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Age-related effects on environmentally sustainable purchases at the time of COVID-19: Evidence from Italy

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ABSTRACT

The present research investigates whether the novel coronavirus disease (COVID-19) pandemic has modified consumers’ spending on environmentally sustainable products by focusing on the role of age. An empirical study conducted in Italy during the first wave of the pandemic finds that consumers’ age affected their reaction to the COVID-19 outbreak, and such age-related effects may have led to an increased propensity to spend on sustainable products. Indeed, the results show that consumers’ age is inversely related to their negative affective reaction to the rise of contagion, which, in turn, is inversely related to their level of optimism experienced when the contagion slowed down due to public health interventions. Furthermore, this level of optimism is positively related to consumers’ pro-environmental attitude and, thus, to their tendency to increase sustainable purchases.

1. Introduction

The novel coronavirus disease (COVID-19) pandemic is deeply affecting humankind. In addition to its dramatic effects on public health, the COVID-19 pandemic has severely hit national economies, insofar as the restrictive lockdown measures (e.g., staying at home, social distancing, business closures) that Governments imposed to limit the rise of contagion have caused a significant contraction of demand in nearly all industries (Donthu and Gustafsson, 2020; Nicola et al., 2020). Importantly, the pandemic has also deeply affected consumers’ behaviors. For example, during the rise of contagion, consumers shopped less frequently, but increased their average basket size (Knowles et al., 2020). Furthermore, they compulsively stockpiled essential products (e.g., non-perishable foods, cleaning products) (Islam et al., 2020; Prentice et al., 2020), postponed unnecessary purchases (Sheth, 2020), engaged in do-it-yourself activities (e.g., cooking, gardening) (Kirk and Rifkin, 2020), and increased online purchases (Pantano et al., 2020).

Amid these relevant changes, a neglected aspect that deserves attention is whether consumers have varied their pro-environmental attitudes and behaviors, two concepts that capture, respectively, consumers’ general appreciation of the natural environment and the actions they perform in an attempt to protect (or not to hurt) the environment (Haws et al., 2014; Kaiser et al., 2018). Some scholars (Cohen, 2020; Mende and Misra, 2020) hint at the possibility that the pandemic may favor a shift toward more environmentally sustainable consumption patterns, insofar as consumers become more conscious of the human-kind vulnerability and the relevance of problems, such as pollution and climate changes, that may have adverse effects on both their health and the natural environment. This would be an interesting opportunity in the light of the relevance of environmental sustainability for companies and policymakers (United Nations, 2018). Yet, to date, no study has empirically explored this possibility.

In the present research conducted in Italy—one of the first countries to be heavily hit by the new virus—we try to advance knowledge on this topic. Specifically, we empirically investigate whether consumers have increased their spending on environmentally sustainable products—i.e., those that benefit, or at least do not hurt, the environment and, as such, relieve consumers from their environmental responsibility (de Medeiros and Ribeiro, 2017)—during the COVID-19 pandemic, and explores a mechanism that might drive such a change in purchasing behavior. The underlying idea is that age may influence consumers’ affective reaction to the pandemic, and such age-related effects may lead consumers to differently alter their spending on sustainable products. We focus on age as it plays a critical role in determining consumers’ shopping behavior (Cox et al., 2005) and still represents a major classification variable in retailers’ segmentation strategies (Phua et al., 2020). Furthermore, age

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plays a significant role in the formation of pro-environmental attitudes and behaviors (Diamantopoulos et al., 2003; Hines et al., 1987). Specifically, we hypothesize and empirically show that consumers at older ages, compared to their younger counterparts, experienced lower levels of negative affect—i.e., a generalized unpleasant feeling state (Cohen and Areni, 1991)—during the ascending phase of the first COVID-19 contagion wave, by virtue of their greater ability to control negative affective reactions to adverse situations (Carstensen 1995; Carstensen et al., 1999). As a result of this less negative affective reaction, during the subsequent, descending phase of the viral contagion, older consumers developed a more optimistic view of the near future compared to younger consumers. Such a higher level of optimism, in turn, inspired more pro-environmental attitudes, which inclined older consumers to spend more on sustainable products.

By providing evidence for this chain of relationships, our work makes two substantial contributions to the literature. First, it contributes to the emerging stream of research on the pandemic’s impact on consumer behavior (e.g., Islam et al., 2020; Kirk and Rifkin, 2020; Laato et al., 2020; Prentice et al., 2020; Sheth, 2020), by unveiling a tendency among older consumers to increase environmentally sustainable purchases. Second, our work contributes to an established stream of research that documents a negative association between age and sustainable consumption (e.g., Diamantopoulos et al., 2003; Jansson et al., 2010). Indeed, our findings challenge such a negative association by showing that consumers at older ages have increased sustainable purchases during the pandemic, due to a less negative affective reaction to the virus outbreak that inspired a more optimistic view of the near future and, thus, more pro-environmental attitudes and behaviors.

In the following section, we illustrate the theoretical background and research hypotheses. Then, we report a survey study by illustrating the methodology followed and the results obtained from the statistical analysis. Finally, we discuss the theoretical and practical implications of our findings, along with the main limitations and some directions for future research.

2. Theoretical background

2.1. Age and sustainable consumption in the pre-COVID-19 era

Age is a central variable in the analysis of sustainable consumption. Past studies provided evidence for a negative relationship between consumers’ age and their interest in taking care for the environment (Diamantopoulos et al., 2003; Hines et al., 1987). For instance, studies investigating pro-environmental attitudes found that consumers at older ages typically exhibit lower levels of awareness of environmental problems, support for pro-environmental reforms (Van Liere and Dunlap, 1980), and environmental concern in general (Cottrell, 2003; Mohai and Twight, 1987).

Additionally, past research suggests that age is negatively related to diverse pro-environmental behaviors. Indeed, past research findings showed that consumers at older ages are less inclined to engage in a series of pro-environmental actions, such as curtailed car use (Jansson et al., 2010), reducing energy consumption, and recycling (Semenza et al., 2008). Furthermore, compared to their younger counterparts, older consumers would be less interested in participating in volunteer actions in defense of the environment (Pillemer et al., 2017; Wright et al., 2003).

In the light of such findings, it seems critical both to investigate whether such a negative association between age and pro-environmental attitudes and behaviors has changed during the COVID-19 pandemic and to explore the mechanism underlying this possible change.

2.2. Age as an antecedent of negative affective reaction to the COVID-19 outbreak

Psychological research has long shown a negative relationship between individuals’ age and their ability to control negative affective reactions, or unpleasant emotional responses (Bagozzi et al., 1999; Cohen and Areni, 1991), to adverse situations or events (see Charles and Carstensen, 2007, for a review). Specifically, the Socioemotional selectivity theory (Carstensen, 1995; Carstensen et al., 1999) suggests that older individuals, compared to younger ones, can better control such affective reactions as a consequence of aging. According to this theory, with the advancing of age, individuals’ feeling that their life horizon is shortening becomes more salient; this feeling, in turn, motivates individuals to pursue immediate rather than delayed rewarding opportunities that can increase life satisfaction and well-being. Therefore, they would prioritize positive emotion-laden events and situations, while putting lesser importance to negative emotion-laden ones, to maximize positive affect and minimize negative affect (Lockenhoff and Carstensen, 2004; Mroczek, 2001).

In line with this notion, past empirical studies found that, compared to younger people, individuals at older ages elaborate negative emotional stimuli (e.g., pictures) more superficially than positive emotional ones (Mather et al., 2004), recall fewer negative memories (Schaie et al., 2006), and experience lower levels of negative affect during interpersonal conflicts within marital relationships (Carstensen et al., 1996). More importantly, individuals at older ages experience negative affective states with lesser frequency (Carstensen et al., 2000) and intensity (Charles et al., 2001).

In the light of such empirical findings, in the present research we hypothesize an inverse relationship between consumers’ age and their negative affective reaction to the COVID-19 outbreak. Specifically, we expect that consumers at older ages experienced less negative affect during the ascending phase of the first COVID-19 contagion wave, which was characterized by a rise of infections and the imposition of restrictive lockdown measures. Formally:

H1. Consumers’ age is inversely related to the level of negative affect that they felt during the ascending phase of the first COVID-19 contagion wave.

2.3. Individuals’ negative affective reaction as an antecedent of optimism

Prior research (Gallo et al., 2011; Isaacowitz, 2005) suggests that older individuals’ greater ability to control (negative) affective reactions may increase optimism. Optimism captures people’s favorable approach to the world, as it refers to the extent to which individuals believe that positive rather than bad things will likely happen in the near future (Scheier and Carver, 1985). Optimism is associated with positive cognitions and feelings. For example, people with an optimistic rather than pessimistic view of the future tend to feel less distressed and depressed, especially in adverse situations; they interpret events—even the most stressful ones—in a more positive and constructive manner, and experience greater self-esteem and well-being (Carver et al., 2010; Forgeard and Seligman, 2012).

Past research also related optimism to individuals’ affective states. While some studies (Scheier et al., 1994) found that optimism is inversely associated with specific negative states like anxiety, others considered affective states in general. These latter studies found that higher levels of optimism are associated with higher levels of positive affect (Ferguson and Goodwin, 2010) and lower levels of negative affect (Anderson, 1996). Interestingly, consistent with this line of research, Västfjäll et al. (2008) found that negative affective reactions to catastrophic events (e.g., a tsunami disaster) reduce optimism, leading to a more pessimistic view of the future. Similarly, Calandri et al. (2018) showed that people’s negative affect felt in adverse health-related situations (i.e., a severe illness experience) is negatively associated with...
optimism.

Based on the above, we expect an inverse relationship between the level of negative affect experienced during the COVID-19 outbreak and optimism. Specifically, it is feasible that the lower the level of negative affect that consumers felt during the rise of contagion, the higher the level of optimism that they experienced during the subsequent phase, when the contagion slowed down due to the implementation of public health interventions. Formally:

**H2.** The level of negative affect that consumers felt during the ascending phase of the first COVID-19 contagion wave is inversely related to the level of optimism that they experienced during the descending phase of the contagion.

### 2.4. Optimism, pro-environmental attitude, and environmentally sustainable purchases

Optimism can influence people’s attitudes and behaviors (Carver et al., 2010). Individuals with higher levels of optimism not only believe that positive things are more likely to occur in the future, but also do their best to make such things happen. When faced with problematic situations, optimists tend to consider said situations as something upon which they can act (Forgeard and Seligman, 2012) and, as such, proactively try to remove the causes of the problem, in order to achieve desirable outcomes (Scheier et al., 1986). For example, past research (Carver et al., 2010; Scheier and Carver, 1992) reported that optimistic individuals with health problems are motivated to overcome such problems and act congruently with this motivation.

Importantly, several studies on sustainable consumption provided evidence for a positive relationship between optimism and pro-environmental attitudes. Dirzyte and Rakauskiene (2016) found higher levels of optimism among consumers who put greater importance to environment protection. Other studies confirmed this notion by showing that consumers who hold a more optimistic view of the near future are more inclined to take care of the environment, for example, by consuming less disposable plastic bottled water (Peter and Honea, 2012), recycling (Kaida and Kaida, 2019), or consuming more organic food (Sadig et al., 2020).

Consistent with the above, in this research we propose that consumers who experienced greater optimism during the descending phase of the first COVID-19 contagion wave tend to interpret the pandemic as an event upon which they can act in their own small way. One way to do so is to defend the planet by taking care of the natural environment. Therefore, we hypothesize that, in the examined context, optimistic consumers hold more pro-environmental attitudes. Formally:

**H3.** The level of optimism that consumers experienced during the descending phase of the first COVID-19 contagion wave is positively related to their pro-environmental attitude.

The concept of pro-environmental attitude logically relates to pro-environmental behaviors. While some studies noted that pro-environmental attitudes do not automatically convert into environmentally friendly actions (e.g., Dirzyte and Rakauskiene, 2016), attitudes remain a fundamental precursor of behaviors (Ajzen, 2005). Indeed, past research clearly demonstrated a positive relationship between pro-environmental attitudes, on one hand, and environmentally sustainable intentions or behaviors, on the other. Importantly, past empirical studies in consumption settings suggested that such a relationship is universally valid by showing that pro-environmental attitudes can increase environmentally sustainable purchasing intentions and behaviors across different national groups, such as Chinese and American consumers (Chan and Lau, 2001), as well as Indian (Kumar et al., 2017, 2021) and Italian consumers (Prete et al., 2017).

Therefore, in this research we hypothesize that those consumers who developed a more pro-environmental attitude—by virtue of an age-related tendency to be more optimistic about the near future and experience less negative affect during the viral contagion—are more likely to increase environmentally sustainable purchases. Formally:

**H4.** Consumers’ pro-environmental attitudes are positively related to their tendency to increase sustainable purchases during the descending phase of the first COVID-19 contagion wave.

**H5.** Negative affect, optimism, and pro-environmental attitude serially mediate the relationship between consumers’ age and their tendency to increase sustainable purchases.

We tested the hypotheses presented above, and summarized in Fig. 1, in the survey study illustrated below.

### 3. Methods

#### 3.1. Research setting

The present research focused on Italy for three main reasons. First, Italy has been the first country in the Western part of the globe to suffer the dramatic consequences of the COVID-19 outbreak on public health and economic activities (Remuzzi and Remuzzi, 2020). As of March 2020, Italy has experienced the most severe health emergency since World’s War II, which was caused by a sudden spread of the virus (Indolfi and Spaccarotella, 2020). Due to the outbreak of that first wave of contagion in March 2020, Italy was the first European country to adopt restrictive lockdown measures (e.g., staying at home, social distancing, business closures) to slow down the virus spreading. Those measures were partially relaxed in May 2020, due to a progressive reduction in new daily infections. However, as a relevant side-effect of those measures, Italy has been experiencing an unprecedented economic downturn that might result in a 10% decrease in Gross Domestic Product in 2020 compared to 2019 (Statista.com, 2020a).

Second, the Italian population is aging at an increasing pace due to a reduced fertility rate and an increased life expectancy (Italian National Institute of Statistics, 2020b). Third, Italy represents a relevant market for environmentally sustainable products, with a total turnover that exceeded EUR6 billion in 2019 (Frojo, 2020). These latter two considerations, combined with previous research findings suggesting a negative association between age and pro-environmental attitudes and behaviors (e.g., Diamantopoulos et al., 2003; Jansson et al., 2016), make it apparent that the future growth of the environmentally sustainable products’ market in Italy should not be taken for granted. Therefore, an investigation of whether consumers in this country may have increased environmentally sustainable purchases during the COVID-19 health crisis as a function of their age might provide insights on the future development of this market.

#### 3.2. Sample

The study involved a sample of 817 Italian consumers. The sociodemographic profile of the sample is compatible with that of the Italian population (Italian National Institute of Statistics, 2020a). Indeed, respondents reported a mean age of about 38 years (age range = 18–85); 37.2% of them were males and 62.8% were females. Furthermore, 44.4% were singles and 55.6% were married or in a married-like relationship. As for their education level, 16.4% of respondents held a lower level of education, 55.8% held a high school diploma, 22.8% held a college or bachelor’s degree, and 5% held a master’s or doctoral degree. Regarding income, 20.4% of respondents reported an annual income lower than EUR10,000, 60.2% indicated an annual income between EUR10,000 and 29,999, 16.9% reported an annual income between EUR30,000 and 60,000, while for 2.5% of respondents the annual income was higher than EUR60,000.
Fig. 1. Conceptual model.

Fig. 2. Ascending and descending phases of the first COVID-19 contagion wave in Italy.
Source: Open data from Italian Civil Protection Department available at: https://github.com/pcm-dpc/COVID-19/tree/master/dati-andamento-nazionale (Accessed August 8, 2020).
3.3. Procedure

We collected the data during the descending phase of the first COVID-19 contagion wave in Italy, from June to July 2020 (see Fig. 2), using a structured online questionnaire.

We administered the questionnaire via the Internet to avoid physical interpersonal contact, in line with the social distancing measures in effect in Italy in that period. Specifically, we distributed the survey link through Facebook, which has recently proved to be a valid participant recruitment tool in social science research (Schneider and Harknett, 2020; Zhang et al., 2020). Moreover, Facebook is the most popular social networking site in Italy (Statista.com, 2020b), and this assured us about the possibility of recruiting a sample of respondents with a socio-demographic profile compatible with that of the national population.

The questionnaire included six distinct sections. The first section comprised a question that asked respondents to indicate the proportion of a shopping budget of EUR100 that they used to spend on environmentally sustainable products (e.g., biodegradable detergents, sustainably sourced food, etc.) before the COVID-19 health crisis (see Appendix). This measurement approach was derived from prior research on consumers’ spending propensity (Jappelli and Pistarferri, 2014). Respondents reported their responses on an 11-point scale, ranging from 0 (corresponding to 0%) to 10 (100%), which served as a measure of respondents’ spending on environmentally sustainable products before the crisis.

The second section assessed the negative affective states that respondents experienced during the ascending phase of the COVID-19 contagion. Operationally, we selected six negative affective states from an initial pool of 10 negative emotions (i.e., “anger”, “anxiety”, “discontent”, “fear”, “frustration”, “guilt”, “resignation”, “sadness”, “shame”, and “worry”), which was developed from prior literature (Richins, 1997; Watson et al., 1988). To this end, we asked three researchers with expertise in social psychology to identify those affective states, within the aforementioned pool of emotions, that people might have felt most frequently during the rise of contagion. The three researchers proposed “anxiety”, “fear”, “frustration”, “resignation”, “sadness”, and “worry” as the affective states that might best capture people’s dominant feelings in that period. Thus, we incorporated these six negative affective states in the questionnaire and asked respondents to indicate how often they felt each affective state in that period using a seven-point scale (1 = never, 7 = very often).

The third and fourth sections of the questionnaire included, respectively, a measure of respondents’ level of optimism for the near future and a measure of their pro-environmental attitudes at the time of data collection. The former measure comprised three items that were adapted from Scheier et al. (1994) (e.g., “In these uncertain times, I tend to expect the best”), while the latter measure comprised six items adapted from Haws et al. (2014) (e.g., “It is important to me that the products I use in this period do not harm the environment”). Both measures were assessed on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree).

The fifth section comprised a question similar to that included in the first section of the questionnaire, except that, in this case, the question asked respondents to indicate the proportion of a shopping budget of EUR100 that they would spend on sustainable products at the time of data collection. Respondents answered this question using the same 11-point scale as in the first section.

The sixth section comprised a question concerning the year of birth, along with measures of potential covariates. Indeed, in addition to age, other individual and contextual factors might contribute to explaining respondents’ reaction to the COVID-19 outbreak and their tendency to purchase sustainable products during the health crisis. To control for such potential effects, we collected data regarding respondents’ gender (0 = male, 1 = female), civil status (0 = single, 1 = married or in relationship), education level (1 = lower than high school, 2 = high school diploma, 3 = college or bachelor’s degree, 4 = master’s or doctoral degree), annual income level (1 = less than EUR10,000, 2 = EUR10,000–29,999, 3 = EUR30,000–60,000, 4 = more than EUR60,000), and number of children. Also, we asked respondents to report their health status (1 = poor, 2 = fair, 3 = good, 4 = excellent) and how their total spending budget varied as a consequence of the health crisis using an 11-point scale ranging from 0 (denoting a budget that decreased by at least 50%) to 10 (denoting a budget that increased by at least 50%), with 5 indicating a budget that remained unchanged.

4. Results

4.1. Descriptive statistics

We checked the three multi-item measures of negative affect, optimism, and pro-environmental attitude for reliability, by computing a Cronbach’s α coefficient for each of them. The results confirmed that these measures were reliable as their respective α coefficients were above the recommended threshold of 0.70 (Hair et al., 2014; see Table 1). Therefore, we averaged the scores obtained on the individual items of these three scales to constitute aggregate measures of negative affect, optimism, and pro-environmental attitude.

Next, we computed the descriptive statistics (i.e., mean and standard deviation) for all the constructs involved in our conceptual model (Fig. 1), along with their bivariate correlations (see Table 1). Furthermore, we subtracted the scores indicating respondents’ spending on environmentally sustainable products before the COVID-19 health crisis from the scores indicating their spending on these products at the time of data collection. The resulting difference was an index that captured a respondents’ tendency to increase sustainable purchases during the pandemic, with higher values denoting a propensity to spend more on such products. Regarding this index, a one-sample t-test confirmed that, on average, it was significantly greater than zero, t(816) = 14.857, p < 0.001. Specifically, considering the 11-point scale employed in the questionnaire to assess this phenomenon, its mean value of 0.950 suggested that respondents increased their spending on environmentally sustainable products by nearly 10%. This index served as the ultimate dependent variable in our analysis.

4.2. Hypothesis testing

To test the proposed hypotheses summarized in Fig. 1, we adopted the statistical procedure recommended by Hayes (2018) for mediation analysis, which was adopted in several studies on sustainable consumption (e.g., Amatulli et al., 2019; Sadiq et al., 2020). By implementing Hayes’ (2018) PROCESS SPSS Macro (Model 6), we estimated a serial mediation model that expressed the index denoting respondents’ tendency to increase their environmentally sustainable purchases as a function of respondents’ age and the three serial mediators regarding negative affect, optimism, and pro-environmental attitude, respectively. This model also included gender, civil status, education level, income level, number of children, health status, and variation in spending budget, which served as covariates. The serial mediation analysis summarized in Table 2 comprised four steps.

In the first step, we regressed negative affect on age, while controlling for the potential effects of seven distinct covariates, namely: gender, civil status, education level, income level, number of children, health status, and variation in spending budget. Consistent with H1, the analysis returned a significantly negative effect of age (b = −0.027, p < 0.001), which suggests that respondents at older ages experienced less negative affect during the ascending phase of the first COVID-19 contagion wave. In the second step, we regressed optimism on negative affect, while controlling for age and the aforementioned covariates. As predicted in H2, there was a significantly negative relationship between negative affect and optimism (b = −0.168, p < 0.001), whereby respondents who felt less negative affect during the rise of contagion experienced greater...
optimism when the viral contagion slowed down. In the third step, we regressed pro-environmental attitude on optimism, while controlling for negative affect, age, and the covariates. In line with H3, the results showed a significantly positive relationship between optimism and pro-environmental attitude ($b = 0.259, p < 0.001$), which suggests that respondents who experienced greater optimism held more pro-environmental attitudes. The analysis also returned a significantly positive effect of age on such attitudes ($b = 0.008, p < 0.05$). In the fourth step, we regressed the respondents’ tendency to increase sustainable purchases during the pandemic on pro-environmental attitude, while controlling for optimism, negative affect, age, and the covariates. Consistent with H4, the analysis revealed a significantly positive relationship between pro-environmental attitude and such a tendency ($b = 0.289, p < 0.001$), which suggests that respondents with a more pro-environmental attitude increased their environmentally sustainable purchases.

To estimate the indirect effect of age on the ultimate dependent variable, we implemented a bootstrapping method, with 5000 samples (Hayes, 2018). As predicted in H5, the results showed a significantly positive indirect relationship between age and tendency to increase sustainable purchases via negative affect, optimism, and pro-environmental attitude ($b = 0.0024, 95% confidence interval = –0.0024, 0.0000, 0.0000$). Furthermore, there were a significantly negative indirect relationship between age and the tendency to increase sustainable purchases, via negative affect ($b = –0.0024, 95% confidence interval = –0.0054, –0.0001$), and a significantly positive indirect relationship between age and such a tendency, via pro-environmental attitude ($b = 0.0022, 95% confidence interval = 0.0001, 0.0047$). Taken together, our results supported the proposed hypotheses and provide insights for theory and practice that are discussed in the following section.

5. Discussion and conclusions

The present research demonstrates that, during the COVID-19 pandemic, consumers have increased their spending on environmentally sustainable products by nearly 10%. To the best of our knowledge, this is the first study to provide empirical evidence for such a change in consumer behavior. Despite apparently small in magnitude, our results showed that this change is statistically significant, yet not homogeneous across consumers. Indeed, consumers at older ages are more inclined to increase environmentally sustainable purchases. More importantly, our findings indicate that these consumers have increased their spending on sustainable products during the pandemic as a consequence of a different reaction to the COVID-19 health crisis. Indeed, consumers at older ages experienced a lower level of negative affect during the rise of contagion. Due to this different reaction, in the subsequent, descending phase of the viral contagion, these consumers developed a more optimistic view of the near future, which, in turn, inspired more pro-environmental attitudes and, consequently, increased their tendency to spend on environmentally sustainable products.

5.1. Theoretical and practical implications

The present research has theoretical and practical implications. From
a theoretical point of view, this work makes two main contributions to literature. First, it contributes to an emerging stream of studies that examine the impact of the COVID-19 pandemic on consumer behavior (e.g., Kirk and Rifkin, 2020; Sheth, 2020). At the moment, most of these studies are conceptual, and none of them have considered potential changes in sustainable consumption. To the best of our knowledge, this is the first study to empirically investigate such a potential change by providing evidence that, during the pandemic, consumers might have significantly increased their spending on sustainable products. Second, our research contributes to an established stream of studies, conducted before the pandemic outbreak, documenting a negative association between age, on one hand, and pro-environmental attitudes and behaviors, on the other (e.g., Diamantopoulos et al., 2003; Jansson et al., 2010). Notably, this study challenges such a negative empirical association by showing that, under the exceptional circumstances determined by the new virus, consumers at older ages are more inclined to increase their spending on sustainable products. Our findings provide evidence for a possible underlying mechanism, whereby such a tendency may derive from these consumers’ ability to better control their negative affective reactions to the outbreak of COVID-19 and develop more optimistic views of the near future during the descending phase of the viral contagion.

From a practical point of view, our findings provide insights to both companies that are involved in environmentally friendly businesses (e.g., manufacturers of products made with recycled materials, energy-saving appliances) and companies that typically target their products at older consumers. Based on our results, the former could try to expand their customer base by targeting their products at older consumer segments. On the other hand, the latter could try to extend their product lines by developing “green” versions of their products. Considering the negative economic consequences of the COVID-19 pandemic in nearly all industries (Donthu and Gustafsson, 2020; Nicola et al., 2020), these strategies could help such companies speed up their recovery from the crisis.

Furthermore, our findings are useful to policymakers interested in encouraging sustainable consumption. In light of prior empirical evidence attesting to older consumers’ reduced tendency to take care of the environment (e.g., Diamantopoulos et al., 2003; Jansson et al., 2010), our findings suggest that, amid the several dramatic consequences of COVID-19, the current pandemic is offering an opportunity to promote sustainable consumption among older consumers. Therefore, policymakers could employ incentives and other tools (see White et al., 2019, for a guiding framework) in an attempt to bolster these consumers’ tendency to purchase environmentally sustainable products during the pandemic, as well as to make such a tendency persist over time, even after the pandemic. At the same time, considering the critical role of age in shaping people’s affective reactions to the COVID-19 pandemic, and by extension to similar health emergency situations, policymakers could help younger individuals—who seem more emotionally susceptible than older ones—to better control such reactions. Specialized psychological support programs, for example, could aid these individuals in coping with the negative affective states they might feel during health crises, inspiring more optimistic views of the future and, thus, more pro-environmental attitudes and behaviors.

5.2. Limitations and directions for future research

The present research features three main limitations that provide opportunities for future studies. First, this research concentrated on Italy. Although this country represented an ideal research setting, as it was among the first countries to be severely hit by COVID-19, and represents a relevant market for environmentally sustainable products, future studies could replicate our research in other countries in order to explore whether our findings are generalizable to other geographical and cultural contexts.

Second, we employed a cross-sectional design and computed an index of respondents’ tendency to increase their environmentally sustainable purchases by comparing a self-report measure of their spending on sustainable products at the time of data collection with a retrospective self-report measure of their spending on these products before the COVID-19 outbreak. Future studies could adopt a longitudinal design that compares other measures of consumers’ spending to confer robustness to our findings. Moreover, while our statistical analysis treated age as a continuous variable, future studies could try to provide further support to our findings by implementing a multi-group analysis that compares younger and older consumer cohorts.

Third, we only focused on the purchase of environmentally sustainable products during the descending phase of the first COVID-19 contagion wave. Thus, our findings are not directly generalizable to other pro-environmental behaviors (e.g., recycling). Future studies could examine other behaviors to explore whether the current pandemic is inspiring pro-environmental attitudes and paving the way for a more sustainable (and, hopefully, healthier) world. Moreover, future studies could explore whether the effects we observed during the first wave of contagion may hold during the current second wave or possible future waves of contagion.

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Declaration of competing interest

None.

Appendix

Relevant measures used in the survey study

1. Spending on environmentally sustainable products before the COVID-19 health crisis

Please think of your purchasing habits before the COVID-19 health crisis. Given a shopping budget of EUR100, what proportion did you typically spend on environmentally sustainable products?

(Response format: 11-point scale from 0% to 100%).

2. Negative affect felt during the ascending phase of the first COVID-19 contagion wave

How frequently did you feel each of the following emotions during the rise of contagion, when the Government imposed the lockdown measures?

- Anxiety
- Fear
- Frustration
- Resignation
- Sadness
- Worry

(Response format: 7-point scale from 1 = never to 7 = very often).

3. Level of optimism experienced during the descending phase of the first COVID-19 contagion wave

- In these uncertain times, I tend to expect the best
- I’m optimistic about my future
- I expect more good things to happen to me than bad
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