



**Radboud Universiteit Nijmegen**

## Proposal Master Thesis

Effect individual and collective efficacies on pro-environmental intention and behavior, moderated by compulsive buying

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### Abstract

This research gathers an answer to the influence of multiple individual and collective efficacies on pro-environmental behavior and pro-environmental intention. Additionally, insights are delivered into how this relationship is moderated by compulsive buying. This question originates from the unclarity in how individual and collective efficacy influences intentions and behavior related to sustainability issues. This research is performed through quantitative analysis in SPSS. The data has been collected through Qualtrics. Multiple regression and moderation analyses are performed to gain insights into the relationships. The results show that individual outcome expectancy is significant. No impact is identified from the other efficacies. However, with the addition of the moderator, the impact of the collective efficacies becomes significant. The significant interactions imply that people are less likely to engage in pro-environmental intentions and behavior as they score high on compulsive buying. This study concludes that the efficacies do, to some extent, influence pro-environmental intention and behavior and that this relationship is moderated by compulsive buying. Additionally, these results suggest that companies consider the extent to which their customers are characterized by the individual and collective efficacies and compulsive buying to improve their communication, customer relationship, and marketing strategies.

**Keywords: Pro-environmental self-efficacy – Pro-environmental intention – Pro-environmental behavior**

## Preface

Before you lay my thesis on the impact of multiple forms of efficacy on pro-environmental intention and behavior and the impact of moderation from compulsive buying. This work has been written to fulfil the graduation requirements of the Master Marketing of the Business Administration program at Radboud University. Conducting research and writing this thesis happened from December 2021 to June 2022. This thesis challenged me intellectually and taught me a lot about the different dynamics identified in business and, more specifically, the impact of the efficacies and compulsive buying on pro-environmental intention and behavior.

Sustainability is nowadays a topic that is undeniable in every part of our society. Through this work, I tried to deliver insights into how companies can improve marketing to eventually improve their relationships with customers. After all, through sustainability, we can improve the lives of our current generation and, more importantly, the future generations.

First and foremost, I want to thank my supervisor, Dr. C. Horváth, and second examiner, Dr. H. W. M. Joosten, for their supervision, critical reflection, support, and advice during this process. Another thank you to the other researcher, Melanie van Eck, who helped me with data collection and analysis. Without you, I would not have been able to finish my thesis.

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Arnhem, 13 June 2022

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## 1. Introduction

There is ample evidence that the environment is changing. Each year a wide range of pollutants are released through industrial emissions. It has been revealed that more than 1,400,000 new chemicals and pesticides have been synthesized since 1950 (Landrigan, Fuller, Acosta, Adeyi, Arnold, Baldé & Zhong, 2017). About 79,000 tons of plastics are dumped annually in the Pacific Ocean. The 'great Pacific garbage patch' floating in the Pacific Ocean is three times the size of France (Arora, Fatima, Mishra, Verma, Mishra & Mishra, 2018). Among major anthropogenic activities, oil spills are also causing great harm to the planet's marine ecosystems (Arora et al., 2018). The average global surface temperature has increased by 0.74 °C since the late 19th century and is expected to increase by 1.4–5.8 °C by 2100 with significant regional variations (IPCC, 2014). For the given temperature rise by 3–4 °C, drought incident risk will increase from 10 to 40% in the coming years (Stern, 2006). These numbers show that the earth is becoming more and more inhabitable for most species, as indicated by a steep decline in the diversity of animals and plants (Arora et al., 2018).

One of the reasons behind the worsening of earth's living conditions is consumer's actions that have resulted in "increased greenhouse gases, climate change, degradation of land, pollution of air water and soil, depletion of non-renewable resources, loss of biodiversity, accumulation of harmful recalcitrant chemicals and several related issues" (Arora et al., 2018, p. 1). However, it is also known that increased engagement in environmentally friendly behaviours can significantly decrease environmental effects. This environmentally friendly behavior is called pro-environmental behavior (PEB) (Lauren, Fielding, Smith & Louis, 2016). Kollmuss and Agyeman define PEB of customers as "behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world." (2002, p.240). Intertwined with PEB is pro-environmental intention (PEI). More specifically, this intention is explained as "the willingness to engage in pro-environmental behavior" (Carfora, Caso, Sparks & Conner, 2017, p.844). This intention precedes PEB and determines the extent to which consumers want to increase their effort related to sustainability. Thus, the importance of PEI and PEB itself is related to decreasing the negative impact consumers can have with their purchases on the environment.

Action is needed to limit the negative impact on the environment. This action is expected from both companies and consumers. More specifically, consumers can contribute to a decreasing impact on the environment through engaging in PEI and PEB. Adequate articles

exist on the relationship between PEI and PEB and its impact on the environment in the business, psychology, and environmental stream. In literature, light has been shed on personal (internal) characteristics and social (contextual) antecedents of PEB. These antecedents are personality traits and social relationships (Chiaburu, Ob, Berry, Li & Gardner, 2011; Organ & Ryan, 1995; Ilies, Nahrgang & Morgeson, 2007; Kamdar & Van Dyne, 2007). Based on such human behavior as antecedents, PEB is in the literature jointly determined by cognitive processes that are internal to the individual and his/her external context (Silvi & Padilla, 2021). However, PEB has traditionally been studied either as the outcome of an internal process of moral deliberation in which the individual supposedly acts in complete autonomy from their external context (Bamberg & Möser, 2007; Hopper & Nielsen, 1991) or the consequence of an external stimulus to which the individual responds as automation regardless of their convictions (Ferrara & Missios, 2005; Jacobs & Bailey, 1982). Literature characterizes PEB by its high level of prosocial behavior that has the intention to promote the welfare of an individual or group (Cavanaugh, Bettman & Luce, 2015).

Furthermore, the literature identifies self-efficacy as an essential factor influencing PEI and PEB. Self-efficacy directly influences PEB and is partially mediated by personal intentions (Faraz, Ahmed, Ying & Mehmood, 2021). To perform prosocial behavior, people must be able to perform activities and control their emotions accordingly. The extent to which an individual will strive for PEB depends on the belief one holds about the perception of their ability to execute actions related to its goals. It has been indicated that individuals with high environmental self-efficacy and outcome expectancy engage more in PEB than individuals with a lower perception of their efficacy (Sawitri, Hadiyanto & Hadi, 2015). Another interesting finding comes from Jugert, Greenaway, Barth, Buchner, Eisentraut and Fritzsche (2016), who showed that PEI could be increased through collective efficacy. Literature showed that besides direct effects, self-efficacy influences PEB indirectly through media usage (Huang, 2016).

While these studies indicate that self-efficacy influences PEB, most have a too simplistic approach. Most studies use a simple, unidimensional conceptualization of pro-environmental self-efficacy. In the context of sustainability, this unidimensional approach is insufficient to understand the relationship's core. The main reason why a unidimensional approach is not enough is that sustainability is not solely an individual action but depends on a group. Additionally, multiple forms of pro-environmental self-efficacy have been identified in the

literature that influences PEB. Using a multidimensional approach helps understand the relative effects of each part of these self-efficacies. Furthermore, it shows what the overall impact is on PEB. Therefore, a more complicated approach toward self-efficacy is needed.

The dimensions added to create a multidimensional pro-environmental self-efficacy (PSE) are pro-environmental individual self-efficacy expectancy, pro-environmental individual outcome expectancy, pro-environmental collective efficacy expectancy, and pro-environmental collective outcome expectancy. Pro-environmental self-efficacy and outcome expectancy stem from Bandura (1977). Outcome expectancy is "a person's estimate that a given behavior will lead to certain outcomes" (Bandura, 1977, p.141). Self-efficacy expectancy is "the conviction that one can successfully execute the behavior required to produce the outcomes" (Bandura, 1977, p.141). The positive effect of pro-environmental individual self-efficacy and outcome expectancy on PEB has already been demonstrated by Sawitri et al. (2015). Here, the article showed that pro-environmental self-efficacy and outcome expectancy is related to sustainability since they can help understand the development of environmentally friendly behaviors (Sawitri et al., 2015). Additionally, pro-environmental collective efficacy expectancy is defined as "a group's shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments" (Bandura, 1997, p.447). Here a distinction is made, like individual level, between collective efficacy and collective outcome expectancy. Pro-environmental collective outcome expectancy refers to the beliefs individuals hold about "likely consequences their group will experience as a result of the group's performance of work tasks" (Riggs & Knight, 1994, p.756). As previously mentioned, Jugert et al. (2016) showed the positive influence of pro-environmental collective efficacy. This collective form of efficacy and outcome expectancy is related to sustainability since it is shown that customers are willing to pay more for sustainable products if they think other customers behave similarly (Doran, Hanss & Larsen, 2015).

Moreover, the relationship between PSE, PEI, and PEB should be studied as compulsive buying moderates it. Compulsive buying is "a preoccupation with buying and shopping, by frequent buying episodes, or overpowering urges to buy that are experienced as irresistible and senseless" (Koh, Tang, Gan & Kwon, 2020, p.2). Most studies do tap into the relationship between impulsive buying and PEB. These studies show that impulse purchases decrease PEI and engagement in PEB. Since both impulsive and compulsive buying are related to similar consumers' normative beliefs, it can be expected that a similar relationship exists between



compulsive buying and PEB (Kwak, Zinkhan, DeLorme & Larsen, 2006). The results on impulsive buying behavior indicate that compulsive buying might decrease if consumers engage more in PEB, despite self-efficacy. Studies have shown that consumers tend to engage more in compulsive buying if they perceive themselves with low self-efficacy (Koh et al., 2020). These findings show how decreased self-efficacy levels increase engagement in compulsive buying (Koh et al., 2020). Consecutively, increased levels of compulsive buying decrease the engagement in PEI and PEB (Kwak et al., 2006). Furthermore, this moderator will improve insights into how the relationship between PSE, PEI, and PEB fluctuates with the degree to which consumers engage in compulsive buying. Previously, no other study has included compulsive buying as a moderator in such a matter as is being done here.

The previously identified gap is the focus of this thesis. This gap will be filled by answering the question, "What is the influence of the multidimensional PSE on PEI and PEB, moderated by compulsive buying?". All studies mentioned in the previous paragraph use efficacy as a unidimensional construct. This study will combine all these dimensions of efficacy into one dimension. The relationships will be studied with a multidimensional PSE. Combining these parts helps understand the relative importance of influencing PEI and PEB. This choice is made due to findings in the literature. Literature has shown that self-efficacy may not be constant (Cervone, 2000). By including a multidimensional PSE, results may show whether this fluctuation can be explained because of the different dimensions. This study can also explain fluctuation in pro-environmental self-efficacy due to different dimensions of PSE influencing PEI and PEB differently. Additionally, a study in the writing domain already studied the multiple dimensions of self-efficacy (Bruning, Dempsey, Kauffman, McKim & Zumbrunn, 2013). Even though this is in another domain, it still shows the relevancy of the aim of this thesis. Suppose the notion of self-efficacy in another domain can be expanded by including a multidimensional approach. This shows that it is likely that a multidimensional approach in this study will also lead to exciting findings for the business domain. Lastly, the relationship between PSE, PEI and PEB can be better understood by including compulsive buying. More precisely, it can show how much PSE's influence on PEI and PEB changes when consumers possess different levels of compulsive buying.

The academic contribution of this study is that it will examine more thoroughly the combined effects of the different forms of self-efficacy on PEB and its intentions. This relationship will be extended by adding compulsive buying. This addition increases knowledge of whether

other moderators can be identified in the relationship. More insights will be provided in the literature chapter. This insight can be academically relevant since it can be a starting ground for future research to include more often a multidimensional approach towards self-efficacy. The benefit of ensuring this approach is that it can give more fine-grained insight into the relationship between PSE, PEI, and PEB. The importance of this gap stems from the management and marketing field that recognizes that companies and customers can and need to be motivated to show PEB (Goldsmith & Goldsmith, 2011).

Firstly, the practical relevance of this study is that companies and managers can grow their quality of communication about their sustainability actions. This relevance can help companies to improve the effectiveness of their marketing programs. Additionally, it can help improve customer relationships companies build through their communications. Secondly, by answering this knowledge gap, they can stimulate consumers to engage more in PEI and PEB. By achieving this, companies are going to consider sustainability issues and customers. Additionally, it helps companies justify their sustainability goals since consumers understand that consumer behavior can reach such goals and that customer actions can be practical. This can strengthen customer relationships and loyalty since customers understand that they can collectively reach sustainability goals with the help of companies. Furthermore, the social relevance is that customers can better understand how their intentions and behaviors are being influenced by self-efficacy to show behavior in alignment with the current sustainability trends. It helps customers take more sustainability issues into account, decrease compulsive buying, and reach their goals related to this issue.

## 2. Literature

### 2.1 *Pro-environmental behavior*

*Pro-environmental behavior* has been defined as "behaviours that consciously seek to minimize the negative impact one's actions on the natural and built world" (Kollmuss & Agyeman, 2002, p. 240). Additionally, in social and behavioral science field, it has been recognized as behavior performed to satisfy personal sustainability needs and goals (Ones, Wiernik, Dilchert & Klein, 2015). In management, PEB stems from a person's environmental passion. This passion is influenced by norms and behavior related to sustainability issues (Robertson & Barling, 2013). PEB is not under the control of formal environmental management policies or systems (Kim, Kim, Han, Jackson & Ployhart, 2017). This behavior is recognized as directly benefitting companies by conserving resources and energy for cost reduction and indirectly by preserving the natural environment for organizational sustainability (Kim et al., 2017).

There are multiple underlying conditions identified for PEB. Like most human behaviors, PEB is in literature jointly determined by cognitive processes that are internal to the individual and by the external context surrounding her/him (Silvi & Padilla, 2021). The general approach toward PEB is that it can be divided into two groups. Firstly, PEB is the outcome of an internal process of moral deliberation in which the individual supposedly acts in complete autonomy from their external context (Bamberg & Möser, 2007; Hopper & Nielsen, 1991). Secondly, PEB is a consequence of an external stimulus to which the individual responds as automation regardless of their convictions (Ferrara & Missios, 2005; Jacobs & Bailey, 1982). Both approaches have their pros and cons concerning validity. However, later evidence showed that internal and external factors determining human behavior, and their interaction had supported the development of integrated frameworks (Jackson, 2005; Kirakozian, 2016). Additionally, Monroe (2003) distinguishes between direct and indirect PEB. Direct pro-environmental behavior uses sustainable products, whereas indirect pro-environmental behavior changes the context of usage/purchase (Monroe, 2003). Furthermore, Monroe (2003) identified that there is PEB on an individual level as well as on a societal level.

A distinction can be made between the degree to which consumers engage in PEB or whether they engage in specific PEB-related actions. An example of this distinction is whether consumers have a high, medium, or low level of interest in PEB or whether they actively

separate plastic from their trash. For this study, the focus is on generally performed PEB. This choice is based on aiming to understand the impact of different variables on PEB. Studies have shown that the individual perceived power directly influences consumers' PEB related to trash separation (Ertz, Karakas & Sarigöllü, 2016). Additionally, a combination of environmental attitudes, knowledge and personal factors influences the extent to which consumers purchase low-energy light bulbs, visit recycling centres, separate trash, and use street trash cans (Casaló, Escario & Rodriguez-Sanchez, 2019). Furthermore, activities identified with PEB are using public transportation, choosing eco-responsible lunch options, turning off lights, participating in a green committee, and participating in social campaigns (Yuriev, Boiral, Francoeur & Paillé, 2018). These studies show that once people have the knowledge and believe in their actions, they are more likely to engage in PEB. As can be seen, the literature identified a wide range of PEB activities. However, the focus will be on PEB as a general construct for this study. This study builds on literature by differentiating between the multiple variables that might impact PEB. These variables are pro-environmental attitudes, compulsive buying, and PSEs. More about these variables in the following paragraphs. These variables are chosen since the literature discussed the multiple variables that can impact PEB (Silvi & Padilla, 2021). The question is whether certain PSEs are familiar with the engagement in PEB or whether the role of PSEs in explaining PEB depends on other included variables like pro-environmental attitude. This study will provide insights into this dynamic by studying the engagement in PEBs and to which extent this stems from PSEs or the other variables.

## *2.2 Pro-environmental intention*

*The pro-environmental intention* is defined as the “willingness to engage more in pro-environmental behavior” (Carfora, Caso, Sparks & Conner, 2017, p.844). Research has shown that intentions can contribute to predicting environment-related behaviors. For example, a meta-analysis indicated that, on average, intentions accounted for 27% of the variance in PEB (Bamberg & Möser, 2007). Moreover, intentions have been identified as the main driver for sustainable consumption behavior (Park & Ha, 2012). Consumers characterized by a higher degree of pro-environmental intention are more likely to increase their efforts in PEB (Park & Ha, 2012). Most studies explain this relationship as follows, the more knowledge people gather about sustainability issues, the more they develop intentions to engage in behavior. Due to this intention to perform PEB, the chances increase that consumers will execute activities related to sustainability issues. Some studies change the dynamic and elaborate that

people who perform PEB are more knowledgeable about the environmental consequences of their behaviors. In turn, this knowledge leads to promoting behavior intention (Park & Ha, 2012).

Additionally, in the sustainability field, it has been recognized that the willingness to engage in pro-environmental actions depends on the knowledge, experience, and perception of collective efficacy (Reese & Junge, 2017). Even though collective efficacy is recognized as a significant predictor of PEIs, other studies shed light on the importance of understanding the linkage between individual and collective efficacy to understand the developed PEIs (Jugert et al., 2016). Reese and Junge explained it as follows “Specifically, these authors argued that collective efficacy exerts its effects on sustainable behavior through raising perceptions of self-efficacy.” (2017, p.3). Moreover, people’s intention to act pro-environmental is enhanced by providing a sense of efficacy transferred from the group to the self. More information about this dynamic will be delivered in the individual and collective efficacy sections.

PEI is directly related to PEB since multiple studies have identified that these constructs are intertwined with each other. Some argue behavior leads to intention (Park & Ha, 2012), while others argue the opposite (Reese & Junge, 2017). However, for the scope of this study, engagement in PEB will stem from the increased intention to engage in extra efforts related to sustainability. More specifically, PEI in this study is seen as the amount of extra effort that people are willing to put into the engagement with PEB. The PEIs are directly related to increased efforts toward sustainability issues since intentions can determine whether consumers will engage in PEB (Jugert et al., 2016). Based on all this literature, the relationship between PEI and PEB is undeniable.

### *2.3 Theory of Reasoned Action*

However, literature identified a problem between intentions and behaviors. Namely, when consumers show intention for a specific behavior, they do not consistently execute it. This phenomenon is known as the intention-behavior gap (Sheeran & Webb, 2016). Numerous theoretical frameworks have been developed to explain the gap between intention of environmental activities and displaying PEB (Kollmuss & Agyeman, 2002). All these frameworks have in common that they relate the extent to which this gap exists is due to experience, normative influences, temporal discrepancy, and attitudes (Kollmuss & Agyeman, 2002). These insights show the current relevancy of the intention-behavior gap.

The problem with the intention-behavior gap is that it indicates the lack of actual PEB being performed by customers. Consumers might intend to engage in sustainability actions, but due to multiple factors, this might not translate into actual PEB (Kollmuss & Agyeman, 2002). This problem indicates that studies should start to include both intentions and behaviors to give conclusions about the effect of antecedents that might lead to PEB. Studies can give more comprehensive and valuable insights into the relationship between influencing factors and PEB with these insights. Better insights can be provided into precisely what and how these antecedents influence intentions and behavior.

However, to understand this intention-behavior gap better, the Theory of Reasoned Action (ToRA) will be used. ToRA was introduced by Fishbein and Ajzen (1975) to better realize how people develop specific behavior. ToRA is selected based on literature in the management field that successfully included the relationship between multiple antecedents leading to either intentions or behavior (e.g. Cordano & Frieze, 2000; Flannery & May, 2000). This study can be seen as an extension as it will provide specific insights into the combination of both intentions and PEB.

ToRA relates to this study since it shows how people develop their behavioral intentions through self-efficacies, which eventually might lead to actual behavior. This study reinforces the main thought in this thesis, which is the division between PEI and PEB. ToRA helps this study dive deeper into the antecedents of intention and how this can translate into actual PEB. More precisely, this theory can help understand how consumers develop intentions based on the different forms of PSE. These intentions can translate to engagement in PEBs, which can also be explained through ToRA. Firstly, ToRA can help explain this intention-behavior relationship as it can show whether this relationship truly exists. Secondly, ToRA can help by providing insights into how people translate this intention to behavior or what hampers people from engaging in PEB.

#### *2.4 Theory of Self-Efficacy*

*Theory of Self-Efficacy (ToSE)* was introduced by Bandura in 1977. Two forms of self-efficacy are distinguished: self-efficacy expectancy and outcome expectancy (Bandura, 1977). ToSE is used to bind all these types of efficacies and outcome expectancies together. It is based on the social cognitive theory and conceptualizes person-behavior-environment interaction as triadic reciprocity (Bandura, 1997). This theory is used to describe antecedents of the individuals' beliefs about whether they can perform a behavior and whether this behavior will produce a given outcome. Self-efficacy expectations are judgements about

personal abilities to accomplish a given task, whereas outcome expectations are judgements about what will happen if a given task is accomplished (Bandura, 1997). Outcome expectations are mainly based on the individual's self-efficacy expectations (Bandura, 1977;1997). People anticipate that the type of outcomes that their behavior can produce depends on their judgements of how well they can execute that behavior. There are situations when outcome expectations can be dissociated from self-efficacy expectations (Bandura, 1986). This disassociation occurs either when no action will result in a specific outcome or when the outcome is loosely linked to the level of quality of the performance. In general, self-efficacy positively impacts intention and behavior (Resnick, 2008). However, there is a negative effect of self-reported personal goals on performance, such that higher personal goals can cause low performance (Vancouver & Kendell, 2006). It may also be counterproductive as it may lead people to have a false sense of confidence and not put in as much effort as needed to perform optimally (Jones, Harris, Waller & Coggins, 2005). These different types of efficacies will be further discussed in paragraphs 2.5 and 2.6.

This study uses ToSE since it can help understand how self-efficacy and outcome expectancy impact intention and behavior. This helps with testing the hypotheses as it provides insights into the effects of these efficacies on intention and behavior. Furthermore, ToSE includes the interaction in the triadic of a person, self-efficacy, and environment. This triadic applies to this study as it tries to understand self-efficacy related to the sustainability issues that consumers face in their environment. However, TOSE will be extended in two ways. Firstly, there will not be a focus on only one form of self-efficacy and outcome expectancy. The collective forms of them will also be included in this study. Secondly, besides looking at solely the behavior, intentions will also be included. This extension can provide more insights into whether consumers want to perform specific PEB actions and whether they are doing it. This study can thus be seen as an attempt to extend the triadic.

## *2.5 Individual pro-environmental self-efficacy & outcome expectancy*

### *2.5.1 Pro-environmental self-efficacy expectancy*

*Self-efficacy* is "the conviction that one can successfully execute behavior required to produce outcomes" (Bandura, 1977, p.141). This study showed that efficacy beliefs regulate human functioning through four major processes. The study included cognitive, motivational, emotional, and selection processes. Cognitive processes are related to efficacy beliefs affecting thought patterns that enhance or undermine performance. The motivational processes relate to the central role that efficacy beliefs play in the self-regulation of

motivation (Bandura, 1977). Affective processes are considered in the coping capabilities of people. These capabilities influence how much stress and depression are experienced in threatening or taxing situations (Bandura, 1977). Two forms of self-efficacy are distinguished: self-efficacy expectancy and outcome expectancy (Bandura, 1977).

Subsequent studies showed that self-efficacy should be resilient to overcome obstacles through relentless effort (Bandura, 1994). He added, "Some setbacks and difficulties in human pursuits serve a useful purpose in teaching that success usually requires sustained effort" (Bandura, 1994, p.2). This addition is reinforced by Schunk and Zimmerman (2007), who showed that self-efficacy could change behavior and help with learning new techniques. Previously, studies showed that self-efficacy could be an essential attribute in changing intentions and learning new behavior (Schunk, 1989). Additionally, the literature showed self-efficacy being the basis for realizing behavioral change (Rababah & Borkovec, 1977).

Furthermore, pro-environmental self-efficacy is related to sustainability issues in the literature. Studies in the environmental literature identified that fewer studies had analyzed the role of pro-environmental self-efficacy in prosocial and altruistic behavior. Related to these behaviors are actions related to the environment, as in this study. More precisely, PEB is seen as a unique prosocial behavior (Ramus & Killmer, 2007). What can be added to this PEB is that "To carry out these acts and make their abilities available for the well-being of others, people must perceive that they have the emotional and social abilities required for prosocial behavior." (Tabernero & Hernández, 2011, p.659). Intentions must accompany this perception of capacity that behaviors generate (Tabernero & Hernández, 2011). PSE is useful for PEI and PEB since it is seen as the best predictor of acts consumers choose to perform for which a greater level of effort is required (Bandura, 2002). The higher the perception of self-efficacy related to PEI, the greater the changes in their chosen goals (Earley & Lituchy, 1991). More precisely, this means that consumers are more likely to engage in PEB if they perceive themselves as capable. In contrast, individuals who initially doubt their capacity feel dissatisfied with themselves and their achievements (Bandura, 1997). Similarly, they will tend to avoid change and stick to goals they are certain to achieve. Studies show that PSE is related to PEB (Meinhold & Malkus, 2005; Tabernero & Hernández, 2011). More precisely, as Tabernero and Hernandez stated, "Results show that individuals with a higher judgment of their capacity to recycle engage in more recycling behaviors..." (2011, p.669). Meinhold and Malkus added that "When experiencing positive feelings, individuals may also experience an



increase in the degree to which they feel the future execution of actions and behaviors will consistently produce positive outcomes" (2005, p.516). These findings emphasize that more PSE leads to more engagement in PEI and PEB.

*H1a: Individual pro-environmental self-efficacy expectancy has a positive influence on pro-environmental behavior.*

*H1b: Individual pro-environmental self-efficacy expectancy has a positive influence on pro-environmental intention.*

### *2.5.2 Pro-environmental outcome expectancy*

*Outcome expectancy* is the second concept introduced by Bandura (1977). Bandura explained, "An outcome expectancy is defined as a person's estimate that a given behavior will lead to certain outcomes" (Bandura, 1977, p. 193).". Outcome expectancy is clearly distinguished from self-efficacy since self-efficacy is the perceived ability to perform behavior. In contrast, outcome expectancies are judgements about the likelihood of outcomes that stem from behavior (Bandura, 1977). Outcome expectancy is related to behavior and intentions (Maddux, Norton & Stoltenberg, 1986). Studies found that outcome expectancy sometimes has the primary effect on behavioral intentions, but self-efficacy expectancy failed to influence intentions (Maddux et al., 1986). Meanwhile, outcome expectancy is significantly impacting effort and performance (Lawler & Suttle, 1973). Other studies reinforce this impact by stating that outcome efficacy is part of multiple predicting variables for consumer behavior (Busseri, Lefcourt & Kerton, 1998). Studies even argue outcome efficacy being detrimental to online consumption behavior (LaRose & Eastin, 2010). Specifically, the importance of outcome expectancy is in the early stages of behavior change, especially intentions' initial formation (Bandura, 1986).

However, not many studies can be found on the effect of outcome expectancies on PEB. The studies that tap into this relationship show how outcome expectancies play an important role in predicting behavior, particularly in the early stages of behavior change (Koletsou & Mancy, 2011). Outcome expectancy in the field of PEB has been defined as "the beliefs about the consequences of pro-environmental behaviors taken by individuals." (Sawitri et al., p.31). Furthermore, it has been suggested that outcome expectancies will be important in situations where desired behaviors are relatively easy to implement but where perceived outcomes are uncertain (Koletsou & Mancy, 2011). These characteristics suggest an essential role for

outcome expectancy in predicting and influencing intentions related to PEB. This importance is backed up by other studies that showed how consumers with high levels of self-efficacy have more outcome expectations. These consumers are more likely to set challenging goals, have higher intentions, and engage more in PEB than people with a lower perception of their efficacy (Sawitri et al., 2015). These studies emphasize that consumers should believe that they can obtain favorable outcomes after initiating or conducting environmental changes to promote PEB (Sawitri et al., 2015; Koletsou & Mancy, 2011). Moreover, findings on outcome expectancy on PEB are extended by showing a higher degree of outcome expectancies function as an incentive. In contrast, lower expectancies can function as a disincentive to action (Gao, Xiang, Lee & Harrison Jr, 2008).

*H2a: Individual pro-environmental outcome expectancy has a positive influence on pro-environmental behavior.*

*H2b: Individual pro-environmental outcome expectancy has a positive influence on pro-environmental intention.*

## *2.6 Pro-environmental collective efficacy & outcome expectancy*

### *2.6.1 Pro-environmental collective efficacy expectancy*

*Collective efficacy* is defined as “a group’s shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments” (Bandura, 1997, p.447). Although the literature contains references to individual and collective forms of efficacy and outcome expectancies, the terms are often poorly distinguished, and theoretical distinctions remain weak. Due to this lack of distinctions, these two forms of self-efficacies are included to understand their effects better. Like individual self-efficacy, group efficacy beliefs are expected to influence intentions and behaviors consumers execute through collective effort. A growing body of research demonstrates the impact of group efficacy on group intentions and performance (Bandura, 1997; Bandura, 2000; Collins & Parker, 2010). It is shown that group efficacy is significantly related to group performance (Stajkovic, Lee & Nyberg, 2009). Findings demonstrate that “the higher the perceived collective efficacy, the higher the group’s motivational investment in their undertakings, the stronger their staying power in the face of impediments and setbacks, and the greater their performance accomplishments” (Bandura, 2006, p.318).

Sustainability issues induce a situation in which consumers have a minor influence, and goals can only be achieved through collective actions. Therefore, pro-environmental individual self-efficacy and outcome expectancies described above are insufficient for understanding PEB. Such sustainability issues can only be solved through collective actions because of the interdependency of outcomes (Katz-Navon & Erez, 2005). Outcomes are interdependent when successful accomplishment of a goal relies on the combined achievement of individuals, even if tasks are independent of each other. Studies discussed the dynamics of this interdependency by showing that pro-environmental intentions and behavior were increased when collective efficacy raised self-efficacy and vice versa (Jugert et al., 2016). More precisely, Jugert et al. stated, “In turn, these enhanced feelings of efficacy provide the ground for people to join in collective pro-climate action by tuning their individual everyday decisions to engage in pro-environmental behavior” (2016, p.36). It shows how pro-environmental individual self-efficacy is influenced by pro-environmental collective efficacy expectancy. Furthermore, as shown consistently across multiple studies, the increase in pro-environmental collective efficacy enhanced consumers’ intention to act by providing a sense of efficacy that was transferred from the group to the self (Jugert et al., 2016). This finding shows if consumers act together as a group, they perceive themselves as more capable of achieving their goals. Thus, they are more likely to engage in PEB. Additionally, pro-environmental collective efficacy is why consumers might dare to engage in actions towards their sustainability goal (Sawitri et al., 2015). If consumers lack intentions to execute actions collectively related to sustainability, they are less likely to engage in PEB (Homburg & Stolberg, 2006). This addition of collective self-efficacy can help this study better understand whether consumers engage in specific PEB.

*H3a: Pro-environmental collective efficacy expectancy has a positive influence on pro-environmental behavior.*

*H3b: Pro-environmental collective efficacy expectancy has a positive influence on pro-environmental intention.*

#### *2.6.2 Pro-environmental collective outcome expectancy*

*Collective outcome expectancy* refers to beliefs individuals hold about “the likely consequences their group will experience as a result of the group’s performance of work tasks” (Riggs & Knight, 1994, p.756). The definitions of the efficacies are given in table 1. Given the importance of distinguishing between efficacy and outcome expectancy at the

individual level, the same is tried for the collective level (Carrico & Riemer, 2011). Studies demonstrated that group outcome expectancies reliably predict behavioral outcomes in group situations (Koletsou & Mancy, 2011). Additionally, collective outcome expectancy is identified as a direct factor for group success (Riggs & Knight, 1994). It is shown that collective outcome expectancy is an essential factor in human intentions and behavior (Bandura, 1997; Koletsou & Mancy, 2011). Individuals in a group are required to strive for and believe in the outcomes of their actions. Without this belief, consumers are less likely to engage in collective actions (Koletsou & Mancy, 2011). The addition of collective outcome expectancy, next to collective self-efficacy, helped the literature understand the group dynamics better concerning engagement in specific behaviors and the success experienced hereafter (Riggs & Knight, 1994).

Studies on collective outcome expectancy are scarce in business and environmental literature. The few studies that have been identified tap into the relationship between how collective outcome expectancy increases PEI and engagement in PEB. Specifically concerning collective PEB, Carrico and Riemer (2011) examined the role of collective outcome expectancy in energy conservation in the workplace. The authors found higher levels of collective outcome expectancy during baseline assessment being related to higher self-reported energy conservation behavior at follow-up (Carrico & Riemer, 2011). Furthermore, pro-environmental collective outcome expectancy is associated with a more outstanding perceived moral obligation to perform actions to reduce greenhouse gas emissions and, ultimately, intentions (Koletsou & Mancy, 2011). All this work provides evidence that pro-environmental collective outcome expectancy is associated with behavioral outcomes and intentions in potential social dilemma situations, like the context of PEB. More specifically, “It increases people’s collective action tendencies, and is important for fostering environmental, behavioral change beyond self-efficacy beliefs.” (Reese & Junge, 2017, p.191). The addition of pro-environmental collective outcome expectancy, next to pro-environmental collective self-efficacy, can help with providing insights into additional reasons why consumers are likely to engage in specific PEB.

*H4a: Pro-environmental collective outcome expectancy has a positive influence on pro-environmental behavior.*

*H4b: Pro-environmental collective outcome expectancy has a positive influence on pro-environmental intention.*

Pro-environmental self-efficacy expectancy (Bandura 1977)	"The conviction that one can successfully execute the behavior required to produce the outcomes" (Bandura, 1977, p.141).
Pro-environmental outcome expectancy (Bandura, 1977)	"An outcome expectancy is defined as a person's estimate that a given behavior will lead to certain outcomes" (Bandura, 1977, p. 193).".
Pro-environmental collective efficacy expectancy	"A group's shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments" (Bandura, 1997, p.447).
Pro-environmental collective outcome expectancy	The beliefs individuals hold about "the likely consequences their group will experience as a result of the group's performance of work tasks" (Riggs & Knight, 1994, p.756).

*Table 1: Overview of the efficacies and outcome expectancies used in this study and their meaning.*

### *2.7 Compulsive buying*

*The moderator* used in this study is compulsive buying. Lejoyeux and Weinstein describe compulsive buying as "a chronic, repetitive purchasing that becomes a primary response to negative events and feelings, and may include symptoms equivalent to craving and withdrawal." (2010, p.1). This behavior is more often excessive and ritualistic, designed to alleviate tension, anxiety, or discomfort. Compulsive buyers are more interested in shopping, browsing, choosing, and order but not in using the goods (Müller, Mitchell & de Zwaan, 2015). These consumers typically have less control over their consumption behaviors due to the vital need to feel happiness via consumption (Lejoyeux & Weinstein, 2010). Additionally, it is elaborated that "shopping and buying episodes are accompanied by relief and pleasure, but followed by remorse and guilt due to the inappropriateness of spending behavior and its negative consequences." (Koh et al., 2020, p.217). A steep incline has characterized compulsive buying since the availability of the Internet retail environment (Koh et al., 2020). Such an online environment may promote compulsive buying because it permits avoidance of direct social contact (Lejoyeux & Weinstein, 2010). This avoidance allows transactions to be kept private and provides direct continuous electronic feedback about product offerings and prices. This buying behavior is characterized by its frequent repetition and problematic nature for consumers (O'guinn & Faber, 1989). Initially, the affected consumer may not see this behavior as problematic. A big problem with compulsive buying is when consumers identify the behavior. This 'loss of control' creates additional anxiety and frustration, but the behavior continues despite attempts to stop it (O'guinn & Faber, 1989). Müller et al. added, "The urges

to buy and the maladaptive spending behaviors lead to personal distress and interfere with social, marital, or occupational functioning" (2015, p.134).

However, the relevant aspect of compulsive buying is that it interferes with the perceived ability of consumers that they can execute behavior (Achtziger, Hubert, Kenning, Raab & Reisch, 2015). That is why for this study on compulsive buying, the tendency to engage in compulsive buying is meant. More specifically, it decreases the self-control of consumers (Achtziger et al., 2015). As previously mentioned, if consumers perceive a decreased level of self-efficacy, their outcome expectancy also decreases (Koh et al., 2020). If consumers become aware of their compulsive buying, they are less likely to believe in their capabilities and expect fewer outcomes from these actions. This decrease in self-efficacy stems from compulsive buying being rooted in high impulsivity (Achtziger et al., 2015). The high level of impulsivity makes it difficult for consumers to control their behavior. Additionally, high levels of compulsive buying detach actions from outcomes since consumers are not likely to use the products (DeSarbo & Edwards, 1996). This detachment shows that compulsive buying negatively influences the outcome expectancies of consumers. In conclusion, individual self-efficacy and outcome expectancy are negatively impacted if the degree of compulsive buying increases.

Furthermore, compulsive buying is not only influencing individuals but also groups. It has been shown that when people start to show compulsive buying in a group, group members start to engage in that behavior, too, as they see it as the norm (Otero-López, Santiago & Castro, 2021). Furthermore, it is added that "The experience of stress situations in different domains (family relational, academic), the support perceived and/or received from a variety of social agents (parents, friends, professors) or the feeling of solitude could be just some examples." (Otero-López et al., p.821). This finding shows that collective groups like families have an important influence on compulsive buying. Based on this literature, compulsive buying is expected to be a moderator between collective efficacies and PEB. Lastly, the collective efficacy might decrease due to compulsive buying since it can decrease the self-esteem of individuals involved (Otero-López et al., 2021). This decrease in self-esteem leads to a decreased belief in the group's capabilities and worsened expectations of the outcomes. Based on these findings, an increase in the degree of compulsive buying will decrease collective efficacy and outcome expectancies.

Based on previous findings, the effect of compulsive buying can also be translated into the sustainability context of these variables. Besides decreasing self-efficacy and outcome expectancy, so does compulsive buying decrease intentions to engage in PEB (Kwak et al., 2006). It has been identified that compulsive buying leads to decreasing engagement in pro-environmental behavior (Gatersleben, Murtagh, Cherry & Watkins, 2019). The opposite is also true; the fewer people engage in compulsive buying, the more PEB they show (Gatersleben et al., 2019). The reason behind this dynamic is, as previously explained that people with higher levels of compulsive buying have less believe in their own actions and impact. Therefore, they are less likely to show intention for PEB and to engage in such behavior. Pícha and Navrátil (2019) added that people who put more emphasis on compulsive buying have less intent to take sustainability issues into account, which eventually translates into a lack of engagement in PEB. Additionally, this was true for not only individuals but also for groups. If a group consisted of multiple people who engage in compulsive buying, the group was less likely to engage in decisions that align with PEB (Pícha & Navrátil, 2019). In conclusion, the degree of compulsive buying is negatively impacting PEI and the extent to which people engage in PEB.

All these findings summarize the literature about compulsive buying impacting PSE and PEB. However, the impact of compulsive buying on these two variables simultaneously has never been tested before. It is expected that the dynamics are similar compared to the previous findings. By including this variable, this study can show how this relationship between PSE, PEI, and PEB can differ if the level of compulsive buying changes. The expectation is that the relationships, as set up in the previous hypotheses, remain the same. However, the degree of compulsive buying is, as a moderator, influencing the strength of this relationship. This knowledge will be a novice, but it will also be a sound basis for future studies. More specifically, follow-up studies can start to test out the impact of compulsive buying on consumer behavior related to other sustainability issues.

*H1c: The effect of pro-environmental individual self-efficacy expectancy on pro-environmental intention and behavior differs with the extent to which a person engages in compulsive buying.*

*H2c: The effect of pro-environmental individual outcome expectancy on pro-environmental intention and behavior differs with the extent to which a person engages in compulsive buying.*

*H3c: The effect of pro-environmental collective efficacy expectancy on pro-environmental intention and behavior differs with the extent to which a person engages in compulsive buying.*

*H4c: The effect of pro-environmental collective outcome expectancy on pro-environmental intention and behavior differs with the extent to which a person engages in compulsive buying.*

## *2.8 Control variables*

### *2.8.1 Pro-environmental attitude*

*Pro-environmental attitude* is defined as a person's tendency to be concerned about the natural environment (Bamberg, 2003). Environmental attitudes are responsible for behavior related to sustainability issues (Berger & Corbin (1992). Multiple studies showed attitudes are influencing behavior (Berger & Corbin, 1992; Fazio & Zanna; Synder & Kendzierski, 1982; Bissing-Olson, Iyer, Fielding & Zacher, 2013). Due to this knowledge, it is a logical choice to include this control variable. This addition takes away influences that change behavior just due to their attitudes.

### *2.8.2 Awareness of the environmental issue*

*Awareness of the problem* refers to the awareness of environmental issues and the engagement in environmental actions (Altin, Finke, Kautz-Freimuth & Stock, 2014 ). Caldwell and Hayes discussed in their article on page 1164, "This paper identifies the relationships between self-efficacy and awareness and the moral obligations of leaders in developing these personal qualities." (2016). Even though the previous quote is related to leaders, it has been shown that environmental awareness is a trigger for nurturing pro-environmental behaviors and attitudes in consumers (Karatekin, 2014). However, it is revealed that awareness of behavioral consequences significantly and positively influences private but not public behavior (Liobikienė & Poškus, 2019). The pro of this addition is that it helps with explaining how self-efficacy might influence or create specific behavior in the end. Secondly, this variable helps increase the reflection of the conceptual model with reality since it is known that many different variables might interfere in relationships, in this case, between self-efficacy and behavior. Lastly, awareness is added in since it is known as a general antecedent of behavior. This study would be limited in its generalization to reality by not including awareness.



### *2.8.3 Pride and guilt about environmental behavior*

*Pride and guilt about environmental behavior* is the final control variable. PEB is related to feelings of pride and remorse, which impacts subsequent behavior (Bissing-Olson, Fielding & Iyer, 2015). These feelings of self-conscious emotions are primarily founded on the judgement of consumers' behavior. Their assessments are formed based on personally significant norms of good and wrong (Tangney et al., 2007; Tracy & Robins, 2007). Additionally, PEB is positively related to feelings of pride and negatively associated with feelings of guilt (Bissing-Olson et al., 2015). These findings prove that this control variable is an excellent addition to this study's control variable.

### *2.8.3 Demographic variables*

*Multiple demographic* variables are included as they are expected to impact both PSE and PEB. The variables are age, gender, income, occupation, and whether people have children. These variables are chosen as they have been used multiple times in other studies and have already shown their relevance (Li, Zhao, Ma, Shao & Zhang, 2019; Whitmarsh & O'Neill, 2010). Some examples of the effects would be that people with children will have more future concerns or that people with higher income have more possibilities to engage in compulsive buying, which decreases PEB.

## *2.9 The conceptual model*

*The conceptual model* that follows from all these mentioned variables is shown in the figure below. The four aspects of PSE are together forming the independent variables. The PSE influences the PEI and PEB. As previously mentioned in paragraph 2.2, more engagement in PEI will likely lead to more PEB. The intention relates to the extra effort that people are willing to put into these actions. However, the moderator, compulsive buying, is added to the relationship. This moderator will help identify whether the strength of the relationship between PSE and (the intention for) PEB changes if the level of compulsive buying changes. Lastly, the control variables are added. Specifically, these are the pro-environmental attitude, awareness of environmental issues, demographic variables, and pride and guilt of environmental behavior. These variables are controlled because they are not in the interest of this study, but they could influence the outcomes.

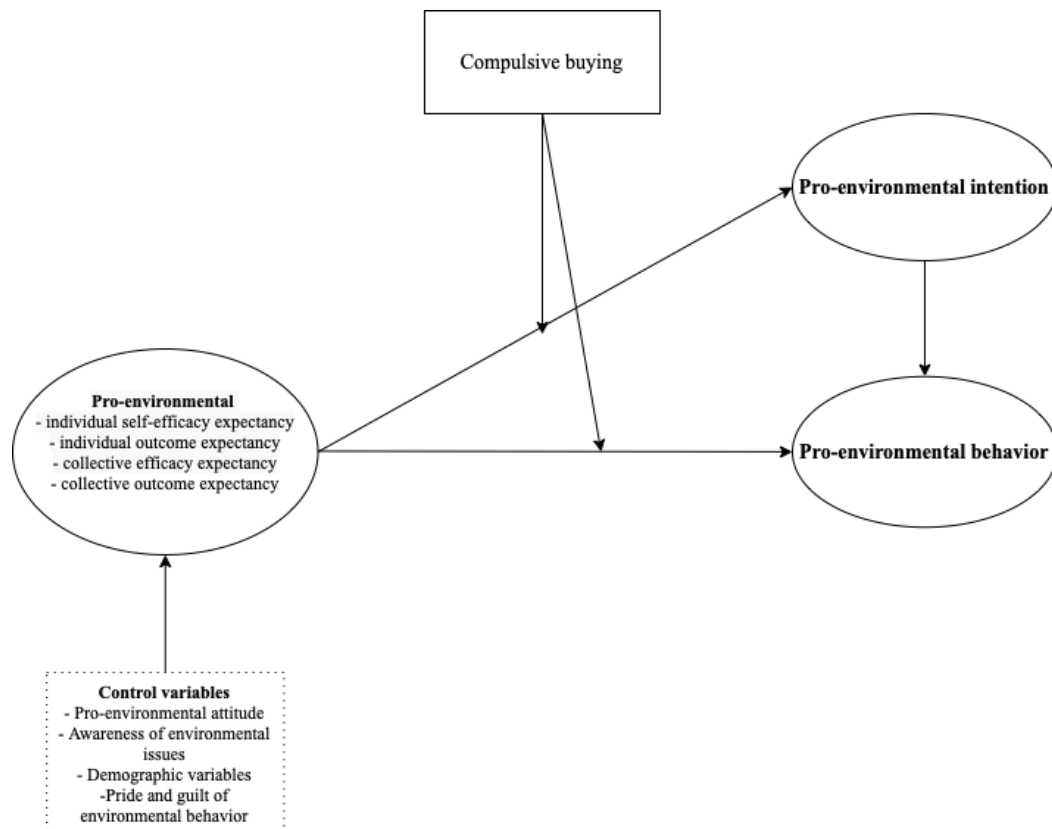


Figure 1: The conceptual model

### 3. Methodology

#### 3.1 Introduction

*The method* we use to address the research question is a large-scale quantitative research method. More specifically, this is a pre-structured online survey. Its goal is to test the hypotheses about the relative importance of the multiple forms of PSE on PEI and PEB and the moderating role of compulsive buying. The survey aims to describe the characteristics of the tested hypotheses systematically. Firstly, the benefit of this approach is that a survey is an appropriate tool to gain insights into habitual buying behavior (Patwardhan, Flora & Gupta, 2010). It captures the nature of their behaviors and the extent to which these behaviors and intentions are pro-environmental (De Lang & DeWitte, 2019). The benefit of this approach is that it helps understand the underlying factors why specific behavior is performed (Glasow, 2005). Thirdly, it allows the collection of a large amount of data in a relatively short period (Field, 2013). More specifically, it is stated, “They are also well suited to gathering demographic data that describe the composition of the sample” (Glasow, 2005, p.1-1). Other descriptive methods, like case studies, are not chosen because they focus too much on the specifics (De Lang & DeWitte, 2019). Our approach would be too complex given the available resources and time. Furthermore, despite the flexibility and possibility of follow-up questions, a qualitative approach is not chosen. A quantitative approach is chosen for our survey as it collects data faster, allows larger sample sizes, and allows for anonymity in the data collection (De Lang & DeWitte, 2019).

#### 3.2 Steps of the study by the respondents themselves

*The first step* before the survey can start is performing a pretest. As a result of this, we can assure that the survey has been set up correctly. We try to identify errors in the way questions are asked, spelling and grammar errors, and whether the online survey is correctly working and storing the data. The pretest is performed by ten people that checked the clarity of the survey setup. The problems that surfaced from the pretest were solved by improving the way questions or statements were formulated. Additionally, other technical issues were solved through Qualtrics. The feedback from the pretest was that the sliders did not work properly in the first examination. A few grammar mistakes have been corrected. Furthermore, additional improvements have been made in the word choices that were used in the questions.

Hereafter, respondents will receive a self-administered online survey, which is distributed through a link to the Qualtrics environment. Participants are thanked for their participation,

and general information is provided concerning how their anonymity will be preserved, what the study is about, and how long it will take. If they want to participate in the survey, they should agree with the informed consent. The survey's introduction explicitly states that participation is voluntary, that the survey can be stopped at any time, and that the data is handled with care. If requested, results can be shared afterwards. Hereafter, respondents fill in questions that measure the dependent, independent, and control variables. Subsequently, several demographic and background questions are asked to understand participants better. At the end of the survey, the participants are thanked. The survey takes around 10 minutes to complete. The specific order of questions is discussed in the following paragraphs.

### *3.2.1 Dependent, independent, and control variables*

The first few questions are related to PSE. First, the items are measured at an individual level. After that, collective efficacy is measured.

Pro-environmental individual self-efficacy expectancy is measured using a scale by Bandura (2006). Based on the same study by Bandura (2006), five items are chosen. This scale provides a reliable guide for the construction of realm-specific self-efficacy. The reliability of this scale has been proven many times in studies (Bandura, 2006). Furthermore, the scale is developed specifically to assess self-efficacy behaviors and intentions related to sustainability (Bandura, 2006). Moreover, we will provide respondents with five statements regarding pro-environmental individual self-efficacy expectancy, measured on a Likert scale ranging from 1 to 7. A few examples of these statements are “I have the ability and the capacity to engage in environmental-friendly behavior”. The five scores for individual pro-environmental self-efficacy are combined into a mean score of 4,705 ( $\alpha=0,951$ ,  $SD=1,093$ ).

*Pro-environmental individual outcome expectancy* is measured by Xiang, McBride, Guan, and Solmon (2003). In their study, the revised Expectancies for Success Scale was used. In this research, the same method will be implemented. However, the questions will be adjusted toward environmental issues. More specifically, questions will be related to specific pro-environmental behavior as this aligns with the aim of this study. The survey will consist of 6 questions regarding pro-environmental individual outcome expectancies. Again here, the statements will be measured through a 7-point Likert scale. These questions refer to both general and specific PEB. Some examples are “My environmental-friendly actions contribute to diminishing the climate crisis” and “I believe that my environmental-friendly actions improve the living conditions on earth”. For individual pro-environmental outcome

expectancy, the six measurements are combined into a mean score of 4,339 ( $\alpha=0,847$ ,  $SD=1,06446$ ).

*Pro-environmental collective efficacy expectancy* is measured by five questionnaire items. The first two items were adapted from Homburg and Stolberg (2006) but adjusted to measure collective efficacy for specific pro-environmental behavior (recycling, buying organic products, separating rubbish). The last was adapted from Doran, Hanss & Larsen (2015) but adjusted to measure collective efficacy for specific pro-environmental behavior (recycling, buying organic products, separating trash). These items are measured on a 7-point Likert scale. The following statements are included “The people I know possess the capabilities to execute pro-environmental behaviour.” and “Although it may cause inconvenience, we all have the ability of living an environmental-friendly life.”. For pro-environmental collective efficacy expectancy, the five statements are combined into a mean score ( $\alpha = 0,958$ ,  $M = 4,7987$ ,  $SD = 1,09689$ ).

*Pro-environmental collective outcome expectancy* is scarcely measured in literature. Therefore, there is a lack of scales on this issue. However, Carrico and Riemer (2011) measured collective outcome expectancy beforehand. It is chosen to use the same scale. Additionally, this scale is combined with statements used for individual outcome expectancy. The scale for individual outcome expectancy is characterized by high reliability due to frequent usage. Due to these characteristics, the same scale will be used and adapted for pro-environmental collective outcome expectancy. Questions for pro-environmental individual outcome expectancy will be adapted to collective. Through this adaption, the study aims to measure the collective level similar to the individual level. The same six items will be used. These items are measured on a 7-point Likert scale. More specifically, statements about collective outcome expectancy are “By changing our behavior, people like can together reduce our waste/ together reduce global footprint.” and “By changing our behavior, people around me and I can improve our recycling activities”. For pro-environmental collective outcome expectancy, six statements are combined into a mean score to measure average pro-environmental collective outcome expectancy ( $\alpha = 0,845$ ,  $M = 4,2863$ ,  $SD = 1,04436$ ).

Hereafter the second part is related to compulsive buying. Compulsive buying is measured by the widely used Compulsive Buying Scale (CBS) (Ridgway, Kukar-Kinney & Monroe, 2008). This scale is applicable due to its high levels of reliability ( $\alpha= 0.82$ ). Furthermore, this scale

also includes online buying behavior that aligns with most consumers' current shopping state. This scale for compulsive buying contains questions about general shopping and buying behavior on the Internet and at real-life stores and the compulsive-buying scale. For this study, the CBS is shortened to 6 items. The included items measure participants' behavior and characteristics related to compulsive buying. Examples are "I cannot resist sales signs in window or shop displays, I just have to check them out", "I feel 'high' when I go on a buying spree", and "I have excessive buying periods accompanied by overwhelming feelings of generosity". These items are measured on a Likert scale ranging from "Strongly disagree" to "Strongly agree", with scores ranging from 1 to 7. With this choice, this variable becomes continuous as the scale values can be treated as equal, making it an interval scale (Field, 2013). The six statements are combined into a mean score to measure average compulsive buying ( $\alpha = 0,916$ ,  $M = 2,7731$ ,  $SD = 0,08448$ ).

The third part of the questions relates to PEI and PEB.

*Pro-environmental intentions* are captured using five items from Green Behaviour Intention Scale by Mancha, Muniz, and Yoder (2014). It tries to study the extra effort respondents will have for PEB. These items are also measured on a 7-point semantic differential (low to high or false to true). An example is "I have the intention to put extra effort in so that I abstain from plastic while shopping". The five statements are combined into a mean score to measure average pro-environmental individual outcome expectancy ( $\alpha = 0,923$ ,  $M = 4,154$ ,  $SD = 1,62709$ ).

*Pro-environmental behaviors* are measured based on a 7-item scale adapted from the General Ecological Behaviour scale (Kaiser, 1998). This scale is used to assess individuals' engagement in pro-environmental behaviors. Respondents were asked to rank five of their sustainability behaviors on a semantic differential scale of 1 (never) to 7 (always). An example is "I use public transport instead of my car.". The five items to measure pro-environmental behavior are combined into a mean score ( $\alpha = 0,892$ ,  $M = 4,1542$ ,  $SD = 1,62709$ ).

### 3.2.2 Control variables

The last part of the survey is related to the control variables and demographics that we included in this study.

*Pro-environmental attitudes* are measured by including three items covering respondents' willingness to take specific actions to protect the environment. This scale is applicable

because of its relatively good level of scale dependability ( $\alpha=0.758$ ) (Lavelle, Rau & Fahy, 2015). These attitudes are measured through questions as "I would be willing to sacrifice some personal comforts to save energy". The statements are tested through 7 scale Likert-scale items. This control variable is a valuable addition since it signals the motivation of respondents to perform sustainability actions. The three statements are combined into a mean score to measure average pro-environmental attitudes ( $\alpha = 0,919$ ,  $M = 4,6061$ ,  $SD = 1,62319$ ). *Awareness of the environmental problem* was measured using the revised scale constructed by Dunlap et al. (2000). This New Environmental Paradigm Scale employs 15 items (8 pro-trait and 7 con-trait) with three items tapping each of the following five hypothesized facets: (1) the reality of limits to growth, (2) antianthropocentrism, (3) the fragility of nature's balance, (4) rejection of exemptionism, and (5) the possibility of an eco-crisis. Respondents are asked to rate these statements on a 7-point Likert scale whether they strongly disagree (1) or strongly agree (7) with it. These statements were e.g. "The so-called "ecological disaster" that humanity is experiencing has been way overstated.". The four statements are combined into a mean score to measure average environmental awareness ( $\alpha = 0,843$ ,  $M = 4,1664$ ,  $SD = 0,63467$ ).

*Pride and guilt over environmental behavior* are measured by The State Shame and Guilt Scale from Marschall, Sanftner & Tangney (1994). To analyze each emotion, five emotions are used per type of emotion. Pride is measured by "proud", "accomplished", "confident", "satisfied", and "worthwhile". Guilt is measured through "guilty", "remorseful", "sorry", "bad", and "ashamed". On a scale of 1 (not at all) to 7 (a lot), participants are asked to rate the amount of which they experience each emotion category concerning their environmental behaviors. An example: "Imagine that you are in a store and decide not to buy an environmentally friendly product. How would you feel?". The first emotion items based on buying behavior were combined into a mean score to measure average pride and guilt about pro-environmental behavior during buying behavior for both negative (EmotionsNegative1) ( $\alpha=0,901$ ,  $M=2,6786$ ,  $SD=1,50445$ ) and positive emotions (EmotionsPositive1) ( $\alpha=0,899$ ,  $M=3,3734$ ,  $SD=1,76479$ ). The last emotion items based on general pro-environmental behavior were also combined into a mean score to measure average pride and guilt about general pro-environmental behavior for both negative (EmotionsNegative2) ( $\alpha=0,788$ ,  $M=2,9273$ ,  $SD=1,62566$ ) and positive emotions (EmotionsPositive2) ( $\alpha=0,921$ ,  $M=3,3006$ ,  $SD=1,77191$ ).

*The demographic variables* included are gender, age, educational level, occupation, nationality, proficiency in English, and net income (Appendix B).

3	Items	Variable	Source	Cronbach's Alpha
5: 1-5		<b>Pro-environmental individual self-efficacy expectancy</b>	Bandura (2006)	0,951
6: 6-11		<b>Pro-environmental individual outcome expectancy</b>	Hale et al. (1992)	0,847
5: 12-16		<b>Pro-environmental collective efficacy expectancy</b>	Bandura (2006)	0,958
6: 17-22		<b>Pro-environmental collective outcome expectancy</b>	Hale et al. (1992)	0,845
7: 23-29		<b>Pro-environmental intention</b>	Mancha et al. (2014)	0,923
6: 30-35		<b>Pro-environmental behavior</b>	Kaiser (1998)	0,892
6: 36-41		<b>Compulsive buying</b>	Ridgway, Kukar-Kinney & Monroe (2008)	0,916
3: 42-44		<b>Pro-environmental attitudes</b>	Lavelle, Rau & Fahy (2015)	0,919
4: 45-47		<b>Awareness of the environmental problem</b>	Hawcroft & Milfont (2010)	0,843
5: 48-52		<b>Pride about pro-environmental behavior during buying behavior</b>	Kugler & Jones (1992); Tracy & Robins (2007); Holbrook & Batra (1987)	0,899
5: 53-57		<b>Guilt about pro-environmental behavior during buying behavior</b>	Kugler & Jones (1992); Tracy & Robins (2007); Holbrook & Batra (1987)	0,901
5: 58-62		<b>Pride on general pro-environmental behavior</b>	Kugler & Jones (1992); Tracy & Robins (2007); Holbrook & Batra (1987)	0,921
5: 63-67		<b>Guilt on general pro-environmental behavior</b>	Kugler & Jones (1992); Tracy & Robins (2007); Holbrook & Batra (1987)	0,788
8: 68-75		<b>Demographics</b>		

Table 2: Items used in the study

### 3.3 Population

The population of this study are mainly general consumers. It will not solely be aimed at people that engage in compulsive buying. We aim to detect differences between consumers that show compulsive buying on a continuous scale and consumers that do not. To participate in this research, the participants had to be 18 years or older. This requirement is chosen since it is required to confirm that you are an adult for most accounts for online shops. Furthermore, children are primarily dependent on their parents regarding decision-making and behavioral aspects. Moreover, adults are only included due to privacy concerns. However, no other specific distinctions are made to gather data from general consumers. In this way, it can be



expected that data will be gathered from consumers with many different characteristics. The goal of this broad inclusion is to provide a realistic insight into the actual state of general consumers.

### *3.4 Sampling technique*

*Participants* are not extracted from a specific database. They are collected through a combination of convenience sampling and snowball sampling. Social media channels through which the survey is shared include LinkedIn, Facebook, WhatsApp, and Instagram. The survey is solely shared online. Due to this fact, convenience sampling aligns with this perfectly. All visitors to that site are invited to respond. Besides general requirements, like being at least 18 years old, the respondents have no other limitations. Respondents were recruited by asking acquaintances to forward the online survey to their contacts. More potential participants will be confronted with the link in this way. Additionally, we motivated people to share the link with people whom they thought could have compulsive buying symptoms. In this way, we tried to include as many people with compulsive buying as possible. Spreading the survey through such informal channels is suitable for this study since it reaches the general population (Lange & Dewitte, 2019). Of course, this depends on the goodwill of the respondents. However, if only a few respondents share the link, it can still lead to much greater exposure and thus more useable surveys.

As we want to prevent the survey from losing its generalizability, we will focus on whether there is enough difference concerning the demographic variables like nationality, age, income, and educational level. We expect this to influence the perspective on sustainability and the level of compulsive buying.

### *3.5 Sample*

A *sample size* of around 300 valuable responses is the aim. To reach this number of valid responses, 345 forms have been filled in. Out of these responses 36 were removed because of incomplete surveys or people that are underage. After all, 307 valid responses have been collected. In table 2 below an overview of demographics is presented.

Amount of respondents	307 respondents
Female/male	176 females (57%)/131 males (43%)
Age mean	30,5 years
Age highest/lowest	63 years/18 years

Age most frequent	23 years (12,1%)
Dutch Nationality	91,2%
Other European Nationality	8,14%
Other Nationality	0,6%
Employed/student/unemployed/retired	72%/23%/2,4%/0,6%
High education/low education	68,8%/31,2%
High income/medium income/low income	37,9%/41,5%/20,6%
No children/children	58%/42%
English proficiency high/low	82,4%/17,6%

*Table 3: Overview of the sample collected for this study*

### *3.6 Method for analysis*

*The method for analysis* we use are two regression analyses and two moderation analyses.

This type of analysis explores the relative influence of variables on PEB and PEI. Such regression analyses can assess the influence of several independent variables, with a moderator, on multiple dependent variables (Field, 2013). Since this study aims to understand the impact of multiple variables of PSE on PEB and PEI, two regression analyses perfectly align with this. One regression analysis is performed for the impact on the behavior aspect. The second regression analysis is performed for the impact on the intention aspect. We will perform this regression analysis with programs such as SPSS. The moderation analysis will provide insights into the relationship between PSE and PEB with varying degrees of compulsive buying. The same goes for PEI. This can show whether compulsive buying is moderating and, if so, how exactly it impacts the relationship.

The data we used for the analyses stems from the survey. We will put these answers into a database that can be implemented into SPSS. We have chosen a quantitative study since it offers reliable and repeatable information and generalizable results (Field, 2013). Such an approach can help provide an overview instead of specificity by looking at the scores given by respondents. Through these scores and the calculation performed by SPSS, the impact of certain variables can be given numbers. These numbers imply the strength of the relationship between certain variables. Furthermore, the scores can also be used to categorize respondents. For example, this is applicable to the respondents scoring high or low on compulsive buying. The different dynamics in the relationship between PSE and PEB can be studied through this separation. This is in alignment with the choice for quantitative research. A quantitative approach aligns with descriptive research that is used to describe the status of the relationship

between variables (Field, 2013). In this case, the goal is to understand the impact of PSE on PEI and PEB, moderated by compulsive buying.

*The validity and reliability* are also considered in this study. Reliability is considered by assuring consistency of results over time and across different people filling in the survey. The implemented pretests help to assure this. Reliability is assured by gathering most scales from other studies. Implementing most scales from other studies implies that they have been justified already in their validity and reliability. Reliability is reached as these items give similar results since they measure the same concepts (Vennix, 2016). Furthermore, reliability is assured by executing an exploratory factor analysis. At last, reliability is maintained by keeping the circumstances as consistent as possible to reduce the influence of external factors that might create variation in results. This research realizes standardized conditions by ensuring that all respondents get the same questions in the same order.

Validity is assured by developing enough insights about the concepts through literature studies. By doing this, the existing operationalization and measuring methods are identified and used as an inspiration for this research (Field, 2013). This study uses parts of others accepted measurement techniques. Such a tactic ensures that the used scales are based on preexisting support from the field (Field, 2013). The chances are higher that errors made in the process are identified and prevented (Field, 2013). This identification of errors is also accurate since an exploratory factor analysis is performed before the analysis is started. Furthermore, the validity is maintained as it is expected that enough respondents are included. If the goal of 370 respondents is reached, the data is representative and generalizable.

### *3.7 Research ethics*

*Multiple research ethics* are addressed in this study:

1. Participation is always voluntary. Participants are free to opt-in or out of the study at any point in time.
2. Informed consent is tried to be reached. This is done by letting participants know the purpose, benefits, and risks of the study before they agree or decline to join in.
3. Anonymity will be maintained as the identity of the participants will remain unknown. Personal data is not collected. However, all collected personal data, like age, income, and perspectives on sustainability, are not shared with anyone else. In this way, this study tries to maintain its confidentiality. There is no way that others can trace back the person.

4. It is ensured that the work is free of plagiarism research misconduct, and if wanted, the accurately represented results can be shared with respondents afterwards.

## 4. Data Analysis

### 4.1 Data Preparation & Descriptives

Before the analysis can start, it is essential to check for inconsistencies and missing data in the sample. As mentioned in paragraph 3.5, some respondents were deleted due to missing values. After the deletion of respondents, they are checked whether suspicious patterns are found in the missing values. Based on Field (2013), it is essential to check for suspicious patterns within missing data. These patterns can imply that specific characteristics of respondents relate to missing values. If this is the case, this is called MAR (Missing At Random). MAR impacts the generalizability of outcomes and can have implications for the result. However, in this case, each variable had the same number of missing variables which means that there is no case of MAR in the used sample. This is also likely the case since the survey was built with a forced response. All respondents with missing values are deleted listwise since they had no score on all the questions in the survey. The pro of listwise deletion is that the generalizability of the results remains higher than in comparison with the case-wise deletion (Field, 2013). This goal overlaps with this study, so the listwise deletion is chosen.

Furthermore, multiple items are combined into one construct that measures the same variable. The information about combining these constructs is provided in paragraphs 3.2.1 and 3.2.2 and table 3 below.

Lastly, to have useable data for analysis, multiple actions are performed. These are actions such as reversing negative items, such as "My environmental-friendly actions have no impact on reducing the climate crisis," for the construct of individual outcome expectancy. All the negative phrased items from Appendix A are reversed to ensure that items measure the same construct correctly. For demographics, the option "prefer not to say" is given a value of 0 since it means nothing for the analysis. Therefore, these variables could be included without misrepresenting the option "prefer not to say" having the highest value. Lastly, dummy variables are made for educational level, and people with a finished Master's from the University are used as the anchor.

	Mean	SD	Minimum	Maximum
Individual pro-environmental self-efficacy	4,705	1,09689	1,2	7
Individual pro-environmental outcome expectancy	4,3387	1,04436	1,2	7
Collective pro-environmental efficacy expectancy	4,7987	1,09689	1	7
Collective pro-environmental outcome expectancy	4,2863	1,04436	1	7

Pro-environmental behavior	4,1542	1,62709	1	7
Pro-environmental intention	4,154	1,62709	1	7
Compulsive buying	2,7731	0,08448	2,02	3,89
Pro-environmental attitude	4,6061	1,62319	1	7
Awareness of environmental issues	4,1664	0,63467	1,25	7
Pride about pro-environmental buying behavior	3,3734	1,76479	1	6,77
Guilt about pro-environmental buying behavior	2,6787	1,50445	1	6,3
Pride about general pro-environmental behavior	3,3006	1,77191	1	6,8
Guilt about general pro-environmental behavior	2,9273	1,62566	1	6,2

Table 3: Means and SD of developed scales

#### 4.2 Reliability Analysis

Once data is prepared for analysis, it is crucial to check whether all the used constructs are reliable. This is checked by going over the Cronbach's alpha of the variables. The reliability analysis determines whether it is required to eliminate more items to boost reliability. The threshold for deleting an item is when the Cronbach's Alpha increased by at least 0,05.

However, no additional items were deleted since the analysis did not signal the need for one item that needed to be deleted. As provided in table 4, all the included constructs in this analysis show satisfactory levels of reliability. This is reflected by all the Cronbach's Alphas above the threshold value of 0,70 (Field, 2013). The reliability of the demographic constructs is not included since they are measured through a single item. There is no need for them to be tested for their scale reliability.

Scale	Number of items	Cronbach's Alpha
Individual pro-environmental self-efficacy expectancy	5	0,951
Individual pro-environmental outcome expectancy	6	0,847
Collective pro-environmental efficacy expectancy	5	0,958
Collective pro-environmental outcome expectancy	6	0,845
Pro-environmental behavior	5	0,892
Pro-environmental intention	6	0,923
Compulsive buying	6	0,916
Pro-environmental attitude	3	0,919
Awareness of pro-environmental problem	4	0,843
Pride about pro-environmental behavior during buying behavior	5	0,899
Guilt about pro-environmental behavior during buying behavior	5	0,901
Pride about general pro-environmental behavior	5	0,921
Guilt about general pro-environmental behavior	5	0,788

Table 4: Reliability of the constructs

### *4.3 Exploratory Factor Analysis*

Furthermore, it is vital to ensure that variables and their underlying theoretical structure are in alignment. This is tested by two Exploratory Factor Analyses (EFA). The first EFA tests the four constructs of PSE included in this study. The second EFA tests the constructs of pro-environmental attitude and the awareness of environmental issues.

The EFA for PSE shows that it is 1 factor explaining most of the variance. According to the analysis, this factor explains 74,45% of the variance. The second factor hereafter only shows a variance explained of 3,93%. Applying the Field (2013) threshold, an eigenvalue above 1 determines the number of factors. In this case, this is only 1 factor. Additionally, this is also reflected in the scree plot (Appendix C1). In alignment with this notion, communalities from the EFA show that the extraction of variables does not change the model a lot. Additionally, the high scores of variables on the correlation matrix signal a problem with multicollinearity for the multiple variables of efficacy. Most of the variables on the correlation matrix have high scores above the threshold value of Field (2013), which is 0,30. The high level of correlation is reinforced by a value of KMO above the threshold value of 0,50 and a significant Bartlett's test (Appendix C1). This is a signal that there is a substantial correlation in the data.

For the second EFA, pro-environmental attitude and environmental awareness items are included. Again, KMO-value is above 0,50, and Bartlett's test is significant (Appendix C2). This indicates that a substantial degree of correlation exists between the constructs of pro-environmental attitude and awareness of environmental problems. Only one factor in this analysis has an eigenvalue above the threshold value of 1 (Field, 2013). This is reinforced by the scree plot (Appendix C2). The correlation matrix shows much correlation exists between the items of pro-environmental attitude and awareness of environmental problems. For most of the included items, the correlation is again above 0,30. This high correlation between these items signals a problem with the multicollinearity of the items.

Both EFA's show a problematic correlation between items of the constructs. However, no further actions can be taken due to time restrictions, and this study will be continued as it is now. However, the results might not reflect reality as well as possible due to the high correlation between the constructs.

### *4.3 Assumptions*

Before the analysis can be started, it is important to check whether all assumptions are met.. These assumptions are tested for both the regression analyses and moderation analysis. This study checked these assumptions by looking into the measurement level, linearity of the phenomenon measured, homoscedasticity, multicollinearity, and normality of the error term distribution.

#### *4.3.1 Measurement level*

For this analysis, all variables must be metrically scaled. This can be either ratio or interval. The independent, dependent, and control variables are measured on a 7-point Likert scale. The results collected through this scale can be interpreted as quasi-interval measurement levels (Field, 2013). The only non-metrical scaled variables were the control variables and some demographic variables such as age and income. However, these were recoded, so they do not require to be used as, e.g., a dummy variable in the analysis. Furthermore, educational level is included as a dummy variable, and people with a Master's are used as the anchor.

#### *4.3.2 Linearity of the phenomenon measured*

Controlling for linearity is crucial for this study because each independent variable needs to be linear related to the dependent variable. If this is not the case, it can damage the efficiency of the analysis, and variables need to be transformed into polynomials (Field, 2013). The linearity of variables is checked through scatterplots, where each independent variable is plotted against the dependent variable. This check found that each variable showed a linear relationship with dependent variables. Therefore, these variables do not need to be transformed.

#### *4.3.3 Homoscedasticity*

There needs to be no obvious pattern in the scatterplot to reach homoscedasticity. If this is the case, there is a constant variance of the error term (Field, 2013). However, if the points are heteroscedastic, the pattern may resemble a consistent pattern. This is not the case for this population for either of the dependent variables. No specific patterns were identified in the scatter plots.

#### *4.3.4 Multicollinearity*

Additionally, the multicollinearity assumption is tested using the VIF values in the Coefficients table. For both dependent variables, most of the VIF values did not go above the



threshold value of 10 (Field, 2013). This indicates that this assumption is partly met. However, the variables with a VIF-value above 10 are kept in the study since these are the interaction terms (Appendix D). Additionally, due to time restrictions no search for solutions was executed.

#### *4.3.5 Normality of the error term distribution*

To perform this study, it is essential to check the residuals of the regression. These residuals should follow a normal distribution. This assumption is checked by examining the P-P plot. Based on this check, for both dependent variables, the P-P plots show quite normal distributions (Appendix E). There is a bit of differentiation around the normality line, but there is no case of drastic variation. Based on this, the linearity assumption is met.

#### *4.4 Analysis Regression 1*

For the first regression analysis, the impact is tested on PEB. The model includes the PSE, control, and demographic variables. The regression analysis does not include compulsive buying and its interaction effects.

The analysis shows a sufficient level of explanatory power, with 57,5% of the variance in PEB explained by the model. However, only the effect of individual outcome expectancy is significant. Nevertheless, it has the biggest impact on PEB of all the model's variables ( $B=0,424$ ,  $p<0,001$ ). Individual self-efficacy ( $B=-0,031$ ,  $p=0,710$ ), collective efficacy ( $B=0,068$ ,  $p=0,381$ ), and outcome expectancy ( $B=0,012$ ,  $p=0,922$ ) are all insignificant. These results show that hypotheses H1a, H3a, and H4a are rejected, and hypothesis H2a is accepted. Additionally, pro-environmental attitude also has a positive, significant impact on PEB ( $B=0,130$ ,  $p=0,017$ ). However, this model's awareness of environmental problems (AwarenessEP) is non-significant ( $B=0,008$ ,  $p=0,923$ ). Furthermore, positive emotions encountered during pro-environmental buying behavior (EmotionsPositive1) negatively impacts PEB ( $B=-0,183$ ,  $p=0,016$ ). In the case of demographics, it is shown that variables such as age, gender, proficiency in English, and number of children are non-significant. However, monthly net income has a significant impact on engagement in PEB ( $B=0,144$ ,  $p=0,024$ ). Additionally, the impact of the dummy variables for the educational level being significant implies significant differences between the included categories and people with a Master from University. More specifically, all the educational levels, except people with primary education, have significantly lower levels of PEB than people with a Master's. This difference is the biggest between the groups of people with a Master's and people that finished

secondary education ( $-0,952$ ,  $p < 0,001$ ). For educational levels like MBO ( $B = -0,657$ ,  $p < 0,001$ ), HBO ( $B = -0,434$ ,  $p = 0,005$ ), and Bachelor ( $B = -0,501$ ,  $p = 0,006$ ) this is also significant and negative.

Adjusted R <sup>2</sup> : 0,575			
Variable	B-coefficient	Std. Error	Sig.
Individual self-efficacy	-0,031	-0,040	0,710
Individual outcome expectancy	0,424	0,103	<0,001
Collective efficacy	0,068	0,078	0,381
Collective outcome expectancy	0,012	0,123	0,922
Pro-environmental attitudes	0,130	0,054	0,017
AwarenessEP	0,008	0,079	0,923
EmotionsPositive1	-0,183	0,075	0,016
EmotionsNegative1	0,108	0,066	0,102
EmotionsPositive2	0,046	0,077	0,551
EmotionsNegative2	0,054	0,064	0,402
Gender	-0,034	0,105	0,744
Age	0,003	0,007	0,688
Proficiency in English	-0,058	0,057	0,310
Occupation	0,072	0,076	0,347
Number of children	-0,101	0,079	0,204
Monthly net income	0,144	0,064	0,024
EducationDummySecondary	-0,952	0,221	<0,001
EducationDummyMBO	-0,657	0,181	<0,001
EducationDummyHBO	-0,434	0,153	0,005
EducationDummyBachelor	-0,501	0,182	0,006
EducationDummyPrimary	-0,245	0,886	0,783

Table 5: Overview of all the variables in the regression analysis on PEB

#### 4.5 Analysis Regression 2

For the second regression analysis, the same is performed as the previous analysis, but this time PEI is the dependent variable. The Adjusted R<sup>2</sup> comes down to a value of 0,705. Like PEB, the individual outcome expectancy is the only significant form of PSE on PEI ( $B = 0,516$ ,  $p < 0,001$ ). Nevertheless, it remains to be the biggest influence on the dependent variable. The other efficacies like individual self-efficacy ( $B = 0,019$ ,  $p = 0,829$ ), collective efficacy ( $B = 0,090$ ,  $p = 0,278$ ), and collective outcome expectancy ( $B = 0,027$ ,  $p = 0,836$ ), are all insignificant. The results suggest that hypotheses H1b, H3b, and H4b are rejected. Hypothesis H2b is accepted.

Additionally, pro-environmental attitude also significantly and positively influences PEI ( $B = 0,188$ ,  $p = 0,001$ ). However, the impact of awareness of environmental issues is

insignificant on PEI ( $B=-0,004$ ,  $p=0,958$ ). No emotions seem to have a significant impact on PEI. For demographics it is showed that occupation ( $B=0,161$ ,  $p=0,048$ ) and monthly net income ( $B=0,188$ ,  $p=0,006$ ) are both positively influencing PEI. Additionally, the analysis shows there are once again significant differences between educational levels. The dummy variable for education, such as secondary education ( $B=-0,584$ ,  $p=0,013$ ), MBO ( $B=-0,831$ ,  $p=<0,001$ ), HBO ( $B=-0,540$ ,  $p=<0,001$ ), and Bachelor ( $B=-0,712$ ,  $p=<0,001$ ), are significant except for primary education.

Adjusted R <sup>2</sup> : 0,705			
Variable	B-coefficient	Std. Error	Sig.
Individual self-efficacy	0,019	0,089	0,829
Individual outcome expectancy	0,516	0,109	<0,001
Collective efficacy	0,090	0,083	0,278
Collective outcome expectancy	0,027	0,130	0,836
Pro-environmental attitudes	0,188	0,058	0,001
AwarenessEP	-0,004	0,084	0,958
EmotionsPositive1	0,022	0,080	0,784
EmotionsNegative1	0,089	0,070	0,203
EmotionsPositive2	-0,116	0,081	0,154
EmotionsNegative2	0,090	0,068	0,189
Gender	0,010	0,111	0,929
Age	0,010	0,008	0,208
Proficiency in English	-0,058	0,061	0,338
Occupation	0,161	0,081	0,048
Number of children	-0,082	0,084	0,330
Monthly net income	0,188	0,067	0,006
EducationDummySecondary	-0,584	0,234	0,013
EducationDummyMBO	-0,831	0,192	<0,001
EducationDummyHBO	-0,540	0,162	<0,001
EducationDummyBachelor	-0,712	0,193	<0,001
EducationDummyPrimary	-0,185	0,939	0,844

Table 6: Overview of all the variables in the regression analysis on PEI

#### 4.6 Analysis Moderation 1

The first test for moderation is run by including the PSE, control, and demographic variables, compulsive buying, and all its interaction effects with PSE. The outcome is that 58,7% of the variance in PEB is being explained in this model. This is a slight increase compared to the first regression analysis on PEB. Individual self-efficacy ( $B=0,020$ ,  $p=0,827$ ), collective efficacy ( $B=0,015$ ,  $p=0,854$ ), and collective outcome expectancy ( $B=-0,058$ ,  $p=0,647$ ) are all non-significant in this moderation analysis. However, the impact of individual outcome

expectancy increases from 0,424 to 0,441 on PEB with the inclusion of compulsive buying ( $B=0,441$ ,  $p<0,001$ ). This shows that hypothesis H2c is accepted.

Additionally, pro-environmental attitude remains significant in the moderation analysis ( $B=0,117$ ,  $p=0,033$ ). However, its impact does decrease from 0,130 to 0,117. Pride emotions experienced as people engage in pro-environmental behavior during buying are still significant ( $B=-0,191$ ,  $p=0,011$ ). However, the negative impact is increased after the inclusion of compulsive buying from -0,183 to -0,191. Concerning the demographic variables, it is shown that monthly net income ( $B=0,131$ ,  $p=0,040$ ) also maintains its significant impact on PEB. With the inclusion of the moderator, the impact does decrease hereafter from 0,144 to 0,131. The differences between the different educational levels are also still present. More specifically, for secondary education the difference is -0,892 ( $p<0,001$ ), for MBO it is -0,702 ( $p<0,001$ ) for HBO it is -0,412 ( $p=0,008$ ) and for Bachelor it is -0,445 ( $p=0,015$ ). Again, the difference between people with a Master's and primary education remains nonsignificant ( $B=0,033$ ,  $p=0,970$ ). However, the significant differences between the groups are decreasing after the inclusion of compulsive buying.

The direct effect of compulsive buying on PEB is not significant ( $B=-0,69$ ,  $p=0,119$ ). The same goes for the interaction effects of compulsive buying with individual self-efficacy ( $B=0,171$ ,  $p=0,316$ ) and individual outcome expectancy ( $B=-0,023$ ,  $p=0,861$ ). However, the interaction effect with collective efficacy ( $B=-0,432$ ,  $p=0,005$ ) and collective outcome expectancy ( $B=0,251$ ,  $p=0,005$ ) are significant in the moderation analysis on PEB. The scatterplots provide the insight that people scoring high on compulsive buying (a mean score above 3,5) are less likely to engage in PEB as they have low scores on collective efficacy expectancy in comparison to people scoring low on compulsive buying (lower mean score than 3,5) (Appendix F). Additionally, people scoring high on compulsive buying are less likely to engage in PEB as they score lower on collective outcome expectancy in comparison to people scoring low on compulsive buying (Appendix G). These results indicate that hypotheses H3c and H4c are accepted.

Adjusted R <sup>2</sup> : 0,587			
Variable	B-coefficient	Std. Error	Sig.
Individual self-efficacy	0,020	0,092	0,827
Individual outcome expectancy	0,441	0,105	<0,001
Collective efficacy	0,015	0,080	0,854

Collective outcome expectancy	-0,058	0,126	0,647
Pro-environmental attitudes	0,117	0,055	0,033
AwarenessEP	0,024	0,080	0,768
EmotionsPositive1	-0,191	0,074	0,011
EmotionsNegative1	0,105	0,065	0,111
EmotionsPositive2	0,065	0,076	0,393
EmotionsNegative2	0,066	0,063	0,299
Gender	-0,017	0,105	0,872
Age	0,002	0,007	0,737
Proficiency in English	-0,065	0,057	0,251
Occupation	0,060	0,076	0,431
Number of children	-0,096	0,078	0,220
Monthly net income	0,131	0,063	0,040
EducationDummySecondary	-0,892	0,220	<0,001
EducationDummyMBO	-0,702	0,182	<0,001
EducationDummyHBO	-0,412	0,153	0,008
EducationDummyBachelor	-0,445	0,182	0,015
EducationDummyPrimary	0,033	0,878	0,970
CompulsiveBuying	-0,069	0,044	0,119
INT1 (Compulsive buying x Individual self-efficacy)	0,171	0,170	0,316
INT2 (Compulsive buying x Individual outcome expectancy)	-0,023	0,132	0,861
INT3 (Compulsive buying x Collective efficacy)	-0,432	0,151	0,005
INT4 (Compulsive buying x Collective outcome expectancy)	0,251	0,089	0,005

Table 7: Overview of all the variables in the moderation analysis on PEB

#### 4.7 Analysis Moderation 2

The second moderation analysis is like the previous moderation; however, the impact is tested on PEI here. The Adjusted R<sup>2</sup> for this study is 0,714. This score is a slight increase from the regression analysis without the moderator. Individual self-efficacy (B=0,088, p=0,365), collective efficacy (B=0,066, p=0,441), and collective outcome expectancy (B=0,046, p=0,729) are all insignificant with their impact on PEI. However, according to this analysis, individual outcome expectancy (B=0,495, p=<0,001) is significant. With the impact changing from 0,516 to 0,495 as compulsive buying is added, hypothesis H2c is accepted.

Additionally, the impact of pro-environmental attitude remains significant (B=0,170, p=0,004). However, this impact has decreased with the inclusion of compulsive buying from 0,188 to 0,170. The environmental awareness (B=0,014, p=0,873) and all the types of emotions included in this study are insignificant. The same goes also for gender (B=0,012, p=0,912), age (B=0,012, p=0,111), English proficiency (B=-0,061, p=0,309), and number of children (B=-0,097, p=0,243). However, occupation is exactly at the threshold of significance

value with a p-value of 0,05. This study chooses to count the impact of occupation as significant since its impact of 0,157 is relatively big compared to the other variables. The inclusion of the moderator does not change the impact too much. Monthly net income is significant ( $B=0,176$ ,  $p=0,009$ ). Its impact is decreased from 0,188 to 0,176. Moreover, the differences between educational levels exist also in this moderation analysis. For secondary education this is -0,516 ( $p=0,027$ ), for MBO this is -0,868 ( $p<0,001$ ), for HBO this is -0,465 ( $p=0,004$ ), and for Bachelor this is -0,613 ( $p=0,002$ ). However, for primary education, the difference in PEI with people with a Master's remains nonsignificant ( $B=0,035$ ,  $p=0,970$ ). As for PEB, the differences between the groups decrease after the inclusion of compulsive buying.

Moreover, the direct impact of compulsive buying is nonsignificant ( $B=0,053$ ,  $p=0,262$ ). All the interaction effect with individual self-efficacy (INT1) ( $B=0,139$ ,  $p=0,441$ ), individual outcome expectancy (INT2) ( $B=-0,037$ ,  $p=0,792$ ), and collective outcome expectancy (INT4) ( $B=0,133$ ,  $p=0,160$ ) are non-significant. Only the interaction effect between compulsive buying and collective efficacy (INT3) ( $B=-0,383$ ,  $p=0,017$ ) is significant. The scatterplot shows that people with low scores on compulsive buying are less likely to engage in PEI as they score low on collective efficacy expectancy (Appendix H). The opposite is true for people with low scores on compulsive buying. This group shows higher engagement in PEI as they have higher scores on collective efficacy expectancy. This finding reinforces hypothesis H3c. No results are found that reinforce hypotheses H1c and H4c in this moderation.

Adjusted R <sup>2</sup> : 0,714			
Variable	B-coefficient	Std. Error	Sig.
Individual self-efficacy	0,020	0,092	0,827
Individual outcome expectancy	0,441	0,105	<0,001
Collective efficacy	0,015	0,080	0,854
Collective outcome expectancy	-0,058	0,126	0,647
Pro-environmental attitudes	0,117	0,055	0,033
AwarenessEP	0,014	0,084	0,873
EmotionsPositive1	-0,191	0,074	0,011
EmotionsNegative1	0,073	0,069	0,290
EmotionsPositive2	-0,113	0,081	0,162
EmotionsNegative2	0,104	0,067	0,121
Gender	0,012	0,112	0,912
Age	0,012	0,008	0,111
Proficiency in English	-0,061	0,060	0,309
Occupation	0,157	0,080	0,050

Number of children	-0,097	0,083	0,243
Monthly net income	0,131	0,063	0,040
EducationDummySecondary	-0,892	0,220	<0,001
EducationDummyMBO	-0,702	0,182	<0,001
EducationDummyHBO	-0,412	0,152	0,008
EducationDummyBachelor	-0,445	0,182	0,015
EducationDummyPrimary	0,035	0,929	0,970
CompulsiveBuying	-0,053	0,047	0,262
INT1	0,139	0,180	0,441
INT2	-0,037	0,140	0,792
INT3	-0,383	0,160	0,017
INT4	0,133	0,095	0,160

Table 8: Overview of all the variables in the moderation analysis on PEI

In table 9 below an overview is provided of all the hypotheses in this study and whether they, based on the results, are accepted, or rejected.

Hypothesis	Accepted/Rejected
<i>H1a: Individual pro-environmental self-efficacy expectancy has a positive influence on pro-environmental behavior.</i>	Rejected
<i>H1b: Individual pro-environmental self-efficacy expectancy has a positive influence on pro-environmental intention.</i>	Rejected
<i>H2a: Individual pro-environmental outcome expectancy has a positive influence on pro-environmental behavior.</i>	Accepted
<i>H2b: Individual pro-environmental outcome expectancy has a positive influence on pro-environmental intention.</i>	Accepted
<i>H3a: Pro-environmental collective efficacy expectancy has a positive influence on pro-environmental behavior.</i>	Rejected
<i>H3b: Pro-environmental collective efficacy expectancy has a positive influence on pro-environmental intention.</i>	Rejected
<i>H4a: Pro-environmental collective outcome expectancy has a positive influence on pro-environmental behavior.</i>	Rejected
<i>H4b: Pro-environmental collective outcome expectancy has a positive influence on pro-environmental intention.</i>	Rejected
<i>H1c: The effect of pro-environmental individual self-efficacy expectancy on pro-environmental intention and behavior differs with the extent to which a person engages in compulsive buying.</i>	Rejected

<i>H2c: The effect of pro-environmental individual outcome expectancy on pro-environmental intention and behavior differs with the extent to which a person engages in compulsive buying.</i>	Accepted
<i>H3c: The effect of pro-environmental collective efficacy expectancy on pro-environmental intention and behavior differs with the extent to which a person engages in compulsive buying.</i>	Accepted
<i>H4c: The effect of pro-environmental collective outcome expectancy on pro-environmental intention and behavior differs with the extent to which a person engages in compulsive buying.</i>	Partly (Only on PEB)

*Table 9: Overview of the rejected and accepted hypotheses*

## 5. Discussion

### 5.1 Interpretation of the results

#### 5.1.1 Regression analysis on PEB

With only individual outcome expectancy being significant, it can be concluded that most of the PSEs do not impact PEB (Table 5). Such finding conflicts with Bandura (1977; 1997). Nevertheless, the importance of PSE on PEB is undeniable since individual outcome expectancy has the biggest impact on PEB out of all the other significant variables. This result shows, in alignment with Bandura (1997), that individual outcome expectancy has a big and positive effect on PEB engagement. In line with hypothesis H2a, the results show that if individuals increase their belief in specific outcomes that they can experience due to their actions, they are more likely to engage in PEB. However, with all the other efficacies not influencing PEB, the usability of ToSE is questioned. An argument for such a finding might be based on Monroe (2003), that showed the distinguishment between direct and indirect PEB. Direct PEB uses sustainable products, whereas indirect PEB changes the context. It might be the case that the efficacies in this study only influence one type of PEB, which might explain the lack of significance of the PSEs on PEB. Additionally, the insignificance of the PSEs on PEB might also be explained due to the environmental attitudes and personal factors that are included in this study and that influence the extent to which people want to engage in PEB (Casaló et al., 2019).

A person's pro-environmental attitude is crucial to whether somebody will engage in PEB. Such a finding reinforces Bamberg (2003), who showed that a person's tendency to be concerned about the natural environment directly influences behavior. In alignment with Casaló et al. (2019), the data shows that if people are concerned about their natural



environment, they are more likely to sacrifice some personal comfort to increase their engagement in PEB. In contrast to Altin et al. (2014), the people's awareness of environmental issues is not significant in this analysis. The insignificance of awareness of environmental problems can be because of pro-environmental attitudes. If people increase their pro-environmental attitude, they are already aware of the environmental issues being faced. The expectation is that pro-environmental attitudes are damping the effect of awareness of environmental issues. That might also be the reason for the failed EFA analysis in chapter 4.

Nevertheless, the impact of positive emotions about pro-environmental behavior during buying behavior is significant and negative in the regression analysis on PEB. In contrast to Bissing-Olson et al. (2015), this result signals an interesting dynamic between positive emotions experienced during the engagement in pro-environmental behavior through buying experiences. While Bissing-Olson et al. (2015) expect an increase in similar behavior if it leads to the experience of positive emotions, this is not the case in this analysis. Building from Jones et al. (2005), the results indicate that people are less likely to engage in PEB as their positive emotions lead to a false sense of confidence. Because of this false sense of confidence, people decrease their efforts. People are decreasing their engagement in PEB because they feel fulfilled by their efforts in pro-environmental behavior during their buying behavior. This result can be based on the dynamic of people feeling satisfied with their efforts. Based on this experienced satisfaction, they perceive they have done enough. The negative impact might be because they have done 'good,' so now they do not have to engage anymore in PEB. This notion proves that, in contrast to Bissing-Olson et al. (2015), providing people with good feelings while engaging in PEB might not always be a good idea. Moreover, in contrast to Bissing-Olson et al. (2015), all the other emotions are not significant in the analysis. The reason why most of the emotions are not significant can be due to engagement in PEB being seen as a must. For most people, engaging in actions that limit the negative impact on their environment is seen as something they are supposed to do. In this case, emotions do not play an essential role in their reason for engaging in PEB.

With gender and age being insignificant in the regression analysis on PEB, it can be concluded that no differences exist between males and females and between different age groups. Based on this result, women and men are evenly likely to engage in PEB, and no differences exist in their extent of engagement. Worries about sustainability problems are similar across the groups of age and do not lead to differences in the engagement on PEB.

With occupation being insignificant, the study shows that people do not differ in their PEB engagement based on their role in society. This result shows no significant differences exist in how they engage in PEB, whether one is a student or a retired person.

However, net income of people is directly and positively influencing PEB. This result concludes the importance of the economic situation people face before they can engage in sustainability actions. Data implies that people can engage in PEB with income increases. Lastly, there are significant differences between educational groups. Since people with a Master's are the anchor group, others with a lower educational level are significantly less engaged in PEB. Data suggests that as people are lower educated, they are less likely to engage in PEB than people with a Master's. The reason behind such differences might be because people with higher education have more income and thus more possibilities to engage in PEB.

#### *5.1.2 Regression analysis on PEI*

In line with hypothesis H2b, individual outcome expectancy makes people engage more in PEB. These results build on existing evidence from Resnick (2008) that shows outcome expectancy increases positively impact intention. However, in contrast to Bandura (1977), no impact is signalled by the data of the other PSEs on PEI. Building on Bandura (1986), this disassociation between the efficacies on intention occurs when no action will result in a specific outcome or when the outcome is loosely linked to the level of quality of the performance. This is applicable in the context of sustainability since no direct impact is immediately felt through the increase in PEI.

Additionally, pro-environmental attitudes are having a significant impact on PEI. These results indicate that as people increase their willingness to decrease personal comfort for sustainability actions, they are more likely to increase their intentions for PEB. An interesting finding is that pro-environmental attitude is one of the most substantial impacts on PEI. The only variable that has a bigger impact is individual outcome expectancy. This finding implies the relative importance of a pro-environmental attitude. However, the data implies that this seems not to be the case for environmental awareness. The exact reason for the insignificance is expected to be the case here as for PEB.

However, in contrast to PEB, occupation did impact PEI. This result signals that occupation of people does have a significant influence on one's engagement in PEI. An explanation

behind such significance might be due to specific jobs increasing the environmental concerns or people having a good income due to their occupation. Moreover, the number of children does not influence PEI. With this variable being insignificant, the results imply that having children does not change the extent to which people engage in PEI.

Nevertheless, monthly net income has a considerable positive impact on PEI. Based on this result, people's income determines to a large extent, whether they increase their engagement in PEI. This can be intertwined with the same reasons as for PEB. Namely, once economic resources allow people to engage in PEI, they are more likely to engage in PEI.

Lastly, all the dummy variables for the different educational levels are significant, except for primary education. With all the significant dummy variables being negative, this result implies that people with lower education than a Master's are less likely to engage in PEI. An explanation for such finding might be, besides the income, the increase in knowledge that higher educated people gather from their educations. In line with Reese and Jung (2017), more knowledge leads to more willingness to engage in pro-environmental actions.

#### *5.1.3 Moderation analysis on PEB*

In line with hypothesis H2c, the effect of individual outcome expectancy on PEB differs with the extent to which a person engages in compulsive buying. However, the impact of individual outcome expectancy increases with the inclusion of compulsive buying. Even though this is a small change, the fact that compulsive buying is not decreasing the impact of individual outcome expectancy is an interesting finding. Based on this conflicting effect, the results contradict the claim of Achtziger et al. (2015). They predict a decrease in efficacy due to the high impulsivity rooted in compulsive buying. These results also contrast the claim of DeSarbo and Edwards (1996) that explained the dynamic of people with compulsive buying detaching their actions from outcomes since they are not likely to use the products. The data shows that this is not the case in the context of sustainability, with compulsive buying included.

Additionally, the impact of pro-environmental attitude is slightly decreasing with the inclusion of the moderator. Next to this decrease, results indicate that pro-environmental attitude is decreasing in importance regarding its size of the impact on PEB. This can be explained since compulsive buying can decrease the importance of environmental issues for customers. In combination with Pícha and Navrátil (2019), customers increase their focus on buying products instead of taking the impact on the environment into account.

Moreover, positive emotions experienced with pro-environmental behavior during buying behavior are significant in the moderation analysis. Interestingly, the negative impact has increased after including compulsive buying. This result signals that positive emotions experienced are, with the inclusion of compulsive buying, more likely to lead to a decrease in PEB engagement. The results align with Tangney et al. (2007) claim that people's assessments of good and wrong influence PEB. However, the results contrast the dynamic Tangney et al. (2007) claimed since experiencing positive emotions leads to less PEB. These results signal that people are less likely to engage in PEB if they start to experience positive emotions during the buying process.

The impact of net income is lower after the inclusion of the moderator. Such a decrease can signal that people with compulsive buying are more likely to spend their money on other products instead of engaging in PEB. This result aligns with Lejoyeux and Weinstein (2010), that discussed the decreased ability of people to have control over their consumption behaviors due to the vital need to feel happiness via consumption. Additionally, differences between people from different educational levels are still negatively significant compared to those with a Master's. However, when comparing the differences between the groups, it is interesting to note that the differences are smaller in the moderation analysis. With the inclusion of compulsive buying and its interaction effects, the differences between the educational groups on PEB engagement seem to decrease. This result is in line with the claim of Otero-López et al. (2021), which discussed the importance of various social agents that may be influencing people in their compulsive buying. Otero-López et al. (2021) explained that as people engage in compulsive buying in groups, this can get socially accepted. This result, in combination with Gatersleben et al. (2019), might explain why differences between the educational groups seem to decrease in the moderation analysis compared to the regression analysis.

Lastly, no impact is perceived from compulsive buying in this moderation analysis. The results go against Gatersleben et al. (2019) claim that compulsive buying is directly decreasing the amount of PEB. The results signal that no direct impact is perceived. An explanation for this lack of relationship can be because compulsive buying is more influential for PSE instead for PEB. This might explain why only the interaction effects are significant in this study. More specifically, the interaction effect with collective efficacy (INT3) and collective outcome expectancy (INT4) is significant. The interaction effect of compulsive

buying with collective efficacy reinforces the claim of Gatersleben et al. (2019). Their claim is that an increase in compulsive buying, through diminishing levels of efficacies, decreases the engagement in PEB. In combination with Pícha and Navrátil (2019), this might be because people with compulsive buying are less emphasizing sustainability issues, which eventually translates into a lack of engagement with PEB. However, the same claim is reinforced by the interaction effect with collective outcome expectancy. It seems that the outcomes that a group will experience because of the group's performance, in combination with compulsive buying, will decrease the engagement in PEB. Based on the findings of a similar study by Riggs and Knight (1994), a plausible explanation is that individuals are likely to be drawn to the positive outcomes of the group, so they are using the collective outcomes as an excuse to keep engaging in compulsive buying.

#### *5.1.4 Moderation analysis on PEI*

The moderation analysis shows, like for PEB, that the moderator and its interactions are of limited added value for increased explained variance. In line with the hypothesis, individual outcome expectancy is significant. The impact of individual outcome expectancy to engage in PEI decreases since compulsive buying and its interactions are added. This result aligns with hypothesis H2c, which proposed a change in PEI by individual outcome expectancy as people engage in compulsive buying. An explanation for this decrease can be that compulsive buying is decreasing the importance of the sustainability outcomes experienced in relation to people's willingness to engage in sustainability actions. This finding aligns with the notion from Pícha and Navrátil (2019) that signalled the decreasing importance of sustainability problems. However, the other efficacies are all insignificant.

The significant effect of pro-environmental attitude did decrease in the moderation analysis. Nonetheless, pro-environmental attitude remains one of the most influential factors on PEI. The results align with Bissing-Olson et al. (2013), explaining that attitudes can be influential. However, this analysis shows that the moderator influences the impact of attitudes on PEI. Nonetheless, the emotions are also not impacting PEI. This study showed that emotions only play a role in impacting PEB, not PEI. This indicates that emotions are only influential if it comes down to actual behavior, not intentions for engaging in such behavior.

However, occupation is just significant enough. With the addition of the moderator, the impact barely decreases. The data shows that compulsive buying is not that influential on the

impact of occupation on PEI. This indicates that some jobs are more likely to motivate people to take sustainability issues into account. This can be plausible for differences in the extent to which specific jobs face sustainability issues. For example, bricklayers might have different experiences with sustainability issues in comparison to consultants. However, the result lacks the insights to identify where these specific differences exist between occupations.

Additionally, monthly net income keeps showing that it is a robust variable concerning the positive impact on both dependent variables. Next to individual outcome expectancy, it has the biggest positive impact on PEI. This finding shows that people's income does play a big role in the extent to which they engage in PEI. Economic resources are an essential prerequisite for engaging in sustainability actions.

Additionally, the significant differences between the people in the educational levels keep on existing with the addition of the moderator. However, these differences are decreasing.

Especially the difference between people with a Bachelor's and Master's decreased. This data signals that differences between educational groups seem to decrease with the addition of compulsive buying. A plausible explanation for the decreasing differences might be because compulsive buying influences lower educated people as much as higher educated people.

Therefore, they are both likely to decrease their PEI due to the tendency to engage in compulsive buying. Based on this explanation, it is logical to understand that the differences between different educational groups start to decrease in the moderation analysis.

Lastly, the direct impact of compulsive buying is insignificant to PEI. Compulsive buying cannot leave a direct impact on people's intentions—the same counts for most of the interaction effects. However, the interaction effect of compulsive buying with collective efficacy expectancy is significant. Furthermore, data shows that people decrease their engagement in PEI due to the interaction between collective efficacy and compulsive buying. In alignment with Kwak et al. (2006), results show how compulsive buying does, through the decrease in efficacies, lead to a decrease in the intention to engage in PEB. In combination with the claim of Pícha and Navrátil (2019), the negative interaction effect shows how this impact is valid for only collective efficacy. The explanation is that people who engage in compulsive buying in a group are less likely to engage in decisions that align with PEB. The results from this moderation analysis reinforce that.

## *5.2 Theoretical implications*

Firstly, ToRA is expanded with insights into how customers might develop PEB and PEI in this specific case. The study showed how efficacies that impact PEI also impact PEB.

However, the impact on PEI is stronger than on PEB. The data contributes to a clearer understanding of ToRA by providing variables that explain the theory's intention-behavior gap. These results build on existing evidence of the intention-behavior gap since the variables in this study better explained the variance for PEI compared to PEB. This study reinforces ToRA as it signalled the central division between PEI and PEB. The data signals how consumers might develop their intentions based on the different forms of efficacies.

Furthermore, this can also be seen as an extension of ToRA since the intention-behavior gap might be explained by the level of different types of efficacies of customers.

However, the results build on existing evidence of ToSE as the impact of PSE is proven in this study. This study reinforces ToSE by showing how different efficacies and outcome expectancies impact intention and behavior. The results do not fit with this theory completely as only individual outcome expectancy has a significant direct impact on PEI and PEB.

Additionally, as was supposed in ToSE, there is interaction with the environment in which the person is active. This study reinforces this as compulsive buying plays an essential role in the extent to which they develop specific efficacies, which might hamper PEB engagement.

Additionally, ToSE is extended by providing insights into the impact of not only one form of self-efficacy and outcome expectancy. This study showed the importance of including collective efficacy and outcome expectancy. More specifically, the importance of collective efficacy is demonstrated as those variables were significant with the interaction term included in the moderation. With this moderator, the negative impact of group dynamics on the engagement in PEB and PEI became clear. Secondly, this study extended ToSE by showing that efficacies do not solely impact behavior. This study proved how intention plays a vital role in the relationship, and based on the results; its importance cannot be denied.

Additionally, the results do not fit the studies on collective outcome expectancy. This study shows how collective outcome expectancy is insignificant for both PEB and PEI. This contrasts with Carrico and Riemer (2011), which emphasized such a variable's importance for group success. They claimed that such collective outcome expectancy could be seen as a prerequisite for group success. However, this study cannot support this claim since no significant impact is identified. Nonetheless, it can be added that this claim has its nuances. Due to the interaction effect between compulsive buying and collective outcome expectancy

being significant for PEB, it can be concluded that the belief in the collective outcomes eventually influences PEB engagement. Moreover, the data reinforces Reese and Junge (2017) to a certain extent since people tend to engage more in PEB if they have compulsive buying and collective outcome expectancy. Such findings signal that the claim of the importance of such collective outcome expectancy depends on individuals' context. Additionally, outcome expectancy is so substantial in the context of compulsive buying that the interaction effect displays a strong positive impact on PEB.

However, the results build on existing evidence from Maddux et al. (1986), which showed how individual outcome expectancy is crucial for PEI and PEB. Individual outcome expectancy has the biggest positive impact in all the performed analyses on PEI and PEB. This data shows how important this type of efficacy is to actual engagement in PEI and PEB. These results should be considered when there is a need to change the amount of engagement in PEI or PEB. The data contributes to a clearer understanding of how individual outcome expectancy influences both PEI and PEB. Additionally, it is shown how individual outcome expectancy influences PEI, which, in alignment with Koletsou and Mancy (2011), plays a vital role in predicting behavior.

In contrast to Bandura (1994) and Schunk and Zimmerman (2007), who showed that self-efficacy could change behavior and help learn new techniques, data shows that no relationship is identified between PEI and PEB. While research has focused on self-efficacy being the basis for realizing changes in intentions and behavior (Schunk, 1989; Rababah & Borkovec, 1977), these results demonstrate that no impact is identified between self-efficacy on PEI and PEB. Such findings contrast with Tabarnero and Hernández (2011), who showed that self-efficacy is especially important in the context of PEB. Additionally, Bandura (2002) even claimed that self-efficacy is one of the best predictors of the act consumers choose to perform. All these studies are not supported by the analyses performed in this study. No direct relationship is identified in the regression and moderation analyses. The study provides new insight into the relationship between individual self-efficacy on PEI and PEB. Based on the results, the impact of this variable has been overstated in the literature. A plausible explanation for this is that in the context of sustainability, people realize that collective actions mean more than their individual actions. Based on such expectations, people are less likely to believe in their abilities to execute specific individual actions. The importance in such a context is more on the collective actions.



Pro-environmental attitude shows that it is a crucial and robust variable that impacts PEI and PEB under different conditions. The data contributes to a clearer understanding of how these attitudes are responsible for behavior related to sustainability issues. Such data reinforces Berger and Corbin (1992) and Bissing-Olson et al. (2013) by showing that attitudes influence behavior. Additionally, this study expanded the literature by showing that attitudes also influence intentions. Such data signals the importance of pro-environmental attitude on PEI and PEB in the context of sustainability. However, as explained in paragraph 5.1.1, this variable might also be the reason why awareness of environmental issues is not significant. Such dynamic shows how the development of pro-environmental attitudes already includes the awareness of environmental issues, which explains why its impact is not found.

The results do not fit with Caldwell and Hayes (2016), which discussed the relationship between self-efficacy and the moral obligations of people impacting their behavior. Only positive emotions of pro-environmental behavior during buying behavior significantly impacted PEB in the regression and moderation analysis. However, the data contributes to a clearer understanding of how such emotions influence PEB. It is shown that if people encounter positive emotions in their buying behavior, they are likely to decrease their engagement in PEB. These results should be used when considering how to impact people to provide more effort to PEB. Based on the data, people should not encounter positive emotions as this decreases engagement in PEB. However, the results do not indicate an opposite relationship. There is no positive impact on PEB as people encounter negative emotions. These results combined signal that positive emotions should be prevented in customers' buying experience as this will decrease their engagement in PEB.

Lastly, the results do not fit with Ahtziger et al. (2015) claim that compulsive buying directly interferes with the perceived ability of consumers that they can execute behavior. In contrast to Koh et al. (2020), results do not signal compulsive buying, decreasing people's belief in their capabilities, intention, and behavior as expected. Compulsive buying does not show to have a direct impact on PSE. In addition to literature, this study demonstrated the interaction effect of compulsive buying with collective efficacy and outcome expectancy (Tables 7 and 8). For PEI, only the interaction with collective efficacy is significant. This data signals that with the inclusion of compulsive buying, collective efficacy is likely to change in its impact on PEI. Such a relationship is also expected by Gatersleben et al. (2019).

### *5.3 Practical and managerial implications*

Individual outcome expectancy shows to have a significant impact on both PEI and PEB. Bamberg and Möser's (2007) indicated that intentions play an essential role in the relationship with behavior. Moreover, this study showed that it is very likely that the engagement in PEI is increasing efforts toward PEB. Reese and Junge (2017) stated that people are more likely to engage in sustainability actions by raising perceptions of outcome expectancy. This study extends the practical relevance of Reese and Junge (2017) by arguing that individual outcome expectancy seems to be incredibly influential in the context where consumers are characterized by compulsive buying. This outcome should be considered when managers want to convince customers to increase their efforts related to sustainability. Extra engagement in PEI and PEB can be experienced if costumers' actions are linked to the belief that certain outcomes can be reached.

Despite the current sustainability trend that society is facing, compulsive buying still has an interaction effect with collective efficacy and outcome expectancy. This study reinforces Achtziger et al. (2015), who showed that compulsive buying interferes with the ability of consumers to execute behavior. This can be, in combination with the results of this study, a signal for society in multiple ways. Firstly, compulsive buying still has a significant impact on society nowadays. Secondly, it hampers the current sustainability trend in its actual realization since compulsive buying hampers the PEB. Lastly, compulsive buying lead to decreases in PEI and PEB as it lowers scores on collective efficacy and outcome expectancy.

For practicality, this means that collective outcome expectancy can be used as an excuse to further engage in compulsive buying. This aligns with DeSarbo and Edwards (1996), that showed the notion of people trying to detach their actions from outcomes by searching for excuses to justify their purchases.

These results should be considered when a company wants to reach out to its external environment to justify its sustainability goals. It is shown that multiple notions should be considered, e.g., their income, occupation, and level of efficacy in a specific customer segment. In alignment with this notion is the importance of how marketing should be performed in a company to deliver a persuasive message that sticks to customers. The practical implication of improving marketing is that it can help increase the company's sales. This notion implies that companies can become better than their competitors due to how they frame their massages. This notion is supported by Park and Ha (2012), which elaborated on

the impact of increased knowledge and the impact that it can have on promoting pro-environmental intention. Additionally, with the insights from positive emotions during buying, companies can start to question whether they should provide feelings of pride to their customers as it seems to decrease PEB in this study.

Furthermore, based on Park and Ha (2012), a company should be proactive in choosing a position on sustainability issues to align with its target market. If their target market cares about sustainability, it is vital to consider this. The practical implication is that a company should be using the PSEs studied here. They should make sure to signal correctly to their customers, e.g., that with the help of their products and services, they can improve the experienced outcomes. Additionally, based to Reese and Junge (2017), results show that it is essential to ensure enough knowledge, experience, and perception of collective efficacy to realize engagement in PEB.

Nevertheless, a company that uses sustainability as its core of existence should use a more profound approach. The marketing strategy can be improved by aligning its approach with the characteristics of specific efficacies in the target market. Additionally, multiple variables like their demographics, pro-environmental attitudes, and pride and guilt emotions should be considered to increase the strategies' effectiveness additionally. Robertson and Barling (2013) explained that a person's environmental passion is influenced by norms that are not under the control of any formal environmental policy or system. In combination with this study, companies can improve the position they want to take in the mind of their customers. If a company can understand its environment, they are better able to position itself in the right way. The same goes for customers' educational level, which drastically influences the extent to which they engage in PEI and PEB. Managers can use knowledge about the extent to which customers engage in PEI and PEB as a tool to position themselves correctly in their customers' minds. Based on Jackson (2005) and the results, another practical implication can be stated. If a company uses, e.g., the knowledge they have about customers being unsure what outcomes can be experienced because of specific sustainability actions, companies can play into this uncertainty and provide a solution for this faced problem. This study can thus be seen as a way of adding an extra dimension to companies' marketing analysis to understand their customers better.

In combination with Kirakozian (2016), results show that managers must be aware of the external environment for their marketing strategy to be realized efficiently and reach their goals effectively. However, since the development of engagement in PEB depends on a person's environment that is not under the control of any formal policy or system, companies must be sure they can measure PSE, PEI, and PEB correctly (Kim et al., 2017). This study can be a good starting point for companies to realize this ambition. Based on the approach used in this study, a company can start to gain more insights into the actual characteristics of customers about the degree to which customers possess one of the four efficacies and to which extent this leads to PEI and PEB. Firstly, this helps with a good understanding of the customer. Secondly, it helps with understanding the priorities from a customer perspective. Thirdly, based on this information, a company can decide on a fitting approach to persuade customers to purchase their products and services. This persuasion can be performed more effectively if the company is fully aware of the importance that customers place on sustainability issues.

Lastly, the notions of Robertson and Barling (2013) and Kim et al. (2017) comply with this study. People's characteristics and norms are highly detrimental to how they will engage in PEB. For managers, this means they must be aware of consumers' characteristics to improve their customer relationships. This aligns with the golden rule of marketing, where marketing myopia must be prevented. Do not focus on selling the products and services, but make sure to understand correctly whom the company is selling to and why they are buying the products.

#### *5.4 Limitations and research ethics*

Due to time limitations, some non-significant assumptions were neglected. This neglect can have a big impact on the usability of results produced. Additionally, the analysis had to be done over again two weeks before the deadline, which hampered the development of truly deep insights into the different relationships identified. However, the maximum is tried to be gathered from the results by collecting as many implications and interpretations as possible. Also, due to time limitations, only a quantitative approach is used. This type of analysis brings the limitations of big chances of miscalculation of probability distributions and leads to falsity in proposition (Chetty, 2016). Furthermore, there is a considerable lack of ability to control the environment. Additionally, close-ended questions in the survey lead to limited outcomes. These questions limit the representation of actually occurring in a generalized form

(Chetty, 2016). These limitations could have been overcome if a qualitative study had been performed.

Another limitation is that most respondents are Dutch. There is a lack of people from different countries and cultures that could provide a more widespread insight into actual dynamics that are going on in the real world. This limitation is mainly created due to the network of the researchers. Due to the lack of data from more countries, the results cannot confirm that these dynamics also occur in other countries. Therefore, how much these results will be representable for other countries can be questioned.

Additionally, there was no specific focus on an industry. Some respondents can show compulsive buying only concerning specific products, e.g., luxury products like clothes, perfumes, and other products, leading to a short-term dopamine kick. This specific dynamic is not tested.

In addition to our sample, another limitation is the lack of a specific technique to include compulsive buyers. It was promoted beforehand to share the survey with as many people as possible, especially if they suspected somebody of compulsive buying. Even though there were no problems in this study concerning the number of people engaging in compulsive buying, it would be better if this process of inclusion could be controlled. Therefore, it becomes clearer which type of respondents are included with compulsive buying.

### *5.5 Future recommendations*

It is advised to perform a study in the future in which all the assumptions are met. This was not always the case for this study. This would improve the usability of the results, and it can show whether the results from this study are robust.

Additionally, it is advised to extend the analysis with other approaches. For example, perform the same study with a qualitative approach or a hybrid form to use both approaches' strengths. This hybrid approach also gives more insights into people's specific dynamics when engaging in sustainability actions or compulsive buying. A qualitative approach can help understand whether the dynamics of compulsive buying are completely opposite of PEB or what the differences are exactly. More specifically, a qualitative study can help where a quantitative study is limited.

Secondly, it would be practical to use respondents from multiple countries so future research could incorporate more insights into whether these dynamics differ per country/culture. With this inclusion, it can be prevented that the sample is dominated by Dutch people. This extension would increase the results' generalizability. Another positive characteristic of this

extension is the increase in the number of respondents. The inclusion of more respondents is a positive development for research, whether qualitative or quantitative.

Thirdly, it is interesting for future studies to dive deeper into the relationship between PEI and PEB. What is preceding what? Is it always the case, or are there some exceptions? How does this relationship evolve? All these questions could not have been answered.

Fourth, it is interesting to perform the same study, but now in, e.g., three different product domains. In this research setup, it can be studied whether the same dynamics exist in different domains. With such approach, insights can be provided into changes in the impact on PEI and PEB. It can be expected that the importance of sustainability differs per product category. An example is the difference between clothing compared to office products.

Lastly, another addition for future studies would be to perform the same study with another mediator or moderator. This addition would help gather more insights into how the relationship between efficacies, PEI, and PEB works. Is this relationship moderated or mediated by other variables? Which of these variables are most impactful? What do these variables that are mediating or moderating tell us? Examples of moderators or mediators that could be included are, for example, the social class of people, their self-esteem, and their innovativeness to learn new things or use new products.

## 6. Conclusion

Throughout this work, this research argued the influence of the multidimensional PSE on PEI and PEB, moderated by compulsive buying. Firstly, it tested how individual self-efficacy and outcome expectancy influenced PEI and PEB. Additionally, the same was done for collective efficacy and outcome expectancy on PEI and PEB. Hereafter, with the inclusion of compulsive buying as the moderator, the same relationships were analyzed.

Based on a quantitative analysis of these multiple relationships, it can be concluded no direct impact of individual self-efficacy expectancy, collective efficacy, and outcome expectancy on PEI and PEB exists. The only efficacy with a significant direct impact is individual outcome expectancy. This result implies that, for people to increase their engagement in PEI and PEB, it is crucial to make them realize their behavior will lead to specific outcomes. Additionally, results indicate there is a significant interaction effect of collective efficacy and outcome expectancy with the inclusion of compulsive buying. Such a finding illustrates the extent to which people have compulsive buying influences the relationship between collective efficacies and PEI and PEB. More specifically, as people score high on compulsive buying, they are less likely to engage in collective efficacy, and thus this will additionally decrease their PEI and PEB. A similar dynamic is found concerning the interaction between compulsive buying and collective outcome expectancy on PEB.

Additionally, the study showed that a pro-environmental attitude and net income always positively affect both PEI and PEB. Occupation always positively influences PEI, and those positive emotions related to PEB during buying behavior positively influence PEB.

This research clearly illustrates that multidimensional PSE influences PEI and PEB, but it also raises the question of whether this relationship is overstated. In this study, only individual outcome expectancy has a significant direct impact on the dependent variables. Collective efficacies included in PSE are only influential with the interaction of compulsive buying.

However, findings confirm ToRA by showing that the impact of PSE is more substantial for PEI than for PEB. This signals that there is indeed an intention-behavior gap, as expected from ToRA. However, ToSE is challenged as most forms of PSE in this study are not directly influencing PEI and PEB. To better understand the implications of these results, future studies could address whether different forms of PSE remain significant if additional variables are added that might change the relationship between PSE, PEI, and PEB.

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## Appendix

### *Appendix A. Detailed description components and items*

*Table A1: Components and items*

<b>1)Pro-environmental individual self-efficacy</b>	
Pro-environmental self-efficacy expectancy	This concept refers to the notion whether individuals perceive that they can perform desired behavior related to sustainability issues. This variable is measured by statements like “I have the capacity to engage in pro-environmental behavior” and “I believe I can perform actions that will have an impact on the environment”.
Pro-environmental individual outcome expectancy	This concept refers to the individual perception whether their behavior will lead to certain outcomes related to sustainability issues. This variable is measured by statements like “I can change my behavior in order to engage in pro-environmental behaviors” and “My actions can have a positive impact on the environment as I start with recycling activities this year”.
<b>2)Pro-environmental collective efficacy</b>	
Pro-environmental collective efficacy expectancy	A group’s shared beliefs in its collective capabilities to execute actions to produce given outcomes related to sustainability issues. It is measured by statements like “I am confident that together we can solve the problem of pollution by means of recycling, buying organic products and separating rubbish”, “We can come up with creative ideas to solve environmental problems effectively, even if the external conditions are unfavorable.”, and “I am confident that we together can encourage more and more people to engage in environmentally friendly behaviors



	such as recycling, buying organic products and separating rubbish.”.
Pro-environmental collective outcome expectancy	The likely consequences that a group will experience a result related to sustainability issues because of a group’s performance of tasks. It is measured by questions like “By changing our behavior, people around me and I can reduce our waste” and “By changing our behavior, people around me and I can improve our recycling activities”.
<b>3)Pro-environmental behavior</b>	Consumer behavior that consciously seeks to minimize the negative impact on the related sustainability issues. More specifically, these are focused on separating trash, buying organic, and recycling. This behavior is measured through statements related to buying organic, separating trash, and recycling. An example of such item to measure this variable is “I have the potency to collect and recycle used paper.”.
<b>4)Pro-environmental intention</b>	The willingness to engage in pro-environmental behavior like separating trash, buying organic, and recycling. The statements are set up in such a way that they reflect the three specific behaviors chosen for this study. An example of such an item is “I have the intention to abstain from plastic while shopping”.
<b>6)Compulsive buying</b>	The consumer’s tendency to engage in behavior that is characterized as a chronic and repetitive purchasing that becomes a primary response to negative events and emotions. It is measured through items as “I cannot resist sales signs in window or shop displays, I just have to check them out”, "I feel 'high' when I go on a buying

	spree", and "I have excessive buying periods accompanied by overwhelming feelings of generosity".
<b>6) Pro-environmental attitudes</b>	A person's tendency to be concerned about the natural environment. These attitudes are measured through questions such as "I would be willing to sacrifice some personal comforts, to recycle more plastic".
<b>7) Awareness of the environmental issue</b>	The awareness of consumers of environmental issues and the engagement they have in environmental actions. This variable is measured through statements like "Global warming is a societal issue."
<b>8) Pride and guilt about pro-environmental behaviour</b>	Feelings of self-conscious emotions, like pride and guilt, that subsequently influences consumer behavior related to sustainability issues. Participants are asked to rate the amount of which they experience each emotion category concerning their environmental behaviors. These emotions are "proud", "satisfied", and "pleased with myself" for pride. For guilt the emotions "guilty", "remorseful", and "regretful" are used.

### *Appendix B. Further information about the demographics measured*

*Educational level* is measured by the highest level of education that the participants experienced. There were seven options based on the Dutch educational level: VMBO (1), HAVO (2), VWO (3), MBO (4), HBO (5), WO (6), I would prefer not to say. The educational level of the Netherlands is only used since it is expected that all participants will be Dutch. Even if the people are from abroad, they are expected to be international students. So, using only the Dutch educational systems is the most applicable.

*Gender is measured* by the three questions male, female, and “I prefer to not say”.

*Age is simply measured* by filling in a number. Participants had the option of entering a number up to three digits.

*Nationality is measured* by giving a blank option where people could fill in their country of origin.

*Occupation is measured* by questioning which occupation they practice most of the time. The options were “student”, “working”, “volunteer”, “non-working”, “retired”, and “I would rather not say”.

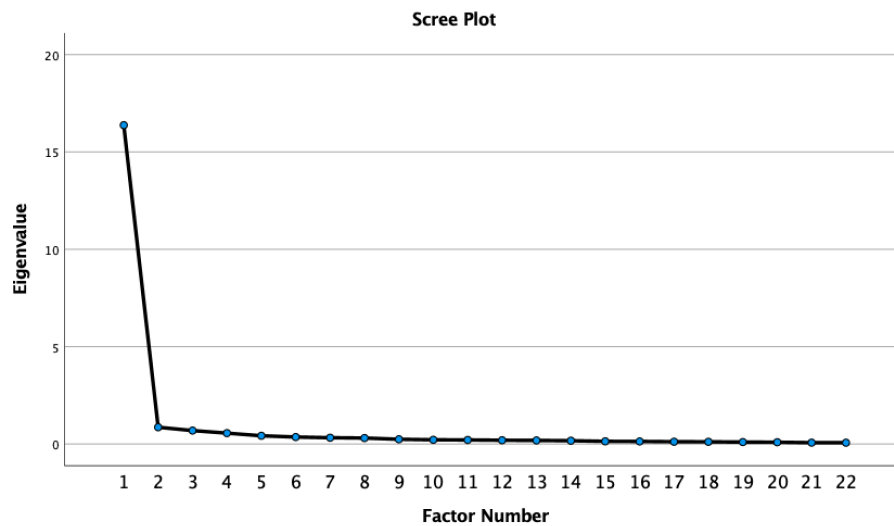
*Proficiency in English* is measured by letting respondents state their skills in the English language. It was asked by the statement “My English is good” The options were ranging on a Likert scale with seven options from “I completely do not agree” to “I completely agree”.

*Net income is measured* by asking their average income per month. The possibilities are “less than €1.000”, “between €1.000 and €2.500”, “between €2.501 and €5.000”, “€5.001 or more” and “I would rather not say”.

*Appendix C. Factor analyses PSE & pro-environmental attitude with environmental awareness*

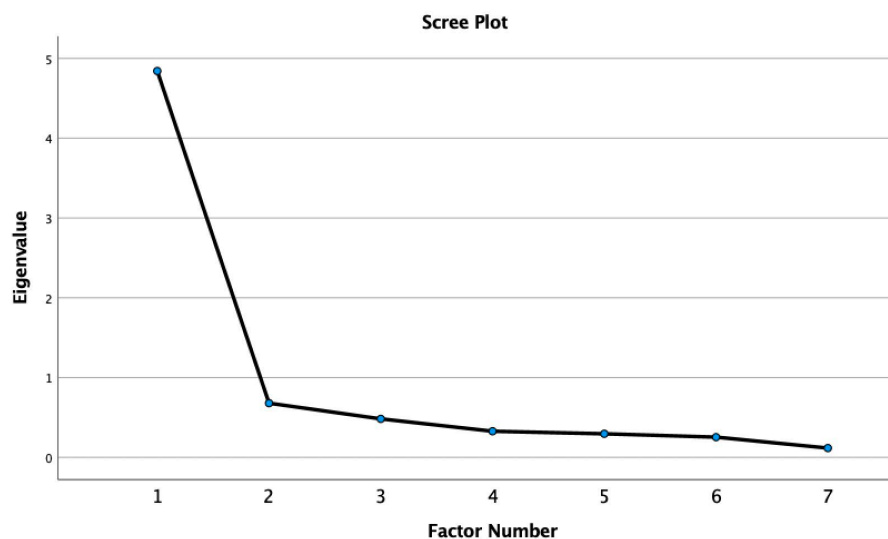
*1) Factor analysis PSE*

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0,977
Bartlett's Test of Sphericity	Sig.= 0,000



*2) Scree plot for the pro-environmental attitude and awareness of environmental issues*

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0,895
Bartlett's Test of Sphericity	Sig. = 0,000



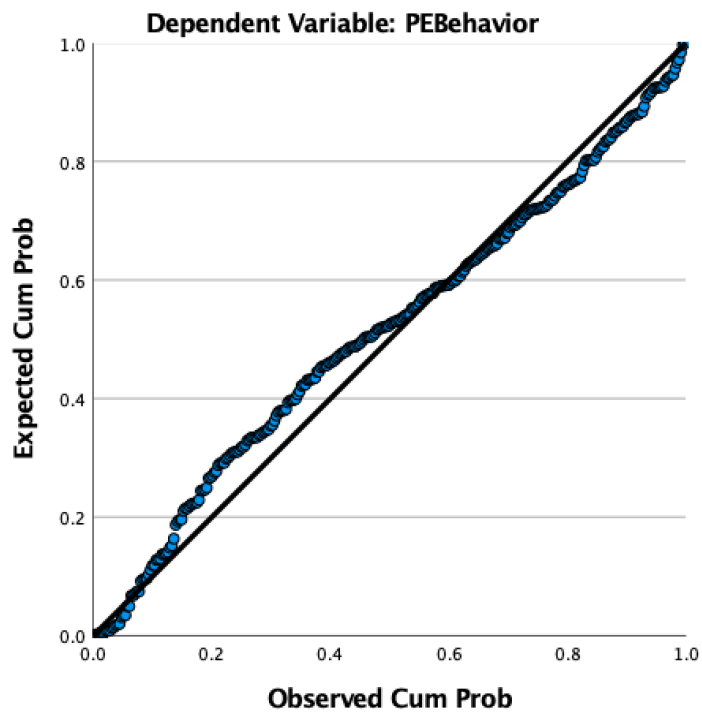
*Appendix D. VIF Tables of PEB and PEI*

Variable	VIF-value
SEindividual	9,852
OEindividual	6,295
SEcollective	8,213
OEc collective	4,249
CompulsiveBuying	1,790
INT1	21,781
INT2	11,623
INT3	18,530
INT4	6,799
PEattitudes	3,458
AwarenessEP	1,139
EmotionsPositive1	7,133
EmotionsNegative1	4,227
EmotionsPositive2	7,888
EmotionesNegative2	4,667
EducationDummySecondary	1,297
EducationDummyMBO	2,242
EducationDummyHBO	1,719
EducationDummyBachelor	1,375
EducationDummyPrimary	1,062

*Appendix E. Normal distribution of PEB and PEI*

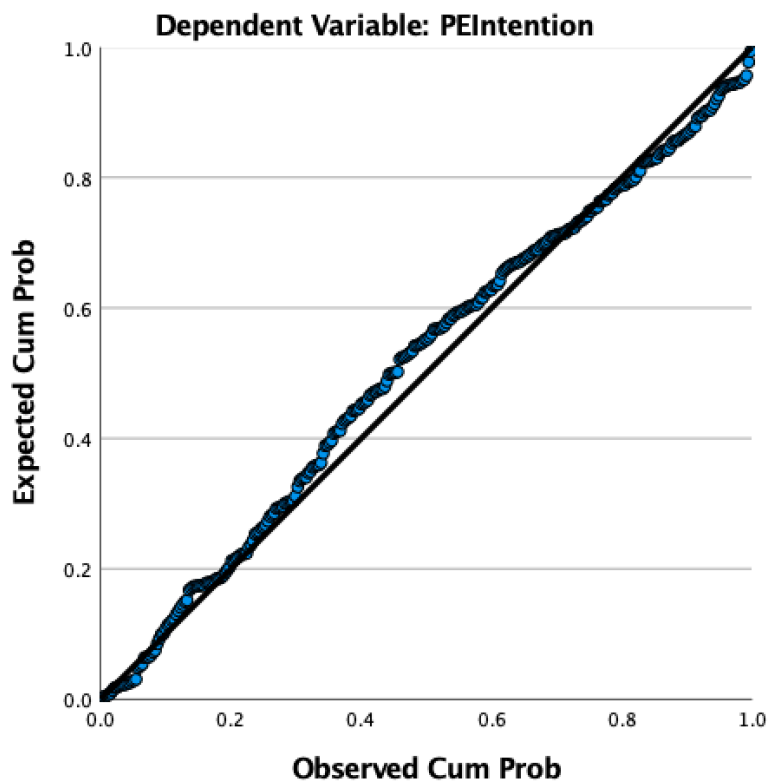
*1) PEB*

**Normal P-P Plot of Regression Standardized Residual**

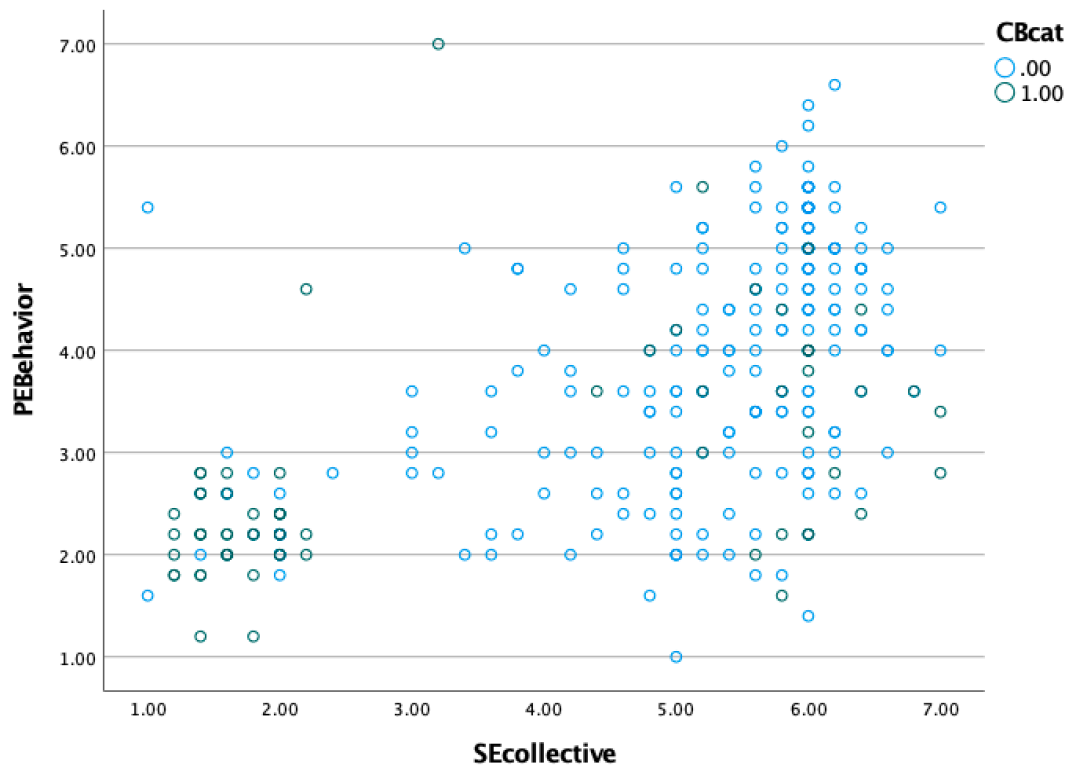


*2) PEI*

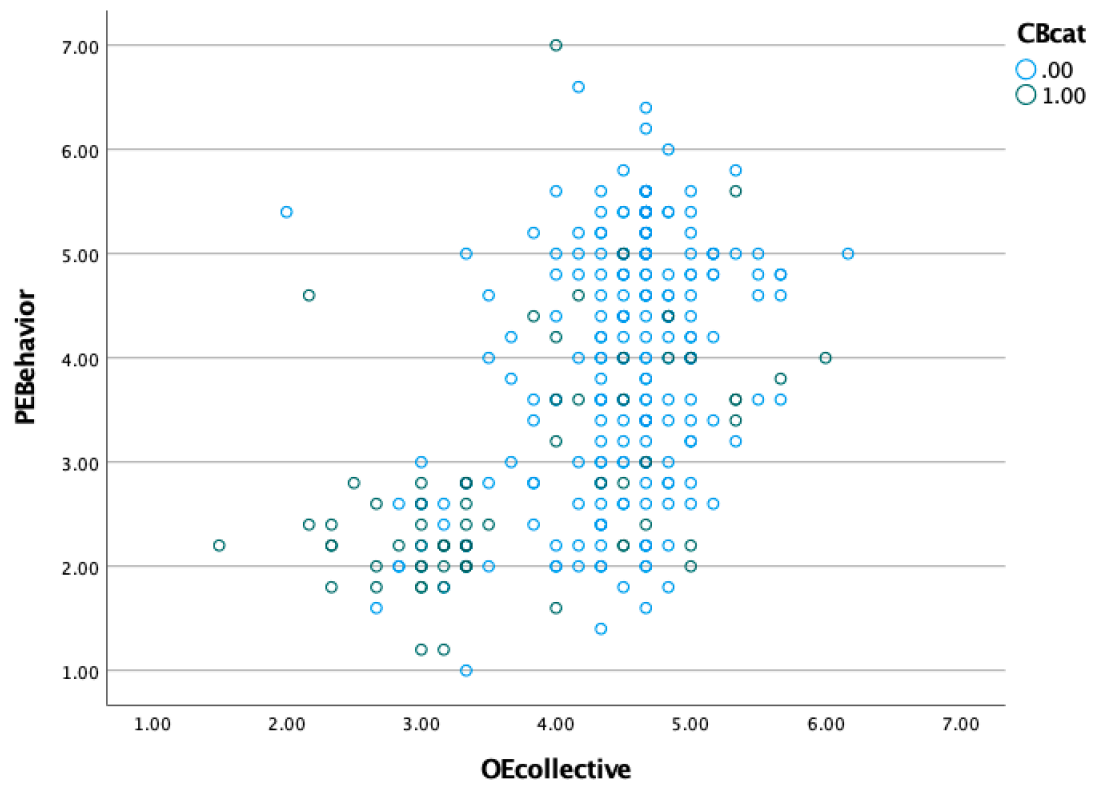
**Normal P-P Plot of Regression Standardized Residual**



*Appendix F: Scatterplot showing the relationship of PEB and collective efficacy expectancy between people scoring low and high on compulsive buying*



*Appendix G: Scatterplot showing the relationship of PEB and collective outcome expectancy between people scoring low and high on compulsive buying*





*Appendix H: Scatterplot showing the relationship of PEI and collective efficacy between people scoring low and high on compulsive buying*

