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Indulge or Reduce? A cross-country investigation of consumption patterns following pandemic lockdowns

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Abstract

Pandemic lockdowns in early 2020 disrupted daily lifestyles worldwide and opened a window of opportunity for self-reflection and consumption paradigm shifts. However, consumption patterns might take different directions and opposing views exist about whether consumers (1) prolong consumption-oriented lifestyles post-lockdown, or (2) compensate for lockdown consumption restrictions through self-indulgence. Drawing from self-determination theory and individual-cultural values frameworks, this paper develops a conceptual model of post-lockdown consumption patterns related to three factors: consumers' fulfilment of basic psychological needs during lockdowns, individual consumer values, and country-level cultural orientations. Consumer surveys conducted after the first lockdowns in three culturally different European countries (UK, Germany, Romania) show that both satisfaction and dissatisfaction of psychological needs during lockdown impact consumption patterns, at least at a short-term level. The direction of consumption patterns is driven by hedonism and universalism values at an individual level and differences in post-materialism and indulgence at a country-level. The results provide implications for international marketers and policymakers in post-pandemic marketplaces.

Keywords: consumer behavior, psychological needs, voluntary simplicity, cross-country, COVID-19 lockdowns

Worldwide, the years of 2020 and following had been marked by periods of so-called lockdowns, where national governments enacted shutdowns of shops, restaurants, hotels, and other facilities aiming at containing the COVID19 pandemic. Not only social contacts were reduced to a minimum, but also possibilities to consume were heavily constrained. These temporary restrictions disruptively changed daily lifestyles and routines of millions of people. A pandemic represents a disruptive event that leads to profound changes to individual consumers, organizations, industries, or society (Dahlhamer and Tierney, 1998). The World Health Organization and the International Monetary Fund, among other institutions, attest that the COVID-19 pandemic, like other prior disruptive events, has significantly impacted human life and the global economy (WHO, 2022; IMF, 2020).

At the time of writing, international marketing has looked at different aspects of the pandemic (for reviews, see Zwanka and Buff (2021) and Cruz-Cárdenas et al. (2021)). These include, for example, research on drivers of different responses to the crisis (Sharma 2021), the role of community resilience in the context of policy interventions (Krasnikov et al., 2022), the economic impact of countries' government responses (Guedhami et al., 2023), and effectiveness of non-pharmaceutical interventions at a country level (Kumar et al., 2021); as well as investigations of pandemic' immediate effect on consumer behavior such as stockpiling, hoarding, pent-up demand, or increased online shopping (e.g., Sheth 2020; Amadi et al., 2022; Kim et al., 2022) at an individual level. Aside from acute measures during the pandemic, disruptive events also have the likelihood to induce new habits. While habits reduce the likelihood to elaborately think about one's decisions, the disruption of usual routines induces such thinking resulting in a stronger openness to behavioral change (Verplanken and Wood 2006; Wood, Tam and Witt 2005). At an organizational level, He and Harris (2020) suggest that the pandemic might offer an opportunity for businesses to shift towards more genuine corporate social responsibility. At an individual level, Sheth (2020) proposes that consumers might return to some old habits while modifying other habits (such

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as wearing masks in selected places) and create new ones (such as the intensified use of technology).

The present research builds upon the idea that the experience of the pandemic might affect individuals' consumption patterns beyond the time of lockdowns. We propose that after experiencing a period of constrained consumption opportunities, consumers might embrace different consumption patterns. On the one hand, consumers may deliberately intend to prolong positive experiences of less consumption-oriented lifestyles during the lockdown and move towards *voluntary simplicity,* i.e. lifestyles characterized by resource conservation and material scarcity (Etzioni 1998). In light of global climate change and resource depletion, climate researchers advocate the importance of such individual consumption reduction as one unavoidable pathway for a sustainable development (e.g., Gossen, Ziesemer, and Schrader 2019). In line with this argument, a global trend survey among marketers shows that executives expect the pandemic to alter marketing strategies in favor of sustainability in the aftermath of the pandemic (WARC, 2021). On the other hand, consumers may intend to self-gratify more through increasing *indulgent consumption* in order to compensate for consumption restrictions experienced during lockdowns. For instance, McKinsey (2021) reports that 51% of US consumers felt the desire to engage in "revenge spending" in indulgent categories such as clothing, travel, and hedonic experiences as they put the pandemic behind them. Similarly, business experts expect an increase in luxury shopping following the pandemic (Bloomberg, 2021).

Against this background, the aim of this research is to explain the emergence of diverging consumption patterns following a disruptive global crisis through a comparative, cross-country lens. Drawing on self-determination theory (Ryan and Deci 2017), Schwartz's (2012) theory of basic values, and cultural theories (Hofstede 2001; Inglehart 2008), we argue that the consumption patterns emerging in response to a global crisis are determined by three factors. First, consumers' individual experiences with the involuntary consumption change

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during the lockdown as reflected in psychological need satisfaction or need frustration (Ryan and Deci 2017). Second, individual higher-order and stable predispositions to act, that is, the values a consumer endorses (Sagiv et al. 2017). Third, consumption-related country characteristics, that is, the country's location on the materialism-postmaterialism spectrum (Inglehart 2008) as well as its cultural proclivity toward indulgence or restraint (Hofstede 2001). We integrate these predictions in a conceptual model of disruptive consumption patterns driven by psychological need fulfillment during a crisis, personal values, and cultural orientations. We posit that psychological need fulfillment determines whether or not consumers intend to engage in specific consumption patterns, whereas personal values and cultural orientations influence the post-lockdown consumption habits.

Using survey-based data from three European countries (United Kingdom, Germany, and Romania) that were all subject to national shutdowns while differing in their indulgence profiles and post-materialism levels, we test this model and find that (1) consumers who experienced higher positive or negative disruptions in the fulfillment of their basic psychological needs during lockdown are more likely to adopt consumption patterns along any of the two directions, (2) the direction of post-lockdown consumption patterns is driven by consumers' basic human values (i.e., hedonism drives indulgent consumption, while universalism drives voluntary simplicity), (3) post-materialism attenuates the effects of needs frustration on consumption patterns, and (4) indulgence boosts the effects of hedonism and attenuates the effects of universalism on consumption patterns.

Our findings contribute to the nascent literature on the consumption implications of global crises and the factors that determine consumer tendencies in a global marketplace constantly reshaped by disruptive events (e.g., wars, health crises, climate change). We also contribute to international consumer behavior literature by identifying and explaining cross-cultural differences in how consumers respond to involuntary consumption restrictions as well as the growing literature on material simplification by discussing how environmental events

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trigger consumers' voluntary shifts to dematerialized lifestyles. Finally, we contribute to cultural theories in the context of consumption (e.g., post-materialism theory) by showing that cultural variables interact with both contextual factors and individual traits in determining consumer reactions to disruptive marketplace events.

From a managerial perspective, our findings (1) reveal opportunities, threats and marketing responses in country-markets undergoing or recovering from crises characterized by restricted consumption opportunities, (2) offer targeting advice to managers of brands that are more likely to be affected by post-crisis consumption patterns (e.g., luxury brands, eco-friendly products), (3) propose cross-cultural adaptations of post-crisis marketing initiatives, and (4) inform decisions on foreign market entry (or exit) as well as marketing strategy reconfiguration in post-crisis marketplaces. From a policy perspective, our findings provide insights about crises that limit consumption opportunities and their potential to promote climate change mitigation strategies at an individual and non-incentivized manner.

THEORETICAL BACKGROUND & HYPOTHESES

Disruptive Experiences and Behavior Change

Consumer behavior, as well as human behavior in general, is to a large degree driven by habits and routines (Ji and Wood 2007). Habitual behavior is performed with little deliberation and is triggered automatically by environmental cues, which makes changing one's behavior so difficult (Verplanken, Aarts, and Van Knippenberg 1997; Verplanken and Wood 2006). Habits further represent crucial barriers to acting in line with one's values as they weaken the link between intentions and behavior (Verplanken and Wood 2006). For instance, an individual may be in favor of protecting the environment by using public transportation but still continue to drive their car because they have been choosing this travel mode for years (Verplanken, Aarts, and Van Knippenberg 1997).

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According to the habit discontinuity hypothesis (Verplanken et al. 2008; Wood, Tam, and Witt 2005), changes in the environment disrupt the automatic execution of habits. This opens a window in which individuals are more likely to deliberate about their behavior and establish new behaviors. In addition, the context change is supposed to activate values that an individual endorses, which, according to the self-activation hypothesis, guide the direction of the new behavior (Verplanken et al. 2008). In line with the habit discontinuity hypothesis, we argue that disruptive crises, such as pandemic lockdowns, render changes in consumer behavior more likely. Established consumption routines cannot be performed anymore and cues that typically trigger habitual consumption patterns, such as passing by one's favorite store and entering it for unplanned purchases, are not available. Consequently, consumers may deliberate about their consumption patterns and try to readjust their behavior based on their current experiences, their persistent values, and the societal meaning of consumption.

Basic Psychological Needs and Consumption Patterns

Basic psychological needs theory (BPNT) is a sub-theory of self-determination theory (Ryan and Deci 2017). It postulates three basic psychological needs to be central to human well-being, which are autonomy, competence, and relatedness. Autonomy refers to the need to be the author of and responsible for one's own behavior. Competence refers to effectively act upon one's capacities and talents. Relatedness refers to experiencing connectedness with other people. BNPT takes a two-dimensional perspective on need satisfaction and need frustration by considering both dimensions of experience as independent (Vansteenkiste, Ryan, and Soenens 2020).

Research into the psychology of lockdowns suggests that lockdown experiences and consumers' ability to satisfy their needs during that period encompasses both positive and negative aspects, often co-manifested within the same individual. For instance, a study comparing psychological needs fulfilment before and during a lockdown in Germany showed

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decreases in autonomy and relatedness (Schwinger et al., 2020). Other empirical findings demonstrate that many consumers also had positive experiences during lockdowns, such as more time for family, hobbies, and exercise (Nicholson and Feltt, 2020; Williams et al., 2021). In UK's largest study investigating adults' feelings toward lockdowns, one in three adults reported to have enjoyed the lockdown and 21% expressed a mix of both positive and negative feelings about it (Fancourt, Steptoe, and Bradbury 2022).

Need satisfaction and need frustration do not relate exclusively to consumption-related experience. Lockdowns, however, had a significant impact on individuals' consumption decisions, including what, how, where, and when they consumed (e.g., shifting from in-store shopping and going to restaurants to alternative activities such as watching Netflix and home cooking), which in turn affected consumers' ability to fulfill their needs. Furthermore, previous research has demonstrated that consumers use consumption as a means to cope with experiences, both with daily experiences (Atalay and Meloy 2011) and with live events (Mathur, Moschis, and Lee 2003). In sum, we expect that need satisfaction and frustration during the lockdown impact consumers' consumption patterns post-lockdown.

Self-determination theory posits that people seek activities having the potential to satisfy their needs, while they avoid activities that bear the risk of need frustration (Ryan and Deci 2017). In line with BNPT's focus on need satisfaction and frustration as two separate dimensions (Vansteenkiste, Ryan, and Soenens 2020), we predict that both need satisfaction and need frustration influence post-lockdown consumption. As such, need satisfaction during lockdowns might motivate consumers to prolong positive experiences, whereas need frustration might motivate consumers to prevent negative experiences. Hence, we posit that the higher the magnitude (irrespective of the direction) of need satisfaction or need frustration, the higher consumers' tendency to adopt simplified or indulgent consumption behavior after the disruptive event.

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Beyond these motivational considerations, self-determination theory provides two additional arguments suggesting that need satisfaction and need frustration impact the post-lockdown behavioral repertoire of individuals. First, individuals are more likely to integrate new values and standards into internal values and standards when the context supports needs satisfaction (Ryan and Deci 2017). Second, need frustration may lead to compensatory behavior or to a focus on extrinsic needs as substitutes for basic psychological needs (Vansteenkiste, Ryan, and Soenens 2020). Thus, we hypothesize:

H1: Satisfaction of psychological needs during a period of shutdown with restricted consumption opportunities positively relates to the tendency to adopt both simplified and indulgent consumption patterns post-lockdown.

H2: Frustration of psychological needs during a period of shutdown with restricted consumption opportunities positively relates to the tendency to adopt both simplified and indulgent consumption patterns post-lockdown.

As shown in H1 and H2, we look at two basic directions in which individuals may adopt post-lockdown consumption behavior, namely their self-reported behavioral tendencies to (a) *reduce* future consumption behavior in the form of voluntary simplicity (Rich, Wright, and Bennett 2020), and (b) *increase* future consumption behavior in the form of indulging (Mukhopadhyay and Johar 2009).[1]

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[1] It is important to note that while indulging and voluntary simplicity are linked to opposing directions of consumption (i.e., increase vs. reduce), both concepts reflect distinct consumption patterns and not just opposite ends of the very same consumption pattern. Indulgence refers to self-gratification and the idea to treat oneself (Mukhopadhyay and Johar 2009), whereas voluntary simplicity refers to reducing consumption in general and to focus on nonmaterialistic sources of well-being (Rich et al., 2020). Both concepts originate in separate literature streams, tap into different conceptual domains, and are measured through distinct operational instruments. In other words, indulgent consumption and voluntary simplification are distinct, non-substitutional behaviors with the potential to be (i) simultaneously absent, (ii) co-manifested or (iii) idiosyncratically present in the absence of one another within an individual's post-pandemic behavior.

While we assume that need satisfaction and need frustration both influence the *extent* of new consumption pattern adoption, the *direction* of such adoption cannot unambiguously be linked to either need satisfaction or need frustration. For instance, some consumers may compensate for need frustration by revenge spending and thus consume more, whereas other consumers may rethink their materialized lifestyles in the face of need frustration and thus consume less. We propose that the type of consumption pattern embraced post-lockdown is determined by the values the individual endorses and on the societal meaning of consumption at a country-level.

Individual Values Directing Consumption Patterns

According to Schwartz (2012), values are stable and higher-order determinants of attitudes and behavior. In his influential theory of basic human values, Schwartz (2012) postulated ten different values: universalism, benevolence, conformity, tradition, security, power, achievement, hedonism, stimulation, and self-direction. For the present research, we focus on two of Schwartz' (2012) ten values namely universalism and hedonism based upon their theoretical relevance for voluntary simplicity and indulgent consumption.[2]

Universalistic individuals pursue goals of "understanding, appreciation, tolerance, and protection for the welfare of all people and for nature" (Schwartz 2012, p. 7). As such, individuals embracing universalism are more likely to hold pro-environmental attitudes (Schultz and Zelezny 1999). Relatedly, literature on voluntary simplicity shows universalism values to support deliberate consumption reduction (Balderjahn and Hüttel 2019; Peyer et al. 2017). Against this background, we expect individuals with universalism values to harbor

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[2] We further included the values self-direction, stimulation, and conformity as control variables. We did not formulate hypotheses regarding these values because they are not directly related to our target behaviors. However, we wanted to control for their potential influence on consumption change because self-direction and stimulation are related to openness to change (Schwartz, 2012), while conformity reflects a willingness to act according to social expectations.

intentions to engage in increased conservation of resources by decreasing their personal consumption beyond the phase of shutdowns.

While universalism focuses on social welfare, hedonism focuses on personal well-being. Hedonism values derive from the pleasure associated with satisfying one's needs. Individuals scoring high on this value aim for "sensuous gratification for oneself" (Schwartz 2012, p. 5). Hedonism values relate to both self-enhancement and openness to change. In a consumption context, hedonism is reflected in intense shopping activities (Babin et al. 1994). As such, we expect individuals with hedonism values to show tendencies of consuming as a form of indulgence and increase consumption after a phase of induced consumption reduction. In sum, we posit the following hypotheses:

H3: Consumers who endorse hedonism have a higher tendency to indulge after a period of shutdown with restricted consumption opportunities.

H4: Consumers who endorse universalism have a higher tendency for voluntary simplicity after a period of shutdown with restricted consumption opportunities.

Country-level Determinants of Consumption Patterns

Cultural differences that exist between countries affect consumer behavior in many ways and can be conceptualized in multiple forms which have similarities as well as idiosyncrasies (for an overview, see de Mooij, 2017). In the context of the COVID-19 pandemic, literature has looked at the relevance of Hofstede's value dimensions on stockpiling behavior (Amadi et al., 2022) or Schwartz' values on individuals' compliance to government guidelines (Wolf et al., 2020). In our model, we combine values of (i) Hofstede's indulgence/restrained dimension and (ii) Inglehart's post-materialism value. The underlying rationale for selecting these two constructs relates to their opposing influences on consumption patterns: post-materialism is linked with willingness to *disengage* from material values while cultural indulgence is linked with willingness to *enjoy* hedonic consumption. Importantly, these behavioral tendencies are

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based on distinct reasons. Post-materialism refers to a country's shift from material to non-material values as a direct consequence of economic development which renders material possessions a non-scarce resource whose value is progressively discounted through the course of intergenerational replacement (Inglehart 1971). On the contrary, indulgence is a culturally rooted dimension which captures a country's affinity towards the gratification of human desires and the enjoyment of life (Hofstede 2001). Thus, post-materialism is an outcome of a country's intergenerational economic development while indulgence is engraved in a country's cultural genome. This also explains why some countries can be both post-materialistic and indulgent (or materialistic and restrained) at the same time.

In our model, we propose that the degree to which a society endorses post-materialistic (vs. materialistic; Inglehart 2008) and indulgence-oriented (vs. restraint-oriented; Hofstede 2021) cultural values influence which consumption patterns consumers will adopt because they determine the overall meaning of consumption within in a society. As such, we use these two dimensions to explain individuals' use of consumption as a coping strategy for need frustration or a mechanism able to prolong positive experiences after the lockdown.

Post-materialistic vs. materialistic countries. Post-materialism is defined as an orientation that shifts the hierarchy of individuals' values from material goals (such as economic security) to non-material goals (such as environmental conservation, freedom of expression, and protection of human rights; Inglehart 1971). Although these orientations are commonly manifested at the individual level, they are reflected at the collective sphere and vary across countries. As societies move from materialistic to post-materialistic orientations, consumers substitute materialistic values such as income and possessions with post-materialistic values such as an emphasis on quality of life and wellbeing (Inglehart 2008).

We posit that post-materialism interacts with consumers' personal lockdown experience and their fulfillment of psychological needs during lockdown disruptions. As previously argued, both need satisfaction and frustration during lockdown affect consumption

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patterns in the aftermath and share a common feature: they push consumers to cope with the disruptive experience by using consumption as a vehicle. In post-materialist countries, though, consumption is valued less than other forms of human behavior such as civic engagement or transformative life experiences (Inglehart 2008). It is thus expected that consumers in post-materialistic countries do not prioritize consumption patterns (of any kind) as a coping mechanism for a disruptive lockdown experience. In other words, post-materialism should operate as a buffer for the mechanisms that transmute needs satisfaction/frustration during lockdown into post-lockdown consumption patterns. Thus, we hypothesize:

H5a: The relationship between need satisfaction and tendency to adopt simplified or indulgent consumption patterns after a period of shutdown with restricted consumption opportunities is less pronounced in post-materialistic countries than in materialistic countries.

H5b: The relationship between need frustration and tendency to adopt simplified or indulgent consumption patterns after a period of shutdown with restricted consumption opportunities is less pronounced in post-materialistic countries than in materialistic countries.

Indulgent vs. Restrained Cultures. Indulgence (versus restraint) represents one of the six main cultural dimensions proposed by Hofstede (2001) and describes a society's tendency to gratify human desires and enjoyment of life. Prior research has associated indulgence with consumption-related outcomes such as customer experience (Gilboa and Mitchell 2020), luxury brand purchases (Bian and Forsyth 2012), and hedonic attitudes (Heydari et al. 2021).

Cross-country research on the relationship between values and culture has further shown that cultural differences may moderate the influence of values on behavior (Sagiv and Roccas 2021). Cultural values, on the one hand, reinforce certain individual values compatible

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with collective value orientations through a process of individual value socialization. On the other hand, individual values restrict the ability of cultural values to change individual behavior in ways that are in discord with what the individual deems important (Schwartz 2011). These processes explain the convergence between cultural and individual values within the context of a specific society.

Based on this principle of cultural-individual value convergence, we argue that indulgence, as a cultural value, interacts with both hedonism and universalism, as individual-level values, and moderates their effects in opposing ways. As hedonism and indulgence both promote enjoyment, pleasure, and satisfaction of hedonic needs, hedonists in indulgent cultures should engage in post-lockdown indulgent consumption with higher intensity than hedonists in restrained cultures. On the contrary, given the divergence of goals dictated by indulgence and an individual's level of universalism, the positive effect of universalism on voluntary simplicity should attenuate in indulgent (compared to restrained) cultures. Thus, we hypothesize:

H6a: The relationship between hedonism and indulgent consumption after a period of shutdown with restricted consumption opportunities is more pronounced in indulgent than in restraint countries.

H6b: The relationship between universalism and simplified consumption after a period of shutdown with restricted consumption opportunities is less pronounced in indulgent than in restraint countries.

Finally, the model includes two controls. First, it assumes that post-materialistic orientation associates with lower indulgent consumption and higher voluntary simplicity tendencies. Second, it assumes that consumers of indulgent cultures should exhibit stronger indulgent consumption tendencies to counterbalance pleasures lost during lockdowns.

Insert Figure 1 here

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EMPIRICAL STUDY

Methods

We employed a theoretical sampling approach by selecting exemplary European countries, namely Romania, Germany, and the UK, which were all affected by COVID19 and a national lockdown in spring 2020. The three countries varied in (a) their level of (post)materialism as measured by Inglehart's framework, and (b) their level of indulgence as measured by Hofstede scores. Our choice of countries was motivated by our aim to cover different combinations of these two variables. Romania scores low on postmaterialism compared to Germany and United Kingdom, who have similar scores. The latter two, however, differ in their indulgence score where Germany (40) scores below the middle-point, while UK (69) scores above the middle point; Romania (20) scores lowest. Against this background, we used these three countries as exemplary settings for our research purpose (UK as a post-materialistic and indulgent country, Germany as a rather post-materialistic country and medium restrained country, and Romania rather materialistic country and restrained country.) Importantly, the three countries were similar in terms of the pandemic containment strategies they followed and the strictness of restrictions they had enforced around the time of data collection to allow comparability and avoid country-level confounds (see Web Appendix A). We intentionally opted for a cross-cultural survey approach as we needed to test links between individual-level variables (e.g., individual needs satisfaction/frustration) with consumption change intentions which could not be captured with country-level, secondary data unable to reflect psychological consumption change dispositions.

Data Collection and Samples

Data was collected in July 2020 after the first wave of the COVID19 pandemic in Europe and the ensuing lockdown measures. Participants were recruited by a professional

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market research agency via online access panels. We targeted 500 participants per country using quota sampling for age and gender to ensure cross-national comparability for theory testing (Reynolds, Simintiras, and Diamantopoulos 2003). Due to the sampling procedure that included oversampling, the final samples consisted of n_{GER} = 531, n_{UK} = 528, and n_{RO} = 532 participants, with only slight deviations from the quota. Table 1 shows sample demographics.

Insert Table 1 here

Measurement

We used established measurement scales to assess the variables of the theoretical model. Table 2 shows the English version of the items used in the survey. For the German questionnaire, we used published German scale versions where available, while translating the remaining scales from English to German using back-translation. For the Romanian questionnaire, a professional translator translated the English version of the questionnaire.

Insert Table 2 here

First, we assessed self-reported tendencies of consumption reduction using the dimensions of material simplicity and (use of) resources from the Voluntary Simplicity Engagement Scale (Rich, Wright, and Bennett 2020). To measure indulgent consumption, we used the self-indulgence dimension from the New Consumer Impulsiveness Scale (Sharma, Sivakumaran, and Marshall 2011). The instructions made clear that the answers should refer to decisions made in response to the pandemic ("*The items below refer to conclusions that you might have drawn from your experiences during the COVID-19 pandemic.*").

Second, we measured need satisfaction and need frustration during the lockdown using the Balanced Measure of Psychological Needs (BMPNS; Sheldon, and Hilpert 2012; German: Neubauer and Voss 2016). In line with BNPT (Vansteenkiste, Ryan, and Soenens 2020), the scale operationalizes need frustration and need satisfaction as two separate dimensions. The instructions made clear that the answers should refer to the time of lockdown

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("*Think about your experiences during the peak of the COVID-19 pandemic in [country] when most businesses were closed and social distancing was most extreme.*").

Third, we measured the universalism and hedonism using the Portrait Values Questionnaire (PVQ; Schwartz et al. 2001; Schmidt et al. 2007). As control variables, we measured three additional Schwartz values (stimulation, self-direction, and conformity) and ecological worldview using a short version (Gedeshi et al. 2008) of the New Environmental Paradigm scale (Dunlop et al. 2000). Finally, we measured the personal impact of the pandemic for our respondents through four items (i.e., infection, loss of job, working short-time, and less income) answered on a binary format (0 = not affected, 1 = affected) which we subsequently summed to create the control variable "COVID impact index".[3]

ANALYSIS AND RESULTS

Measurement Model Assessment

We tested the psychometric properties of the constructs in our conceptual framework using a series of Confirmatory Factor Analysis (CFA) across country samples. To reduce model complexity and ensure an adequate sample to estimated parameter ratio, we estimated separate CFA models for (1) the needs satisfaction/frustration construct, (2) the basic human values scales, and (3) the consumption change variables and controls across countries.

Due to the multidimensional nature of the need satisfaction construct, previous literature has proposed four alternative construct specifications of the BMPN scale (Neubauer and Voss 2016; Sheldon and Hilpert 2012). Based on our analysis of alternative specifications, we opted for the model specification (Model 3) in our subsequent structural model because it (1) fits conceptually with the dual nature of needs satisfaction/dissatisfaction

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[3] We measured related variables that we did not include in the final model: cognitive well-being, affective well-being, the work-life balance subscale from the Voluntary Simplicity Engagement Scale, and participants' evaluation of the government's management of the pandemic.

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conceptualization and (2) achieves consistently the best possible empirical fit with the data among alternative specifications (for detailed comparisons, see Web Appendix B).

CFAs of the five values measures across country samples, following the exclusion of a few items with low loadings, lead to satisfactory model fit (UK: $\chi^2 = 214.83$, df = 55, $\chi^2/df = 3.91$, RMSEA = .074, SRMR = .052, CFI = .938, GFI = .940, TLI = .912; Germany: $\chi^2 = 204.02$, df = 55, $\chi^2/df = 3.71$, RMSEA = .071, SRMR = .065, CFI = .936, GFI = .942, TLI = .909; Romania: $\chi^2 = 191.67$, df = 55, $\chi^2/df = 3.85$, RMSEA = .068, SRMR = .045, CFI = .958, GFI = .943, TLI = .941). All item loadings, composite reliabilities, and AVEs were within conventional thresholds, and discriminant validity according to the Fornell and Larcker criterion was achieved. Finally, CFAs including the consumption change intentions scales across countries also lead to satisfactory model fit (UK: $\chi^2 = 431.36$, df = 145, $\chi^2/df = 2.99$, RMSEA = .062, SRMR = .066, CFI = .903, GFI = .918, TLI = .885; Germany: $\chi^2 = 515.56$, df = 145, $\chi^2/df = 3.56$, RMSEA = .069, SRMR = .066, CFI = .913, GFI = .898, TLI = .898; Romania: $\chi^2 = 500.01$, df = 145, $\chi^2/df = 3.45$, RMSEA = .068, SRMR = .066, CFI = .858, GFI = .903, TLI = .833)[4]. Psychometric properties were largely satisfactory with reliability and validity metrics reaching values showing sound measurement across countries. Thus, our measurement model estimates suggest sound measurement properties.

Common Method Variance

We used the unmeasured common latent factor technique to test for common method variance separately in each country dataset. Specifically, we specified all items across constructs measured on the same scale format to load on a common latent factor, set all loadings equal and constrained the latent factor's variance to unity (Podsakoff et al. 2003).

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[4] For identification purposes, voluntary simplicity has been specified as a second order construct comprising two reflectively measured dimensions (resource conservation and material scarcity). The paths from the second order construct to the two dimensions were specified to be equal in size as per the Tau-Equivalent model (see Oberecker and Diamantopoulos 2011).

The value of the squared common unstandardized loading represents the amount of common method variance in each dataset. The results suggest that the common method variance is low and way below the threshold of 50% which would indicate serious common method variance concerns (UK: $\lambda = .375$, $\lambda^2 = .141$; Germany: $\lambda = .288$, $\lambda^2 = .083$; Romania: $\lambda = .298$, $\lambda^2 = .089$). We thus conclude that common method variance is not a threat to our path estimates.

Cross-cultural Invariance

We tested the cross-cultural invariance of our measures across the three country samples (Steenkamp and Baumgartner 1998). Having established that Model 3 is the appropriate specification for the BMPN scale across samples (see Web Appendix B), we focused on testing the invariance of the remaining constructs in two separate invariance analyses, one for the values measures and one for the consumption pattern measures.

Regarding values, the results support configural invariance as shown by satisfactory (and comparable) global fit indices across samples (Unconstrained model: $\chi^2 = 610.52$, df = 165, χ^2/df = 3.70, RMSEA = .041, CFI = .945, GFI = .942, TLI = .923). Additionally, setting the measurement weights equal across the three country samples (Constrained model: $\chi^2 = 633.95$, df = 181, χ^2/df = 3.50, RMSEA = .040, CFI = .944, GFI = .940, TLI = .928) did not lead to a significant deterioration in model fit compared to the unconstrained model ($\Delta\chi^2 = 23.43$, Δdf = 16, p = .103), providing evidence of metric invariance.

Turning to consumption pattern change measures, the unconstrained model demonstrated acceptable model fit statistics (Unconstrained model: $\chi^2 = 1044.62$, df = 252, χ^2/df = 4.15, RMSEA = .045, CFI = .894, GFI = .914, TLI = .864) which were similar across the three country samples, suggesting configural invariance. Regarding metric invariance, comparing the unconstrained model with a model constraining all measurement weights to equality resulted in a significant deterioration in model fit (Constrained model: $\chi^2 = 1183.15$, df = 274, χ^2/df = 4.32, RMSEA = .046, CFI = .894, GFI = .914, TLI = .868), implying the

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lack of full metric invariance across countries. Failure to achieve full metric invariance is common in cross-cultural research as it represents a frequently unfeasible, ideal goal rather than a pragmatic prerequisite for cross-cultural model testing under realistic conditions. This is especially true for comparisons across more than two countries which inflate the number of parameters to be found invariant (Steenkamp and Baumgartner 1998). Following common practice in cross-cultural research, we subsequently checked for partial metric invariance through follow up tests that allowed specific parameters to be non-invariant according to conventional statistical thresholds. Indeed, inspecting the items with the biggest discrepancies across countries and allowing four item loadings to be invariant led to a model (Partially constrained model: $\chi^2 = 1054.21$, df $= 266$, χ^2/df $= 3.96$, RMSEA $= .043$, CFI $= .895$, GFI $= .913$, TLI $= .875$) that fit the data equally well to the unconstrained model ($\Delta\chi^2 = 9.59$, Δdf $= 14$, p $= .792$). We are thus confident that our scales are partially invariant across countries, allowing us to proceed with testing the structural paths of our model.

Structural Model Estimation

We tested our conceptual framework in two stages. First, following successful cross-cultural invariance tests, we pooled the three country samples (N $= 1591$) and estimated the overall model to test for the non-country specific hypotheses (Table 3). Beyond the pooled model, we also estimated country-level models, whose results are largely consistent with the pooled model ones (see Web Appendix C for details). Second, we conducted a series of multi-group analyses to test our moderation hypotheses (Table 4). All models were estimated using covariance-based SEM in AMOS environment using maximum likelihood estimation (standardized estimates reported in text; unstandardized estimates and standard errors reported in Tables).

Pooled model results. The pooled sample model showed good overall model fit ($\chi^2 = 4713.78$, df $= 1066$, χ^2/df $= 4.42$, RMSEA $= .046$, SRMR $= .050$, CFI $= .881$, GFI $= .884$, TLI

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= .864). Needs satisfaction positively affected both indulgent consumption (β = .260, p

< .001), and voluntary simplicity (β = .349, p < .001). Similarly, needs frustration had positive

effects on both indulgent consumption (β = .183, p < .001), and voluntary simplicity (β

= .299, p < .001). Thus, H1 and H2 are supported. Regarding basic human values, we found a

positive effect of hedonism on indulgent consumption (β = .461, p < .001), and a positive

effect of universalism on voluntary simplicity (β = .231, p < .001), lending support to both H3

and H4. Thus, all our main effect hypotheses were supported (Table 3).[5] We discuss the

effects of control variables in Web Appendix C.

<div align="center">Insert Table 3 here</div>

Multi-group moderation analysis. We conducted a series of multi-group analyses to test

our moderation hypotheses (H5 and H6). In these analyses, we used the post-materialism

country dummy (1 = UK, Germany; 0 = Romania) and the indulgence country dummy (1 =

UK, 0 = Germany, Romania) as the moderating binary variable. Specifically, for each path

hypothesized to be moderated, we estimated unconstrained (i.e., path is freely estimated) and

constrained models (i.e. path is fixed to be equal across dummy levels) and compared the

model fit difference using formal chi-square comparisons while allowing free estimation of all

the remaining paths.

The results in Table 4 suggest that in post-materialistic countries, frustration of basic

needs had an attenuated (yet still positive) effect on both indulgent consumption ($\Delta\chi2$ =

3.142, Δ(df) = 1, p = .076) and voluntary simplicity ($\Delta\chi2$ = 6.439, Δ(df) = 1, p = .011),

compared to materialistic countries. Thus, in support of H5b, need-frustrated consumers of

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[5] We estimated several additional models to test the presence of interactions between needs satisfaction / frustration and basic human values (satisfaction×universalism, frustration×hedonism, etc.). No effects were found significant and the corresponding R^2 increases were marginal, suggesting that the effects of needs and human values do not interact but instead jointly (yet separately) affect consumption pattern change.

post-materialistic countries were less likely to adopt simplified or indulgent consumption patterns post-lockdown compared to need-frustrated consumers of materialistic countries. However, we do not observe significant moderating effects of post-materialism on the effects of needs satisfaction on either indulgent consumption or voluntary simplicity, implying that that consumers who experienced lockdowns positively were equally likely to adjust post-lockdown consumption patterns in both materialistic and post-materialistic countries. Thus, H5a is not supported.

Regarding the moderation of the effects of basic human values by cultural values, we found that the positive effect of hedonism on indulgent consumption in culturally indulgent countries to be stronger than in culturally restrained countries ($\Delta\chi^2 = 6.232$, $\Delta(df) = 1$, p = .013). Thus, H6a is supported. Similarly, the positive effect of universalism on voluntary simplicity was stronger in culturally restrained countries than in culturally indulgent ones ($\Delta\chi^2 = 7.132$, $\Delta(df) = 1$, p = .008). Thus, H6b is also supported.

Insert Table 4 here

GENERAL DISCUSSION

Wood (2022, p. 5) underlines that "marketers understood that different people around the world responded to pandemic-created challenges based on a plethora of internal (e.g., upbringing, cultural identity, attitudes, psychographics, demographics) and external factors (e.g., choice contexts, persuasion effects, decision triggers, incentives)". The present research examined which factors at the level of the individual consumer (i.e., psychological need fulfilment, basic values) and at country level (i.e., post-materialism, indulgence) determine which consumption patterns consumers might adopt in response to a time of consumption restriction (due to COVID19 lockdowns). We focused on two possible consumption behaviors in response to the lockdown experience, i.e., consumption reduction in the sense of voluntary simplicity, and consumption increase in form of indulgent consumption. The major

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contribution of this research is to provide a framework that integrates situational experiences, stable inter-individual differences, and cultural differences that influence consumption patterns in response to a crisis that limits consumption opportunities. In addition to providing theoretical contributions to (cross-cultural) consumer research, this framework also provides practical implications for marketers and policymakers.

Theoretical contributions

Psychological need frustration and need satisfaction increased the intention to adopt both simplified and indulgent consumption patterns post-lockdown. Our results show that psychological needs play a pivotal role for triggering consumption behaviors both when they are fulfilled and when they are frustrated by a disruptive consumption event (see also Rich, Hanna, and Wright 2017). The finding that both need satisfaction and need frustration act as predictors of consumption behavior following the lockdown experience suggests that it is not the direction of the psychological experience during the crises (i.e., frustration vs. satisfaction), but its intensity that triggers a general preparedness to adopt specific consumption patterns. The finding that both need satisfaction and need frustration act as predictors of consumption patterns is in line with self-determination theory, which posits that need satisfaction and need frustration are not simply antagonistic forces, but reflect separate dimensions with independent effects on human behavior (Vansteenkiste, Ryan, and Soenens 2020). Regarding research on behavior change, our results provide support for the assumption that disrupting experiences—may they be for the better or for the worse—offer an opportunity to rethink one's routines and make plans to change one's behavior (Verplanken et al. 2008; Wood, Tam, and Witt 2005). Notably, the effects of needs satisfaction and frustration show stability across countries, implying that global crises that limit consumption opportunities may trigger changes in global demand in their aftermath.

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Personal values determine the directions of consumption patterns after the lockdowns. These relationships are line with Schwartz's (2012) theory of basic human values. As such, universalism is linked to consumption reduction, while hedonism is linked to indulgence. In addition, hedonism is negatively related to consumption reduction. Although we did not explicitly hypothesize this relationship, this finding aligns with our proposed framework: Striving for pleasure and sensuous gratification, as characteristic for hedonism (Schwartz 2012), is contradictory to the intention to reduce consumption.

With regard to country-level differences, we focused on post-materialism (Inglehart 2008) and indulgence (Hofstede 2001) as cultural values. Both factors had direct as well as moderating effects on consumption patterns. The findings suggest that in post-materialistic (vs. materialistic) countries, consumption as a coping strategy to negative psychological lockdown experience is less prevalent. Consumers in post-materialistic countries were more likely to reduce consumption and less likely to indulge post-lockdown. Importantly, though, we observe an asymmetrical influence of post-materialism on its ability to block the translation of needs fulfilment on consumption pattern adoption. While psychological need frustration had less impact on the intention to embrace specific consumption patterns in post-materialistic countries, this was not the case for needs satisfaction which triggered simplified and indulgent consumption patterns with the same intensity in both materialistic and post-materialistic country environments. Indulgence (vs. restraint) as a cultural value, by contrast, increased tendencies to use consumption as a vehicle to response to the lockdown experience: the tendency to indulge was higher, the influence of universalism on consumption reduction was attenuated, and the influence of hedonism on indulgence was more pronounced.

Implications for international marketers

Our findings have implications for managers responsible for navigating their brands in a post-pandemic, and more generally in post-crisis, global marketplace. First, although the

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effects of needs satisfaction/frustration are quite strong and stable in the pooled model

estimates, our findings suggest that the effects of needs satisfaction/frustration are not equally

strong (or even significant) in all three countries considered. For instance, the effect of needs

frustration on voluntary simplicity is non-significant in the UK sample, while its effect on

indulgent consumption is not significant in the German sample. This is also in line with the

moderating roles of post-materialism and indulgence (versus restrained consumption).

Relatedly, some countries have experienced the pandemic more negatively than others,

leading to differences in life satisfaction and consumer well-being (Davvetas, Ulqinaku and

Sarial-Abi, 2022). Similarly, the impact of lockdowns on individuals' mental health has been

found to exhibit significant variation across countries (Ding et al., 2021). Thus, international

marketers should be aware that countries where lockdowns had stronger psychological impact

on consumers (i.e., exhibiting more extreme changes in needs satisfaction/frustration) should

expect bigger shifts in consumption patterns than those who psychologically underwent

lockdowns more mildly. Given that the direction of consumption pattern adoption is largely

dictated by a country's level of post-materialism and cultural indulgence, our findings imply

that marketers should closely monitor each country's materialistic and cultural profile to

predict cross-country differences in consumption patterns emerging following the pandemic

or other future crises.

Second, an important implication of our findings is that specific markets or industries

are more likely to be affected by shifts in consumption patterns post-COVID19 than others.

One the one hand, global luxury products, hedonic service brands or other goods/services that

fall outside the domain of necessities are expected to see post-pandemic gains in materialistic

countries, countries scoring high on indulgence and markets with a large share of hedonic

consumer segments. Indeed, data indicate that, in 2022, luxury sales have been growing fast

enough to exceed pre-pandemic levels; yet this resurgence is mostly attributed to materialistic

Eastern markets such as China and Korea and less to post-materialistic markets such as

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Europe and Japan which lag far behind (Financial Times, 2022). Such brands should thus target materialistic and indulgent countries to recover from the losses faced during the pandemic and grow their global market shares. On the other hand, international companies should consider investing in sustainable strategies and the development of products that promote or facilitate a voluntarily simplified lifestyle (e.g., alternative modes of transport, second-hand products, repair services, sharing platforms). Such investments are expected to pay off in the aftermath of the pandemic particularly in countries with restrained cultures, post-materialist attitudes and universalist consumers who saw the pandemic as an opportunity to shift to more simplified consumption lifestyles. In these countries, marketers should also expect to see delays in consumers' product upgrade decisions (e.g., buying the new version of a smartphone vs keeping the older one) or even prolonged product lifecycles due to consumers' situational scepticism toward excessive consumption. Finally, marketers should consider capitalizing on the upcoming trend of sustainable luxury brands that combine hedonic/indulgence benefits with environmental protection. Sustainable luxury is a novel phenomenon in the global marketplace, with scholars calling for a deeper investigation of its cross-cultural determinants and manifestations (Athwal et al. 2019). Our findings show that indulgent consumption and voluntary simplification coexist as purchase motives in post-pandemic markets. Thus, global marketers should consider the development of eco-luxury brands as a promising strategy to target international consumer segments who desire to counterbalance hedonic consumption yet embracing sustainable and resource-efficient innovations (e.g., use of recyclable materials in production, vintage fashion brands).

Third, the pandemic forced international marketers to make hard decisions about which foreign markets to enter, re-enter or abandon altogether (Vissak 2022). The evidence of significant cross-country variation in post-lockdown consumption patterns observed in our findings implies that managers should avoid blanket approaches and strictly linear internationalization strategies when deciding which foreign markets to enter or exit during

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their post-pandemic recovery. As cultural and individual values interact in shaping consumption preferences in the aftermath of COVID19, international marketers should consider not only cultural country profiles but also micro-segments within each country that have psychographic profiles promoting certain values (e.g., universalists, hedonists). For instance, new product launches or hedonic advertising appeals are expected to work more effectively in materialistic and indulgent countries craving for hedonic "revenge spending". In contrast, post-materialistic and culturally restrained countries should be more receptive to utilitarian advertising appeals or products promising lifestyle simplification to consumers.

Implications for policymakers

Beyond relevance for marketers, the results of this study are also relevant to public policymakers aiming to (1) forecast consumer behavior as a reaction to crises, and (2) shift consumer behavior in a particular direction after a crisis. For the first purpose, it appears useful to initially consider dominant cultural values in a target country with regard to post-materialism (vs. materialism) and indulgence (vs. restraint) as they impact directions of consumption patterns. In a second step, governments might use primary data on personal values within the target country for identifying the size of consumer segments that tend towards different types of reactions for a more fine-grained forecasting.

Regarding shifting consumer behavior, governments may consider using the crisis as an opportunity to foster individual behavior that assists reaching the sustainable development goals in the UN Agenda 2020 (United Nations 2015). During the COVID19 pandemic, it has been repeatedly debated whether the pandemic offers a window of opportunity for more sustainable consumption or whether the pandemic harms sustainable consumption (e.g., Hüttel and Balderjahn 2021; Tonne 2021). The present research contributes to this debate by showing that the answer is not a simple yes or no. Our results suggest that the pandemic does provide such a window of opportunity, but not for all consumers. In general, consumers who

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endorse universalism are more likely to adopt simplified consumption patterns as a response to the crisis, whereas consumer with hedonistic values are less prone to reduce their consumption of materials and resources. Hence, public policy initiatives (e.g., nudging) aiming at promoting reduced consumption should take these differences into account. For universalist consumers, public policy measures can build on consumers' higher readiness to adopt voluntary simplified lifestyles after the crisis. The challenge is to support these consumers with translating their readiness into actions (Bamberg 2013). These consumers may particularly benefit from providing an environment that makes action easier, such as increasing car-sharing offers or providing reduced fees for public transportation. In addition, communication campaigns should integrate psychological techniques that support translating intentions into action (Fennis et al. 2011). Persuasive appeals could refer to positive experiences with simplified lifestyles during the pandemic (e.g., simple pleasures such as discovering local parks or other nearby destinations). For segments with hedonist values, by contrast, persuasive appeals should avoid any reference to the experiences with reduced consumption during the pandemic. The major goal for these segments would be to establish positive intentions towards consumption reduction before supporting action.

Limitations and further research

Our study is subject to limitations that offer valuable future research directions. First, we tested our model in the context of COVID19 lockdowns. Although we assume that the mechanisms outlined in our framework also generalize to other crises characterized by consumption restrictions, this assumption warrants further contextual replication. The recent war in Ukraine is a sad example that global crises are not rare. The impact of the war on global supply chains shows that consumption restrictions may also affect countries that are not directly involved in such conflicts. Relatedly, the effects of and the measures to fight the global climate change crisis may also lead to large-scale consumption restrictions. Thus,

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future researchers should consider a more diverse range of global crises to test whether model generalizes across different crisis contexts.

Second, as our study focused on the psychological determinants driving post-lockdown consumption patterns, we used consumer surveys to detect consumer beliefs, attitudes, and experiences of the pandemic. Our findings though should be complemented with secondary data which show how key metrics relating to the proposed consumption patterns have been developing as the world leaves the pandemic behind. For instance, sales of luxury brands, energy consumption reductions or market shares of sustainable products could be used as proxies of our dependent variables when observing cross-country consumption behavior over time. Relatedly, future research should employ longitudinal models of consumption indices to test whether the post-lockdown consumption patterns observed in our study persist or change over time.

Third, despite our choice of countries being guided by literature and careful comparison of post-materialism and cultural value scores, any replication in a new set of countries is desirable. Having focused only on European countries to minimize cross-country differences, we were unable to consider other relevant country distinctions (e.g., emerging vs. developed countries) which could offer a more generalizable picture of post-pandemic consumption trends. Moreover, although we selected countries that followed pandemic containment strategies of similar strictness, length and type, we expect that differences in policy responses to the pandemic would influence our effects through affecting the level of needs satisfaction/frustration experienced by local citizens during lockdown periods. Additionally, we used selected cultural values to assess country differences, while downplaying others which offers future researchers the opportunity to further investigate cross-cultural differences in consumers' responses to global crises. Although we did not find significant interactions between basic human values and situational satisfaction/frustration of psychological needs in our model estimates, future researchers should delve deeper into the

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interplay between enduring and contextual factors when predicting consumption trends following global crises.

Finally, we assessed consumption patterns at a general level. As such, our findings are not indicative for specific industries or product categories. Future research investigating industry-specific boundary conditions would be helpful.

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Tables

Table 1. Sample Description

	UK	Germany	Romania
N	528	531	532
Age (SD)	45.0 (14.4)	45.5 (14.2)	43.7 (14.4)
Gender			
Male	260 (49.2%)	261 (49.2%)	264 (49.6%)
Female (%)	268 (50.8%)	270 (50.8%)	268 (50.4%)
Other / prefer not say	0 (0%)	0 (0%)	0 (0%)
Occupation			
Student	28 (5.3%)	59 (11.1%)	36 (6.7%)
Employee	260 (49.2%)	306 (57.6%)	271 (50.9%)
Self-employed	41 (7.8%)	30 (5.6%)	46 (8.6%)
Unemployed	51 (9.7%)	17 (3.2%)	39 (7.3%)
Retirement	74 (14.0%)	79 (14.9%)	95 (17.9%)
Other	74 (14.0%)	40 (7.5%)	45 (8.5%)
Education			
No degree	20 (3.8%)	6 (1.1%)	5 (0.9%)
High school degree	244 (46.2%)	56 (10.5%)	123 (23.1%)
Professional degree	59 (11.2%)	188 (35.4%)	70 (13.2%)
Undergraduate degree	136 (25.8%)	207 (39.0%)	205 (38.5%)
Postgraduate degree	68 (12.9%)	71 (13.4%)	111 (20.9%)
Other	1 (0.2%)	3 (0.6%)	18 (3.4%)
Income (monthly)			
Under £500/€1000	37 (7.0%)	57 (10.7%)	180 (33.8%)
£500-£1000 / €1000-€2000	72 (13.6%)	109 (20.5%)	184 (34.6%)
£1000-£1500 / €2000-€3000	92 (17.4%)	124 (23.4%)	53 (10.0%)
£1500-£2000 / €3000-€4000	85 (16.1%)	96 (18.1%)	38 (7.1%)
£2000-£2500 / €4000-€5000	82 (15.5%)	53 (10.0%)	19 (3.6%)
£2500+ / €5000+	97 (18.4%)	39 (7.3%)	8 (1.5%)
No answer	63 (11.9%)	53 (10.0%)	50 (9.4%)
Household size (SD)	2.6 (1.3)	2.3 (1.2)	2.9 (1.3)

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Table 2. Construct measurement

Construct	Item	UK	Germany	Romania
Needs satisfaction		.858	.863	.822
		/ .820 / .343	/ .828 / .354	/ .818 / .342
I was free to do things my own way.	AUT1+	.630	.670	.710
My choices expressed my ''true self.''	AUT3+	.798	.606	.726
I was really doing what interests me.	AUT5+	.642	.738	.599
I felt I was in contact with people who were close to me.	REL1+	.493	.569	.499
I felt close and connected with other people who are important to me.	REL2+	.554	.564	.550
I felt a strong sense of intimacy with the people I spent time with.	REL3+	.462	.537	.296
I was successfully completing a difficult task.	COM1+	.578	.523	.594
I took on and mastered hard challenges.	COM3+	.493	.429	.627
I did well even at the hard things.	COM5+	.548	.658	.551
Needs frustration		.887	.898	.867
		/ .881 / .454	/ .891 / .479	/ .865 / .420
I had a lot of pressure I could do without.	AUT2-	.614	.664	.521
There were people telling me what I had to do.	AUT4-	.538	.583	.474
I had to do things against my will.	AUT6-	.601	.559	.613
I was lonely.	REL4-	.662	.707	.637
I felt unappreciated by one or more important people.	REL5-	.659	.702	.729
I had disagreements or conflicts with people I usually get along with.	REL6-	.663	.713	.710
I experienced some kind of failure or was unable to do well at something.	COM2-	.723	.759	.688
I felt incompetent.	COM4-	.789	.779	.734

I struggled doing something I should be good at.	COM6-	.778	.731	.673
Conformity[1]		.762 / .763 / .520	.701 / .700 / .442	.793 / .799 / .572
It is important to him/her always to behave properly. He/She wants to avoid doing anything people would say is wrong.	CFRM1	.667	.619	.677
It is important to him/her to be obedient. He/She believes he should always show respect to his parents and to older people.	CFRM2	.65	.580	.750
It is important to him/her to be polite to other people all the time. He/She tries never to disturb or irritate others.	CFRM3	.833	.778	.833
Universalism[1]		.788 / .792 / .561	.744 / .747 / .497	.754 / .761 / .517
He/She thinks it is important that every person in the world be treated equally. He/She wants justice for everybody, even for people he/she doesn't know.	UNIV1	.781	.743	.754
It is important to him/her to listen to people who are different from him. Even when he/she disagrees with them, he/she still wants to understand them.	UNIV2	.684	.685	.611
He/She believes all the worlds' people should live in harmony. Promoting peace among all groups in the world is important to him/her.	UNIV3	.777	.685	.781
Stimulation[1]		.758 / .752 / .504	.785 / .792 / .562	.802 / .802 / .575
He/She likes to take risks. He/She is always looking for adventures.	STML1	.686	.760	.754
He/She likes surprises. It is important to him/her to have an exciting life.	STML2	.685	.824	.757

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He/She thinks it is important to do lots of different things in life. He/She always looks for new things to try.	STML3	.756	.655	.763
Self-direction[1]		.756 / .756 / .608	.687 / .689 / .526	.754 / .756 / .609
It is important to him/her to make his own decisions about what he does. He/She likes to be free to plan and to choose his activities for himself.	SLFD1	.784	.692	.737
It is important to him/her to be independent. He/She likes to rely on himself/herself.	SLFD2	.775	.757	.821
Hedonism[1]		.811 / .812 / .685	.833 / .834 / .716	.836 / .838 / .722
He/She seeks every chance he can to have fun. It is important to him/her to do things that give him/her pleasure.	HEDO1	.864	.813	.803
He/She really wants to enjoy life. Having a good time is very important to him/her.	HEDO2	.789	.878	.894
Indulgence		.745 / .744 / .424	.819 / .825 / .543	.684 / .686 / .362
I enjoy spending money again.	IND1	.689	.804	.609
I like to indulge myself.	IND2	.709	.738	.660
I buy things for pleasure.	IND3	.676	.601	.696
I like good things in life.	IND4	.511	.786	.397
Resources		.687 / .677 / .347	.717 / .715 / .387	.699 / .705 / .381
I repair broken items rather than replace them.	RES1	.607	.649	.669

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I will make do with what I have on hand rather than purchase something new.	RES2	.679	.680	.717
I avoid buying products that are designed to be obsolete within a short period of time.	RES3	.544	.518	.456
I am very careful with how much power, water and fuel (including gas or wood) I use.	RES4	.551	.630	.594
Material scarcity		.761 / .760 / .515	.747 / .747 / .497	.692 / .689 / .425
I will need less material things to live a fulfilling life.	MTRS1	.646	.697	.641
I will try having less possessions.	MTRS2	.729	.722	.655
In general, I will purchase less.	MTRS3	.773	.695	.659
Ecological Worldview		.776 / .781 / .476	.829 / .834 / .561	.716 / .724 / .402
Humans were meant to rule over the rest of nature.	ECOS1	.646	.750	.624
Human creativity will ensure that the earth remains fit to live in.	ECOS2	.559	.577	.468
The balance of nature is strong enough to cope with the impacts of modern industrial nations.	ECOS3	.798	.873	.758
The so-called ecological crisis is massively exaggerated.	ECOS4	.732	.767	.652

Notes: Item-level entries represent standardized loadings; construct-level entries represent Cronbach's alphas / Composite Reliabilities / Average Variances Extracted.

[1] The items were tailored dynamically to the gender that participants indicated at the outset of the survey. Female participants received descriptions with the pronouns "she" and "her", whereas male participants received descriptions with "he" and "him."

Table 3. Pooled model estimates

	ENDOGENOUS VARIABLES	
	Indulgent Consumption	**Voluntary Simplicity**
Needs fulfilment		
Needs satisfaction (H1)	.231 (.036) ***	.311 (.041) ***
Needs frustration (H2)	.133 (.026) ***	.219 (.030) ***
Basic human values		
Hedonism (H3)	.345 (.049) ***	-.137 (.052) **
Universalism (H4)	-.077 (.049)	.199 (.057) ***
Country level controls		
Post-materialistic country	-.271 (.056) ***	.137 (.063) *
Indulgent country	.152 (.050) **	.242 (.056) ***
Individual level controls		
Income	.015 (.012)	-.038 (.014)
COVID impact index	-.045 (.021) *	.037 (.024)
Ecological worldview	-.032 (.025)	.111 (.029) ***
Conformity	.037 (.047)	-.006 (.054)
Stimulation	-.034 (.051)	.034 (.057)
Self-direction	.077 (.045)	.000 (.051)
R²	.435	.252
Model Fit	χ^2 = 4713.78, df = 1066, χ^2/df = 4.42, RMSEA = .046, SRMR = .050, CFI = .881, GFI = .884, TLI = .864	

Notes: Column entries represent unstandardized parameter estimates (standard errors in parentheses),
*** $p < .001$, ** $p < .01$, * $p < .05$

Table 4. Multigroup moderation analysis

Post-materialism vs. materialism	Unconstrained model				Constrained model			Model comparison		
Moderated path (Hypothesis)	χ^2	**df**	**path estimate (post-material)**	**path estimate (materialistic)**	χ^2	**df**	**path estimate (constrained)**	$\Delta(\chi^2)$	Δ(df)	p
Satisfaction → Indulgent consumption (H5a)	6388.75	2030	.229 (.050) ***	.308 (.067) ***	6389.67	2031	.260 (.039) ***	.931	1	.339
Satisfaction → Voluntary simplicity (H5a)	6388.75	2030	.244 (.047) ***	.260 (.068) ***	6388.79	2031	.250 (.039) ***	.036	1	.849
Frustration → Indulgent consumption (H5b)	6388.75	2030	.116 (.034) ***	.230 (.059) ***	6391.89	2031	.150 (.029) ***	3.142	1	.076
Frustration → Voluntary simplicity (H5b)	6388.75	2030	.140 (.032) ***	.325 (.065) ***	6395.19	2031	.173 (.030) ***	6.439	1	.011
Indulgence vs. Restraint	**Unconstrained model**				**Constrained model**			**Model comparison**		
Moderated path (Hypothesis)	χ^2	**df**	**path estimate (indulgent)**	**path estimate (restrained)**	χ^2	**df**	**path estimate (constrained)**	$\Delta(\chi^2)$	Δ(df)	p
Hedonism → Indulgent consumption (H6a)	6847.67	2030	.550 (.137) ***	.212 (.053) ***	6853.91	2031	.272 (.049) ***	6.232	1	.013
Universalism → Voluntary simplicity (H6b)	6847.67	2030	.067 (.069)	.385 (.099) ***	6854.81	2031	.182 (.056) **	7.132	1	.008

Notes: *** $p < .001$, ** $p < .01$, * $p < .05$

Figures

Figure 1. A conceptual model of consumption patterns in response to disruptive post-lockdown experiences
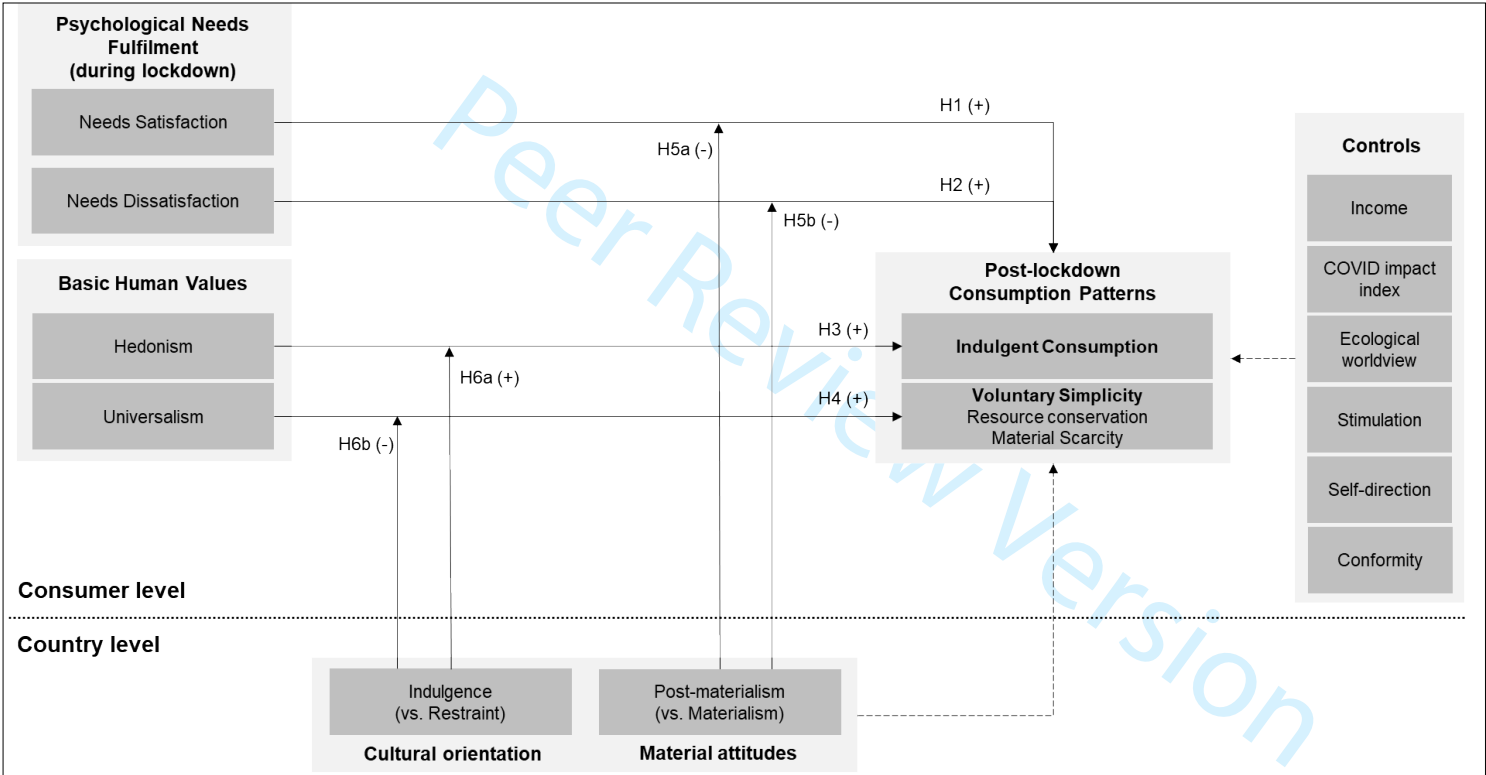
Indulge or Reduce? A cross-country investigation of consumption patterns following

pandemic lockdowns

Riefler, P. Buettner, O. B., and Davvetas V. (2023)

WEB APPENDIX

These materials have been supplied by the authors to aid in the understanding of their

paper. The AMA is sharing these materials at the request of the authors.

Content

1

Web Appendix A: COVID Containment Policies

Table W1. Containment policy strictness in the UK, Germany, and Romania

Containment Index	UK	Germany	Romania
March 15th	13	39	42
April 15th	61	65	69
May 15th	56	62	61
June 15th	66	61	45
July 15th	62	58	45

Source: OurWorldInData.org; column entries refer to the containment index produced by OurWorldInData.org that ranges from 0 (not strict) to 100 (very strict) from the beginning of the lockdowns until the time of data collection

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Web Appendix B: Details on Model Specification of Basic Psychological Needs Construct

The first specification (Model 1) focuses on satisfaction and frustration as the reference dimensions by pooling items across all three need types (autonomy, relatedness, competence). Inversely, the second specification (Model 2) uses the three need types as reference dimensions and pools positive (satisfaction) and reversed negative (frustration) items under the three reference dimensions. The third specification (Model 3) allows for the three need scales (autonomy, relatedness, competence) to share their items with the satisfaction and frustration dimensions. Finally, the fourth specification (Model 4) allows for six correlated scales capturing satisfaction and frustration within each specific needs type (autonomy satisfaction, autonomy frustration, etc.). An overview of the alternative specifications is presented in Figure W1.

To decide on the final specification, we compared the fit with our theoretical conceptualization as well as global fit statistics across the four models. As we differentiate between need satisfaction and need frustration in our hypotheses, we excluded Model 2 from our considerations. We did not postulate differential effects of the three need types, so Model 1, Model 3, as well as Model 4 are adequate from a theoretical point of view. We estimated global fit statistics and repeated the estimation across the three country samples. The results suggest the dominance of Model 3 over the three alternative specifications across all three country samples. Specifically, Model 3 was the only model achieving acceptable RMSEA values, the lowest chi-square to degrees of freedom ratio and descriptive fit indices above the threshold value of .90 across countries (Table W2). Also, Model 3 had the best local fit indices (item loadings, composite reliabilities) and the only one displaying discriminant validity across reference dimensions. Thus, we opted for Model 3 specification in our structural model.

3

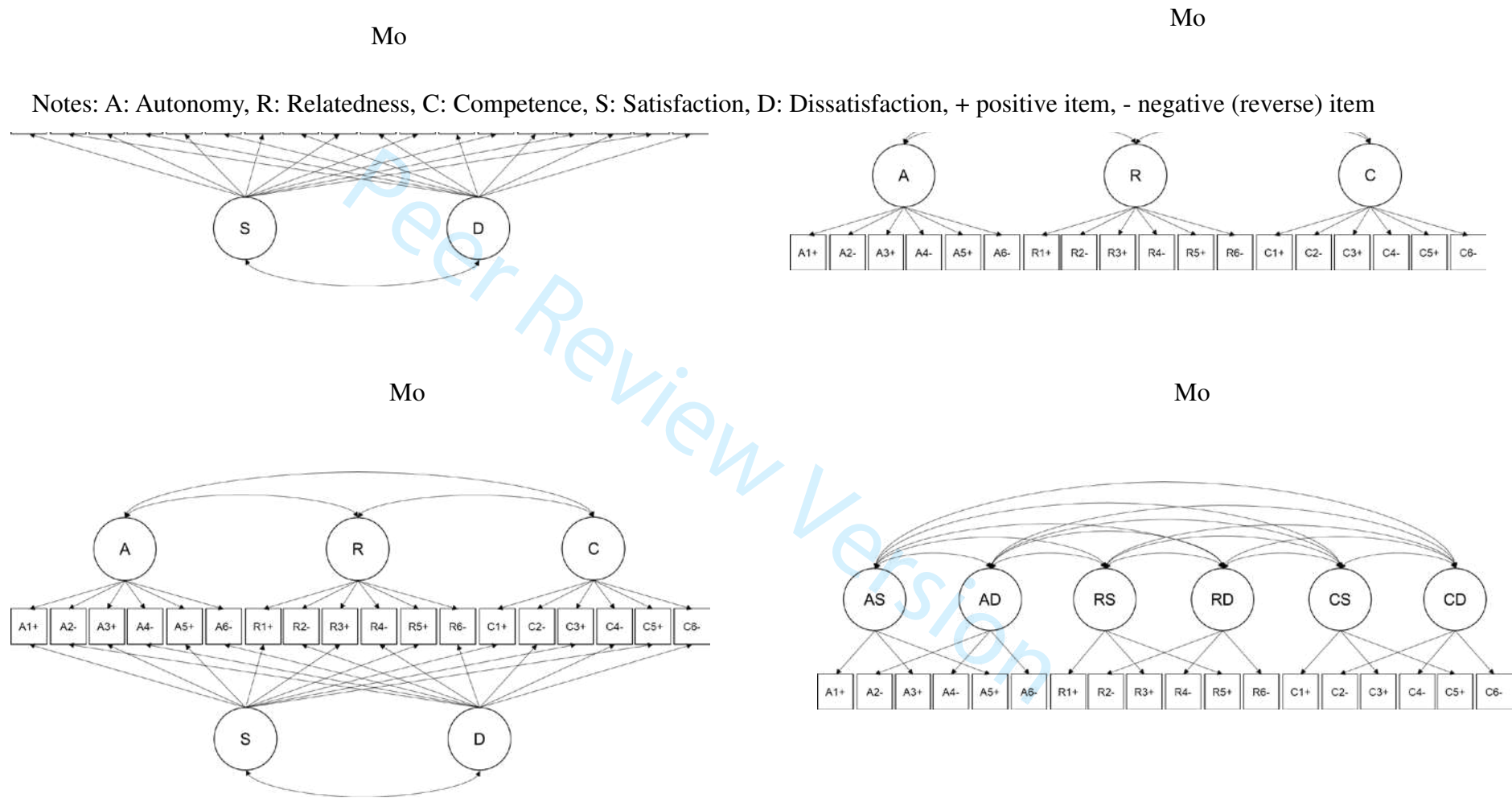Figure W1. Alternative specifications of the BMPN scale

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Notes: A: Autonomy, R: Relatedness, C: Competence, S: Satisfaction, D: Dissatisfaction, + positive item, - negative (reverse) item

Mo

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Table W2. Model fit of alternative BMPN scale specifications

Fit index	UK				Germany				Romania			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
χ^2	1092.333	2264.779	365.641	448.481	1128.826	2649.703	409.161	436.975	752.870	2181.177	612.999	552.649
df	134	132	113	120	134	132	113	120	134	132	206	120
χ^2/df	8.152	17.157	3.236	3.737	8.424	20.074	3.621	3.641	5.618	16.524	2.976	4.605
RMSEA	0.116	0.175	0.065	0.072	0.118	0.190	0.070	0.071	0.093	0.171	0.061	0.082
SRMR	0.093	0.208	0.060	0.064	0.090	0.239	0.065	0.057	0.085	0.208	0.065	0.076
CFI	0.780	0.511	0.942	0.925	0.784	0.453	0.936	0.931	0.819	0.399	0.920	0.873
GFI	0.790	0.504	0.926	0.912	0.788	0.482	0.919	0.916	0.858	0.533	0.902	0.893
TLI	0.749	0.433	0.921	0.904	0.753	0.366	0.913	0.912	0.793	0.304	0.902	0.838

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Web Appendix C: Additional Findings

Pooled Model Controls. Regarding the country-level controls, we found that post-materialistic countries report higher levels voluntary simplicity (β = .083, p < .05) but lower levels of indulgent consumption (β = -.165, p < .001). On the contrary, culturally indulgent countries were associated with higher levels of indulgent consumption intentions (β = .093, p = .002) and, against assumptions, also with higher levels of voluntary simplicity (β = .147, p < .001). In addition, we found no significant effects of conformity, stimulation, and self-direction on either indulgent consumption or voluntary simplicity. We observed that respondents most heavily affected by COVID19 were less likely to engage in indulgent consumption post-lockdown (β = - .058, p < .05), that higher levels of income are associated with decreased voluntary simplicity (β = - .087, p < .01), while ecological worldview had a positive effect on voluntary simplicity (β = .164, p < .001) but no effect on indulgent consumption (β = .033, p = .219)

Country-level models. We estimated the same model reported in the paper separately in each country sample and report country-level estimates to observe differences in effect sizes across countries (see Table W3). All three separate country models show good (and comparable) fit to the data (UK: $\chi 2$ = 2069.16, df = 994, $\chi 2$/df = 2.08, RMSEA = .045, SRMR = .058, CFI = .892, GFI = .858; Germany: $\chi 2$ = 2307.90, df = 994, $\chi 2$/df = 2.32, RMSEA = .050, SRMR = .063, CFI = .880, GFI = .843; Romania: $\chi 2$ = 2028.10, df = 994, $\chi 2$/df = 2.04, RMSEA = .044, SRMR = .061, CFI = .889, GFI = .859).

Similar to the pooled model, needs satisfaction has significant positive effects on both indulgent consumption and voluntary simplicity across all three countries. Differences across countries were observed in terms of the effects of needs frustration on indulgent consumption

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and voluntary simplicity. Specifically, in the UK sample, needs frustration had a positive effect on indulgent consumption (β = .224, p < .01) but no effect on voluntary simplicity (β = .092, p = .269). The opposite as observed in the German sample; needs frustration increased voluntary simplicity (β = .334, p < .001) but had no effect on indulgent consumption (β = .066, p = .247). Interestingly, in the Romanian sample, needs frustration had significant positive effects on both indulgent consumption (β = .278, p < .001) and voluntary simplicity (β = .401, p < .001).

Regarding basic human values, we observed stability of the positive effects of hedonism on indulgent consumption across countries (UK: β = .688, p < .001; Germany: β = .378, p < .001; Romania: β = .353, p < .01). Universalism's effects on voluntary simplicity were significant in the German sample (β = .287, p < .01), marginally significant in the Romanian sample (β = .577, p = .085) but non-significant on the UK sample (β = .133, p = .170). The control effects of the remaining human values were all found non-significant , with the exception of conformity's effect on voluntary simplicity in the UK sample (β = .330, p < .001).

Finally, regarding controls, we observed sparingly significant effects of income and impact of COVID-19, with ecological worldview being the only control variable with mostly positive effects on voluntary simplicity (UK: β = .329, p < .001; Germany: β = .189, p < .01; Romania: β = - .003, ns).

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Table W3. Country-level model estimates

	UK		Germany		Romania	
	Indulgent Consumption	**Voluntary Simplicity**	**Indulgent Consumption**	**Voluntary Simplicity**	**Indulgent Consumption**	**Voluntary Simplicity**
Needs fulfilment						
Needs satisfaction (H1)	.239 (.078) **	.272 (.074) ***	.226 (.061) ***	.244 (.056) ***	.337 (.075) ***	.305 (.076) ***
Needs frustration (H2)	.176 (.060) **	.059 (.054)	.059 (.051)	.250 (.049) ***	.244 (.064) ***	.358 (.070) ***
Basic human values						
Hedonism (H3)	.565 (.142) ***	-.372 (.127) **	.399 (.105) ***	-.164 (.094)	.250 (.084) **	.002 (.091)
Universalism (H4)	.053 (.074)	.096 (.070)	-.107 (.118)	.299 (.109) **	-.684 (.296) *	.526 (.305) †
Individual level controls						
Income	.042 (.022)	-.007 (.020)	.018 (.027)	-.060 (.024)	-.003 (.029)	-.061 (.032)
COVID impact index	.001 (.045)	.070 (.042)	-.134 (.050) **	.078 (.045)	-.077 (.058)	.013 (.040)
Ecological worldview	-.086 (.051)	.208 (.050) ***	-.094 (.056)	.136 (.051) **	.077 (.058)	-.002 (.974)
Conformity	-.074 (.087)	.175 (.083) *	.108 (.111)	-.017 (.100)	.365 (.216)	-.366 (.230)
Stimulation	-.263 (.181)	.273 (.167)	.017 (.098)	.034 (.089)	.059 (.091)	-.014 (.101)
Self-direction	.093 (.078)	-.022 (.073)	.044 (.122)	-.008 (.110)	.322 (.141)	-.123 (.148)
R²	.440	.343	.336	.291	.506	.330
Model fit	χ^2 = 2069.16, df = 994, χ^2/df = 2.08, RMSEA = .045, SRMR = .058, CFI = .892, GFI = .858		χ^2 = 2307.90, df = 994, χ^2/df = 2.32, RMSEA = .050, SRMR = .063, CFI = .880, GFI = .843		χ^2 = 2028.10, df = 994, χ^2/df = 2.04, RMSEA = .044, SRMR = .061, CFI = .889, GFI = .859	

Notes: Column entries represent unstandardized parameter estimates (standard errors in parentheses), *** p < .001, ** p < .01, * p < .05, † p < .10 (two-tailed tests)

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