moderate or high, the probability of the behavior being performed is also high and vice versa (Armitage & Conner, 1999a).

3.7 Perceived Consumer Effectiveness

A strong individual belief in the outcomes of a specific pro-environmental behavior has been referred to as perceived consumer effectiveness (PCE) in academic research. Ellen et al. (1991, p. 103) conceptualize PCE as; "*A domain-specific belief that the efforts of an individual can make a difference in the solution to a problem*." Studies that have examined the role of PCE in sustainable food contexts have corroborated its predictive power and substantial influence on concrete behaviors (See e.g., Vanhonacker & Verbeke, 2009; Vermeier & Verbeke, 2006).

Cleveland et al. (2012) argue that decades of research have shown that consumers who lack a sense of empowerment are unlikely to translate their green creeds into green deeds. The lack

of empowerment ultimately leads to pro-environmental attitudes and intentions not translating to congruent behaviors. Corroborating the arguments of Cleveland et al. (2012), numerous studies on pro-environmental behaviors have concluded that consumers who strongly believe that their consumption behavior can mitigate greater environmental problems are highly more likely to engage in corresponding behaviors (See e.g., Antonetti & Maklan, 2014; Berger & Corbin, 1992; Lee et al., 2014; Roberts, 1996; Roberts & Straughan, 1999).

The dashed line between perceived behavioral control and behavior (See **Fig**.1) represents the effects of a given obstacle that might cause obstruction to perform a behavior when volitional control over the behavior decreases (Ajzen, 1991). For example, if a consumer wants to purchase organic minced meat, but it is not available in nearby supermarkets, the barrier of availability might prohibit the individual's favorable intentions from translating to congruent purchase behavior (Kaiser, 1999). However, if the consumer has high PCE and the consumer strongly believes that by favoring organic minced meat, significant environmental issues can be mitigated, there is a possibility that the consumer will make the trip to the supermarket not in close proximity to make the purchase. The behavior is, thus, incentivized by the desirable outcome attached and attainable through the organic food purchase behavior (Taylor & Todd, 1995).

Based on extant research that has proven the significance of PCE in predicting and directly influencing pro-environmental behaviors including organic food consumption behavior, it is plausible to postulate that PCE can positively moderate the relationship between intention and behavior when behavior is examined. Therefore, the following hypothesis is proposed:

> **H6:** Perceived consumer effectiveness has a positive moderating effect between young adults' intention to purchase organic food and actual purchase behavior

3.8 Perceived Price

Völckner and Hoffman (2007) conceptualize price as the necessary monetary sacrifice for consumers to satisfy their consumption needs. From a consumer's viewpoint, price is something that is given up or sacrificed to obtain commodities (Zeithaml, 1988). Objective price information (values in a price tag) is an extrinsic cue that is perceived, and ultimately judged differently by consumers (Lichtenstein et al., 1988). Hence, focusing on subjectively perceived price when purchase behavior is examined is highly preferable, as there is no uniform meaning of a given price that applies to all consumers. Past studies (See e.g., Hjelmar, 2011; Hughner et al., 2007;

Krystallis & Chryssohoidis, 2005; Tarkiainen & Sundqvist, 2005; Padel & Foster, 2005) that have focused on the role of price in organic food purchase behavior have come to differing conclusions about its role in influencing purchase behavior.

Lichtenstein et al. (1988) conceptualize perceived price as the outcome of a process by which consumers translate price perceptions into meaningful cognitions. Zeithaml (1988) calls this process price encoding. Lichtenstein et al. (1988) further elucidate the price encoding process by positing that each consumer assigns a meaning to the objective price by translating it into a perceived psychological price. To exemplify the dynamics of subjective price, a pack of orange juice costing $1.99 might be expensive for consumer Y and simultaneously cheap for consumer X (Zeithaml, 1988). Thus, consumers X and Y assign contrasting subjective meanings to the objective price tag of $1.99, forming the boundaries for an "acceptable" price. Lichtenstein et al. (1988) further emphasize the consumer-specific nature of translating perceived price into psychological price, meaning that the acceptability of a price is partly formed by memorizing the prices of comparable alternatives, which often vary greatly between consumers.

Price has an intricate role in the context of the purchase of organic food (Padel & Foster, 2005). On one hand, the higher price of organic alternatives can obstruct consumers' intentions to buy organic food and subsequently contribute to the formation of a "green gap" (Padel & Foster, 2005). On the other hand, a higher price may also assure consumers that an organic alternative is of better quality (Hughner et al., 2007). Consumers familiar with organic options tend to cognize the reasons contributing to the price premiums and often associate them with increased health benefits and quality (Winter & Davies, 2006). In support of consumers' quality perceptions being intertwined with perceived price, Hughner et al. (2007) argue that cheap organic foods can yield feelings of inferior quality, deterring consumers from purchasing them.

Generally, it has been argued that people who have a habit of purchasing organic food are less price-sensitive than consumers who do not frequently purchase organic food (Hughner, 2007; Zanoli & Naspetti, 2002). Frequent buyers do also consider the price of organic food and could be discouraged by it, but less likely than consumers who seldom purchase organic food (Padel & Foster, 2005). Extant research has not been uniform to corroborate this notion, however. Hjelmar (2011) argues that a notable proportion of consumers who frequently purchase organic food are pragmatic and highly price sensitive.

Price as a variable in the TPB

Price has been introduced into and assessed differently in the TPB model in previous studies concerning the consumption and purchase of organic food. For example, Tarkiainen and Sundqvist (2005) extended the TPB model by introducing perceived price as an exogenous variable to examine its influence on intention to purchase organic flours.

Given the proven complex nature of perceived price in the organic food context (Hughner et al., 2007; Padel & Foster, 2005), it is plausible to assume that when incorporated into the TPB to examine actual behavior, a positive moderating ability on the relationship between intention and behavior might emerge (Gleim & Lawson, 2014; Lichtenstein et al., 1988). Therefore, the following – final hypothesis is proposed:

> **H7:** Perceived price has a positive moderating effect on the relationship between young adults' intention to purchase organic food and actual purchase behavior

4. METHODOLOGY

The research was conducted in Finland. Finland presented an appropriate setting to examine a growing organic food sector and its micro-level consumer behavior as earlier studies (See e.g., Arvola et al., 2008; Tarkiainen & Sundqvist, 2005) have found Finnish consumers to harbor positive attitudes toward organic food, which has been supported by the steady growth of the sales of organic food in Finland over the past decade. Between 2012 and 2020, the sales of organic food doubled, surging from 202 m EUR to 409 million (Proluomu, 2022). However, the promising growth of the Finnish organic food industry has stagnated in the 2020s. The stagnation can be mostly attributed to successive exogenous shocks, the COVID-19 pandemic and the Russo-Ukrainian War (Proluomu, 2022, 2023). Especially the recent surges in inflation have had a severe impact on many customers' purchasing power, leading to the growth of the private label industry and more frugal grocery shopping behavior among consumers, which has had a detrimental effect on the sales of organic food (Proluomu, 2023).

Research philosophy

The study adopted the post-positivist paradigm as its research philosophy. The deductive design of the study is closely related to traditional positivism, but since the proposed causal relationships were tested with empirical data that was based on introspective interpretations of objective reality, the tenets of positivism would have been violated (Crowther & Lancaster, 2012). Hence, a philosophical paradigm that accepts quantitative methods and embraces the role of subjectivity and context was selected.

The collected data was analyzed with a set of statistical analyses. The two primary analyses were confirmatory factor analysis (CFA) and structural equation modeling (SEM). With CFA, the observed data's fit on the hypothesized theoretical structure was tested. After CFA, structural equation modeling was conducted to examine the causal relationships among the latent constructs. Both the assessment of the measurement model and estimation of the structural model were based on maximum likelihood estimation (ML). Data for the statistical analyses was collected with a self-administered online Microsoft Forms questionnaire. The collected data was quantitative and quantified on SPSS preceding the statistical analyses. Young adults in this study were categorized as people aged between 18 and 30 years old. International young adults living in Finland were also approached.

4.1 Theoretical model

Preceding the development of the hypothesized model (See **Fig.** 3) was an extensive examination of extant social sciences research on ecological behaviors. Of the hundreds of individual research papers involved, the vast majority addressed different pro-environmental behaviors, employed the TPB or applied an extension of it. Ultimately, the selected latent constructs and item scales had a strong track record of producing valid results in extant literature. The substantial empirical evidence-backed and made the hypothesized model theoretically grounded, justifying the absence of EFA (exploratory factor analysis) from the formation of the model's structure. Hence, the first major step of the statistical analysis process, after normality, reliability, multicollinearity and outliers have been calculated – could be the development and validation of the measurement model (CFA) to examine how well the observed data actually fits the theoretical structure. The second major step is then to test the hypothesized relationships among the latent constructs and see how they influence one another by estimating the structural model. All of the constructs and their respective scales are presented in Table 1. Please note that the moderating analyses *PP*INT*->BEHV for perceived price and *PCE*INT*->BEHV for perceived consumer effectiveness will be run as their separate moderated multiple linear regression analyses and not during the estimation of the TPB structure that tests H1, H2, H3, H4 and H5.

Developing the latent constructs

Traditional covariance-based SEM (CB-SEM) is known for its more demanding requirements to produce parameter estimates compared to, for example, partial least squares path modeling PLS-SEM (Hair et al., 2017). Concerning the strategy for the statistical analyses, perhaps the most important requirement for SEM is the suggested number of indicators per construct. Whereas PLS-SEM can yield valid results with fewer indicators per latent construct, SEM has stricter general requirements (Kenny et al., 1998). PLS-SEM does not suffer from identification problems when the number of indicators per construct is less than three (Hair et al., 2017). However, in traditional covariance-based structural equation modeling, unless specific conditions are met (Bearden & Netemeyer, 1999), constructs should preferably have at least three indicators to avoid model identification problems (Baumgartner & Homburg, 1996). Intertwined with selecting a sufficient number of indicators was the objective of achieving unidimensionality. The indicators must only measure their respective underlying constructs. (To specify, an indicator for a particular latent construct is a measurement item, e.g., *SN1)*

In addition, the likely obstacles with the assessment of the measurement model influenced the number of items chosen per construct. Extant literature suggests that the measurement model's fit might initially not be ideal, and removing items with poor factor loadings ($\lambda = <0,6$ or $\lambda = <0,7$) is common (Ford et al., 1986). Furthermore, the prospect of reliability, more specifically, convergent validity problems could not be ruled out (Cronbach, 1951; Fornell & Larcker, 1981), as they would also necessitate the dismissal of items with poor inter-item reliability and standardized factor loadings, respectively.

The inclusion of four items for the TPB's fundamental independent constructs reduced the probability of having to estimate the structural model with less than three indicators for a particular construct (Bearden & Netemeyer, 1999). Regarding internal consistency, a greater number of inter-related indicators for a homogeneous construct has proven to have a positive effect on scale reliability (α) (Tavakol & Dennick, 2011). In essence, the Cronbach's alpha of a particular scale is partly contingent on the number of indicators per construct, meaning that a construct with eight indicators is likely to yield a greater Cronbach's alpha coefficient than one with two.

However, advancements in internal consistency were not impetuously chased to avoid multicollinearity issues (Montgomery & Voth, 1994). Multicollinearity, meaning that the independent variables of a particular model are severely correlated, is likely to lead to noticeable measurement errors (Kline, 1998). The distorting effects of collinearity do not only pertain to structural modeling, and assumptions of no correlation between independent variables in multiple linear regression have to be met (Cohen, 1983). Also, given the likely prospect that this study's sample size will not be in the thousands, the effects of multicollinearity are further amplified (Mason & Perreault, 1991), meaning that the scales had to be meticulously developed to ensure they only measure their underlying constructs.

Furthermore, despite the benefits that CFA and SEM enjoy when constructs have multiple indicators (Anderson & Gerbing, 1988; Baumgartner & Homburg, 1996), an increase in indicators necessitates an increase in sample size to achieve minimal bias (Wolf et al., 2013). Given the resource-based limitations of this study's data collection process, the number of indicators per construct had to be kept moderate to ensure the *n*-requirement did not become unfeasible. The constructs that only had three indicators had to be carefully chosen and designed – having a proven track record in contributing to valid results in extant research. This was imperative, as, by using extensively validated three-item scales, the likelihood of poor factor loadings that prompt item removal was suppressed.

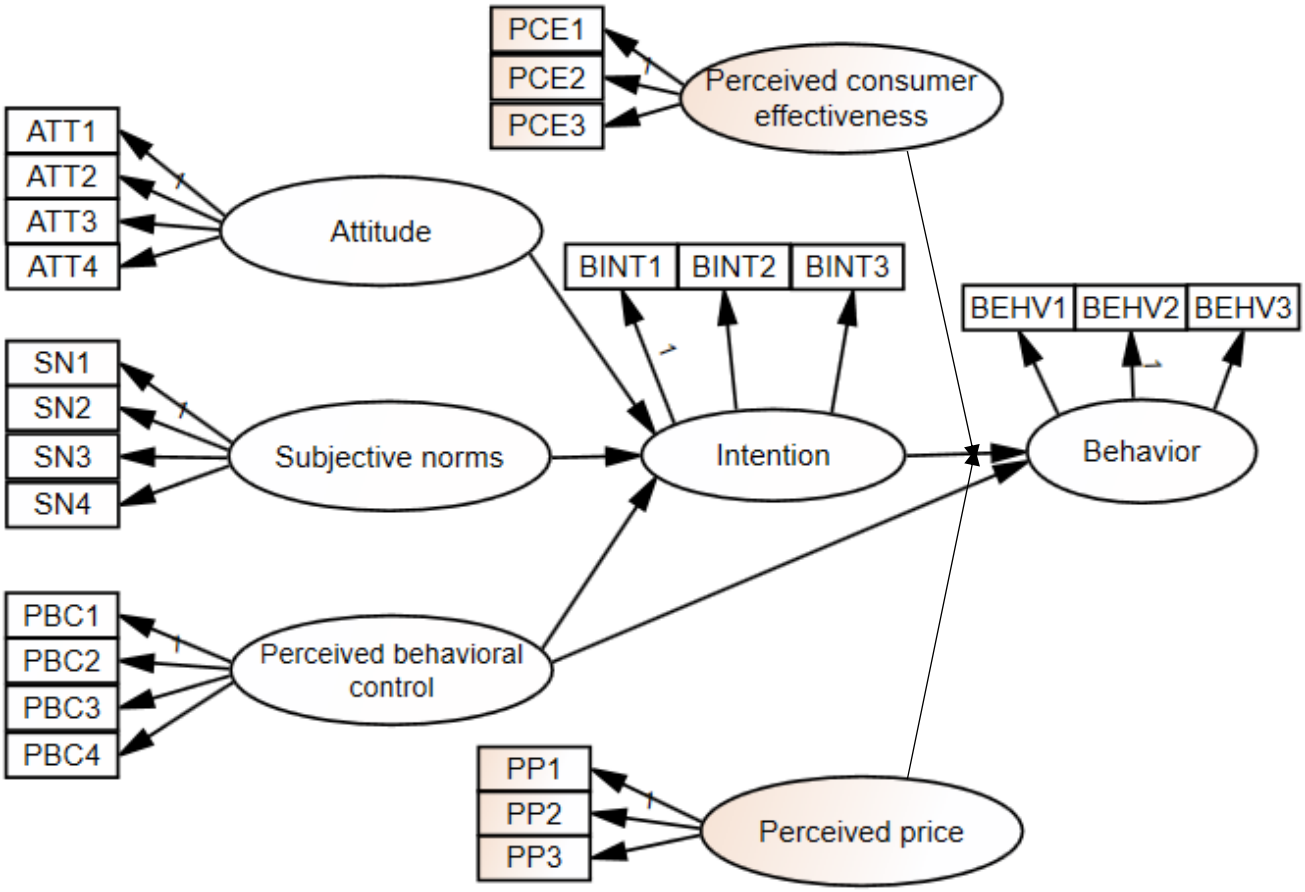

Figure 3. Hypothesized latent variable model

4.2 Questionnaire development

Each of the *ATT*-items focused on general attitudes toward organic food purchase behavior (behavior experience) (Ajzen, 1991). The items were adopted from Sparks and Shepherd (1992) and Randall and Gibson (1991). A strain of studies on organic food buying behavior has also employed preference-based items (See e.g., Arvola et al., 2008; Tarkiainen & Sundqvist, 2005) to measure attitudes toward the purchase of foods. However, since this study focused on general organic food purchase behavior (all foods and foodstuffs) and not on a particular behavior (e.g., organic eggs), preference-based items were not used. In addition to the absence of preference-based items, non-direct measurement items focusing on perceived outcomes were not employed because of the presence of PCE. The items used to measure PCE already focus on the perceived benefits attainable through organic food purchase behavior, thus outcome-based measurement items for attitude would have provided little value and likely created unnecessary correlation. Five-point Semantic-differential scales were employed for

each of the attitude items. For *ATT1*, the two extremes were anchored at (1 extremely foolish – extremely 5 wise), for *ATT2* at (1 extremely harmful – 5 extremely beneficial), for *ATT3* at (1 extremely bad – 5 extremely good) and for *ATT4* at (1 extremely negative – 5 extremely positive)

The items measuring subjective norm were derived from Randall and Gibson (1991) and Taylor and Todd (1995). The items focused on individuals whom the respondents deem as important. Some studies examine subjective norms by using items that directly address people that influence the respondents' behavior (See e.g., Ajzen & Driver, 1991). However, this could have been too restrictive, and perhaps only been salient to respondents who live with cohabitants. Thus, "important to me" leaves the normative pressure of important peers fully to be decided by the respondents. These could include peers who directly influence the behavior or peers that are to be influenced by the behavior. Each of the items (*SN1*, *SN2* and *SN3*) was measured on a five-point Likert scale, with the extremes anchored at (1 strongly disagree – 5 strongly agree).

Perceived behavioral control was measured with four items adopted from Sparks et al. (1997). Here, the measurement items addressed the multidimensionality of PBC and focused on different dimensions of PBC; difficulty in performing the behavior (*PBC1*), perceived availability (*PBC2*) and perceived control over the organic food buying behavior (*PBC3 & PBC4*). In-depth items focusing perceived on internal control over the behavior (See e.g., Randall & Gibson, 1991; Taylor & Todd, 1995) were not used due to their complexity as *PBC3* and *PBC4* already effectually encapsulate perceptions of internal control. Moreover, extant literature has found that complicated PBC questions are sometimes interpreted differently by respondents, which poses a risk to the validity of the findings (Sparks et al., 1997). *PBC1* was measured on a five-point Likert difficulty scale, anchored at (1 very difficult – 5 very easy). *PBC2*, *PBC3* and *PBC4* were measured on a 5-point Likert agreement scale, with the extremes anchored at (1 strongly disagree – 5 strongly agree).

Perceived consumer effectiveness was measured with four items adopted from Roberts (1996). Minor modifications were made to the items to make them better suit a study that focuses on organic food purchase behavior. Of the items. *PCE2* and *PCE3* were initially reverse-coded. The reverse-coded items were formulated positively to avoid any confusion that they might create (Wejters & Baumgartner, 2012). Each of the PCE measurement items (*PCE1*, *PCE2*, *PCE3* and *PCE4)* was measured on an identical five-point Likert agreement scale, with the extremes anchored at (1 strongly disagree – 5 strongly agree).

Table 1. Measurement items

Construct	Items
Attitude *(ATT)*	**Sparks & Shepherd (1992) and Randall & Gibson (1991)**
ATT1	1. Purchasing organic food is (foolish/wise)
ATT2	2. Purchasing organic food is (harmful/beneficial)
ATT3	3. In general, purchasing organic food is a (bad/good) idea
ATT4	4. In general, my attitude toward purchasing organic food is (negative/positive)
Perceived behavioral control *(PBC)*	**Sparks et al. (1997)**
PBC1	5. Organic food is generally available in the shops where I purchase food
PBC2	6. If I wanted to, it would be possible for me to purchase organic food
PBC3	7. For me, purchasing organic food would be (easy/difficult)
PBC4	8. Whether or not I purchase organic food is fully up to me
Subjective norm *(SN)*	**Randall & Gibson (1991) and Taylor & Todd (1995)**
SN1	9. People who are important to me purchase organic food
SN2	10. People who are important to me would probably think I should purchase organic food
SN3	11. People who are important to me would expect me to purchase organic food
SN4	12. People who are important to me would want me to purchase organic food
Perceived consumer effectiveness *(PCE)*	**Roberts (1996)**
PCE1	13. Individual actions are important in combating environmental issues
PCE2	14. I can personally help protect the environment by making more responsible choices
PCE3	15. Each consumer can have a positive impact on the environment by preferring sustainable products
Perceived price *(PP)*	**Steptoe et al. (1995)**
PP1	16. I think organic food is affordable
PP2	17. I think organic food is moderately priced
PP3	18. I think organic food is good value for the money
Intention *(BINT)*	**Armitage & Conner (1999b)**
BINT1	19. I plan to purchase organic food in the near future
BINT2	20. I intend to purchase organic food in the near future
BINT3	21. I want to purchase organic food in the near future
Behavior *(BEHV)*	**Wan et al. (2012)**
BEH1	22. I have purchased organic food
BEH2	23. I have purchased organic food within the past few months
BEH3	24. I have regular organic food purchase behavior

Intention was measured with three items derived from Armitage and Conner (1999b). Minor changes were made to the timeframe that the authors used in their study. “In the future” was changed to “in the near future”. The near future was selected as an appropriate timeframe due to the ambiguity of “future”, and the restrictiveness of specifically defined timeframes, of, for example, two weeks (See e.g., Taylor & Todd, 1995) or one month (See e.g., Sheeran & Orbell, 1999). Each of the measurement items, *BINT1*, *BINT2* and *BINT3* was measured on a five-point unipolar scale with the two extremes anchored at (1 definitely do not – 5 definitely do).

Behavior was measured with three items adopted from Wan et al. (2012). General approaches to behavioral frequency were selected instead of numerically reported amounts of how many times organic food purchase behavior has been performed (See e.g., Ajzen & Driver, 1991). This approach was adopted due to the unlikely prospect that the young respondents had kept any statistics about their organic food purchase behavior. All measurement items for behavior (*BEHV1, BEHV2* and *BEHV3)* were measured on a five-point Likert agreement scale, with the two extremes anchored at (1 strongly disagree – 5 strongly agree).

The measurement items for perceived price were adopted from Steptoe et al. (1995). The authors’ set of items presented an opportunity to understand the perceptions of objective prices and how they are encoded and given subjective meanings by the respondents – following the arguments of Lichtenstein et al. (1988) and Zeithaml (1988) that were presented in the literature review part of this study. Of the measurement items, *PP1* and *PP2* focus on the general perceptions of organic food prices. Item-specific price perceptions (See e.g., Tarkiainen & Sundqvist, 2005) were not used because of the study’s objective to examine general organic food purchase behavior. Of the items, *PP3* presented an opportunity to understand the respondents’ perceptions of value, which is commonly intertwined with price perceptions as argued by Zeithaml (1988). Furthermore, given the complexity of decision-making in the organic food consumption context (Padel & Foster, 2005) and the ambiguous role of price (Hughner et al., 2007), addressing the perceptions of organic food’s value for the respondents’ economic sacrifices (Steg & Vlek, 2007) adds more depth to the results. Minor modifications to the items were made as *PP1* was initially negated in Steptoe et al.’s (1995) study but was formulated positively to suit this study’s policy of not using any negated items. Each of the measurement items was scored on a five-point Likert agreement scale, anchored at two extremes (1 strongly disagree – 5 strongly agree).

Sample size requirement for the model and its measurement items

In traditional SEM, the methods for estimation and testing of structural equation models are based on asymptotic theory, thus *n* has to be large enough to produce valid parameter estimates and statistics (Baumgartner & Homburg, 1996). However, before the parameter estimates can be assessed, the model has to demonstrate a proper fit for the path coefficients and relationships to be valid. Both CFA and SEM enjoy benefits from a larger sample when it comes to their respective model fit indices (Hu & Bentler, 1999). For example, Marsh et al. (1988) found that of the CFA model fit indices, only TLI (Tucker-Lewis Index) remained independent of sample size, whereas all of the other fit indices became greater in value when *n* increased. When a structural model is estimated, the model fit indices are similarly affected by sample sizes (Hu & Bentler, 1999). For example, the RMSEA (root mean square error of approximation) according to Kenny et al. (2015), is particularly dependent on sample sizes – despite RMSEA being a fit index that should avoid some of the sample size-based issues. Sharma et al. (2005), in turn argued that the GFI (goodness of fit index), which measures the fit between the hypothesized model and the observed covariance matrix should be disregarded when sample sizes are not large due to unlikely proper representation of the structural model fit.

No universal *n* minimums exist for conducting covariance-based SEM, but suggestions are generally well over (*n* 100) (Wolf et al., 2013). Anderson and Gerbing (1988), for example, have advocated for a minimum sample size of $N = 150$, similar to the recommendation of Tinsley and Tinsley (1987), whereas Bagozzi and Yi (1988) recommended an *N* of at least 200. Historically, in marketing research, the average *N* for SEM was around 180 between 1977 and 1994, but the average sample size has since gradually grown (Baumgartner & Homburg, 1996). Despite the increases in observations per study, extant research (See e.g., Hoyle, 1999; Marsh & Hau, 1999; Wolf et al., 2013) has proven SEM's applicability on particularly small sample sizes.

Historically, the suggestions for sample sizes in the SEM literature have varied, and determining a uniform sample size requirement has been highly challenging (Baumgartner & Homburg, 1996; Wolf et al., 2013). The challenges arise from model-specific differences and especially the substantial differences in their respective complexity (Wolf et al., 2013). For example, a complex model with hypothesized mediating effects would not produce reliable results with a sample size of 250, whereas a straightforward model with a couple of latent constructs is capable of producing valid results with a sample size of half of that (Marsh &

Hau, 1999). Mathematical techniques for determining sufficient sample sizes exist, namely the Monte Carlo method developed by Neumann and Ulam (1940), however, mathematical techniques, such as the MCM were not seen as necessary for the study and the relatively simple hypothesized model.

Selecting a suitable guideline for *n*

In an attempt to mitigate poor structural model fit and distortion in concomitant parameter estimates, an approach that was realistic for the scope of a master's thesis and preferred the obtainment of medium-sized samples was chosen. The hypothesized model is not complex and does not involve mediators with multiple regression paths, thus, its *N* requirement remained fairly feasible for the scope of a master's thesis. The rules used and gathered sample sizes vary greatly in extant behavioral research employing the TPB. Based on popular works in the SEM literature (See e.g., Anderson & Gerbing, 1988; Bagozzi & Yi, 1988; Baumgartner & Homburg, 1996; Bentler & Chou, 1987; Bollen, 1989; Hu & Bentler, 1999; Kline, 1998; Marsh et al., 1988; Miles & Shevlin, 1998; Nunnally, 1967; Tinsley & Tinsley, 1987) – the selected sample size guideline that would exceed the often suggested minimums for similar models and should, thus, be sufficient for the statistical analyses to produce valid results was Nunnally's (1967) ten cases per variable. Since the model's latent constructs had 24 unique measurement items, the minimum sample size, according to Nunnally's (1967) rule was set to $n = 240$. Despite the set minimum threshold, the author will try his best to acquire as large sample as possible as CFA and SEM will benefit from more respondents (Kenny et al., 1998; Miles & Shevlin, 1998).

4.3 Data collection

All of the questions were scored on five-point Likert scales. Since the measurement items were employed to collect relatively general opinions, no need for seven-point scales existed. In addition, five-point scales were likely to decrease the likelihood of drops in cognitive performance that might have transpired as a result of the effort required to process seven response options on mobile (Krosnick, 1999). Microsoft Forms is not perfectly optimized for completing seven-point scales on mobile, and a significant risk existed that some respondents could have found a questionnaire consisting of seven-point scales to be arduous to complete. This concern was of significant importance as the study focused on young adults who tend to prefer smartphone use. The form was also distributed in channels that are often accessed with smartphones.

Since the study assesses a socially desirable behavior, the questionnaire had to be assembled in a way that the enticement to give over exaggerative answers is mitigated. As a result, the questionnaire was fully anonymous, self-administered and void of any visual cues that could have acted as a stimulus to associate organic food purchases with, for example, prospering nature. However, it is important to acknowledge that these measures are never enough to completely thwart the presence of social desirability bias but have been proven to help in mitigating its intensity (Armitage & Conner, 1999b).

Given the generally engaging effect that enhanced visuals and clever visual cues are believed to produce, their role in ensuring respondents' engagement when online questionnaires are completed has often, however, been exaggerated (Guin et al., 2012). Thus, a more fundamental objective was to enforce common method bias controls regarding questionnaire design and to ensure the questionnaire was of optimal length, engaging, unambiguous, and as versatile as possible without causing unexpected challenges to the subsequent statistical analyses.

Krosnick (1991) has described the loss of interest and motivation to answer a questionnaire as "satisficing", which means that a respondent takes shortcuts to get the questionnaire completed as soon as possible due to decreasing interest. Herzog and Bachman (1981) have additionally posited that the repetitiveness of identical scales and questions could lead to behavior similar to "satisficing" (Krosnick, 1991). Both phenomena entail the respondents' progressively decreasing reflexivity and motivation to answer the presented questions. Satisficing can also occur if the questions are ambiguous and laborious to assimilate (Krosnick, 1991). Despite the relatively short length of the questionnaire, different Likert scales (e.g., semantic, agreement) were used and knowingly placed to follow an order that would positively influence the respondents' sense of engagement and drops in cognitive performance (Krosnick, 1999).

Since the objective of the study was to focus on regular young adults with no known propensity for purchasing organic food, the Microsoft Forms landing page (See **Fig 4**.) was written in a way that could realistically make less interested respondents deem participating worthy of their time. There was high suspicion that the behavior in question, organic food purchase behavior could deter people who do not really care about organic foods, let alone about purchasing them. In an attempt to catch the pondering respondents' attention, the sentence "every response is valuable" was bolded. The average time to complete the questionnaire was also bolded so the respondents pondering about their decision to either participate or not could be convinced that

the process is feasible and does not necessitate them to invest 15 minutes or so of their time to complete the questionnaire.

A brief elucidation on the particulars of the organic food purchase behavior in this study was also given in the beginning. The author, with the aid of extant literature, cognized that organic food could only be associated with organic produce or meats, and it was important that the respondents were fully aware of what was being asked.

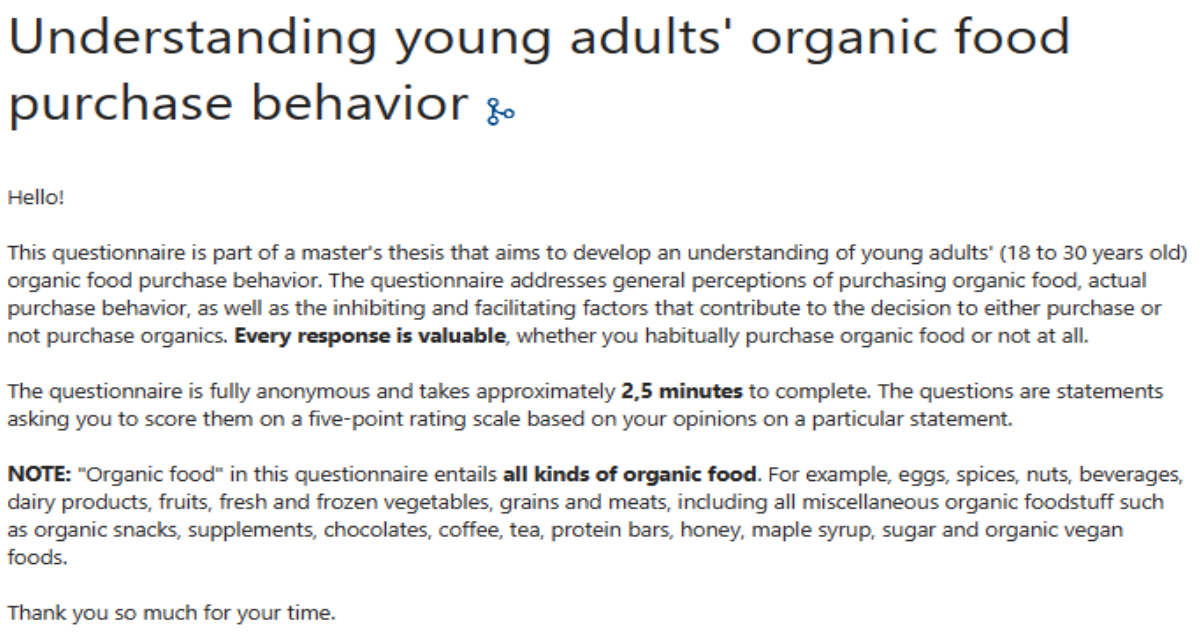

Figure 4. Questionnaire landing page

All in all, the questionnaire comprised 28 questions of which three were general demographic questions and the rest the measurement items that were scored on 5-point Likert scales. Since the study had no other concrete requirements than age, the only filter question was the first demographic question concerning the respondents' age. When an individual selected "Under 18 years old" or "Over 30 years old" as their age, the system routed them to a custom page that kindly informed them about their unfitness for the study and expressed gratitude for the respondents' willingness to allocate their time to participate in the study.

Personal data in the questionnaire

The study was fully anonymous and collected no personal data, including emails or more precise locations of the respondents. Microsoft Forms does not collect the IP-addresses either, when the questionnaire is shared with an anonymous, non-organizational link.

Intraorganizational links register a variety of information into the organization's Azure Active Directory, but a standard anonymous link does none of that. Naturally, a risk existed that a single respondent would, for some perplexing reason, submit more than one response, but the risk was knowingly taken in order to not collect unnecessary personal data.

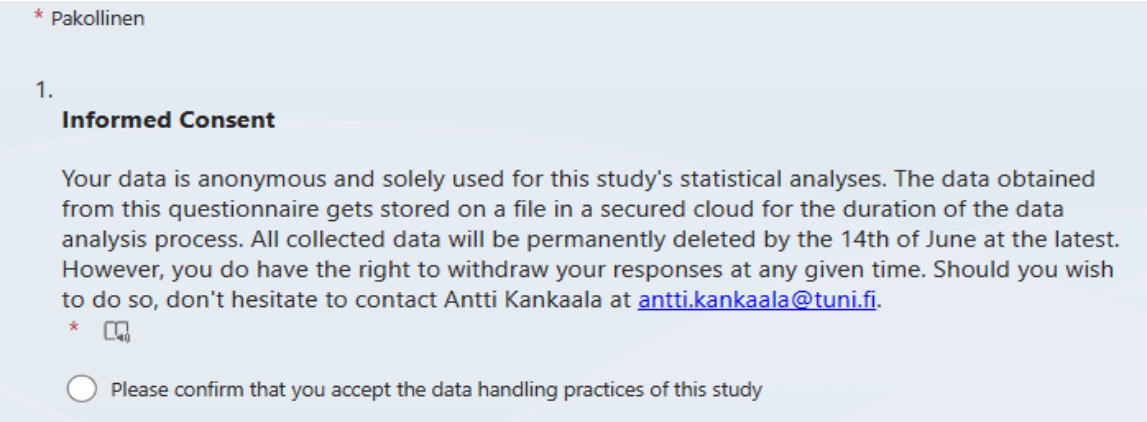

Figure 5. Informed consent

Despite only collecting age, gender and occupational status as demographic information, nobody could start scoring the questionnaire without agreeing to the study's data handling practices (See **Fig.** 5). The author cognized the importance of transparency and research ethics, and every respondent whose responses are the subject of further statistical analyses have genuinely accepted the data handling practices associated with participating in the study.

Gathering the sample

Data were collected with an online Microsoft Forms questionnaire for approximately six weeks between the 15th of March 2024 and the 27th of April 2024. An extensive pilot testing phase took place from the 4th of March to the 14th of March preceding the distribution of the questionnaire. A lot of focus was put on the completion experience on mobile. Based on feedback regarding completing the questionnaire on mobile platforms, several changes were made to its technical implementation with the addition of miscellaneous enhancements.

Some of the major improvements included dividing the constructs' respective items into different sections to make the completion experience more convenient and professional feeling. The bolded fonts were also modified as they were found to be vexingly dominating in a mobile view. Given the scrolling effort that the horizontal Likert scales required on mobile, a brief set of instructions was added as a sub-heading to section 1 (attitude items) that suggested respon-

dents completing the questionnaire on mobile to temporarily switch their respective browsers to desktop mode to make the process significantly more convenient. Also, a redundant thank you message was removed from the end of the questionnaire as it necessitated the respondents to manually submit the responses instead of the system automatically registering the responses when a particular respondent scored the final statement. The step was taken to prevent respondents from falsely believing that the questionnaire was completed without submitting their responses to ensure that nobody's time and kindness would be in vain.

Sampling methods

The sampling methods included two non-probability sampling methods – convenience sampling and snowball sampling. Convenience sampling was used to distribute the questionnaire in various social media groups the author was already a part of and in, for example, various social media groups, such as Facebook-groups the author joined to collect responses for the study. Furthermore, selected degree-specific University messaging channels were used. Snowball sampling was used as some respondents were willing to distribute the questionnaire in, for example, their WhatsApp-groups and at their workplace.

5. RESULTS

5.1 Data characteristics

Ultimately, the sample size for the study was 212. Despite persistent efforts by the author, the *n* fell below the set threshold of 240, which was based on Nunnally's (1967) 10c/v guideline. Of the 212 respondents, eleven were not valid due to them not meeting the age requirements for the study (respondents over 30 years old). Therefore, the sample size for the statistical analyses was *n* = 201. Despite being relatively small, the sample size was sufficient for the analyses, but it bears some limitations that have to be acknowledged when the results are being interpreted (Hu & Bentler, 1999; Wolf et al., 2013).

Table 2. Overview of the respondents' demographics

***n* = 201 demographics**			
Age	18-22 (41 = 20.4%)	23-27 (116 = 57.71%)	28-30 (44 = 21.89%)
Gender	Female (148 = 73.63%)	Male (51 = 25.37%)	Non-binary (2 = 1%)
Occupation	Student (109 = 54.23%)	Student* (53 = 26.37%)	Employed (39 = 19.4%)

***= and working part-time**

Most respondents were between 23 and 27 years old (57.71 %). The two other accepted age ranges, 18 to 22 years old and 28 to 30 years old each represented an approximate 20 % portion of the sample. On the gender side of things, the vast majority of respondents, approximately 74 % were females. Male respondents represented approximately one-fourth of the respondents (25.37 %). Two respondents identified as non-binary, forming 1 % of the sample. Nobody responded "Other" to the gender question.

Students and students who worked part-time alongside their academic endeavors ended up constituting 80 % of the respondents. Roughly 20% of the respondents worked full-time without association with studying. The fourth option for occupation, "Other", was not selected by anyone. The sole demographic screening questions were age-related (under 18 years old and over 30 years old), leading to the previously mentioned 11 exclusions (212 – 11 = *n* 201) preceding the statistical analyses.

Cook's distance

Given the distorting effect that data outliers can have on parameter estimates when a structural model is estimated, the first step was to screen the dataset for abnormalities. Of the methods available, Cook's distance (Cook, 1977) was selected due to its prevalence in social science research. Suggestions for cutoff thresholds vary, with some suggesting pre-fixed values, such as 0,5 (See e.g., Stevens, 1984; Kim & Storer, 1996). However, this study opted for an approach that was more suitable for its sample size – the 4/*n* rule. In the equation, *n* represents sample size, which was ultimately 201 after the exclusion of nonvalid responses. Therefore, the cutoff value was set at 4/*n* (201) = 0.0197. Preceding the calculation, all of the indicators were transformed into their respective mean variables on SPSS (i.e. = Mean (*ATT1*, *ATT2*, *ATT3*, *ATT4*). Based on the causality of the model, mBEHV was set as the dependent variable (*X*-axis). As presented in Figure 6., entries 74, 19, 71, 65, 183, 121 and 41 significantly exceeded the cutoff threshold of 4/*n* (201) = 0.0199 and were removed from the dataset. Entries slightly over the threshold of 0.0199 were kept as they did not classify as being severe outliers.

After screening the dataset for outliers, normality was tested with multiple methods. The initial Kolmongorov-Smirnov and Shapiro-Wilk tests ($p < 0.05$) indicated a non-perfect normal distribution. Further Q-Q plots corroborated the tests' results and suggested that despite the residuals falling relatively well on the line, the distribution was not fully normal. Figure 8. shows the Q-Q plot for subjective norms (SN), which is nearly identical to the model's other plots.

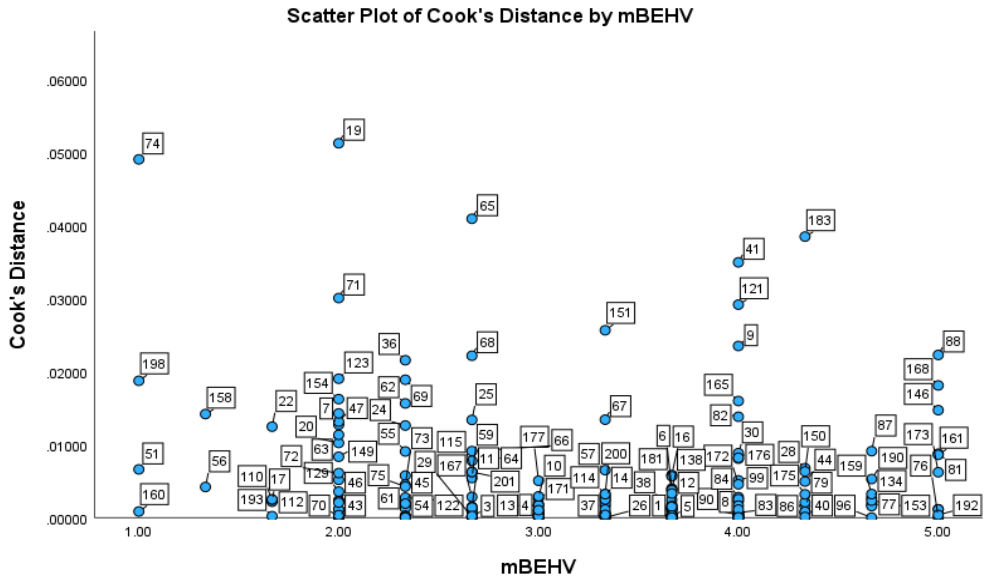

Figure 6. Cook's distance

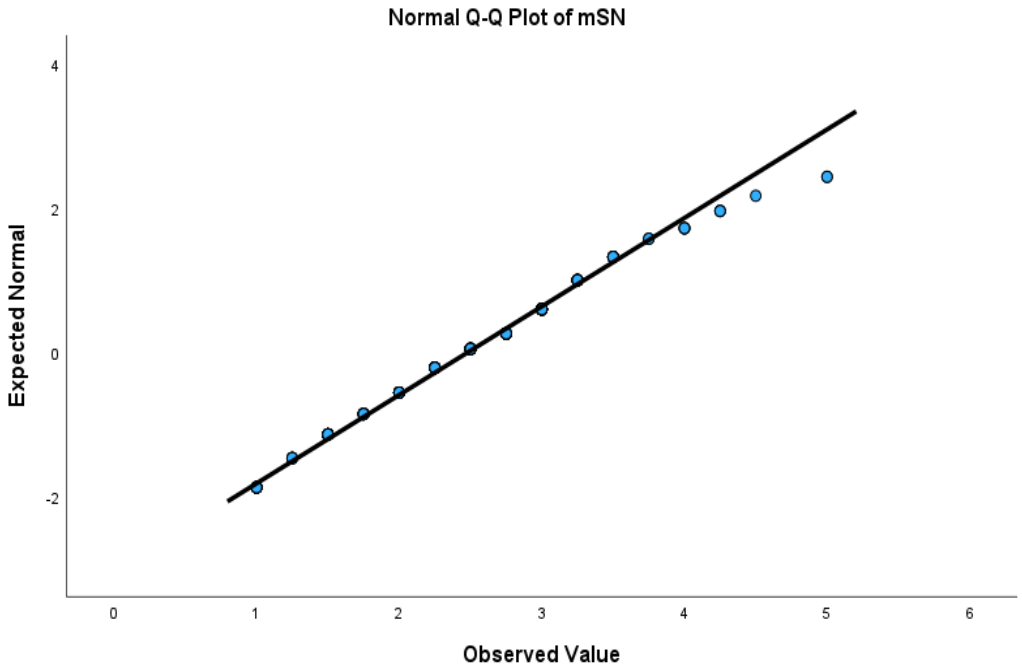

Figure 7. Q-Q Plot for Subjective norms

Given the results of the earlier tests, the Skewness and Kurtosis values were calculated to examine whether the dataset meets the fundamental requirements for normality and, thus, is suitable for the assessment of the measurement model (Hair et al., 2009). Generally, when data does not follow a perfect normal distribution, acceptable Skewness and Kurtosis values indicate that sufficient normality requirements are met (Kline, 1998). Of the commonly used thresholds, this study opted for a stricter rule of thumb by George and Mallery (2010), where both Skewness and Kurtosis values have to be between -2 and 2. Each of the variables was actually within -1 and 1 in terms of both Skewness and Kurtosis, with the exception of *ATT* – having a Kurtosis value of 2.212. Exceeding the threshold is not ideal with the relatively small sample size of this study. Tabachnik and Fidell (2013) have argued that exceeding the generally accepted thresholds for data Skewness and Kurtosis is highly unlikely to have a substantial effect on the subsequent analyses' parameters when $n > 200$. As this study's sample size is $n = 194$ after the exclusion of outliers, focus had to be put on the ATT's Kurtosis. However, renowned statisticians, namely, Hair et al., (2009), have postulated that a Kurtosis value of ± 3 will indicate that the distribution is not excessively peaked. Hence, sufficient normality was concluded.

Multicollinearity

After running the normality tests, the variables were tested for multicollinearity. The multiple linear regressions – conducted toward the end of the statistical analysis process – assume that no multicollinearity between the independent variables exists (Cohen et al., 1983). The calculations were done early on as multicollinearity can also distort the parameter estimates of the structural model (Kenny et al., 1998). Each of the independent variables' Variance Inflation Factors (VIF) and collinearity tolerances were well within the normally suggested limits. The highest VIF values were exhibited by ATT (VIF = 2.222) and the lowest by PBC (VIF = 1.363). When looking at the common guidelines for multicollinearity, it could be concluded that the results of the linear regression were satisfactory. Contributing to the conclusion of satisfactory results were the collinearity tolerance values (PP = .573, PCE = .606, SN = .654, PBC = .734, ATT = .451). Each of the CT values was above the suggested threshold of .10 (Taberchnik & Fidell, 2001). The VIF values also met the stricter requirements of 3 (Zuur et al., 2010) and the common, more relaxed requirements of 5 (Kline, 1998) and 10 (Tabachnick & Fidell, 2001). Low VIF values below .50 that would indicate multicollinearity issues weren't present either – with the lowest VIF being PBC's 1.395 (Haier, 2010). Hence, it could be established that the independent variables were lowly correlated.

5.2 Confirmatory factor analysis

Preceding the assessment of the measurement model was a test of scale reliability. To test reliability or internal consistency, the Cronbach's alphas (Cronbach, 1951) of each of the item scales were calculated. Extant research has nearly uniformly adhered to the guidelines of Nunnally (1978), where acceptable reliability is achieved when the alpha coefficient (α) is above .70. An alpha of above .80 indicates good reliability and an alpha coefficient of above .90 is a sign of excellent reliability – if not much higher than .90 that is (Nunnally & Bernstein, 1994).

The alpha coefficients for the item scales were ATT (α = .890), PBC (α = .733), SN (α = .853), PCE (α = .874), PP (α = .767), BINT (α = .937) and BEHV (α = .825). Whereas the other item scales exhibit moderate, mostly strong internal consistency, the coefficients of PBC and PP were relatively close to the cutoff threshold (Nunnally & Bernstein, 1994). At .733 and .767 respectively, the alpha coefficients indicate that the constructs' items did not harmoniously measure the underlying construct itself, which alludes to a somewhat erratic inter-item relationship (Tavakol & Dennick, 2011), which was confirmed with a further examination of the mean

scores of both constructs. Overall, the individual mean scores for PBC (*PBC1* = 3.90, *PBC2* = 3.81, *PBC3* = 3.46 & *PBC4* = 3.52) and PP (PP1 = 2.56, PP2 = 2.88 & PP3 = 3.15) were not ideally consistent, elaborating on the merely satisfactory alpha coefficients.

Only marginal improvements to the alpha coefficient would have been achieved with the removal of one of the items for PBC – with the hypothetical coefficient being $\alpha = .736$ with the exclusion of *PBC4*. The author was cognizant of the upcoming standardized factor loadings (λ) when the measurement model is assessed, which would indicate a need for removal of any indicators to decrease measurement error and to improve scale reliability (Ford et al., 1986).

Measurement model

After excluding outliers from the data, establishing acceptable normality, multicollinearity and internal consistency, the data was deemed suitable for the first major statistical analysis of the data analysis process – confirmatory factor analysis (hereafter CFA). In principle, CFA shows whether the empirical (observed) data actually fits the hypothesized measurement model (See **Fig.** 3) (Jöreskog, 1971). Given there's no missing data, the *n* of 194 was sufficient for conducting CFA (ML), but its limitations must be acknowledged when the fit indices are examined (Bentler & Hu, 1999; Fan et al., 1999; Miles & Shevlin, 1998; Wolf et al., 2013).

Initially, the model fit was close to moderate (Byrne, 1994), but not ideal at $\chi2 = 497.241$, $\chi2/df = 2.153$, CFI = .915, GFI = .814, IFI = .916, TLI = .899 and RMSEA = .077. Of the values, only the goodness of fit index (GFI) was of notable concern due to it being relatively low. The suggested thresholds for GFI are generally above .90 or higher (Hu & Bentler, 1999). However, when $n < 200$, the GFI has been proven to underestimate model fit due to its high dependency on sample sizes (Mulaik et al., 1989). Hence, given the substantial evidence from previous simulations that have concluded the GFI to be a poor predictor of fit with smaller sample sizes (See e.g., Hu & Bentler, 1999), no concrete actions were taken to improve the measurement model's GFI because of the complexities associated with obtaining a satisfactory result with the study's *n* of 194. Although GFI was reported in this study, attention should be put on the Tucker-Lewis index (TLI) (Tucker & Lewis, 1973) as it is a significantly more suitable measure to address model fit when $n < 200$ (Tabachnick & Fidell, 2001).

Given the close to moderate initial model fit, it was theoretically justified to commence a thorough examination of the standardized factor loadings (λ). The relatively low Cronbach's alpha coefficient of the PBC scale and the fit indices indicated that some items might have poor loadings below the ($\lambda = .60$) threshold based on the recommendation of Bagozzi and Yi (1988).

An overview of the loadings (See **Fig**. 8) mostly showed sufficient to moderate λ's (λ > .60), apart from a few factors. The standardized factor loadings for PBC were a tad off as the earlier alpha coefficient had indicated. Only two items loaded between .60 and .70 – with *PBC4* exceeding the set cutoff threshold and *PBC1* being significantly below it (Bagozzi & Yi, 1988). The SN scale showed satisfactory λ's apart from SN1 (λ = .59). Following guidelines of handling items with poor λ's – items that loaded under (λ = .60) (*SN1 & PBC1*) were excluded from the model to reduce measurement error and to increase scale reliability (Ford et al., 1986).

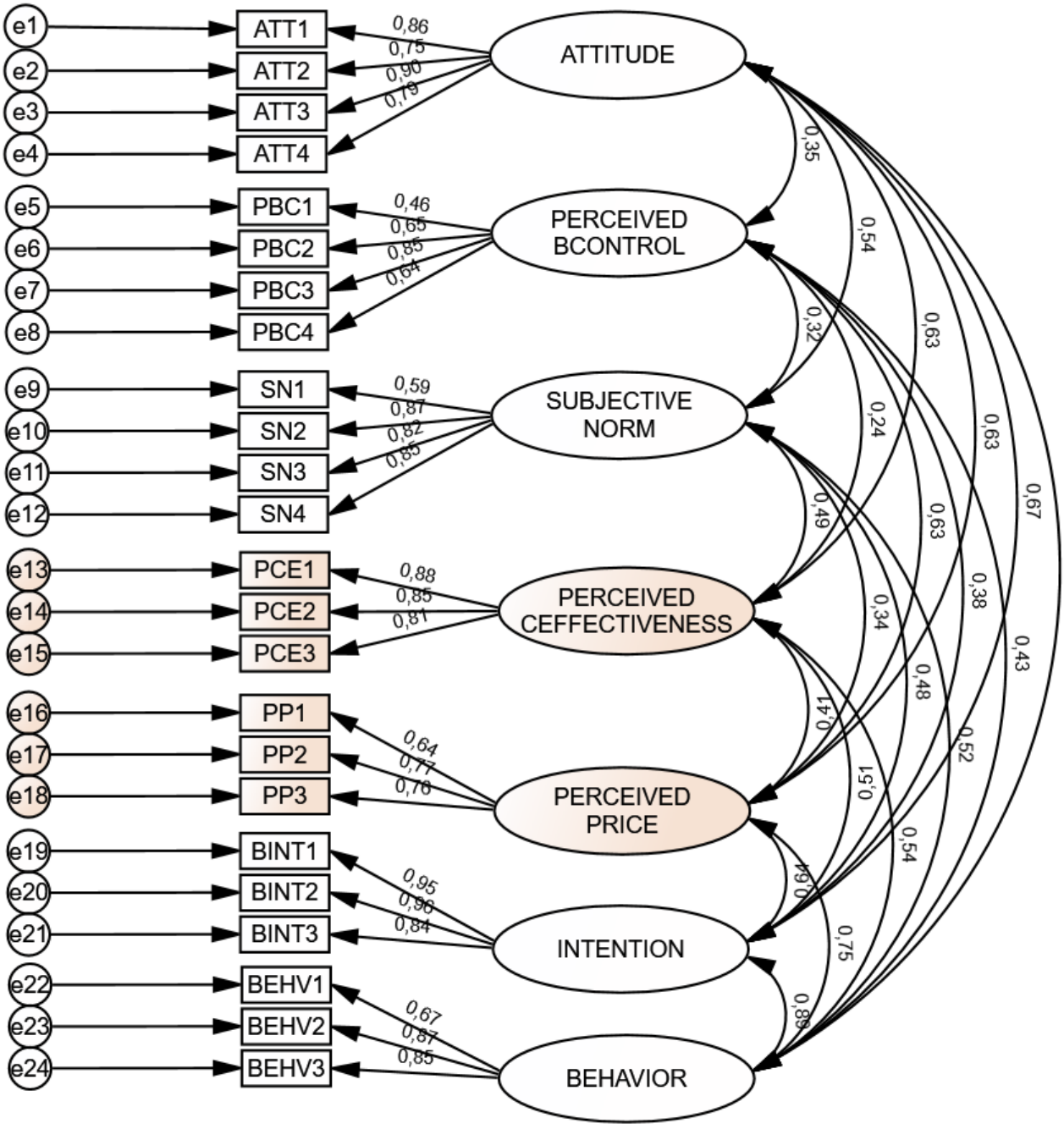

Figure 8. Measurement model

Table 3. CFA model fit indices and chi-square

Fit Index	Model fit* (initial)	*(*SN1* & *PBC4* excluded)	Acceptable threshold
χ2	497.241	**360.691**	-
χ2/df	2.153	**1.919**	< 3.000 (Byrne, 1994)
CFI	.923	**.941**	> .90 (Byrne, 1994)
GFI	.829	**.851**	> .90 (Kline, 1998)
IFI	.925	**.942**	> .90 (Bollen, 1989)
TLI/NFI	.909	**.928**	> .90 (Byrne, 1994)
RMSEA	.072	**.069**	< .80 (Bollen, 1989)

The removal of poorly loaded items improved model fit (absolute, comparative and parsimonious) to meet the cutoff thresholds for good model fit of Bollen (1989), Byrne (1994) and Kline (2011) (See **Table 3.**). For comparison, a third model was run without *PP1 (*λ = .64), mostly meeting Hu and Bentler's (1999) >.96 thresholds for CFI, TLI and IFI - with the root mean square error of approximation (RMSEA) at .061. The model was only run to examine possible fit improvements and will not be the subject of further analyses for the time being.

Validity assessment

After establishing a satisfactory model fit, the next step was to examine the measurement model's convergent- and discriminant validity. Convergent validity was assessed first, as it is, according to Bagozzi and Phillips (1991) – pointless to examine whether a construct can be distinguished from others if it is not adequately represented by its own indicators. The assessments adhered to Fornell and Larcker's (1981) guidelines and suggestions for construct validity. For comparison, the measurements were conducted on the "full" model and on the model with *PBC1* and *SN1* excluded. The poor λ's of the PBC scale were evident when the average variance extracted (AVE) was first examined. The CR for PBC was well above the .70 threshold at .751, but the AVE for PBC was below the cutoff threshold of .50 at .442. After the exclusion of *PBC1* (and *SN1)*, expected improvements were observed. The AVE for PBC improved to .534. The AVE's and CR's for the other constructs were satisfactory based on the criteria of Fornell and Larcker (1981). Even with a couple of items with not optimal loadings, it was concluded that the measurement model had convergent validity and discriminant validity could be assessed next as per Bagozzi and Phillips (1982). Note that constructs with three items are not trimmed by default due to the complications that only two items might cause when the structural model is estimated with a relatively small *n* (Bearden & Netemeyer, 1999).

Table 4. Reliability and convergent validity

Construct	Alpha coefficient (α)	CR	AVE
Perceived Price	.767	.771	.569
Attitude	.893	.893	.686
Perceived behavioral control	.733	.769	.535
Subjective norms	.841	.884	.704
Intention	.937	.943	.842
Perceived consumer effectiveness	.871	.881	.708
Behavior	.825	.842	.647

Fornell and Larcker's (1981) technique was used to determine discriminant validity of the measurement model. To achieve discriminant validity – the square root of AVE needs to be higher than the correlations of any other latent construct. The analysis was conducted with the help of James Gaskin's Validity Master. The macro allows for an additional examination of the maximum shared variance (MSV) values and their comparison to the constructs' AVEs.

The Fornell and Larcker technique (1981) showed validity concerns for PP and BEHV. First, as Table 4. shows, the discriminant validity concerns for PP were due to very low margins. The MSV was .537 and AVE .531 – resulting in the AVE being 0.006 too high. Also, the square root of AVE for PP was a mere 0.005 over the absolute value of correlation with behavior. Nonetheless, steps were taken to rectify the validity concerns. To examine the correlations further, the measurement model's cross-loadings were determined by running a principal component analysis (Promax rotation with Kaiser normalization). The KMO test (Kaiser-Meyer-Olkin) measure of sampling adequacy was excellent at .904, and Bartlett's test of sphericity significant at ($p < .001$) – making the analysis valid for interpretation.

Table 5. Discriminant validity

C*	AVE	MSV	ASV	PP	ATT	PBC	SN	INT	PCE	BEHV
*Construct								Fornell and Larcker (1981)		
PP	**0.531**	**0.537**	**0.314**	**0.728**						
ATT	**0.677**	**0.468**	**0.335**	**0.611**	**0.823**					
PBC	**0.537**	**0.339**	**0.123**	**0.582**	**0.261**	**0.733**				
SN	**0.717**	**0.261**	**0.183**	**0.293**	**0.511**	**0.235**	**0.847**			
INT	**0.847**	**0.783**	**0.367**	**0.626**	**0.667**	**0.331**	**0.465**	**0.920**		
PCE	**0.712**	**0.392**	**0.225**	**0.394**	**0.626**	**0.180**	**0.469**	**0.507**	**0.844**	
BEHV	**0.643**	**0.783**	**0.412**	**0.733**	**0.684**	**0.364**	**0.508**	**0.885**	**0.540**	**0.802**

The PCA's pattern matrix showed that *PP3*, as indicated by the Fornell and Larcker criterion (1981) in Table 4. loaded on another construct (ATT) – albeit not severely at .39. After confirming the cross-loadings with a principal component analysis. The measurement model was assessed again and its covariances and standardized regression weights were examined accordingly to revisit the model's discriminant validity. With *PP3* excluded, validity issues concerning the PP scale subsided. Excluding *PP3* from the measurement model is not, however, ideal as it leads to the PP scale having only two items, which is generally not optimal (Bearden & Netemeyer, 1999). However, since the moderator variables will not be part of the structural model estimation and run as their own regression analyses – the limitations are not as severe with two items (Austin & Steyerberg, 2015). Theoretical justifications for the possible exclusion of PP3 from the moderation analyses were further sought, nonetheless.

A glance at extant literature on conducting statistical modeling with latent constructs that have under three items revealed a uniform consensus that such endeavors should be avoided if not mandatory (Bearden & Netemeyer, 1999). If a study is, however, forced to resort to these extremes – various guidelines exist. For example, Yong and Pearce (2013) have postulated that a two-item construct exhibits sufficient reliability if its inter-item Pearson correlation coefficient (*r*) is high at (r >.70) and low between the other items that are not the subjects of evaluation. In search of further theoretical justification for the exclusion of PP3, the PCC for PP1 and PP2 was calculated. The r's indicated moderate inter-item correlation at the cusp of acceptability at ($r = .649$, $p < .001$). The second model included all other variables in the matrix and the correlations with other items were examined. Overall, the PCCs were relatively low at mostly (< .29), showing low correlation with the items of other constructs.

Despite coming up with a somewhat sound theoretical justification for the exclusion of PP3 from the model – the calculations were partly redundant as PP will not be incorporated in the structural model when it's estimated – ultimately being run as a separate multiple linear regression where 2 items suffice (Austin & Stemeyer, 2015). Nonetheless, based on the cons-truct's absence from the structural model, close to good Pearson correlation coefficients, and the requirements of multiple linear and linear regressions (OLS), PP*3* was excluded from the model to thwart its discriminant validity concerns.

After the discriminant validity issues for the PP scale were addressed, focus was put on the BEHV construct. The principal component analysis with Promax rotation showed that BINT and BEHV load rather high on the same component (>.60). The loadings unambiguously

indicated that the constructs exhibit high similarity. Further evidence of the correlation can be seen in the covariances (right side) of the measurement model (See **Fig.** 8) as the INT-BEHV correlation value exceeds the generally recommended maximum threshold of .85 (Hair et al., 2009). Given the fundamental limitations that a model without discriminant validity leads to, the question was whether correlation should exist between INT and BEHV. By nature, the model assumes causality between intention and behavior – with intention being the sole predictor of behavior. Hence, some correlation, albeit not severe, between the constructs is to be expected when a principal component analysis is conducted.

Rönkkö and Cho (2022) have argued that where true in most instances, high correlation between separate constructs is not always a sign of severe discriminant validity violations. If correlation is expected based on theory and the correlation can be elucidated with the sample of a given study – high correlation between constructs X and Y does not automatically mean it's the end of the hypothesized model. Intention and behavior are also fundamentally different and distinct from each other as concepts. Intention is a psychological variable (Ajzen & Driver, 1991), and behavior in this study encapsulates past actions that have been concretely executed. On that note alone, merging the constructs, as suggested by many researchers, to mitigate the discriminant validity concerns was not a theoretically feasible option. Therefore, no rational solutions to thwart the validity issues existed – resulting to the author accepting the limitations that the discriminant validity issues have on the applicability of the results of the structural model estimation (Bove et al., 2009).

Furthermore, it is worth mentioning that the developer of the TPB, Icek Ajzen (1985), has also addressed the sometimes-emerging validity concerns regarding the TPB. As implied by statisticians Rönkkö and Cho (2022), Ajzen (2020) emphasizes the differences in research populations and samples. For the sake of transparency, most of the blame should be put on the research design devised by the author. Ajzen (2020) suggests preliminary interviews with a desired research population to ensure that a population-specific questionnaire is created that helps to form a model wholeness that would be devoid of validity concerns. An approach that would have included preliminary interviews was not taken in this study, which is, however, a common step to neglect when the TPB is employed in pro-environmental contexts to examine a particular behavior (Yuriev et al., 2020).

5.3 Structural equation modeling

After validating the observed data's fit with the hypothesized model and establishing validity, including the discriminant validity limitations – the hypotheses could be tested. First, as with the measurement model, model fit was examined. Generally, a good model fit for a particular measurement model should translate to a congruent model fit when the structural model is estimated. Note that hypotheses H6 and H7 were not tested with the structural model. The moderating analyses will be run as their separate regression analyses after testing hypotheses H1, H2, H3, H4 and H5 in AMOS.

The initial estimation showed acceptable data fit at (χ2/df =, 2.248, GFI = .870, CFI = .943, IFI = .944, TLI = .931 and RMSEA = .080). The absolute, comparative and parsimonious fits were satisfactory (Byrne, 1994; Kline, 1998), and the path coefficients could be examined next. Despite it being the norm in many papers employing the TPB to examine pro-environmental behaviors, no covariances were drawn between the independent variables to inflate model fit and to distort the path coefficients. Apart from the residual error terms applied to the endogenous variables of the model – the model was estimated in its pure configuration. See Figure 9. for a visual overview of the estimated structural model.

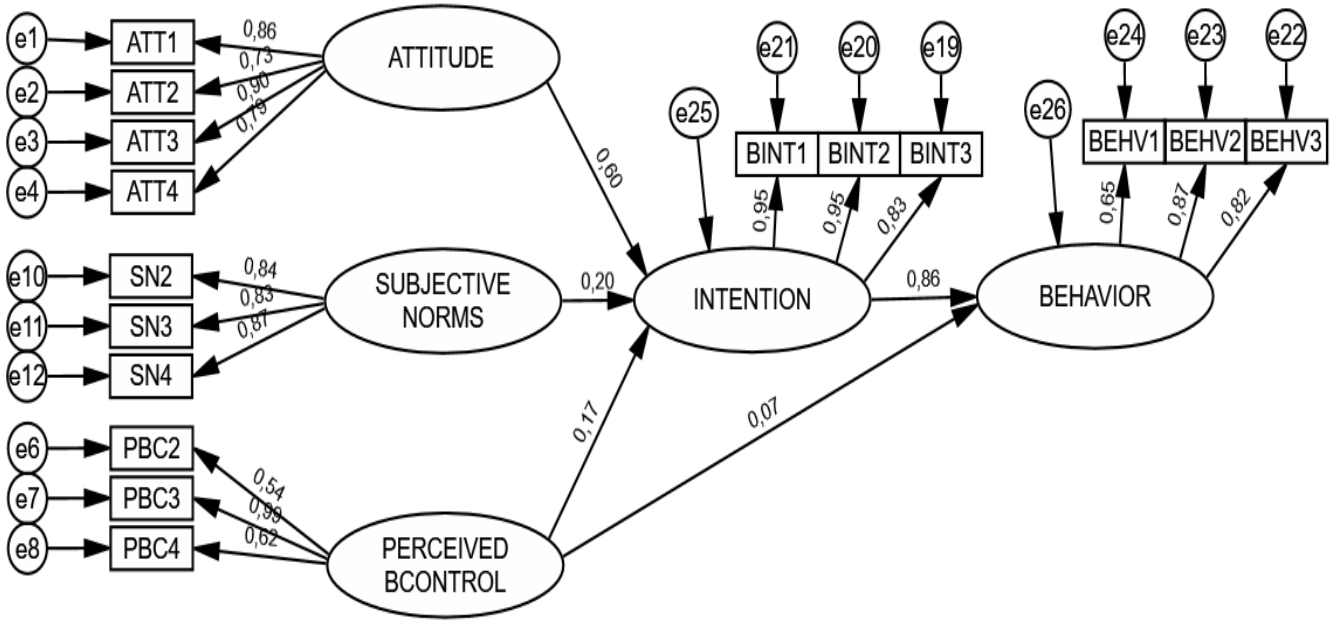

Figure 9. Structural model and standardized path coefficients

The estimation method used was ML (maximum likelihood). The use of ML was applicable as the dataset had met the fundamental requirements for normal distribution (Bollen, 1989; Hair et al., 2009; Kline, 1998). The normality tests are presented in Chapter 5.1. When requested, AMOS also provides a handy table to examine the Squared Multiple Correlations (SMC) of the model. Since an acceptable model fit had been established and the SMCs raised no concerns as per the criteria of Byrne (1994) (> .40) – the path coefficients, in other words, the proposed hypotheses were investigated.

First, H1 (*ATT → INT)* was examined. The relationship was statistically significant ($p < .001$, t = 8.076) with a high beta coefficient of ($\beta = .599$). H2 (*SN → INT)* was statistically significant *(*$p < .001$, $t = 3.116$), showing a moderate effect ($\beta = .196$). H3 (*PBC → INT)* was also statistically significant ($p < .001$, $t = 2.719$), demonstrating a moderate effect ($\beta = .170$). H4 (*PBC → BEHV)* was not statistically significant ($p > 0.05$, $t = 1.339$). H5 (*INT → BEHV)* was significant ($p < .001$, $t = 14.661$), showing a substantial effect on BEHV ($\beta = .861$).

Table 6. Path relationships for the proposed hypotheses

Relationship	β	t-value	*p*-value	Hypothesis status
ATT → INT (H1)	.599	8.076	< .001	Accepted
SN → INT (H2)	.196	3.116	< .001	Accepted
PBC → INT (H3)	.170	2.719	< .007	Accepted
PBC → BEHV (H4)	.066	1.339	> 0.05	Not accepted
INT → BEHV (H5)	.861	14.661	< .001	Accepted

Four additional models were estimated. While exhibiting satisfactory model fit (Byrne, 1994) and acceptable SMCs, the direct influences of PP and PCE on behavior were investigated. The structural model showed the relationship for PP-BEHV was significant ($p < .001$, $t = 4.258$), showing a moderate effect ($\beta = .331$). Hence, when PP is examined with a direct path to behavior, an increase of 1 in perceptions of low price results in an increase of .331 in purchase behavior. Note that the model was run with a two-item PP construct given the close to acceptable Pearson correlation coefficients for such exceptions (Bearden & Netemeyer, 1999; Yong & Pearce, 2013). A second estimation was conducted with *PP3* incorporated back into the PP

construct – resulting in a model fit that was not acceptable (Bollen, 1989) (TLI >.90, RMSEA, >.080). The third model examined the PCE-BEHV relationship (PP absent from the estimation). Model fit was acceptable except for RMSEA, which slightly exceeded the .080 threshold at .081 (Byrne, 1994). Given the closeness of being acceptable in terms of the structural model fit, the path coefficients were examined further. The effect was statistically significant with a low effect (p = 0.014, t = 2.461, β = .129). The fourth model discarded the path from PBC to BEHV. Since the PBC-BEHV relationship was not statistically significant, it was tested whether its absence led to noticeable improvements in the model's other relationships. Model fit was acceptable, but nothing worthy of mentioning in terms of augmented beta coefficients for the other relationships emerged. For example, the PBC-INT relationship improved from (p = .007, t = 2.719, β = .170) to (p = .005, t = 2.824, β = .179).

5.4 Multiple linear regression

The last phase of the statistical analyses was to run the moderation analyses. Note that the additionally estimated structural models with extra parameters (PP → BEHV, PCE → BEHV) were not the moderation analyses for hypotheses H6 and H7. AMOS does not allow for the drawing of regression paths on one another – meaning that moderation analyses are difficult to run simultaneously when a particular structural model is estimated. Therefore, hypotheses H6 and H7 were tested with different methods. Multiple linear regression (MLR) was selected as the primary method due to its commonness in social science research. An extension of MLR, hierarchical multiple regression, was also conducted for additional models for PP and PCE.

This study has transparently addressed the limitations of its sample **(**n = 194) when it comes to structural modeling. However, in multiple regression, the sample size requirements are bit more relaxed (Maxwell, 2000). For example, Green's sample size formula for multiple linear regression (Green, 1991) for .80% statistical power (alpha = .05) – follows the equation (n > 50 + 8 m), where m represents the number of predictors in a given regression. In this study, the predictors in the regression were PP, BINT and PCE, forming the equation (n > 50 + 8 x 3 = 74). In moderated multiple linear regressions, the sample size requirements become a tad more demanding (Cohen et al., 1983). To achieve similar statistical power to detect the interaction effects, a regression with three predictors should have a sample size of (n > 100) (Aiken & West, 1991). Smaller sample sizes necessitate that the data structure is not deficient (Bobko & Russell, 1994) and the reliability among the predictors is high (Cronbach's alpha coefficient >

.88) (Aiken & West, 1991). Furthermore, the assumptions of MLR have to be met (Cohen et al., 1983). All told, if all the assumptions of multiple linear regression are met and no violations emerge, the *n* of 194 should well exceed the minimum sample size requirements for moderated multiple regression while bearing sufficient statistical power for interaction effect detection (.80%, alpha = .05).

Assumptions of multiple linear regression

Prior to conducting the moderation analyses (MLR), the data was thoroughly tested to ensure it did not violate the assumptions of MLR. The assumptions have been thoroughly elucidated by Fein et al. (2022), which is the reference paper of this chapter. The assumptions are no multicollinearity, independence (more than one independent variable), linearity, homoscedasticity, absence of spurious outliers and normality (error residual distribution).

Multicollinearity had been tested prior to assessing the measurement model. The calculations were done early on given the distortion that high intercorrelations among independent variables can have on statistical results (Kline, 1998). All Variance Inflation Factor (VIF) values and tolerances were acceptable (Allison, 1999). Normality had also been examined prior to the assessment of the measurement model. The data Skewness and Kurtosis values were well within the acceptable range, indicating sufficient normal distribution (Hair et al., 2009). Regarding the distribution of error residuals, the Q-Q plots were nearly identical and acceptable for all the variables. An example Q-Q plot (SN) can be revisited by looking at Figure 9. Hence, linearity, independence and homoscedasticity were to be tested to meet the assumptions of MLR before conducting any analyses.

Homoscedasticity was tested with a scatterplot with a Loess fit line applied to it. As displayed in Figure 12., no erratic turns or sharp curves can be observed on the Loess line. Alongside the Loess fit line, the residuals are rather randomly scattered around 0 and do not follow a distinct pattern that would signal heteroscedasticity. The standardized error residuals also demonstrate a rather uniform distribution against the predicted values – further suggesting that the assumption of homoscedasticity should be acceptably met by the model (Campbell & Singh, 2019). Note that only the variables that are included in MLR were included in the regression on which the scatterplot was based.

Next, the single most important assumption of multiple linear regression – linearity was tested. A linear relationship needed to be established between each of the independent variables and the dependent variable of the regression. Technically, the model has three independent variab-

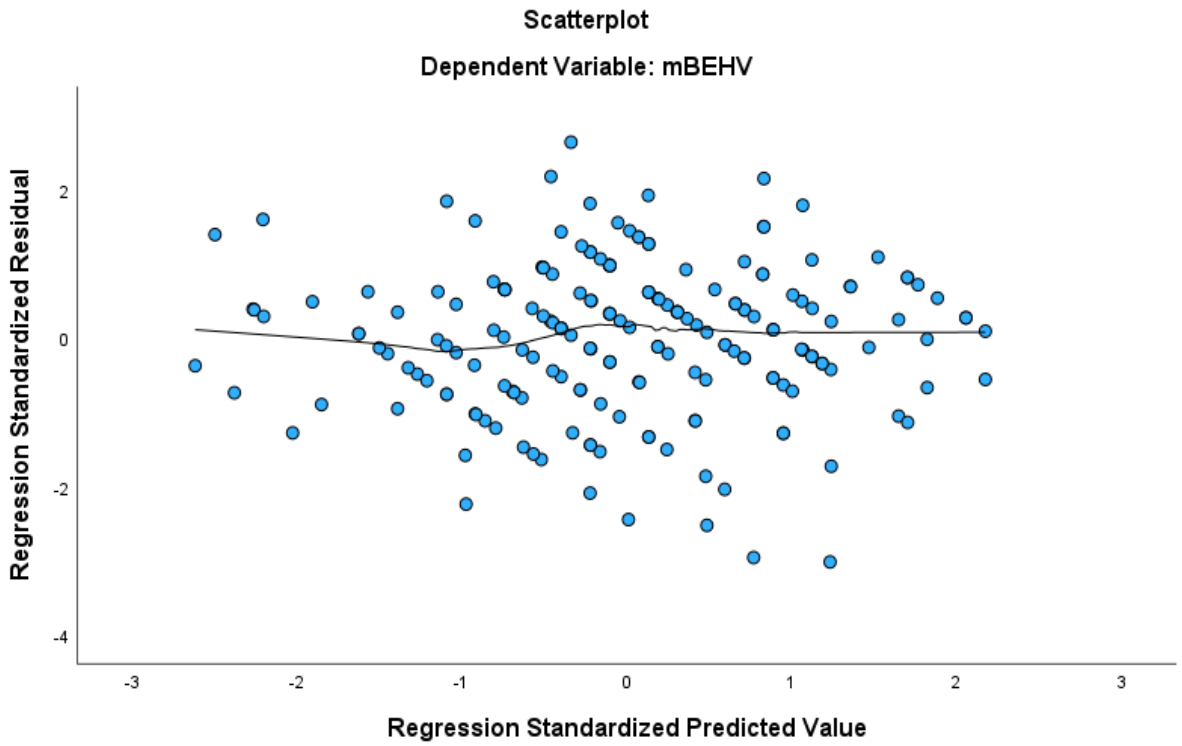

Figure 10. Homoscedasticity with Loess Fit Line

Table 7. Linearity ANOVA table

ANOVA Table (BEHV*PP, BEHV*PCE, BEHV*BINT)

BEHV*BINT	***SoS***	***df***	***Mean Square***	***F***	***Sig.***
Linearity	113.3471	113.347	113.347	382.851	<.001
Deviation**	1.910	11	.174	.586	.838
BEHV*PCE					
Linearity	41.370	1	41.370	67.056	<0.05
Deviation**	13.956	8	1.745	2.828	0.06
BEHV*PP					
Linearity	37.667	1	37.667	57.697	<.001
Deviation**	10.400	7	1.486	2.276	.030

****from linearity**

les (PP, PCE, INT), thus, the variables' relationship with BEHV, the dependent variable in the regression was examined. The Analysis of Variance (ANOVA) results are presented in Table 6. In sum, despite being on the cusp of being significant, PCE's deviation from linearity (p = 0.06), acceptable linearity could be concluded as all of the linear relationships were significant, and the deviations were statistically insignificant. Hence, the null hypothesis of the appropriateness of the linear regression was accepted.

Running the multiple linear regression

After extensive testing, it could be concluded, that no MLR assumptions were violated (Fein et al., 2022) and the regression analyses could be run. First, a standard MLR was conducted. All variables were standardized prior to conducting the analyses. The interaction terms were also formed accordingly with standardized variables (i.e., zPCE*zBINT).

The ANOVA test of the MLR was significant ($p < .001$) and the test was deemed acceptable. The moderating effect of PP (zPP*zBINT) on BEHV was examined first. Despite having a statistically significant, relatively strong effect on BEHV directly, the moderating effect of perceived price on the BINT-BEHV relationship was not significant ($p > 0.05$). PCE did not have a significant moderating effect on the BINT-BEHV relationship either ($p > 0.05$).

Given the negative influence that a smaller sample can have on a moderated MLR in terms of not having sufficient statistical power to detect the interaction effect (Aiken & West, 1991), the author wanted to conduct a back-up moderation analysis to ensure that the results are as valid as they can be. Hence, an additional moderation path analysis with standardized constructs was conducted on AMOS. See Figure 11. for the interaction model.

Table 8. Overview of the results of the moderation analyses

Interaction term				
(INT*PCE)	**Analysis**	**beta coefficient (*β*)**	***t*-value**	***p*-value**
	AMOS	.032	.740	> 0.05
	MLS	.036	.783	> 0.05
(INT*PP)	**Analysis**	**beta coefficient (*β*)**	***t*-value**	***p*-value**
	AMOS	.000	.011	> 0.05
	MLS	.000	.012	> 0.05

After conducting the analysis, the fit indices were checked first. The moderation model demonstrated excellent fit ($p > 0.05$, $\chi 2/df = 1.222$, GFI = .989, CFI = .997, IFI = .997, TLI = .991, RMSEA = .034). Thus, the path coefficients could be analyzed. An overview of the results is presented in Table 8. To conclude, the results of the path analysis were similar to the results of the MLS.

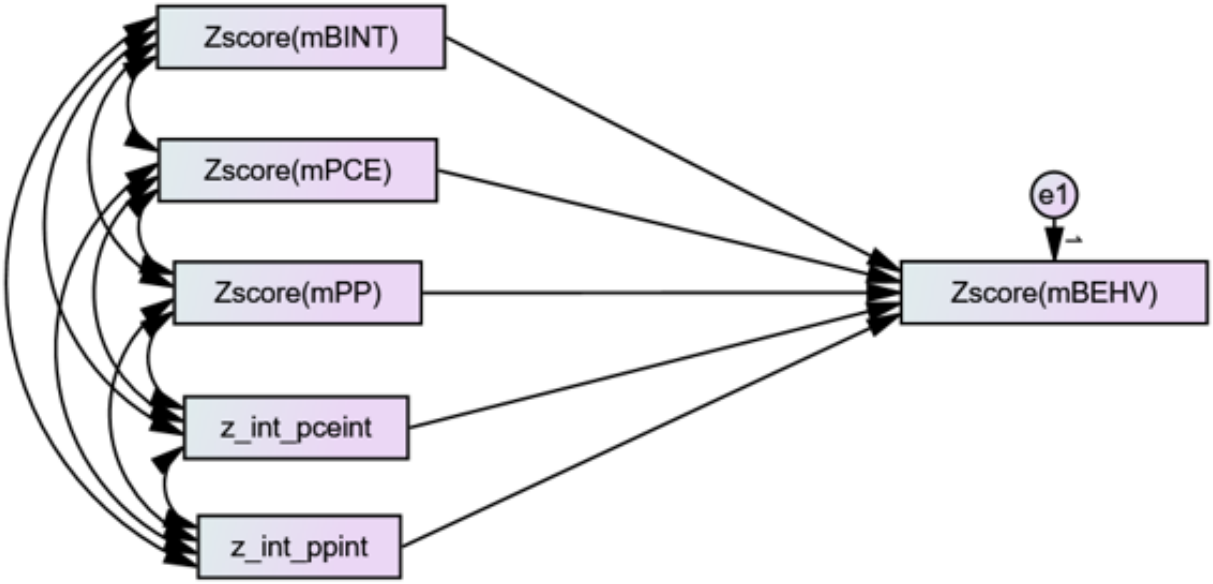

Figure 11. AMOS moderation model

Additional MLSs for the intention-behavior relationship

Given that MLS is less affected by deficiencies concerning discriminant validity – assuming the fundamentals are met – another MLS was run to examine the relationship between intention and behavior. The regression was formed to represent the structural model and its paths to behavior. The beta coefficient ($\beta = .789$) with statistical significance ($p < .001$, $t = 18.007$) was relatively close to the results of the structural model ($\beta = .861$, $t = 14.661$, $p < .001$), demonstrating that the substantial effect on behavior was also replicable in multiple linear regression. This does not dispel the model from its discriminant validity concerns but gives some support to the findings in light of violating the validity requirements (Campbell & Fiske, 1959).

Furthermore, *BEHV1*, focusing on the respondents' lifetime organic food purchase behavior is arguably not the most optimal determinant of future behavior. Thus, the author found it important to also examine the intention-behavior relationship on more recent and frequent pur-

chase behavior. Given the requirements for estimating a structural model, the two-item construct was not tested as a part of a structural model. However, a multiple linear regression does not get affected by similar circumstances. Transforming *BEHV2* and *BEHV3* into one behavior variable and incorporating it as a dependent variable in the regression equation, the relationship was statistically significant ($p < .001$, $t = 12.358$) with a beta coefficient of ($\beta = .697$). The results show that the intention-behavior relationship was substantial when only recent and frequent organic food purchase behavior were examined.

6. CONCLUSIONS AND DISCUSSION

6.1 Summary of findings

The objective of this study was to develop an understanding of young adults' purchase behavior in the Finnish organic food market. Behavior was assessed by adhering to the behavioral causality of the Theory of Planned Behavior. Acknowledging the imperativeness of understanding the antecedents that constitute a particular pro-environmental behavior, the application of the TPB allowed the examination of the sequence that leads to the behavioral decision to purchase or to not purchase organics. After an extensive statistical analysis process, it can be concluded that the application of the extended TPB was successful. The study was able to answer its research questions with trustable results. The trust stems from the statistical analysis process rigorously adhering to the mandatory and complementary protocols of its respective analyses. The extension of the TPB was not in vain, as the approach was salvaged by examining the variables' direct relationship to behavior, yielding relevant insights.

What constitutes young adults' intentions to purchase organic food?

The results showed that attitude is a significant predictor of behavioral intention, which is congruent with extant, vast literature on pro-environmental behaviors (Cleveland et al., 2012; Kaiser et al., 1999; Lee & Holden, 1999; Taylor & Todd, 1995), as well as on organic food purchase behavior (Dean et al., 2012; Hughner et al., 2007; Schlegelmilch et al., 1996; Sparks & Shepherd, 1992). The findings demonstrate a strong link between positive perceptions of the pro-environmental facets of purchasing organic food and subsequent behavioral intentions. The results' direct connection to perceptions of responsibility was further supported by the score for *ATT2*, having the highest mean at 4.12/5.

The mean score of subjective norms (*SN1*, *SN2*, *SN3* = 2.309) was far lower than those of the other predictor variables of behavioral intention. The responses show that young adults' behavioral decisions for the purchase of organic food are mostly autonomous and seldom the outcome of perceived normative pressure from salient referents. However, when young adults perceive normative pressure, congruent behavioral intentions follow. The findings correspond to the arguments of Schultz (1999) and Gleim and Lawson (2014) concerning the strong influence of normative pressure when it is perceived by individuals vis-à-vis a particular pro-environmental behavior. As the vast majority of respondents were students, the perceptions of

pressure might stem from standardized behavior in a student association or a smaller group – alluding to interest in conforming to group norms (White et al., 2009).

Perceptions of control over the organic food purchase behavior had a less than anticipated effect on behavioral intentions. Despite the internal consistency issues (See Chapter 6.4 for further analysis), PBC was a statistically significant, albeit relatively small in effect, predictor of intention to purchase organic food. Thus, when young adults perceive sufficient control over the purchase of organic food, it'll bolster the formation of favorable intentions. This supports the TPB's tenets about the requirement of volitional control over a particular behavior (Ajzen, 1991).

When examined directly in relation to behavior, PBC's effect on behavior was not statistically significant. Based on another set of arguments by Ajzen (1991) regarding the dependency of intentions on volitional control over a particular behavior – a non-statistically significant result was unexpected. Explaining the result is the strong control that individuals who did not have any intentions to purchase organic food and little past purchase behavior perceived. Many respondents who gave the lowest scores for intention and behavior respectively, expressed moderate to high control over their purchase behavior. The interest toward purchasing organics just did not exist. Given the confusion that the PBC scale caused, many who did purchase organics somewhat frequently also perceived some difficulties (PBC scores < 3).

Do young adults' intentions to purchase organic food translate to congruent actions?

Despite the growing discussion around the elusiveness and especially the attitude-behavior incongruence among young adults (ElHaffar et al., 2020; Wiernik et al., 2013), including other consumer cohorts as well, the findings of this study show that young adults act according to their stated intentions when it comes to purchasing organics. Only a few respondents stated strong intentions to purchase organic food without following through with congruent behavior. This discrepancy can also be because the respondents have recently developed an interest in organic food and are yet to engage in corresponding purchase behavior. As past behavior was used as a proxy, the behavior might be performed in the future and doesn't necessarily allude to a green gap. The intention-behavior congruence was substantial when only recent and frequent purchase behaviors were examined (See Chapter 5.4).

The roles of PCE and perceived price

The intention-behavior relationship was not dependent on any moderator variables and the strong relationship rendered the moderators practically useless. However, especially the role of PCE should not be dismissed in driving organic food purchase behavior. Despite not having a moderating influence due to the strong correspondence of intention and behavior, all of the frequent purchasers of organic food had high levels of PCE. Whereas not everyone who often purchased organic food found organic food to be particularly cheap, everyone strongly believed in the importance of individual actions in combating the contemporary environmental issues of today. What was intriguing was the sheer number of respondents who had high PCE, but who did not purchase organics. In total, only a tiny fraction of the respondents did not consider individual actions to be important in combating environmental issues.

The prevalence of high general PCE and the varying engagement in organic food purchase behavior highlight the differences between individuals' consumption domains (Kaiser et al., 1999). Many of the respondents who had high levels of PCE but did not purchase organic food are likely to manifest their PCE through other pro-environmental behaviors that they consider to nurture their motives or conception of a green self (Helm et al., 2019). The finding has support in the PCE literature as well, as Ellen et al. (1991) have argued that pro-environmental behaviors should not be viewed in aggregate if the role of PCE is exa-mined as it is highly unlikely that the effects of high PCE are uniform across many different pro-environmental behaviors. Moisander (2007) has argued that the salient motives for pro-environmentalism tend to manifest through selective behaviors.

When the effect of perceived price on behavior was examined directly (with two items), the effect was statistically significant, and the beta coefficients signaled a moderate relationship. Many respondents who purchased organic food did not consider it to be particularly affordable (only one respondent strongly agreed) whereas the vast majority of respondents who did not purchase organics considered organic food to be on the expensive side. Although it cannot be determined for certain, the findings could be a sign of frequent organic food shoppers being a tad less price sensitive as also argued by Hughner et al. (2007) and Padel and Foster (2005).

What the findings objectively suggest is the powerful role of the psychological antecedents of behavior (Steg & Vlek, 2009). The perceptions of non-low prices did not seem to have a constraining role when attitudes in favor of purchasing organic food, PCE and in some scenarios perceived normative pressure were high. Most crucially, stated strong intentions to purchase

organics were not suppressed by perceptions of high prices, as congruent behavior almost always followed. The polarization concerning the responses to the price items implies that a more pragmatic segment that is highly price-sensitive with differing antecedents of behavior exists among the group that simply does not care about organic food and the consumers who frequently purchase organics without being significantly guided by the prices.

6.2 Practical implications

On the more practical front, this study corroborates the imperative role of the antecedents that constitute a particular pro-environmental behavior in enabling a more comprehensive understanding of it. Adherence to the TPB's behavioral causality provided insights into the roles that attitudes, subjective norms and perceived behavioral control play in forming behavioral intention to purchase organic food and how the intentions then correspond with the behavior that follows. The findings also highlight the complexity associated with pro-environmental behaviors, namely organic food purchase behavior. The study showed that young adults in Finland harbor positive attitudes toward the purchase of organic food, especially its pro-environmental facets.

On a more general note, young adults in Finland cognize the importance of individual actions in mitigating the contemporary environmental issues of today. Combined with favorable attitudes toward the purchase of organic food, the foundation for a more widespread organic food purchase behavior is there, but its effectiveness is obstructed by, for example, perceptions of high prices of organic foods. Since the majority of respondents were students, the role of price amplifies. Although the worst of the inflation in the Eurozone has subsided and supermarkets in Finland have begun to actively lower the price of foods, students' purchase power is not improving as the substantial cuts on students' housing allowance will inexorably worsen many students' already tight financial situations. Given that organic alternatives are oftentimes more expensive, sometimes substantially more expensive than their conventionally produced counterparts, purchasing organic food is just not feasible for some young adults despite favorable intentions.

Notably, the study showed that a strong intention to purchase organic food is an objective cue of future organic food purchase behavior. Therefore, focus should be put on how to form such positive intentions among young adults. Information campaigns have historically been popular in introducing a novel pro-environmental behavior to, for example, students. However, there

are some fundamental aspects that have to be taken into account when such a campaign is devised in order for the efforts to not be in vain and concomitant resources to not be squandered. The effectiveness of information campaigns taking place within educational institutions has been questioned for a long and the findings of this study could be of help in understanding why and how the cruxes could be avoided in the future if similar campaigns to increase organic food consumption are held.

Attitude played a fundamental role in influencing young adults' intentions to purchase organic food. Nobody had particularly negative attitudes toward the purchase of organic food and its pro-environmental facets. If the mean score for attitudes alone is examined with the previously dominant view that favorable attitudes should lead to congruent behaviors, the number of respondents who purchased organics should have been significantly higher. The influence of attitudes alone is not powerful enough to facilitate the adoption of novel organic food purchase behavior, which should be taken into account when, for example, intervention strategies to support the F2F strategy are devised. Positive attitudes on the pro-environmental facets, nutritional facets or health-related qualities of organic food support the formation of favorable future behaviors but require support from other psychological and contextual factors.

PCE, which has historically been regarded as one of the most powerful predictors of behavior supported the effect of attitudes. The high levels of PCE among the respondents should have theoretically led to a significantly higher number of respondents who frequently purchased organic food. However, the measurement items for PCE were fairly general and did not pertain to the purchase of organics alone. Corroborating the findings of previous studies, the results supported the notion that pro-environmental behaviors to be influenced should not be assessed in aggregate.

When an intervention strategy is devised, the approach should first of all solely focus on organic food and its purchase. Second, the observer should understand his/her/their role in the face of the problem to be influenced. For example, the fabric should be *why it is important that **you** purchase organic food* instead of *why it is important to purchase organic food*. The study provides support for the inapplicability of self-efficacy on aggregate pro-environmental behaviors. Thus, if PCE is to be fostered, the persuasion should be pertinent to the behavior to be acquired.

6.3 Theoretical implications

This study makes contributions to the TPB literature and to streams of literature on aggregate pro-environmental behaviors and organic food purchase behavior. In addition, the study provides interesting insights into the dynamics of the green gap in the organic food purchase context. Perhaps most notably, the study provides substantial support for the relevance of the behavioral causality of the TPB in young adults' organic food purchase behavior context. This is in contrast with recent meta-analyses (See e.g., ElHaffar et al., 2020) that have vocally criticized the applicability of the TPB on pro-environmental behaviors and older works that have tried to understand the discrepancy between stated pro-environmental intentions and behaviors (See e.g., Schwenk & Möser, 2009). However, when young adults' organic food purchase behavior was examined, the intention-behavior congruence was extremely high and no discrepancies among stated intentions and behavior were observed.

This paper also provides some preliminary contributions to the relatively scarce body of literature on young adults' pro-environmental behaviors. Where Finnish consumers are concerned, works on organic food purchase behavior mostly refer to studies from the early 2000s that have not been conducted too much since. Hence, these findings also offer a timelier view of how consumers in Finland behave in the growing organic food sector in a challenging macroeconomic environment. In general, the paper does not provide support for the elusive and enigmatic nature of young adults' pro-environmental behavior that has been postulated by a plethora of previous studies. Further studies on young adults' pro-environmental behaviors in Finland are needed to determine whether the repeatedly touted elusiveness is something that does not pertain to the Nordic youth.

Future research directions

Since the intention-behavior relationship was so intense and not dependent on alien moderators, future applications of the TPB on the organic food purchase behavior of young adults in Finland should put more emphasis on the antecedents of intention. Possible extensions of the model should, thus, focus on how the incorporated alien variables bolster the formation of favorable intentions and increase the model's predictive power. If the research is quantitative and estimates the parameters of a theoretical TPB structure, paths from the added variables must be drawn to the intention construct. The moderator variables of this study could produce useful insights and greatly influence the predictive power of a TPB application. If young adults in Finland are

not the core research population and there are doubts over the intention-behavior congruence, the direct effects of perceived price and PCE on behavior could also be examined.

Furthermore, the salience of normative pressure would be interesting to be dissected more thoroughly in the organic food purchase context. When young adults perceived pressure from important peers to purchase organic food, corresponding behavior followed. It's plausible to try and understand the dynamics of young adults' normative beliefs and motivations to comply more in-depth. The motivation to comply is of particular interest to better understand whether the pressure stems from adherence to given group norms or other social norms.

6.4 Limitations of the study

All of the study's limitations must be acknowledged should the results be used in any way or form. The results obtained from this study should not be used as concrete evidence in determining how young adults behave in the Finnish organic food market. Instead, the findings should be used as indicative information.

Demographic distribution

Attempts were made to gather a sample with a more even gender distribution were made. Ultimately, the vast majority of respondents – approximately 74% were females. Where the Finnish population structure is concerned, 74% is a substantial overrepresentation of females (Statistics Finland, 2022). Although not ideal, the overrepresentation is nothing particularly new in the realm of pro-environmental research. Historically, females have favored pro-environmental behaviors (Mohal et al., 1992). Studies have addressed the gender differences at an aggregate level (See e.g., Hunter et al., 2004) and by focusing on particular behaviors, for example, waste sorting (See e.g., Eisler et al., 2003). The reasons for the discrepancy are vast (Hunter et al., 2004), but generally, females tend to hold more positive attitudes toward pro-environmental behaviors than males (Zelezny et al., 2000). A recent study by Brough et al. (2017) found that men are, even today, surprisingly affected by the historical femininity of pro-environmental behaviors – resulting in evasion. Potential male respondents were not excessively interested in participating in the study. The title of the questionnaire likely further contributed to the matter. The questionnaire was likely ignored if organic food purchase behavior did not positively resonate with a person or evoke any interest. The ignoring was supported by the poor response rate.

High percentage of pro-environmental attitudes

The questionnaire was not distributed in any social media groups that were in any way or form associated with organic food. Furthermore, the questionnaire was not shared in groups that were associated with any sustainable behaviors. The choice of channels was based on the objective of reaching the quintessential young adults living in 2020s Finland. Systematically approaching people who already purchase organics would not have made sense as they already represent the growing minority that engages in more sustainable grocery shopping behaviors.

At first, the mean score of 3.979 for attitudes and 4.123 for PCE might seem oddly high. Part of the reasons are explainable by the overrepresentation of women in the sample and their tendency to favor sustainable behaviors. Another likely reason for the scores is the absence of respondents who harbor particularly negative feelings toward the purchase of organic food. In addition, the author recently conducted similar, unpublished research on young adults waste-sorting practices in rented apartments (n = 169). The questionnaire was shared on email channels that could reach thousands of people. Ultimately, the response rate was low, and 99,1% of the respondents stated that they view themselves as environmentally conscious consumers. The high percentage of respondents who viewed themselves as environmentally conscious consumers was a clear indication that the questionnaire was almost solely picked up by those who had some propensity to engage in pro-environmental behaviors. The landing page of the questionnaire had a bolded sentence, stating the importance of each response. In retrospect, a general questionnaire on standard grocery shopping behavior with questions about organic food purchase behavior would have likely appealed to non-pro-environmentally oriented consumers.

Social desirability bias

Possibly influencing the answers was the topic of research. Pro-environmental behaviors have generally been found to be highly susceptible to social desirability bias (For an extensive overview, see Vesely & Klöckner, 2020). Social desirability bias occurs when respondents or a particular respondent exaggerate their answers in a questionnaire in pursuit of a more favorable depiction of themselves (Fisher, 1993). The social desirability of organic food purchase behavior might've made it enticing to answer something exaggerated. The social desirability effect was likely amplified by the study's focus on the pro-environmental determinants of purchase behavior and not on more subjective drivers, such as perceived nutritional benefits. Mitigating actions were taken to suppress the prospect of social desirability bias to the best possible extent whilst simultaneously ensuring the questionnaire was not arduous to complete. Despite the

measures taken in this study, it's fundamental to acknowledge that such measures are seldom enough to thwart the influence of social desirability bias (Armitage & Conner 1999b).

Reliance on self-reported behavior

The study relied on self-reported past organic food purchase behavior, which was used as a proxy to predict future organic food purchase behavior. The approach was, thus, fully dependent on the respondents' honesty and integrity. Real-life observations would have been more undisputable. However, such an approach was not feasible nor realistic for the scope of the study compared to a self-administered online questionnaire. Additionally, the frequency of "regular" (*BEHV3*) was open to many subjective interpretations. A pre-determined scale to qualify as "*regular organic food purchase behavior*" was not given, which must be acknowledged when the scores for *BEHV3* are examined.

Discriminant validity concerns

Despite extensive efforts by the author, discriminant validity could not be established for the structural model. As the PCA-analysis with Promax rotation showed, cross-loadings were present with behavior and intention loading highly on the same component. This means that the constructs' relationship in the structural model is likely amplified, and the effects might have influenced the other path coefficients as well. However, the effects of discriminant validity are less amplified in the multiple linear regression, which was also conducted to verify the intention-behavior relationship. The results were also in support of a substantial relationship between intention to purchase organics and actual organic food purchase behavior.

Nebulous PBC scale

Contributing to the subpar inter-item reliability of the PBC scale was the confusion that *PBC3* caused. Of the items, *PBC3* received particularly low scores. At first, the low scores did not make much sense as the respondents had generally perceived high availability of organic food in the stores they frequent for groceries (availability-dimension) and moderate capability to purchase organics if they wanted to (ability-dimension). Hence, the perceptions of the easiness to purchase organic food should have been higher. What became evident was the confusion that *PBC3* "*For me purchasing organic food would be easy/difficult*", had caused – resulting in some respondents connecting the question to financial-related difficulties. Although fundamentally hypothetical, supporting evidence for this theory was found by cross tabulating the

two items (*PBC3*, *PP1*) and observing that perceptions of difficulties to purchase organic food meant strong disagreement or disagreement on organic food's affordability.

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