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Voluntary Simplicity and Green Buying Behavior: An Extended Framework

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Abstract: Green consumption is usually understood in the context of green consumption values and receptivity to green communication. Voluntary simplicity, a related yet distinct construct that relies on ecological responsibility, has not been included in the same framework. This paper bridges this gap and extends the original model to consider green consumption and voluntary simplicity in a unified structure. Based on a study conducted in Romania, it was found that 70% of the variation in buying behavior is explained by a combination of direct and mediated influences. The main takeaway is that any serious attempt to encourage responsible buying has to rely on a reduction in the absolute level of consumer demand. This result has far-reaching implications because the current paradigm of economic growth and prosperity is tributary to consumerism. The question is not how to avoid curtailing consumption and substitute green products for those harming the environment, but rather how to make voluntary frugality palatable.

Keywords: voluntary simplicity; green buying behavior; ecological responsibility

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1. Introduction

Climate change and environmental degradation are undoubtedly one of the greatest existential threats faced by mankind in recent memory [1]. Fighting back to slow down and even reverse the effects of climate change is a monumental task. One of the more important directions of action aims to change consumer habits by nudging them towards sustainability [2].

Green or responsible consumption represents choices favoring products and services with the lowest possible impact on the environment [3,4]. The aim is to reduce humankind's ecological footprint to a minimum. Until now, green buying behavior has been modeled in connection with green consumption values and receptivity to green communication [5–7].

A related line of research focuses on voluntary simplicity—a programmatic and sophisticated form of frugality in the context of a wholesome lifestyle [8]. Although one of the core values of voluntary simplicity is ecological responsibility [9], to date, green consumption and voluntary simplicity have never been considered as part of the same groundwork according to our knowledge.

This paper bridges this gap and extends the scope of the original green consumption model [5] by including what seems to be a natural fit. One sets out to test the extent to which voluntary simplicity influences green consumption in the context of green consumption values and green communication. It is hypothesized that the former must be a determinant of green buying behavior, either directly or through the mediation of beliefs in material simplicity and ecological responsibility. The originality of this paper consists in providing a broader and more encompassing context than the one developed until now for understanding the dynamics of green consumption.

The hypotheses outlined above were tested using a Partial Least-Square Path Model (PLS-PM), which was implemented in WarpPLS version 6.0. Not counting control variables

there is a total of six variables, of which four are constructs obtained through dimension-reduction procedures (Buying Behavior, Voluntary Simplicity, Green Consumption Values, and Receptivity to Green Communication), and the other two are stand-alone (Beliefs in Material Simplicity and Ecological Responsibility). The measurement and treatment of composite variables are based on measurement scales validated by previous research.

The results support the contentions outlined above and show that about 70% of the variation in green Buying Behavior is explained by the influence of the other variables. Green Consumption Values have both a direct and mediated effect on Buying Behavior. Voluntary Simplicity has only an indirect effect. The mediating variables are Ecological Responsibility and Receptivity to Green Communication in the case of Green Consumption Values, and Ecological Responsibility and Belief in Material Simplicity in the case of Voluntary Simplicity. Ecological Responsibility mediates both Green Consumption Values and Voluntary Simplicity. Together, they reveal a more encompassing and sophisticated dynamic, and show the explanatory power of the extended model to be substantially higher than that documented by previous research.

The effect sizes suggest there are opportunities for practical interventions. The most important takeaway is that green consumption is contingent on voluntary simplicity and beliefs in material simplicity, among others. A significant shift towards responsible consumption cannot occur without enabling a reduction in the levels of consumption. This represents a formidable challenge since the level of consumer demand is central to the current paradigm of economic growth and prosperity. All these issues will be discussed at greater length in the second part of the paper.

In the next section, we present a brief theoretical background and formulate the hypotheses. In section three, we introduce the sample, explain the measurement of each construct, and present the PLS-PM method. The results are shown in section four. Section five provides an extended discussion of the results and of the implications relating to practical interventions. Section six concludes the paper.

2. Literature Review and Hypotheses

Green consumption is a fertile research topic, albeit relatively recent. There is a clear link between shifts towards a sustainable, green consumption paradigm and environmental concerns [10]. A lot of effort has been dedicated to clarifying the concept and building a sound theoretical framework around it.

Ref. [7] broadly defines green consumption in terms of purchasing choices that are made with a view for preserving the environment. Green buying behavior obviously rejects choices harmful to the environment and the ecosystem. Green consumption might also include all sorts of related actions, such as recycling, partaking in communal cleaning campaigns, environmental protection activism, and other activities in a similar vein.

Green buying behavior is closely related to green consumption values [11] and green communication [12,13]. Green consumption values are expressed through attitudes, concerns, and values related to the protection of the environment and purchase of goods and services that are eco-friendly. The relationship among green buying behavior, green consumption values, and green communication has been modeled and documented explicitly and convincingly [5], showing that green buying behavior is driven by green consumption values—directly and through the mediation of green advertising. This setup explains up to 55% of the variation in green buying behavior.

A distinct yet related notion is that of voluntary simplicity. Voluntary simplicity can be conceptualized in terms of frugality [14–16] and downshifting [4]. Individuals who adopt it hold strong convictions opposed to the overuse of both collective and personal resources. The main goal is to reduce waste and embrace a simple yet wholesome lifestyle by separating wants from needs. In accepting a lower level of consumption, one has additional time and freedom to pursue more fulfilling goals, such as artistic, intellectual, spiritual, or personal growth projects [8]. Besides frugality and a rejection of luxuries and

conspicuous consumption, simple living entails a desire for self-sufficiency and respect for nature [17,18].

Voluntary simplicity is easily conflated and confused with austerity and even ascetism; hence, one needs to further clarify the concept because it has important consequences in terms of practical interventions, as it will be seen later on. One has to distinguish between voluntary simplicity—a proactive, programmatic attitude based on a sophisticated set of beliefs pertaining to material simplicity—and austerity driven by poverty. When consumption is reduced as a result of shortages, lack of income, and overall economic hardship, the resulting attitude and behavior is reactive and does not qualify as voluntary simplicity [9]. As noted by [19], individuals must first meet their most basic consumption needs and feel secure before they voluntarily and wholeheartedly adopt beliefs and attitudes that enable material simplicity.

As mentioned earlier, green consumption and voluntary simplicity are kindred concepts, but they have not been modeled in a unified framework until now. In the next section, the authors of this paper extend and adapt the green consumption model with the inclusion of three additional constructs: voluntary simplicity, ecological responsibility, and beliefs in material simplicity.

This research builds on the green consumption model developed by [5]. Although the model is already widely accepted, it is nevertheless fairly recent. There are no competing models or alternative research paradigms to our knowledge to date. The choice of the starting point is straight forward and provides the authors of this paper with the opportunity to make a significant contribution early on and shape the direction in which this line of research will evolve in the future. The original model posits that green consumption (buying) behavior is an outcome determined by green consumption values and receptivity to green communication. One formulates the first two hypotheses to merely reconfirm previously reported findings before proceeding with the extended [20] model [5]:

Hypothesis 1 (H1). *Green consumption values are positively related to green buying behavior.*

Hypothesis 2 (H2). *Receptivity to green communication is positively related to green buying behavior.*

This research extends and refines the original model by adding additional hypotheses aimed at capturing the complexity of the relationships among green consumption and its determinants. The innovation advanced here posits that voluntary simplicity must be a determinant of green buying behavior, either directly or through the mediation of beliefs in material simplicity and/or ecological responsibility. As already stressed, voluntary simplicity entails—among many other things—concerns related to sustainability and the environment [17,18]. It makes perfect sense to infer that a voluntary reduction in one's level of consumption is also accompanied by awareness about the need to move towards green consumption [8]. One is therefore justified in assuming that voluntary simplicity would have an effect on buying behavior [20].

Although ecological responsibility has been traditionally associated with voluntary simplicity [18], we decided to treat it as a stand-alone variable to bridge the interaction with green consumption values and green buying behavior. Ecological responsibility is the linchpin that connects two important dimensions that have been developed in parallel but never connected in this way before: green consumption values and voluntary simplicity [3,4,8–10]. In other words, this paper asks about the role of ecological responsibility, either as a direct influence on green buying behavior or as a mediator for green consumption values and/or voluntary simplicity. Based on the theoretical background outlined above, one formulates five additional hypotheses that expand the original model as follows:

Hypothesis 3 (H3). *Ecological responsibility is positively related to green buying behavior.*

Hypothesis 4 (H4). *Voluntary simplicity is positively related to green buying behavior.*

Hypothesis 5 (H5). *Belief in material simplicity is positively related to green buying behavior.*

Hypothesis 6 (H6). *Receptivity to green communication and ecological responsibility mediate the relationship between green consumption values and green buying behavior.*

Hypothesis 7 (H7). *Ecological responsibility and the belief in material simplicity mediate the relationship between voluntary simplicity and green buying behavior.*

Figure 1 provides a visual and more intuitive representation of the model.

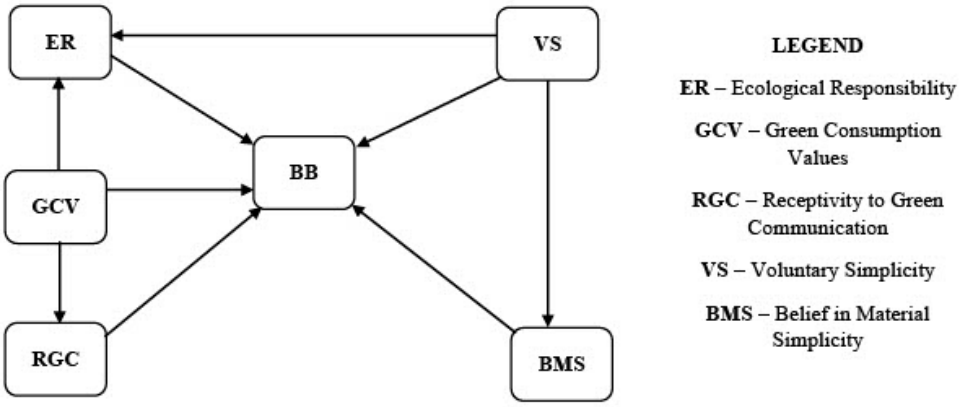

Figure 1. The conceptual model.

3. Materials and Methods

3.1. Data

Data was collected in Romania between November–December 2021 through a self-reported questionnaire. It was posted on different social platforms like Facebook, LinkedIn, Telegram, and WhatsApp. The resulting sample represents a combination of convenience and snowball sampling methods [21,22]. The initial convenience sample of seeds originated from WhatsApp and Telegram [23]. Before completing the questionnaire, the respondents provided their consent to participating in the study, were informed about the purpose of the study, that participation is anonymous and voluntary, and that the collected data will be used only for research purposes. The participants did not receive any monetary rewards for taking part in the study.

There were 741 responses. In WarpPLS 6.0, the minimum sample size for a significance level of 0.05 and a power level of 0.990 is 407 respondents when using the inverse square root method and/or 385 respondents when using the gamma-exponential method. The sample size obtained here is reassuringly well above both thresholds.

3.2. Measurement

The proposed model includes five potential predictors, of which three are deemed mediators. With the exception of Ecological Responsibility (ER) and Belief in Material Simplicity (BMS), all variables represent latent constructs, which were estimated using dimension-reduction techniques that will be explained in the next subsection. The measurement items and the corresponding latent constructs included in the analysis are presented in Table 1, and a complete list of items involved in each latent construct is available in Appendix A.

Table 1. Measurement items by latent constructs.

Latent Structure	Observed Variables
Buying Behavior (BB) [24]	Refers to purchase in a responsible, sustainable, and environmentally friendly way: BB1–BB8.
Green Consumption Values (GCV) [15]	Describes an environmental protection preference, expressed through personal consumption and buying behavior: GCV1–GCV6.
Receptivity to Green Communication (RGC) [13]	Refers to consumer reaction to environmental communication: RCG1–RGC9.
Voluntary Simplicity (VS) [25]	Refers to a lifestyle characterized by low consumption, sustainability, self-sufficiency, and environmental responsibility: VS1–VS6.

All items were measured using a 7-point Likert scale, where 1 corresponds to "total disagreement" and 7 stands for "total agreement".

Green Buying Behavior (BB) was measured using eight items from the "Ecologically Conscious Consumer Behavior" (ECCB) scale [24]. Earlier research tested the reliability of this scale and used it extensively [5,7,26].

Prior studies used ten items of the ECCB scale to quantify a green purchasing behavior [5,7,26,27]. Here, we exclude the first item of the scale "I try to buy energy-efficient products and appliances" and the last one "I buy high-efficiency light bulbs to save energy." We argue these items have a negligible relevance to our respondents because a significant proportion of them are students living in residence or at home with their family. The exploratory analysis revealed that all items were grouped in a single latent construct, which is consistent with the findings of prior research [5,27].

The six-item Green scale [15] was used to measure Green Consumption Values (GCV). This is the same construct used by previous research to establish that stronger green consumption values advance consumer preferences for environmentally friendly goods [5,27,28].

One uses a nine-item scale to quantify Receptivity to Green Communication (RGC) [13]. The third item was dropped because it registers too low a loading following the exploratory analysis.

In the case of the Voluntary Simplicity (VS) latent construct, we only use five of the original six items [25]. It was decided that Ecological Responsibility (ER) would be modeled as a stand-alone variable, at the confluence between Green Consumption Values and Voluntary Simplicity (VS). We had to apply the same treatment to Beliefs in Material Simplicity (BMS), because this item shows lower loadings when attempting dimension reduction.

3.3. Method

We used a Partial Least Square-Path Modeling, also known as PLS-PM or PLS-SEM [29], to assess the contemporary relationships among variables in the conceptual model. This is achieved by maximizing the variance of Buying Behavior (BB) as explained by the predictors and the control variables presented in the next section. The PLS-SEM estimation method is similar to the approach used by previous research [5] and, therefore, allows for the meaningful comparison of the results. In addition, the methodology benefits from the capabilities of a predictive technique that is widely used to inform practical interventions [30].

The PLS-SEM method does not require any particular assumptions about the distribution of the data [31]. In this case, the Jarque-Bera and the robust Jarque-Bera tests show that none of the numerical predictors are normally distributed. In addition, the statistical package used to conduct the analysis, WarpPLS version 6.0, has a unique capacity to identify potential non-linear relationships among variables. This capability is

particularly important because the usual estimation in regression models assume either a linear relationship among variables or a pre-defined non-linear functional form. Unlike this approach, WarpPLS relies on non-parametric techniques able to detect the most appropriate functional form that describes the data. We found this aspect very useful, as previous research using WarpPLS shows that, in some cases, statistically insignificant relationships in models are not due to the absence of the relationship, but rather to the non-linear form of the relationship involved [32,33].

The PLS-SEM estimation involves an outer (measurement) model, assessing the relationships between the latent constructs and their corresponding manifest variables; and an inner (or structural) model, estimating the relationships among latent variables. We report the results in accordance with the recommendations available in [30,34].

4. Results

The sample consists of 741 Romanian respondents (564 women and 177 men) with an average age of 23.36 (median = 20.00, sd = 7.73). A proportion of 82.05% of the respondents were aged between 18–25 years. This explains why 74.77% of them acknowledged high school as their terminal degree. A proportion of 25.78% of the respondents reported an income under RON 500 (€101), while 22.27% reported an income above RON 3000 (around €610 at the time when the study was conducted). A complete sample description is available in Table 2. In this table, the income intervals were converted into euros but, in the questionnaire, we measured the monthly income using the national currency, RON.

Table 2. Descriptive statistics.

	Study Participants	
	N = 741	**(%)**
	Gender	
Male	177	23.89
Female	564	76.11
	Income	
Under €101	191	25.78
€101–€202	119	16.06
€203–€304	74	9.99
€305–€406	66	8.90
€407–€508	78	10.52
€509–€610	48	6.48
Above €610	165	22.27
	Education	
High school	554	74.77
Bachelor's degree	133	17.95
Master's degree	33	4.45
Doctoral degree	21	2.83

Table 3 shows the reliability of the measurement for each latent construct. The composite reliability values are high, ranging between a minimum of 0.822, for voluntary simplicity, and a maximum of 0.950 for receptivity to green communication. All values score above the recommended threshold of 0.70 [35]. Cronbach's alpha values are also high, ranging between 0.913 in the case of Green Values Consumption (GVC) and 0.939 for Receptivity to Green Communication (RGC), indicating high internal consistency [36,37].

Table 3. Assessment of the measurement model.

Variable	Composite Reliability	Cronbach's Alpha	Average Variance Extracted (AVE)
Buying Behavior (BB)	0.943	0.931	0.676
Green Consumption Values (GCV)	0.932	0.913	0.697
Receptivity to Green Communication (RGC)	0.950	0.939	0.704
Voluntary simplicity (VS)	0.822	0.675	0.606

Voluntary Simplicity (VS) has a Cronbach's alpha of only 0.675, which is slightly below the recommended value of 0.7. Given the exploratory nature of this study and the high value of the corresponding composite reliability index, we nevertheless consider VS as reliable and keep it in the analysis. The last column of Table 3 shows that the average variance extracted (AVE) for each composite variable is above the recommended minimum threshold of 0.50 [37,38]. Therefore, the reliability of the measurement is confirmed.

Table 4 shows that convergent validity holds. All loadings range from a minimum value of 0.743 to a maximum value of 0.899, which is above the required threshold of 0.7 [39]. All off-diagonal values are lower than the corresponding diagonal values for each block of measurements.

Table 4. Combined loadings and cross-loadings.

	BB	GCV	RGC	VS
BB1	*0.743*	−0.053	−0.109	−0.009
BB2	*0.849*	0.104	0.111	−0.046
BB7	*0.812*	−0.007	0.053	0.009
BB8	*0.829*	−0.007	0.048	−0.005
BB3	*0.847*	0.034	−0.016	0.001
BB4	*0.855*	0.027	0.017	−0.043
BB5	*0.813*	−0.027	−0.042	0.035
BB6	*0.824*	−0.081	−0.077	0.061
GCV1	−0.053	*0.830*	−0.039	0.046
GCV2	−0.100	*0.848*	−0.109	−0.013
GCV3	0.243	*0.856*	−0.034	0.008
GCV4	0.060	*0.834*	0.148	0.015
GCV5	−0.204	*0.832*	−0.063	−0.079
GCV6	0.051	*0.807*	0.101	0.024
RGC1	0.011	0.300	*0.748*	−0.004
RGC4	0.076	−0.095	*0.885*	−0.010
RGC5	−0.008	−0.045	*0.899*	−0.006
RGC2	0.109	0.145	*0.840*	0.002
RGC6	−0.251	−0.183	*0.837*	0.030
RGC7	−0.284	−0.131	*0.796*	0.025
RGC8	0.176	0.078	*0.834*	−0.025
RGC9	0.151	−0.034	*0.864*	−0.010
VS2	0.100	0.133	−0.042	*0.791*
VS3	−0.148	−0.028	0.025	*0.773*
VS4	0.046	−0.108	0.018	*0.771*

In Table 5, we present evidence that the discriminant validity of the measurement holds as well. All diagonal values are higher than all corresponding off-diagonal values. In addition, none of the off-diagonal correlations exceeds the recommended value of 0.8 [40].

Table 5. Correlations among latent constructs with square roots of AVE.

	BB	GCV	RGC	VS
BB	*0.822*	0.734	0.683	0.508
GCV	0.734	*0.835*	0.708	0.476
RGC	0.683	0.708	*0.839*	0.459
VS	0.508	0.476	0.459	*0.778*

Table 6 presents the estimated coefficients of the model and Table 7 shows the corresponding effect sizes. The total amount of variance in Buying Behavior (BB) explained by the model is 69%, with an adjusted R^2 of 68.8%. The coefficient of determination in the case of the first mediator, Receptivity to Green Communication (RGC), is 50.2% (adjusted R^2 = 50.2%) and for the second mediator, Ecologic Responsibility (ER), it is 58.1% (adjusted R^2 = 58%). The explained variation of the third mediator, Belief in Material Simplicity (BMS), is 25.3% (adjusted R^2 = 25.2%).

Table 6. Path coefficients for direct effects, with *p*-values in parentheses.

Model	Direct Effects Involving Mediators			BB
	RGC	ER	BMS	
Green consumption values (GCV)	0.709 *** ($p < 0.001$)	0.636 *** ($p < 0.001$)	-	0.219 *** ($p < 0.001$)
Voluntary Simplicity (VS)	-	0.209 *** ($p < 0.001$)	0.503 *** ($p < 0.001$)	0.040 ($p = 0.136$)
Receptivity to Green Communication (RGC)	-	-	-	0.230 *** ($p < 0.001$)
Ecological Responsibility (ER)	-	-	-	0.360 *** ($p < 0.001$)
Belief in Material Simplicity (BMS)	-	-	-	0.133 *** ($p < 0.001$)
Age	-	-	-	0.034 ($p = 0.178$)
R^2/Adjusted R^2	50.2% (50%)	58.1% (58%)	25.3% (25.2%)	69% (68.8%)
Tenehaus GoF	0.636 (large)			

*** *p*-value < 0.001; ** *p*-value < 0.01; * *p*-value < 0.05.

Table 7. Effect sizes for direct effects.

Model	Direct Effects Involving the Mediators			BB
	RGC	ER	BMS	
Green consumption values (GCV)	0.502	0.471	-	0.162
Voluntary Simplicity (VS)	-	0.110	0.253	0.021
Receptivity to Green Communication (RGC)	-	-	-	0.159
Ecological Responsibility (ER)				0.274
Belief in Material Simplicity (BMS)				0.069
Age				0.006

All VIF values are lower than 3.20 and the average block VIF (AVIF) is 2.008, which is below the recommended threshold of 3.3 [41]. The Tenehaus goodness of fit is 0.641, which is considered large. We could not detect the presence of statistical suppression, Simpson's paradox, or bivariate causality direction. No non-linear relationships were found.

Green Consumption Values (GCV) predicts Receptivity to Green Communication (RGC) ($\beta = 0.709$, $p = 0.011$), Ecological Responsibility (ER) ($\beta = 0.636$, $p < 0.001$), and Buying Behavior (BB) ($\beta = 0.230$, $p < 0.001$). GCV has comparable predictive power on RGC and ER, with effect sizes classified as high (0.502 and 0.471). GCV has a lower effect size (0.162) as a direct predictor of Buying Behavior (BB), but it is still suitable for interventions. Voluntary

Simplicity (VS) predicts Beliefs in Material Simplicity (BMS) ($\beta = 0.503$, $p < 0.001$) with a rather strong effect size (0.253) and Ecological Responsibility (ER) ($\beta = 0.209$, $p < 0.001$) with a moderate effect size that supports practical interventions (0.110). There is no direct relationship with Buying Behavior (BB) though ($\beta = 0.040$, $p = 0.136$).

Buying Behavior (BB) is strongly predicted by RGC ($\beta = 0.230$, $p < 0.001$), ER ($\beta = 0.360$, $p < 0.001$), and BMS ($\beta = 0.133$, $p < 0.001$), with effect sizes suitable for potential interventions (0.159 for RCG, 0.274 for ER and 0.069 in the case of BMA). ER displays the highest effect size and, therefore, presents the highest potential for interventions. We concluded that hypotheses H1–H5 are strongly supported.

Some of the control variables are categorical and, therefore, we used multigroup analysis—such as the Satterthwaite method—to explore their relevance as predictors. We conducted three multigroup explorations: by gender, by income, and by education, and did not identify any significant differences across the estimated coefficients.

The size of the subsamples for each category is higher than 50, which is the minimum required size in WarpPLS. For gender, the size of the groups is 564 (females) and 177 (males); for education, the sample size is 554 (high school) and 187 (bachelor diploma or above); and for income, there are 450 respondents with a monthly income less than 2000 lei (roughly the minimum wage in Romania) and 291 with a higher monthly income. Age is numeric and not statistically significant ($\beta = 0.034$, $p = 0.178$), as shown in Table 6. We conclude there is no significant socio-demographic impact on green Buying Behavior (BB).

The structural model presented in Figure 1 involves three mediators: RGC and ER (from GCV to BB), and ER and BMS (from vs. to BB). Ecological Responsibility (ER) is thus a mediator for both Green Consumption Values (GCV) and Voluntary Simplicity (VS). As shown in Table 8, both indirect effects are statistically significant: the one from GCV to BB is a sum of two indirect effects, via RFC and ER ($\beta = 0.429$, $p < 0.001$), whereas the one from VS acts through BMS ($\beta = 0.142$, $p < 0.001$) and a fraction of the VS influence through ER ($\beta = 0.209$, $p < 0.001$). This result confirms that RGC, ER, and BMS are mediators. The effect size from GCV to BB ranks higher than the one from VS to BB (0.289 versus 0.075), but both are suitable for interventions. The former effect size qualifies as high, whereas the latter qualifies as low.

Table 8. Path coefficients and effect sizes for indirect and total effects.

Model	Indirect Effect on BB via Mediators	Effect Size of Indirect Effect	Total Effect on BB	Effect Size of Total Effects
Green consumption values (GCV)	0.391 *** ($p < 0.001$)	0.289	0.611 *** ($p < 0.001$)	0.451
Voluntary Simplicity (VS)	0.142 ** ($p < 0.001$)	0.075	0.182 *** ($p < 0.001$)	0.096
Receptivity to Green Communication (RGC)	-	-	0.230 *** ($p < 0.001$)	0.159
Ecological Responsibility (ER)	-	-	0.360 *** ($p < 0.001$)	0.274
Belief in Material Simplicity (BMS)	-	-	0.133 *** ($p < 0.001$)	0.069
Age	-	-	0.034 ($p = 0.178$)	0.006

*** p-value < 0.001; ** p-value < 0.01; * p-value < 0.05.

The total effect of VS on BB is statistically significant ($\beta = 0.182$, $p < 0.001$), as Table 8 shows, but, after deconstruction into direct and indirect effects via the mediators, the direct effect remains statistically irrelevant ($\beta = 0.040$, $p = 0.136$). We conclude that BVS and ER completely mediate the relationship between VS and BB. The relation between GCV is only partially mediated by RGC and ER: after controlling for mediators, the direct effect between GCV and BB is still statistically significant. We conclude that hypotheses H6 and H7 are supported. Table 9 summarizes our overall findings.

Table 9. Summary of hypothesis testing.

	Hypotheses	Supported/ Rejected
H1:	Green consumption values are positively related to green buying behavior.	Supported
H2:	Receptivity to green communication is positively related to green buying behavior.	Supported
H3:	Ecologic responsibility is positively related to green buying behavior.	Supported
H4:	Voluntary simplicity is positively related to green buying behavior.	Supported
H5:	Belief in material simplicity is positively related to green buying behavior.	Supported
H6:	Receptivity to green communication and ecological responsibility mediate the relationship between green consumption values and green buying behavior.	Supported
H7:	Ecological responsibility and the belief in material simplicity mediate the relation between voluntary simplicity and green buying behavior.	Supported

5. Discussion

This paper is able to corroborate previous findings and extend a widely accepted analytical groundwork [5,13,15]. The results show that indeed Green Consumption Values (GCV) influence Receptivity to Green Communication (RGC), showing a coefficient that is comparable to that obtained by [5]—that is, 0.701 vs. 0.675. The relationship between Green Consumption Values (GCV) and green Buying Behavior (BB) shows a coefficient of 0.22 vs. 0.659, a difference most likely due to the extension of the original framework and the inclusion of additional variables and mediators. In this extended framework, Green Consumption Values (GCV) also significantly influence Ecological Responsibility (ER). The emerging picture shows a strong and robust system of green consumption values, thereby increasing one's proclivity for ecological responsibility and enhancing one's receptivity to the dissemination of messages with a green or ecological content. Green Consumption Values (GCV), Ecological Responsibility (ER), and Receptivity to Green Communication (RGC) contribute directly to determining buying behavior.

The other important extension of the original model is represented by Voluntary Simplicity (VS), which acts on Buying Behavior (BB) through the mediation of Belief in Material Simplicity (BMS) and Ecological Responsibility (ER). Ecological Responsibility (ER) acts as a mediating bridge between Green Consumption Values (GCV) and Voluntary Simplicity (VS); it highlights the joint influence of Green Consumption Values (GCV) and Voluntary Simplicity (VS) on Buying Behavior (BB).

The results fully justify the extension of the original model. Besides obtaining comparable coefficients and comparable or better statistical significance, they also reveal a higher overall explanatory power of just under 70%, compared to the original 55% obtained by [5].

The important thing to note is that all these constructs are notionally related and overlap to varying degrees. By integrating Voluntary Simplicity, Ecological Responsibility, and Belief in Material Simplicity into the fold, one is able to emphasize the complex nature of the dynamic taking place.

It appears the effect sizes corresponding to Receptivity to Green Communication (RGC), Ecologic Responsibility (ER), and Belief in Material Simplicity (BMS) are suitable for interventions. The significant results documented here open the door to a whole range of implications and consequences. At first glance, it is nevertheless difficult to formulate novel directions for public policies and practical implications for managerial action that are not radical or diverge significantly from what has been already suggested in the extant literature [20,42–45]. The amount of work and the ground covered by these papers is significant and impressive. Instead of reiterating the ideas and suggestions already formulated in extenso by other authors, it is perhaps more enlightening to pursue another angle that is usually downplayed or avoided for reasons that are easy to understand.

To a certain extent, as it is argued next, green buying behavior is at odds with the current paradigm of economic growth. At least partially, because voluntary simplicity

and belief in material simplicity represent kindred concepts and are an integral part of the theoretical structure revolving around green buying behavior.

6. Practical Implications and Their Limitations

The most obvious practical implications stemming from this research and previous papers take into consideration two broad directions of action: to enact strict environmental regulation and to sensitize the public to the imperative of becoming responsible consumers to reduce our ecological footprint and delay the irreversible environmental damage in the offing. However, this type of public policy is walking a fine line between being ecologically sound and economically unfriendly.

Enacting regulation to alter consumption patterns has already been pursued for decades. It has the double effect of impacting both consumers and producers of goods and services. Corporations are forced to internalize the cost of degrading the environment and pushed towards pursuing eco-friendly technologies and products previously considered less cost effective. These higher costs are eventually passed on to consumers. In addition, consumers are redirected towards more responsible buying choices, mainly through fiscal measures and other combinations of incentives and penalties.

A second direction is represented by policies aimed at educating and sensitizing the public towards making green buying choices on a voluntary basis as opposed to coerced by fiscality or other types of penalties. There are precedents suggesting a combination of regulation and persuasion might work in the long run. Starting in the 1960s and 1970s many Western nations have pursued vigorous anti-smoking campaigns featuring a combination of tough regulatory measures and assertive public education and advertising campaigns. The evidence to date points towards a significant reduction in smoking driven by both coercion [46] and perhaps, to a lesser extent, education and advertising campaigns [47,48].

Nevertheless, tobacco products represent a very narrow and well-delineated subset of the economy. Despite this, anti-smoking campaigns proved to be long, drawn-out crusades against Big Tobacco. Prevailing over the powerful tobacco lobby, and persuading consumers to cut back on smoking on a voluntary basis were no small feats.

The structural shift towards green buying behavior and absolute reductions in the levels of consumption required to assist the effort to stop and even reverse environmental degradation are on a whole different level. Whereas anti-smoking policies faced a determined pushback from a small segment of Corporate America (and other tobacco multinationals), the momentous conversion to a green economy is facing a potential backlash from almost all quarters of society. Internalizing the enormous costs of environmental protection could prove to be too much for both corporations and consumers [49–51].

Notice that until now the thrust in public policies has been towards fomenting a shift in consumer demand and not towards a reduction in it. The message conveyed to the public is to drive electric vehicles instead of gasoline-powered cars, but not necessarily to drive less. In fact, public eco-anxiety is allayed by signaling that citizens need not reduce their consumption as long as its structure shifts towards eco-friendly products.

However, this is at odds with what our findings suggest. One of the important determinants of green buying behavior is voluntary simplicity mediated by the belief in material simplicity and ecological responsibility. Green buying behavior cannot be properly understood without making reference to an absolute reduction in the level of consumption, and therein lies the great challenge faced by society.

Our entire economic system—economic growth and prosperity as we know them today—are driven by consumer demand. On 22 December 2021, CNN Business posted a headline warning of "What glum consumer sentiment could mean for the US economy next year." [52]. On 14 January 2022, the headlines were even more ominous: "Warning sign for the economy: Consumers are getting grumpy" [53]. These media articles underscore the attention economists, politicians, investors, and the public devote to the level of consumption as a barometer of economic health.

Consumer demand is linked to corporate profits. Corporate profits are linked to cash-flows and stock market valuation [54–58]. Finally, stock markets are linked to investment funds, pension plans, and other types of wealth management companies that today drive our overall sense of affluence and prosperity. Dramatic stock market declines can trigger painful and persistent economic downturns, as it happened in 1929; on the other hand, rebounding market valuations can enable and accompany economic growth. To make a long story short, there is a complex yet irreducible connection between consumer demand and economic prosperity.

The recent example of the COVID-19 pandemic underlines the point raised here. The pandemic represented and still represents a formidable threat to public health. It has the potential to wreak havoc with our fragile healthcare systems and kill millions of people. However, by no means does it represent a potential extinction-level event on par with global warming. Acting against COVID-19—although well warranted—is not an existential imperative on the same level with transitioning to green consumption in order to save humanity in its entirety.

Governments around the world took unprecedented measures to contain or slow down the spread of the virus. These tough measures resulted in huge economic costs that were eventually internalized by corporations and consumers. However, notice what happened next: in order to stave off a colossal economic slump, policy makers everywhere compensated by increasing public borrowing and quantitative easing to levels not seen since World War II. As a result, governments across the world added an additional $5 trillion in public debt when compared to 5 years earlier [59]. When faced with a significant health threat, the world chose to binge on debt to preserve economic growth and maintain consumption steady. Rising inflation in the aftermath of the pandemic is [60,61], in fact, strengthening this point; inflation is the toxic consequence of trying to maintain consumption when faced with a major crisis. One cannot have it both ways. One simply cannot get serious about fighting a crisis without assuming the consequences and the costs of one's actions.

Green buying behavior is clearly linked to ecological responsibility, voluntary simplicity, and belief in material simplicity. We cannot engender a coherent transition policy to green buying behavior without addressing the need to reduce the absolute level of consumption. Instead of asking how to avoid a significant reduction in consumption to save the planet, we should find what needs to be done to make a potential long-term decline in economic prosperity more palatable. As already emphasized in the first part of this paper, a forced reduction in consumption driven by economic hardship and accompanied by resentment and fear does not amount to voluntary simplicity.

We need to find a practical way to nudge consumers towards voluntarily embracing material simplicity and acquiescing to a reduction in consumption. Perhaps it is time to adjust the way in which we measure economic performance and consumer satisfaction [62]. There is no quick or easy solution to this conundrum. Overplaying the dangers of environmental degradation and summoning the specter of catastrophe [20] might have an adverse effect. Instead of awakening the feelings of shared responsibility, it might trigger heightened levels of eco-anxiety, intolerance, and even denial [63,64]. Both anxiety and denial can result in hoarding, the very opposite of what voluntary simplicity is aiming for [65].

7. Conclusions

Green buying behavior has been successfully and convincingly modeled in the extant literature in relation to green consumption values and receptivity to green communication. This paper extends the original structure by taking into consideration ecological responsibility and voluntary simplicity. It also provides a more complex and integrative framework, with richer and more challenging practical implications.

The analysis uses a sample of 741 respondents and a PLS-PM methodology to test the determinants of green buying behavior and their mediators. The measurement of green

buying behavior, green consumption values, receptivity to green communication, and voluntary simplicity was adapted from scales validated by previous research.

It is found that green consumption values determine green buying behavior directly, and through the mediation of ecological responsibility and receptivity to green communication. Voluntary simplicity determines green buying behavior only indirectly, through the total mediation of beliefs in material simplicity and ecological responsibility. Overall, the expanded model is able to explain almost 70% of the variation in green buying behavior, which is substantially more than what previous research found.

Effect sizes vary from moderate to large and they no doubt highlight the challenges associated with practical interventions. One of the major contributions of this paper is to underscore the extent to which green buying behavior is connected to voluntary simplicity, ecological responsibility, and beliefs in material simplicity. The findings imply that a paradigm-changing approach towards responsible consumption to delay or reverse environmental degradation cannot be conceived without considering a voluntary reduction in the absolute level of consumption. Reductions in consumption can be the result of education campaigns and regulatory action.

One must be careful with the message conveyed to the public. No doubt, there is a great danger in ignoring or denying the existential threat posed by environmental degradation and global warming. On the other hand, pushing the panic button hysterically might de-sensitize consumers, induce acute eco-anxiety, and trigger denial. All of these might lead to compulsive hoarding instead of voluntary frugality; or they might lead to the wholesale rejection of the message, defeating the purpose of persuasion campaigns.

History shows that regulation aimed at selectively changing consumption patterns has met with vigorous pushback from powerful lobby groups, the wrath of big corporations, and the inertia of consumers. There is no telling what will happen when taking regulatory action on a global scale to fend off the largest existential threat to life on Earth since the last major extinction some 65 million years ago. Until now, the thrust of public policies has been to gently nudge consumption by altering its patterns and not by reducing its absolute levels. This is understandable given the extent to which economic growth and prosperity depends on consumerism.

The COVID-19 pandemic provides a cautionary and sobering tale. In order to flatten the curve and reduce the number of deaths, governments across the world adopted stringent lockdowns, vaccine passports, and other draconian regulation with mixed results. At the same time, they aggressively promoted extremely lax monetary policies that ran up public and private debt to levels never seen since World War II. All this to maintain consumption and keep the economy steady. The ensuing inflation and the debt hangover represent a stark reminder that there is no free lunch and, eventually, someone or everyone will have to bear the costs.

It is not even clear if stringent and overbearing regulation, the sorts of which we witnessed during the pandemic, is the answer. A regulated austerity driven by economic hardship and threat of penalties is the opposite of what voluntary simplicity is set to achieve. The key to success is persuasion and voluntary compliance. The challenge is to find the right balance between education campaigns and choice architecture solutions that are effective without being resented as oppressive.

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Appendix A

Table A1. The measurement items.

Dimensions	Item Abrreviation	Item
Green consumption values (GCV) [5,15]	GCV1	It is important to me that the products I use do not harm the environment.
	GCV2	I consider the potential environmental impact of my actions when making many of my decisions.
	GCV3	My purchase habits are affected by my concern for our environment.
	GCV4	I am concerned about wasting the resources of our planet.
	GCV5	I would describe myself as environmentally responsible.
	GCV6	I am willing to be inconvenienced in order to take actions that are more environmentally friendly.
Receptivity to green communication (RGC) [5,13]	RGC1	I support brands that support the environment.
	RGC2	I tend to pay attention to advertising messages that talk about the environment.
	Drooped	The use of green messages in ads affects my attitude toward ads.
	RGC4	I respond favourably to brands that use green messages in their advertising.
	RGC5	I am the kind of consumer who responds favourably when brands use green messages in their ads.
	RGC6	I think that green advertising is valuable.
	RGC7	Green advertising is a necessary form of advertising.
	RGC8	I am the kind of consumer who is willing to purchase products marketed as being green.
	RGC9	I tend to pay attention to green advertising messages.
Buying behavior (BB) [5,24]	BB1	I avoid buying products that have excessive packaging.
	BB2	When there is a choice, I choose the product that causes the least pollution.
	BB3	I have switched products/brands for ecological reasons.
	BB4	I make every effort to buy paper products made from recycled paper.
	BB5	I use environmentally friendly soaps and detergents.
	BB6	I have convinced members of my family or friends not to buy some products which are harmful to the environment.
	BB7	Whenever possible, I buy products packaged in reusable container.
	BB8	I try to buy products that can be recycled.
Voluntary simplicity (VS) [25]	VS2	I believe in "small is beautiful" (e.g., I prefer smaller cars over large cars).
	VS3	I believe chat product function is usually more important than its style.
	VS4	I am interested in personal growth more than economic growth
	dropped	I am determined to have more control over my life as a consumer (e.g., stay away from instalment buying).

Table A1. *Cont.*

Dimensions	Item Abrreviation	Item
Ecological Responsibility (ER) [25]	VS6	I consider myself ecologically responsible.
Belief in Material Simplicity (BMS) [25]	VS1	I believe in material simplicity (buying and consuming only what I need).

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