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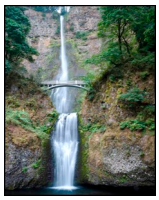

Wean off green: On the (in)effectiveness of biospheric appeals for consumption curtailment

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ABSTRACT

Ecologically-friendly lifestyles such as Minimalism—living with less—are gaining attention in popular media outlets. However, it is unclear whether ecological concern is driving the popularity of these lifestyles, and how social marketing campaigns could leverage this consumer shift. This research examines whether living with less is equally encouraged by biospheric and egoistic appeals, e.g., reducing carbon emissions and reducing stress, respectively. In an initial exploratory study (N = 265), self-described minimalists reported both biospheric and egoistic concerns as likely to motivate a minimalistic lifestyle. However, in an experimental setting (Study 1; N = 296), biospheric appeals were ineffective in shifting consumption-curtailment engagement, even for highly biospheric participants. The ineffectiveness of biospheric appeals was not explained by value incongruence, presenter relatability, negative affect, perceived self-efficacy or control. The real-world impact of egoistic and biospheric consumption-curtailment appeals was also tested in a week-long online intervention (Study 2; N = 102). The biospheric appeal presented null effects as compared to a control condition, while the egoistic appeal increased participants' motivation to curtail their consumption. Results suggest that biospheric appeals for consumption curtailment may be ineffective. Limitations and directions for future research, as well as implications for social-marketing practice, are discussed.

1. Introduction

Steadily rising overconsumption is environmentally, economically, and psychologically harmful. Previous research suggests solid waste is at an all-time high (Hoornweg, Bhada-Tata, & Kennedy, 2013), financial stress is growing (Board of Governors of the Federal Reserve, 2015), and contemporary materialistic culture impedes well-being (e.g., Dittmar, Bond, Hurst, & Kasser, 2014; Kasser et al., 2014; Lee & Ahn, 2016). A key to promoting a sustainable future may require not only that production processes be refined, but also that consumers consume less (e.g., Jackson, 2008; 2009; Shaw & Newholm, 2002). Indeed, recent cultural phenomena suggest consumers are considering more ecologically-friendly lifestyles; they are downsizing their material possessions from their homes to their wardrobes (Koncius, 2019; Quint, 2018). However, it is unclear whether this shift toward *Minimalism*—living with less—is best promoted through ecological or self-centered appeals. For instance, in the "Keep Plastic Out of the Pacific" campaign, Environment California encourages curtailment of single-use plastics to stop an ecological disaster,[1] exemplifying an ecological appeal for consumption curtailment. Conversely, in the "Waste-Wise Holidays" campaign, the city of Portland, Oregon advises residents to reduce waste at home for their own well-being and financial savings,[2] exemplifying a self-centered appeal.

Both biospheric (i.e., ecological) and egoistic (i.e., self-centered) considerations may promote pro-environmental behavior. Proponents of the biospheric approach propose that biospheric considerations are strongly associated with pro-environmental behavior, while egoistic considerations may be ineffective (e.g., inhibiting water conservation; de Groot & Steg, 2009; Steg, Perlaviciute, van der Werff, & Lurvink, 2014). A newer line of research conversely suggests that a biospheric approach may be ineffective in promoting pro-environmental behavior. Specifically, within a social comparison context, the biospheric and ethical considerations of others can discourage consumers from behaving ethically themselves (Zane, Irwin, & Reczek, 2016). Yet others

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[1] https://environmentcalifornia.org/programs/cae/keep-plastic-out-pacific.
[2] https://www.oregonmetro.gov/tools-living/garbage-and-recycling/reduce-waste-home/waste-wise-holidays.

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suggest that both biospheric and egoistic considerations are beneficial (e.g., waste reduction is associated with both moral and frugal consumer identities; Gatersleben, Murtagh, Cherry, & Watkins, 2017). Finally, consumers' personal values can moderate the effectiveness of biospheric and egoistic appeals for pro-environmental behavior (Bolderdijk, Gorsira, Keizer, & Steg, 2013; van den Broek, Bolderdijk, & Steg, 2017). Thus, it is unclear how social marketers should design appeals for pro-environmental behavior more generally, and for consumption-curtailment specifically. This research examines the effectiveness of egoistic and biospheric appeals in promoting Minimalism—an ecologically friendly lifestyle of living with less (Alexander & Ussher, 2012).

1.1. Minimalism as a component of voluntary simplicity

Minimalism—a lifestyle of "valuing fewer possessions" (Alexander & Ussher, 2012, p. 74) is pursued mainly through consumption curtailment, but can be accompanied by other behaviors similarly intended to minimize possessions (e.g., decluttering, upcycling; Alexander & Ussher, 2012). While curtailed consumption is associated with positive ecological impact (e.g., reducing ecotoxicity), it can also be associated with non-environmental, self-centered impacts (e.g., well-being enhancement; Alexander & Ussher, 2012; monetary savings; Kropfeld, Nepomuceno, & Dantas, 2018).

A similar yet distinct consumer lifestyle is voluntary simplicity, which refers to the "choice out of free will … to limit expenditures on consumer goods and services, and to cultivate non-materialistic sources of satisfaction and meaning" in life (Etzioni, 1998, p. 2). In previous research, voluntary simplifiers were generally female in greater proportions than male (e.g., 74% in Huneke, 2005, p. 60% in Craig-Lees & Hill, 2002, p. 64% in Boujbel & D'Astous, 2012) and more highly educated than the general US population (Elgin & Mitchell, 1977; Huneke, 2005; Zavestoski, 2002). In addition to curtailing their material consumption, voluntary simplifiers also tend to engage in sustainable consumption behaviors, like purchasing Fairtrade and organic products to promote an ethical market system, and reducing car and energy use to protect the environment (Ballantine & Creery, 2010; Huneke, 2005; Leonard-Barton, 1981; McDonald, Oates, Young, & Hwang, 2006; Shaw & Newholm, 2002).

Survey research has identified voluntary-simplifiers' motivations as either other-focused (e.g., buying Fairtrade or organic), self-centered (e.g., downshifting), or both (Shaw & Newholm, 2002). Thus, there appears to be a dual motivation to adopt voluntary simplicity—focus on others and the self. Similarly to the broader voluntary simplicity lifestyle, Minimalism may be motivated by both environmentalism and self-centeredness. However, unlike voluntary simplicity, Minimalism is not likely to be associated with altruistic considerations. A decision to live with less does not require the consumer to support others in her purchasing decisions (e.g., buying Fairtrade).

1.2. How might biospheric and egoistic appeals influence consumption curtailment?

Two paths through which appeals can motivate behavior change are through the priming of relevant values and goals. Values are the concepts or beliefs that stably guide an individual's selection and evaluation of behavior (Schwartz, 1992). Since values influence pro-environmental behavior (de Groot & Steg, 2009; Steg, Bolderdijk, Keizer, & Perlaviciute, 2014), previous research has suggested that persuasive appeals which strengthen relevant values could promote pro-environmental behavior (e.g., biospheric value orientation; Steg & Vlek, 2009). However, triggering value shifts may be unlikely due to values' relative stability and embeddedness in one's social context (Manfredo et al., 2017). Instead, appeals may work best when they are in congruence with consumers' existing values (Bolderdijk, Jan, Gorsira, Keizer, & Steg, 2013; Gromet, Kunreuther, & Larrick, 2013; van den Broek et al., 2017). Thus, values play an important role as individual-level differences, or consumer characteristics—they may be best suited to act as moderators for the effectiveness of consumption-curtailment appeals, rather than behavior-change triggers.

While values are the "incentives or reasons for doing the activity" (Eccles & Wigfield, 2002, p. 110), goal-systems are more malleable "mental representations of motivational networks", which include interconnected goals and means (Kruglanski et al., 2002, p. 334). In other words, goals direct behavior toward a desired, *valued* state, while being more flexible than values. Therefore, appealing to consumers' malleable goals, be they egoistic or biospheric, may be an effective way to motivate consumption curtailment. Below we review the mixed research findings on the roles of biospheric and egoistic values and goals in promoting consumption curtailment.

1.2.1. Biospheric concerns

Individuals with a strong biospheric value orientation (de Groot & Steg, 2007; benevolence and universalism in; Schwartz, 1992) tend to *transcend* their selfish interests, considering others and the natural environment in their decisions and behavior. Since self-transcendence is relatively opposed to materialism (Kilbourne & LaForge, 2010; Schwartz, 1992), previous research has suggested that interventions aimed at curtailing consumption promote self-transcendence values (e.g., Kasser, 2011), like biospherism. Indeed, biospherism is associated with curtailed meat consumption and an intention to curtail energy use (Van der Werff, Steg, & Keizer, 2013). Similarly, environmental concern is associated with curtailed household electricity consumption (Bruderer Enzler, Diekmann, & Liebe, 2019) and self-transcendence is associated with reduced use of personal vehicles (Nordlund & Garvill, 2003). Consumers with strong biospheric values, and hence pro-environmentalist identities, are likely to find biospheric appeals highly motivating (Van der Werff et al., 2013).

However, the efficacy of biospheric appeals may be limited. First, biospheric appeals may be best suited for consumers who hold a strong biospheric value orientation to begin with (e.g., curtailing paper-use; van den Broek et al., 2017; curtailing the use of bottled-water; Bolderdijk et al., 2013) or a liberal political ideology (e.g., energy conservation; Gromet et al., 2013), while discouraging others. Second, emphasizing biospheric values in appeals might be particularly discouraging in a social-comparison context, due to perceived social threat. Consumers who willfully ignore the ethical attributes of products (e.g., organic), tend to negatively evaluate, or denigrate, those who consider these attributes in their consumption decisions (Zane et al., 2016), thereby potentially minimizing the relatability of the biospheric other and their appeal. Similarly, perceived social threat causes consumers to judge the pro-environmental actions of biospheric actors as less impactful than the same actions conducted by egoistic actors (Hoogendoorn, Sütterlin, & Siegrist, 2019). Finally, biospheric appeals may be perceived as patronizing or paternalistic (Meyer, 2015, p. 6), thus triggering a negative affective response (e.g., upset, hostility) and de-motiving behavior change.

1.2.2. Egoistic concerns

Conversely to biospheric individuals, individuals with a strong egoistic value orientation (de Groot & Steg, 2007; achievement, power, and hedonism in; Schwartz, 1992) tend to *enhance* the self in their decisions and behavior. Since self-enhancement is negatively associated with sustainable attitudes and behaviors and positively associated with materialism (de Groot & Steg, 2008; Karp, 1996; Kilbourne & LaForge, 2010; Steg, Perlaviciute, et al., 2014), egoism has been suggested to hinder consumption-curtailment (Kasser, 2011). However, research on egoism has shown mixed results in promoting consumption-curtailment. On one hand, egoistic appeals may reduce engagement in sustainable behaviors (e.g., economic appeals for eco-driving or tire-pressure maintenance; Bolderdijk, Jan, & Steg, 2015; coastal conservation support; Dean, Fielding, & Wilson, 2019; for a summary see

Bolderdijk, Steg, Geller, Lehman, & Postmes, 2012). On the other hand, some egoistic concerns could promote sustainable behaviors (e.g., reputation concerns motivate organic consumption; Griskevicius, Tybur, & Van den Bergh, 2010).

The values and goals literatures suggest that egoistic appeals may be superior to their biospheric alternatives. The Inclusion Model of Environmental Concern (Nolan & Schultz, 2015; Schultz, 2002) suggests that satisfying biospheric needs is important mainly to consumers with strong biospheric value orientation, but satisfying egoistic needs is a common interest of all consumers. Indeed, egoistic appeals have been found to shift the pro-environmental behavioral intentions of more individuals overall while not hindering the intentions of biospheric individuals (e.g., public transit use; De Dominicis, Schultz, & Bonaiuto, 2017). Correlative research similarly finds that the pain of payment experienced by "tightwads" (Rick, Cryder, & Loewenstein, 2008) enables them to adopt reduced-consumption lifestyles, decreasing their ecological footprint as compared to non-tightwads with strong ecological concern (Kropfeld et al., 2018).

Furthermore, the motivational properties of goal systems (Kruglanski et al., 2002) suggest that the subjective utility and subsequent commitment to an egoistic goal may be stronger than that of a biospheric goal, which by definition prioritizes the environment over the consumer's desires (de Groot & Steg, 2007; Kruglanski et al., 2002). Additionally, the motivation to pursue an outcome-focused goal—i.e., curtailing consumption to either save money or protect the environment—is impacted by the expectancy that the goal is within reach (Touré-Tillery & Fishbach, 2017). Thus, consumers' perceived self-efficacy and control are critical. Common biospheric goals are focused on transcending selfish interests for the betterment of others or the environment (e.g., protect the oceans). These goals may be too broad or abstract to be considered attainable. Conversely, common egoistic goals are focused on personal enhancement or gain (e.g., protect your well-being or finances). These goals may be perceived as more pragmatic and specific, and thus attainable.

1.2.3. Potential motivating and de-motivating effects

In sum, the above literature suggests that egoistic and biospheric appeals have shown mixed results in promoting pro-environmental behavior generally and consumption curtailment specifically. Appeals are most beneficial when they (1) promote action consistent with existing values and goals, (2) encourage behaviors with high subjective value, and (3) enhance a sense of self-efficacy and control in goal attainment. Both biospheric and egoistic appeals may at times not only be ineffective, but they could also de-motivate consumers. Appeals may be ineffective when they are (1) inconsistent with consumers' pre-existing values, (2) perceived as unattainable, thus resulting in lower perceived self-efficacy and control, or (3) associated with social threat, thus potentially minimizing the relatability of the appeal and its presenter, as well as triggering a negative affective response. The potential of consumption-curtailment appeals to trigger both motivating and de-motivating impacts substantially challenges social marketers in developing effective campaigns.

1.3. Overview of the present research

This paper first explores and then empirically tests the association and impact of biospheric and egoistic appeals on consumption curtailment. We test whether these appeals have similar effects on consumers' interest in consumption curtailment and whether one of these appeals is more (de)motivating than the other. We also explore potential mechanisms of (de)motivation, as described above—value incongruence, perceived self-efficacy and control, as well as messenger relatability and affective response (Study 1). Finally, we compare the impact of biospheric and egoistic appeals in a one-week field intervention, measuring self-reported changes in behavior (i.e., non-essential spending; Study 2).

1.4. Ethics review

All studies were subject to ethical review within their relevant university setting. The preliminary exploration was conducted at a university that did not require an ethics review for psychological studies. Study 1 was submitted and exempted from review by the university's Office of Responsible Research Practices (submission 2018E0758). Study 2 was submitted, reviewed, and approved by the university's Psychology Research Ethics Committee (submission PRE. 2016.098).

2. Preliminary exploration: Minimalism motivation

We conducted a preliminary exploration of the motivations of self-proclaimed Minimalists—consumers interested in living with less, who were actively following Minimalism content online. In line with the voluntary simplicity literature, we explored whether minimalists' motivations were self-enhancing (i.e., egoistic) or self-transcending (i.e., biospheric) (e.g., Shaw & Newholm, 2002). We also explored whether increased environmental concern or reduced materialism were more strongly associated with involvement in a Minimalistic lifestyle. While environmental concern is associated with a self-transcending, biospheric value orientation (de Groot & Steg, 2008), (reduced) materialism is related to the centrality of material possessions in one's own life (Richins & Dawson, 1992) and is thus considered a self-enhancing value (Schwartz, 1992). We expected that, if Minimalism was strongly associated with a biospheric value orientation, participants' Minimalism involvement would be associated with either an ecological worldview, ethical consumer behavior, or both. Conversely, if Minimalism was strongly associated with an egoistic value orientation, participants' Minimalism involvement would be associated with reduced materialism. The survey also probed participants' motivations to follow Minimalism content online, as well as their stated goals and subjective success in adopting Minimalism in order to better describe the non-random sample.

2.1. Method

2.1.1. Participants and recruitment

Self-proclaimed Minimalists, similarly to other special-interest consumer groups, are not publicly identifiable or registered. Thus, the recruitment method targeted consumers who were engaging with public, online Minimalism content. During a set time frame of six weeks, study invitations were posted on several online platforms. Invitations were posted in forum discussions in an online Minimalism community,[3] similarly to the method employed by Huneke (2005). Invitations were also posted on newly published YouTube videos including the keyword "Minimalism" in their title. YouTube, in particular, was used as a recruitment platform due to the high viewer traffic it attracts.[4] The online sampling method used is similar to posting newspaper ads that recruit special interest samples, but it is free, fast, and simple to conduct and was thus preferred. While this recruitment method resulted in a very specific study sample, this approach is common in the research of sustainable consumption movements (e.g., Alexander & Ussher, 2012; Huneke, 2005). Due to the high effort and low reliability of this sampling method, sample size was not pre-determined. Participation was compensated through a lottery prize of $150.

2.1.2. Procedure and measures

After consenting to participate in the study, participants answered a

[3] https://itunes.apple.com/us/app/minimalism-amino/id1170871158?mt=8.

[4] https://www.youtube.com/intl/en-GB/about/press/.

Table 1
Means, Standard Deviations, and Correlations of Preliminary Exploration Study.

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
Dependent variable														
1. Involvement	6.33	0.70												
Values														
2. Materialism	2.38	0.76	-.23** [-.34, −.11]											
3. NEP	4.48	0.65	.05 [-.07, .17]	-.01 [-.13, .11]										
Motivation														
4. Environment	4.54	0.70	.22** [.11, .34]	-.06 [-.18, .06]	.17** [.05, .29]									
5. Savings	4.54	0.74	.25** [.14, .36]	.06 [-.06, .18]	-.08 [-.20, .04]	.27** [.16, .38]								
6. Try out	4.25	0.92	.14* [.02, .25]	.07 [-.05, .19]	-.04 [-.16, .08]	.13* [.01, .25]	.15* [.03, .27]							
7. Stress	4.58	0.77	.31** [.20, .41]	-.04 [-.16, .08]	-.06 [-.18, .06]	.23** [.11, .34]	.28** [.16, .39]	.25** [.13, .36]						
8. Challenge	3.60	1.20	.10 [-.03, .21]	-.00 [-.12, .12]	-.06 [-.18, .06]	.19** [.07, .30]	.28** [.17, .39]	.35** [.24, .45]	.30** [.18, .40]					
9. Trend	3.68	1.21	-.05 [-.17, .07]	.03 [-.09, .15]	-.00 [-.13, .12]	.02 [-.10, .14]	.17** [.05, .28]	.30** [.19, .40]	-.01 [-.13, .11]	.25** [.13, .36]				
Ethical consumption														
10. Organic	3.56	0.96	.17** [.05, .28]	-.13* [-.24, −.01]	.04 [-.08, .16]	-.00 [-.12, .12]	-.09 [-.21, .03]	-.06 [-.18, .06]	.10 [-.02, .22]	-.05 [-.17, .07]	-.08 [-.20, .04]			
11. Fair-Trade	3.38	0.89	.16* [.04, .27]	-.13* [-.25, −.01]	.08 [-.04, .20]	.06 [-.06, .18]	-.04 [-.16, .08]	-.04 [-.16, .08]	.05 [-.07, .17]	.05 [-.07, .17]	.01 [-.11, .13]	.48** [.39, .57]		
12. Local	3.48	0.88	.10 [-.02, .22]	-.10 [-.22, .02]	-.03 [-.15, .09]	.07 [-.05, .19]	-.04 [-.16, .08]	-.06 [-.18, .06]	.01 [-.11, .13]	.08 [-.04, .20]	-.01 [-.13, .11]	.37** [.27, .47]	.42** [.32, .52]	
13. Cruelty-free	3.75	1.08	.18** [.07, .30]	-.11 [-.23, .01]	.18** [.07, .30]	.12* [.00, .24]	-.01 [-.13, .11]	.02 [-.10, .14]	.12* [.00, .24]	.02 [-.10, .14]	-.04 [-.16, .08]	.33** [.21, .43]	.50** [.40, .58]	.22** [.10, .33]

Note: All variables were measured on a scale of 1–5, except for involvement (scaled 1 to 7). Values in square brackets indicate the 95% confidence interval for each correlation.
*$p < .05$; **$p < .01$; ***$p < .001$.

well-established short materialism-value scale that included nine items across three dimensions: acquisition centrality (e.g., “Buying things gives me a lot of pleasure”), possession-defined success (e.g., “The things I own say a lot about how well I'm doing in life”), and acquisition as the pursuit of happiness (e.g., “My life would be better if I owned certain things I don't have”) (total $\alpha = 0.82$; Richins, 2004). They also answered five items from the New Ecological Paradigm (NEP) scale, which captured attitudinal environmental concern ($\alpha = 0.75$; Dunlap, Van Liere, Mertig, & Jones, 2000; “Humans are severely abusing the environment”, “The balance of nature is strong enough to cope with the impacts of modern industrial nations”, “The so-called ‘ecological crisis' facing humankind has been greatly exaggerated”, “The earth is like a spaceship with very limited room and resources”, and “If things continue on their present course we will soon experience a major ecological catastrophe”). Both measurements were answered on a 5-point Likert scale (1 = strongly disagree, to 5 = strongly agree). Ethical consumption was measured as a behavioral outcome of environmental concern—participants reported how often they purchased (a) cruelty-free, (b) organic, (c) local, and (d) fair-trade products (1 = never, to 5 = always).

Then, participants were introduced to a general definition of Minimalism: “Minimalism promotes reduced consumption, reuse of owned items, and a general reduction (decluttering) of one's possessions”. As the main dependent variable in this study, participants reported their involvement with Minimalism. Taken from the consumer behavior literature, the Personal Involvement Inventory (Zaichkowsky, 1994; 10-items $\alpha = 0.89$), measured how personally relevant Minimalism was to participants, based on their inherent needs, values, and interests. Participants rated Minimalism on a 7-point semantic scale (e.g., important-unimportant, appealing-unappealing, interested-uninterested).

Several question items explored participants' motivations and goals in adopting Minimalism, thus aiding the description of the non-random participant sample. When measuring participants’ reported motivation to follow Minimalism, social desirability bias was expected. Namely, participants may have preferred reporting a socially desirable reason for their Minimalism practice (e.g., environmental concern) over a more selfish reason (e.g., stress reduction). Using proxy measurement (Nederhof, 1985), participants indicated why others adopt Minimalism, thus providing a less biased response (i.e., “People who try Minimalism out probably do so because it is …“). Possible answers were; good for the environment, money-saving, stress-reducing, interesting to try out, challenging, a new trend. Participants rated each of these motivations on a 5-point Likert scale of (1 = disagree, to 5 = agree)..

Participants rated their personal Minimalism goal—whether they were interested in adopting Minimalism, and to what extent (1 = not at all, to 5 = in every aspect of my life). They additionally reported their subjective success in adopting Minimalism from 1 (very poor) to 5 (very good) with 0 indicating they had not tried to adopt Minimalism. Participants also reported their reasons for consuming Minimalism

Table 2
Multiple Regression Predicting Minimalism Involvement.

	Minimalism Involvement	
	(1)	(2)
Constant	6.60*** [5.97, 7.23] p < 0.001	6.05*** [5.26, 6.84] p < 0.001
Materialism	-.21*** [-.32, −.10] p < 0.001	-.21*** [-.32, −.11] p < 0.001
NEP	.05 [-.08, .18] p = .43	.05 [-.08, .18] p = .44
Gender		.75** [.28, 1.22] p = .01
Age		0.00 [-.01, .01] p = .80
Education		-.14 [-.32, .04] p = .14
Employment		.15 [-.04, .34] p = .13
Location		-.12 [-.29, .05] p = .18
Observations	265	264
R^2	.06	.12
Adjusted R^2	.05	.09
Residual Std. Error	.68 (df = 262)	.67 (df = 256)
F Statistic	7.69*** (df = 2; 262)	4.80*** (df = 7; 256)

Note: [a] female; [b] college education; [c] full-time employment; [d] Western; [e] One participant did not indicate their employment status and was excluded from this analysis. Values in square brackets indicate the 95% confidence intervals.*p < .05; **p < .01; ***p < .001.

content on YouTube by selecting any of five proposed reasons: interest, motivation, inspiration, boredom, entertainment, other. Multiple choice was allowed, and an option indicating the participant did not watch Minimalism videos was presented. Finally, demographic information was collected about participants' age, gender, education, employment status, and country of residence.

2.2. Results

2.2.1. Sample descriptives

A non-random sample of 326 Minimalism followers was recruited, of which 265 completed the study; partial responses were excluded (M_{age} = 28.23, SD_{age} = 9.31; 97% female). The majority of the sample was higher educated; 37 percent held a graduate degree and 34 percent held an Undergraduate degree. Most of the participants were either employed full-time (27%) or students (32%). The sample was largely from either Europe (48%) or North America (40%). They reported to watch YouTube Minimalism videos for inspiration (94%), interest (91%), motivation (84%), and entertainment (62%); only a minority did so to relieve boredom (20%) or for other reasons (10%). Most of the sample reported wanting to adopt Minimalism in either every aspect of their lives (51%) or in a few aspects of their lives (48%) and assessed their success in doing so as good (53%) or very good (16%).

2.2.2. Motivations and consumption behaviors

Table 1presents descriptive statistics and correlations of the variables analyzed in this study.

When asked why other people adopt Minimalism, participants rated the top motivations to be stress reduction (M = 4.58, SD = 0.77), financial savings (M = 4.54, SD = 0.74), and ecological concern (M = 4.58, SD = 0.70). Participants reported purchasing cruelty-free, organic, local, and fair-trade products sometimes, but not often. These ethical consumption practices were weakly correlated with Minimalism involvement; all r < 0.19.

2.2.3. Minimalism involvement

An OLS linear regression tested which voluntary simplicity tenants best predicted participants' involvement in Minimalism—reduced materialism or increased environmental concern (Model 1, Table 2). Materialism was negatively associated with Minimalism involvement (β = −0.21 p < .001). Environmental concern, on the other hand, was not associated with Minimalism involvement (β = 0.05 p = .43). These results did not change when controlling for demographics (Model 2, Table 2).

Due to the high mean score on the NEP scale (M = 4.48, SD = 0.65), a ceiling effect was suspected, and visual exploration was conducted. Fig. 1 illustrates the bivariate correlations for Minimalism involvement with materialism and with NEP.

2.3. Discussion

This preliminary study explored the attitudes, concerns, and motivations of self-described minimalists—consumers who aspire to live with less, and who follow Minimalism content online. The non-random sample was similar to previous voluntary simplicity samples in that it presented higher proportions of females and highly educated individuals (Boujbel & D'Astous, 2012; Craig-Lees & Hill, 2002; Elgin & Mitchell, 1977; Huneke, 2005; Zavestoski, 2002), though the discrepancy between females and males was particularly high in our sample.

Similarly to voluntary simplifiers (Alexander & Ussher, 2012;

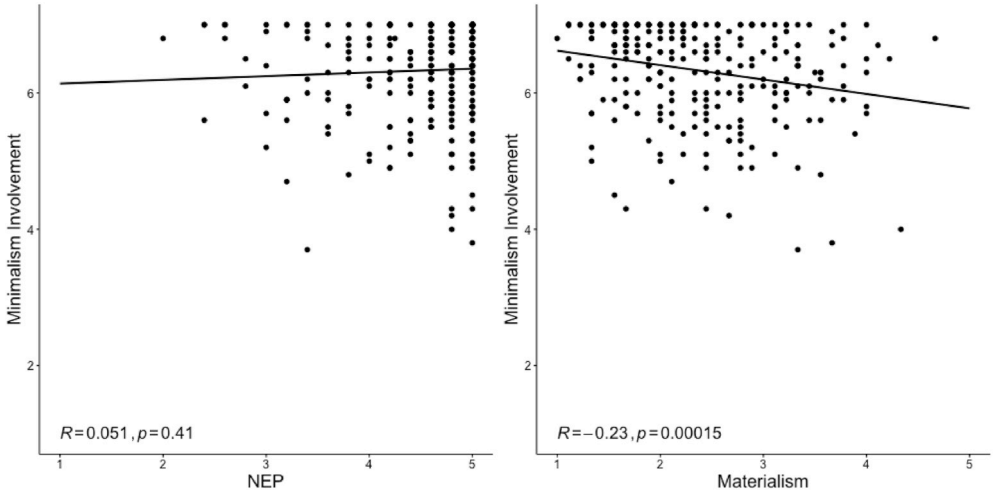

Fig. 1. Minimalism Involvement's Associations with Materialism and NEP.

Huneke, 2005), minimalists reported environmental concern, stress reduction, and financial concern as motivating a minimalistic lifestyle. While they strongly endorsed the new ecological paradigm, ecological concern did not predict Minimalism involvement. However, since most of the minimalists recruited for this study scored highly on the NEP measure, a ceiling effect likely hindered our ability to identify an association between ecological concern and Minimalism involvement. Finally, participants reported purchasing ethically produced products occasionally, and ethical consumption was weakly associated with Minimalism involvement. These findings suggest that living with less can be associated with a wide variety of concerns, both ecological and not.

The recruitment method used in this study prompts important limitations: our non-random participant sample may not adequately represent all Minimalists. Minimalists who do not follow Minimalism content online, like our sample from YouTube and online forums did, might have different demographic characteristics (e.g., older) and may even practice Minimalism differently than those who follow online Minimalism content. For example, “offline” Minimalists may choose to live a more simplistic lifestyle in general, and thus may practice Minimalism more similarly to voluntary simplifiers (e.g., stronger ethical consumption tendencies). Additionally, while participants reported the likely motivations of others in adopting Minimalism, we did not ask them to report the likely motivations of *in-group* others (i.e., self-identified Minimalists) in adopting Minimalism. Therefore, caution should be taken when interpreting participants’ responses on Minimalism motivations. Finally, due to their correlational nature, we cannot make causal inferences about the preliminary exploratory findings.

3. Study 1

In Study 1 we recruited participants from a student sample and used an experimental design to empirically compare the influence of biospheric and egoistic appeals on consumption curtailment. Since participants were not expected to be familiar with Minimalism, we examined how these appeals would impact not only participants’ Minimalism involvement, but also their motivation and intent to curtail their consumption.

Study 1 also examined potential mechanisms for (de)motivation effects. First, we tested for a congruency effect of appeal and value orientation—whether participants' individual differences in value orientation (egoistic and biospheric) moderated the effectiveness of the appeals. Second, since the biospheric behavior of others can induce denigration (Zane et al., 2016), we measured whether participants across conditions similarly related to the appeal presenter. We expected denigration, or the negative evaluation of the appeal presenter, to outcome in lowered messenger relatability, which could, in turn, demotivate consumers from the consumption curtailment appeal. Third, since a biospheric message can be perceived as patronizing and paternalistic (Meyer, 2015), we assessed participants' affective response to the appeals. We expected that messages perceived as patronizing or paternalistic would outcome in increased negative affect. Finally, we assessed participants’ perceived self-efficacy and control in curtailing their consumption. Since the motivation to pursue a goal is impacted by the expectancy that the goal is within reach (Touré-Tillery & Fishbach, 2017) we expected that a subjectively unattainable goal-directed appeal would be associated with lower levels of perceived self-efficacy and control.

3.1. Method

3.1.1. Participants and recruitment

Two-hundred and ninety-six undergraduate students at a public American university (M_{age} = 19.83, SD_{age} = 1.69; 69.87% female) were recruited to an online study about consumption curtailment. Participants were awarded course credit for their participation. The aspired sample size was based on a power analysis for a medium effect size, using G*Power software (F-test, ANOVA: Fixed-effects, omnibus, one-way; 1- β = 0.95, α = 0.05, Cohen's f = 0.25; 3 groups), which revealed an ideal sample size of 252 participants (Faul, Erdfelder, Lang, & Buchner, 2007). We oversampled to mitigate drop-out risk. A total of 45 participants did not complete the full study (15.2%). Drop-out did not significantly differ between the treatment conditions; $\chi^2(1) = 0.34$, $p = .56$.

3.1.2. Procedure

Participants were randomly allocated to either a control condition ($n_{control}$ = 91) or one of two treatment conditions: biospheric or egoistic appeals (n_{bio} = 78, n_{ego} = 82). Participants in each of the two treatment conditions viewed a series of two videos promoting consumption curtailment. Between the two treatment conditions, the videos differed in whether appeals were focused on biospheric concerns (e.g., reduce carbon emissions) or egoistic concerns (e.g., reduce stress). Participants in all conditions then filled out questionnaires about their involvement, motivation, and intent to adopt Minimalism, as well as their perceived self-efficacy and control in curtailing their consumption, their affect and the presenter relatability, their values, and demographics.

3.1.3. Video stimuli

In each treatment condition, a six-video series was created to mimic Minimalism content commonly found on social media (i.e., YouTube)—a young, female presenter described to viewers what Minimalism was, as well as why and how she adopted Minimalism (see Herziger et al. (2017) for video development protocol). Each video lasted between three to 5 min and discussed topics such as consumerism turning-points and buying less (see video scripts in Appendix A). The video series was identical between treatment conditions, excluding condition-specific goal manipulations integrated into the series. Namely, in each video, the opening and closing statements focused on either biospheric or egoistic goals. In the egoism condition, the opening statement in each video was:

> “Remember why we are here—we want to make our lives better. By being less stressed, more in control, and spending wisely, we can make a positive impact on our own lives”.

Conversely, in the biospherism condition, the opening statement in each video was:

> “Remember why we are here—we want to save our ecological environment. By being environmentally friendly, ethical, and conscientious, we can make a positive impact on the world”.

Similarly, the closing statements in each video focused on either egoistic or biospheric goals. Additionally, in the egoism condition, footage of the presenter laughing with friends and enjoying a cup of coffee was used to prime a hedonic and egoistic value orientation. In the biospherism condition, footage of gardens, plants, and wildlife was used to prime a biospheric value orientation (see Appendix B; see also De Dominicis et al., 2017 Study 3 for a similar example). Out of the full six-video series, two 3-min videos were chosen as stimuli for Study 1 due to their introductory content (i.e., introducing Minimalism, and turning points; see Appendix A for scripts). To increase engagement likelihood with the video content, participants could not advance the page until the video had finished.

3.1.4. Measures

Immediately after watching the treatment videos, participants answered a short-version Positive and Negative Affect Schedule (PANAS, Thompson, 2007; e.g., upset, inspired; 10-item α ranged 0.77 to 0.89, 1 = very slightly or not at all, 5 = extremely). Participants in the control condition did not watch any videos and began the study by answering this affect questionnaire. All participants were asked

Table 3
Means, Standard Deviations, and Correlations of Study 1 Variables.

Variable	M	SD	1	2	3	4	5	6	7	8	9
Dependent variable											
1. Minimalism Engagement	0.00	0.86									
Independent variables											
2. Presenter Relatability	3.68	1.62	.42** [.28, .54]								
3. Self-Efficacy	4.44	1.08	.52** [.42, .60]	.22** [.06, .36]							
4. Perceived Control	3.87	0.89	.19** [.06, .30]	.07 [-.08, .22]	.10 [-.03, .22]						
Affect											
5. PANAS: Positive	2.56	0.86	.16* [.03, .27]	.54** [.42, .64]	.04 [-.09, .16]	-.03 [-.16, .09]					
6. PANAS: Negative	1.51	0.68	-.10 [-.22, .03]	.04 [-.11, .20]	-.19** [-.31, −.07]	-.07 [-.19, .06]	.36** [.25, .46]				
Values											
7. Materialism	2.91	0.32	-.11 [-.23, .01]	.14 [-.02, .28]	-.15* [-.27, −.03]	-.06 [-.18, .07]	.11 [-.02, .23]	.24** [.12, .35]			
8. Biospherism	5.12	1.54	.41** [.31, .51]	.08 [-.07, .23]	.42** [.32, .52]	.10 [-.02, .22]	-.01 [-.13, .12]	-.08 [-.20, .05]	-.11 [-.23, .01]		
9. Altruism	5.11	1.46	.34** [.23, .45]	.07 [-.09, .22]	.35** [.24, .45]	.00 [-.12, .13]	.01 [-.11, .14]	-.09 [-.21, .03]	-.12 [-.24, .00]	.61** [.52, .68]	
10. Egoism	3.56	1.28	-.15* [-.27, −.02]	.06 [-.09, .21]	-.08 [-.20, .05]	-.08 [-.20, .05]	.24** [.12, .35]	.13* [.01, .25]	.25** [.13, .36]	.03 [-.10, .15]	.07 [-.05, .19]

Note: Scale 1 was a mean of standardized scores, each ranging from −1 to 1. Scales 2 through 4 were measured on a scale from 1 to 7. Scales 5 through 7 were measured on a scale of 1–5 and scales 8 through 10 were measured on a scale of 0–7. Values in square brackets indicate the 95% confidence interval for each correlation.
*$p < .05$; **$p < .01$; ***$p < .001$.

whether they would like to see (another) video about Minimalism (1 = yes; 0 = no).

3.1.4.1. Dependent variables. Similarly to the preliminary exploratory study, participants were told that "Minimalism promotes reduced consumption, reuse of owned items, and a general reduction (decluttering) of one's possessions" and were asked to rate Minimalism on the Personal Involvement Inventory (Zaichkowsky, 1994; α = 0.73). Since participants in Study 1 were not expected to have previous experience with Minimalism, additional items further assessed participants' interest and motivation to adopt Minimalism. Participants indicated if they would like to adopt Minimalism (1 = not at all, to 5 = in every aspect of my life). As a motivation assessment, participants were asked how important it was for them to curtail their consumption (1 = not at all important, to 5 = extremely important). Consumption-curtailment involvement, adoption intent, and motivation were strongly correlated ($r = 0.57$ to $r = 0.66$, all $p < .001$), loaded on one factor, and showed high inter-scale reliability (α = 0.82). These items were thus standardized to Z-scores and then aggregated to a measure of Minimalism engagement, the study's dependent variable.

3.1.4.2. Independent variables. Perceived self-efficacy was measured with a 4-item scale adapted from Heath & Gifford, 2006 (e.g. "There are simple things I can do that will have a meaningful effect on the negative impacts of overconsumption"; α = 0.82). Perceived control was measured with a 5-item scale adapted from Hassan, Shiu, & Shaw, 2014 (e.g., "If you wanted to you could easily reduce your material consumption"; α = 0.64). Both measures used 7-point Likert scales (1 = strongly disagree, to 7 = strongly agree).

In order to control for pre-existing biospheric and egoistic concerns, participants reported their value orientations. The Value Instrument (de Groot & Steg, 2008) measured participants' egoistic (e.g., social power; 5-item α = 0.61), altruistic (e.g., equality; 4-item α = 0.81) and biospheric value orientations (e.g., preventing pollution; 4-item α = 0.91) on a scale of −1 = opposed to my values, through 0 = not important, to 7 = of supreme importance. Additionally, materialism was measured with a full-form 18-item scale, similarly to the short version used in the preliminary study (Richins & Dawson, 1992; α = 0.87; 1 = strongly disagree, to 5 = strongly agree). Participants in the treatment conditions further indicated the relatability of the video presenter from 1 = not at all relatable, to 7 = very relatable. Finally, all participants responded to demographic questions.

3.2. Results

Table 3 reports the means, standard deviations, and correlations of the dependent and independent variables in Study 1. Results show that Minimalism engagement was positively associated with participants' biospheric value orientation, but negatively associated with their egoistic value orientation.

We planned to use participants' values as individual-level variance controls. To increase the reliability of this measure, we first ensured that exposure to the appeal did not systematically shift participants' values. Since participants were randomly allocated to conditions, we expected their values to remain largely similar across conditions. As expected, participant's egoistic ($F(2,250) = 0.52$, $p = .59$, $\eta^2 = 0.004$) and biospheric ($F(2,250) = 0.74$, $p = .48$, $\eta^2 = 0.006$) value orientations did not change by experimental condition.

3.2.1. Minimalism engagement

We conducted a series of OLS regressions to test whether exposure

to either of the consumption-curtailment appeals affected participants' Minimalism engagement—their motivation, adoption intent, and involvement in Minimalism (see Table 4). In Model 1, the main effects of both appeals were compared with that of the control condition. Neither appeal significantly altered participants' Minimalism engagement. Next, we tested whether either appeal would influence Minimalism engagement when controlling for participants' pre-existing values as individual-level variance controls (biospherism and egoism). The results of Model 2 indicate that again, neither appeal met the statistical threshold of significance in their influence on engagement (i.e., $p < .05$). In Model 3 we tested for a value-congruency effect by including the interaction terms between each of the appeals and participants' biospheric and egoistic value orientations. Namely, we were interested in testing whether participants with stronger biospheric value orientation would react more positively to biospheric appeals and vice versa. We found no such interaction effects. When accounting for the null message-congruency effect, the biospheric condition did significantly decrease Minimalism engagement ($B = -0.24$, $p = .045$). Although the biospheric appeal descriptively trended towards a negative impact on Minimalism engagement across all three models, this effect was not significant in any of the simpler models reported in Table 4, suggesting the effect was either too weak or the study was underpowered to detect it.

Fig. 2 illustrates Minimalism engagement scores across conditions when controlling for participants' pre-existing values (results of Model 2).

3.2.2. De-motivation mechanism testing

Several tests were conducted in addition to value-incongruence (tested in section 3.2.1) to assess whether the biospheric appeal was simply ineffective, or potentially de-motivating. First, it is possible that the biospheric appeals triggered denigration of the appeal presenter, and thus reduced the presenter's relatability. Participants in the two treatment conditions reported the presenter to be similarly relatable, $F(1,159) = 0.10$, $p = .75$, $\eta^2 = 0.001$. Moreover, the appeals' influence on Minimalism engagement was not mediated by presenter relatability (simple mediation estimate = 0.02, 95% CI[-0.10, 0.13]). Another mechanism explored was affect—the biospheric appeals could have been perceived as patronizing or paternalistic, triggering a negative affective response. Immediately after watching the video appeals, there were no differences between the three experimental conditions in participants' positive or negative affect; $F(2, 254) = 0.22$, $p = .80$, $\eta^2 = 0.002$ and $F(2, 245) = 0.29$, $p = .75$, $\eta^2 = 0.002$, respectively. Alternatively, the biospheric appeals may have reduced participants' expectancy that the Minimalism goal is within reach, thus de-motivating them. We tested whether the biospheric appeal influenced participants' perceived self-efficacy and control in consuming less. There was no difference between experimental conditions in participants' perceived control $F(2, 251) = 2.06$, $p = .13$, $\eta^2 = 0.016$ nor perceived self-efficacy in consuming less $F(2, 251) = 1.61$, $p = .20$, $\eta^2 = 0.013$. Finally, a de-motivating effect of the appeals could have been associated with watching Minimalism videos rather than engaging in Minimalism. However, there was no difference between experimental conditions in participants' opting-in to watch additional videos about Minimalism, $\chi^2(2) = 1.41$, $p = .49$.

Table 4
Impact of condition on minimalism engagement in study 1.

	Minimalism Engagement		
	(1)	(2)	(3)
Constant	.06 [-.12, .23] p = .53	.07 [-.09, .23] p = .39	.07 (−.09, .23] p = .39
Condition: Ego	-.002 [-.26, .25] p = .99	-.001 [-.23, .23] p = .99	.001 [-.23, .23] p = .99
Condition: Bio	-.18 [-.44, .08] p = .17	-.23 [-.46, .001] p = .053	-.24* [-.47, −.01] p = .045
Biospherism		.24*** [.18, .30] p < 0.001	.19*** [.09, .30] p < .001
Egoism		-.11** [-.18, −.03] p = .006	-.04 [-.16, .08] p = .52
Cond: Ego X Biospherism			.06 [-.08, .21] p = .38
Cond: Ego X Egoism			-.09 [-.26, .09] p = .34
Cond: Bio X Biospherism			.09 [-.07, .25] p = .27
Cond: Bio X Egoism			-.15 [-.33, .03] p = .11
Observations	254	253	253
R^2	.01	.21	.23
Adjusted R^2	.001	.20	.20
Residual Std. Error	.85 (df = 251)	.77 (df = 248)	.77 (df = 244)
F Statistic	1.19 (df = 2; 251)	16.75*** (df = 4; 248)	8.87*** (df = 8; 244)

Note: Predictors were centered; Values in square brackets indicate the 95% confidence intervals.
*p < 0.05; **p < 0.01; ***p < 0.001.

3.3. Discussion

In Study 1 we experimentally tested the influence of biospheric and egoistic consumption-curtailment appeals in a controlled setting. Although participants' biospheric values were positively associated with Minimalism engagement, biospheric appeals were ineffective in promoting Minimalism engagement. The ineffectiveness of these appeals did not hinge on participants' pre-existing values (i.e., value congruency), suggesting that the biospheric appeal was ineffective not only for non-biospheric participants (De Dominicis et al., 2017) but for all participants. Potential mechanisms for the ineffectiveness of the appeals, and possible de-motivation, were explored. We found no evidence that either appeal's ineffectiveness was due to value incongruence, presenter relatability, affective response, perceived control, or self-efficacy. The results of Study 1 suggest that while interest in Minimalism may be associated with a strong biospheric value orientation, biospheric appeals may not be effective in persuading consumers to adopt such a lifestyle. We also found no evidence that highly biospheric consumers would find these appeals more effective than others. Notably, while egoistic value orientation was negatively associated with Minimalism engagement, egoistic appeals did not negatively influence engagement in Minimalism.

Since neither appeal resulted in a robust influence on Minimalism engagement, it is possible that the study was underpowered, or the stimuli used were too weak to produce substantial effects. Still, the stimuli used in Study 1 closely mimic those used on social media platforms such as YouTube and therefore constitute an ecologically valid assessment tool for those Minimalism appeals. Importantly, Study 1 only tested the impacts of biospheric and egoistic appeals on momentary assessments of motivation and intent, and not prolonged, real behavior. Moreover, the study sample may have been generally uninterested in changing their lifestyles and thus would lack a fundamental motivation to engage in Minimalism. Thus, in Study 2 we tested an extended set of biospheric and egoistic appeals on consumers interested in curtailing their consumption, implementing our appeals in a field intervention and measuring participants' self-reported curtailment behavior.

4. Study 2

In Study 2 we tested whether biospheric and egoistic appeals for consumption curtailment would have-real world impacts, which would have been difficult to measure in a non-experimental setting or a lab

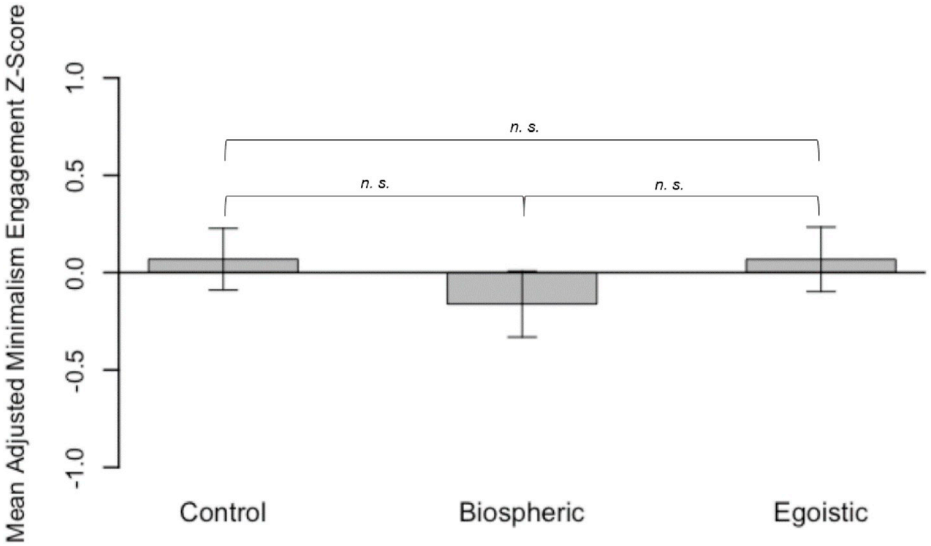

Fig. 2. Minimalism Engagement by Condition in Study 1. Error bars depict 95% CI intervals.

study. Thus, Study 2 measured whether either of the two appeals could change real behavior—spending on non-essential items. We expected that motivating appeals would promote real behavior change, while demotiving appeals would not.

In order to test the appeals in an ecologically valid setting, we invited consumers to take part in an experimental intervention to help them curtail their consumption. The week-long intervention utilized a mobile application and video stimuli that mimicked genuine Minimalism content on social media. Thus, the intervention method created a naturalistic context, similar to that in the preliminary study, which allowed the examination of biospheric and egoistic appeals' influence in the field.

Study 2 also explored whether malleable goals (Kruglanski et al., 2002), rather than stable values (Schwartz, 1992), would predict participants' initial motivation to curtail their consumption, and whether egoistic or biospheric goals better predicted this motivation, regardless of the intervention presented.

4.1. Methods

4.1.1. Participants and recruitment

Four-hundred and sixty-nine participants were recruited through convenience sampling for a week-long intervention study on consumption curtailment; a mixture of both online and offline recruitment strategies was used, utilizing Facebook, Reddit, YouTube, and online forum communities alongside the use of physical flyers, university emailing lists, and personal contacts (see Appendix C for details). Participants were mainly white (83.6%), college-educated (56.6%), European (81.9%) females (84.2%), with a mean age (*SD*) of 25.93 (7.54). A 100-Euro prize was raffled between participants for compensation, and personalized progress reports were provided upon intervention completion. Two-hundred and twenty-nine participants consented and were eligible to participate in the study, thus beginning the intervention. Of these participants, 102 completed the intervention ($n_{control}$ = 48, n_{bio} = 23, n_{ego} = 31; 55% intervention dropout). The aspired sample size was based on an a priori power analysis using G*Power software (F-test, ANOVA: Repeated measures, within-between-interaction; 1- β = 0.80, α = 0.05, Cohen's f = 0.10), which revealed an ideal sample size of 198 completed interventions (Faul et al., 2007). Due to the effortful recruitment process and external time constraints, recruitment efforts were concluded after 6 months (June through November 2017), leaving the sample size at 102 completed interventions.

4.1.2. Intervention procedure

Upon recruitment, participants were asked to download a free mobile application, which served as the study platform. Participants were randomly allocated to either the biospherism, egoism, or control conditions and filled out a baseline survey. On each intervention day, the mobile application "pushed" a notification requesting participants to access their daily survey. For the two treatment conditions—egoism and biospherism—this involved watching one video and completing an affect measurement. In the control condition, participants were only asked to answer the affect measurement. Thus, control condition participants were reminded of their participation in the study—and hence their objective to curtail their consumption. On the last intervention day, all participants took part in a post-intervention survey. One month later, participants were invited via email to take part in a follow-up survey; low response rates excluded the possibility of meaningful follow-up analysis. Fig. 3 outlines the study procedure. An early version of this intervention protocol has been peer-reviewed and published by the authors (Herziger et al., 2017).

4.1.3. Video stimuli

The full six-video series described in Study 1 was used in Study 2 as the intervention stimuli (see Herziger et al. (2017) for video development protocol). The video series showed a young female describing Minimalism, as well as why and how she adopted a lifestyle of living with less. Between conditions, the videos were nearly identical. Each video series only differed in its appeal—either a biospheric or egoistic concern was used to promote consumption curtailment.

4.1.4. Measures

Variables were measured at the baseline, post-intervention, and one-month follow-up stages of the study to account for intervention-related change.

Participants were told that "non-essential items and services can be defined as things irrelevant to the chief purpose of your life" and were asked to identify a non-essential item or service on which they overspend (e.g., clothing, electronics)—their "problem" category. To measure motivation, participants were asked how important it was for them to reduce their material consumption (1 = not at all, 7 = extremely).

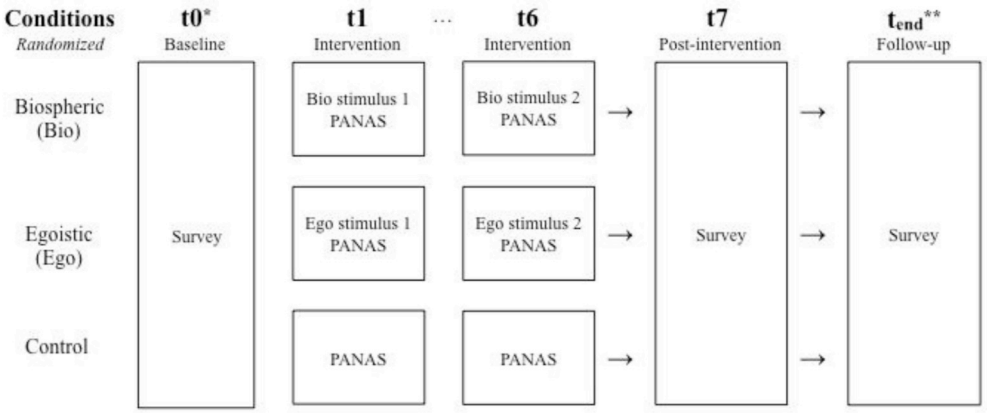

Fig. 3. Study 2 outline.
*t + 1 equals one day; t0-t7 were completed within one week.
** t_{end} took place one month after intervention completion and post-intervention measurement.

Participants were then asked what their monthly income was, and how much money they spent a week on items that were non-essential [5]. These items were computed into the proportion of monthly income spent on non-essential items—i.e., non-essential spending.

$$Proportion\ of\ non-essential\ spending = \frac{Weekly\ non-essential\ spending}{Monthly\ income} \times 4.5 \quad (1)$$

To measure subjective overconsumption, several items were employed. Participants were asked to assess their overconsumption on both non-essential items in general and their previously identified problem category (1 = nothing, to 7 = too much). They were asked how tempted and how likely they would be in the coming week to buy something that was a good deal but that they did not need (1 = not tempted or not likely, to 7 = very tempted or very likely). The same questions were asked when referring particularly to the participant's problem category. Participants were then asked how likely they would be to buy something they did not need in the coming week (1 = not likely, to 7 = very likely). A factor analysis showed that these items loaded on one factor, and a reliability analysis on the items revealed a high reliability score (7-items; α = 0.86). Thus, these items were combined into one measure of reported overconsumption.

As in Study 1, the Value Instrument (de Groot & Steg, 2008) measured participants' egoistic, altruistic, and biospheric value orientations (α = 0.66, α = 0.63, and α = 0.61, respectively). Additionally, consumption-curtailment goals were rated in the following categories: egoistic (improve my wellbeing, save money, reduce stress; α = 0.54) and biospheric (improve the future of the environment, reduce my carbon footprint, leave the earth sustainable; α = 0.87). Similarly to the Value Instrument, goals were rated on a scale of −1 = opposed, through 0 = not important, to 7 = extremely important. Comparably low Cronbach alpha coefficients—apparent in both the validated values scale as well as the author-generated egoistic goals scale—may have been associated with the field-experiment rather than the statistical properties of the scales (de Groot & Steg, 2007). Namely, lowered attention or the mobile-context in which surveys were answered may have impacted the reliability of the scales utilized in the field study. Since we did not have a priori concern for these issues, we do not have access to survey items that would assess which, if any, of them occurred.

An inclusive measurement of consumer lifestyles and values was assessed by measuring participants' orientation toward voluntary simplicity (Nepomuceno & Laroche, 2015; e.g., " I fully adhere to a simple lifestyle and only buy necessities"; 9-item α = 0.70, 1 = definitely disagree, to 5 = definitely agree) and materialism (Richins & Dawson, 1992, p. 18-item α = 0.86, 1 = strongly disagree, to 5 = strongly agree).

In order to provide the control-condition participants with a control activity during the seven-day intervention, all participants answered a daily affect scale throughout the intervention week (PANAS, Thompson, 2007; 1 = very slightly or not at all, to 5 = extremely, α ranged from 0.48 to 0.91). Participants also answered demographic questions.

4.2. Results

4.2.1. Intake results

Table 5 presents the means, standard deviations, and inter-correlations of the main variables at intake.

First, we tested whether participants' initial consumption-curtailment motivation was associated with their egoistic and biospheric concerns. A multiple regression model tested whether consumption-curtailment motivation at intake could be predicted by biospheric and egoistic values and goals (Model 1; Table 6). Results showed that biospheric value orientation was positively associated with consumption-curtailment motivation (β = 0.28, p = .001). Importantly, egoistic goals were also positively associated with consumption-curtailment motivation, though this association was weaker (β = 0.14, p = .021). Biospheric goals, conversely, were not association with consumption-curtailment motivation (β = 0.07, p = .18). The variance inflation factors (VIF) in the model were small, suggesting no multicollinearity; max VIF = 1.86. Thus, while biospheric values were associated with consumption curtailment motivation, egoistic goals were also relevant for this motivation—even more so than biospheric goals. Demographic variables did not improve the models' predictive power, nor did they change the result patterns reported.

4.2.2. Intervention analysis approach

For each dependent variable, a univariate analysis of covariance (ANCOVA) was used to examine post-intervention changes on the subsample of participants who completed the full intervention (Rausch, Maxwell, & Kelley, 2003; N = 102). We chose ANCOVAs as they are most suitable for our research question and minimize loss of power (see Ruasch, Maxwell, & Kelley, 2003). The dependent variables were the measure of difference between post-intervention and intake levels (i.e., intervention-related change), the covariate was the intake variable, and the factor was the intervention condition. ANCOVAs with pre-measures as a covariate are more suitable to answer this specific research question (i.e., differences in outcome scores, accounting for intake variance) than repeated measures ANCOVAs, and using the difference score as an

[5] At the post-intervention time period, this item was phrased in the past tense and probed participants on their weekly spending in the past week.

Table 5
Means, Standard Deviations, and correlations with confidence intervals at Study 2 Intake.

Variable	*M*	*SD*	α	1	2	3	4	5	6	7	8
1. Materialism	2.74	0.57	.84								
2. Voluntary Simplicity	2.95	0.63	.72	-.45*** [-.55, −.34]							
3. Egoistic Value Orientation	3.92	1.13	.65	.19** [.06, .31]	-.02 [-.15, .11]						
4. Biospheric Value Orientation	4.99	1.15	.69	-.28*** [-.40, −.16]	.33*** [.21, .44]	.35*** [.23, .46]					
5. Egoistic goals	4.96	1.29	.51	.14* [.02, .27]	.05 [-.08, .18]	.22** [.09, .34]	.15* [.02, .27]				
6. Biospheric goals	4.82	1.77	.87	-.30*** [-.41, −.18]	.33*** [.21, .44]	.12 [-.01, .25]	.62*** [.53, .69]	.24*** [.12, .36]			
7. Non-essential spending [a]	0.75	3.59		.01 [-.13, .14]	-.02 [-.15, .12]	.03 [-.11, .16]	.00 [-.13, .14]	.10 [-.04, .23]	.02 [-.12, .15]		
8. Overconsumption	4.46	1.12	.76	.32*** [.20, .43]	-.29*** [-.40, −.16]	.08 [-.05, .21]	-.11 [-.24, .02]	.21** [.09, .33]	-.06 [-.19, .07]	.09 [-.04, .22]	
9. Motivation	5.09	1.19		-.33*** [-.44, −.21]	.40*** [.28, .50]	.00 [-.13, .13]	.31*** [.19, .43]	.19** [.06, .31]	.30*** [.17, .41]	.03 [-.10, .17]	-.03 [-.15, .10]

Note: All variables reported were measured at intake (N = 229); Scales 1 and 2 were scaled from 1 to 5. Scales 3, 4, 5, and 6 were scaled from −1 to 7. Scales 8 and 9 were scaled from 1 to 7; Values in square brackets indicate the 95% confidence interval for each correlation. *p < .05; **p < .01; ***p < .001.

[a] Non-essential spending question items were open-ended, thus producing substantial variance in response. Outliers were identified using SPSS categorization of extreme outliers (n = 10). Correlation results do not substantially differ when excluding these outliers.

Table 6
Multiple Regression Model Predicting Consumption-Curtailment Motivation at Intake.

	Consumption-Curtailment Motivation
	(1)
Constant	5.09*** [4.94, 5.23] p < .001
Biospheric value orientation	.28*** [.11, .45] p = .001
Egoistic value orientation	-.15* [-.29, −.01] p = .04
Biospheric goals	.07 [-.04, .18] p = .18
Egoistic goals	.14* [.02, .26] p = .02
Voluntary Simplicity	
Observations	229
R^2	.15
Adjusted R^2	.13
Residual Std. Error	1.10 (df = 224)
F Statistic	9.59*** (df = 4; 224)

Note: All variables reported were measured at intake (N = 229); Values in square brackets indicate the 95% confidence intervals. *p < .05; **p < .01; ***p < .001; Predictors were centered.

outcome increases interpretability substantially (see Rausch et al., 2003). Unequal dropout rates and heterogeneity of variance required the use of bootstrapping. As suggested by Krishnamoorthy, Lu, and Mathew (2007), we used 95% confidence intervals based on 10,000 bootstrapped resamples. Lastly, condition main effects were compared and bias-adjusted with the Bonferroni correction method (Wilcox, 1987).

4.2.3. Non-essential spending

Non-essential spending varied substantially, and outliers were identified using SPSS categorization of extreme outliers (n = 10). The reported analysis includes these outliers; result patterns do not change when excluding them. At intake, participants in the three condition groups did not differ in their non-essential spending, $F(2,210) = 0.73$, p = .48. Bootstrapped estimates of the ANCOVA condition effects showed that non-essential spending decreased in both the control, $M = -0.26$, 95% CI [-0.43, −0.10], and egoism conditions, $M = -0.34$, 95% CI [-0.48, −0.20], but not in the biospherism condition, $M = -0.16$, 95% CI [-0.34, 0.04]. Bootstrapped pair-wise comparisons revealed that the difference between the egoism and biospherism conditions was significant, $M_{diff} = 0.18$, 95% CI [0.21, 0.36], p = .049; with an ANCOVA condition effect size of Partial $\eta^2 = 0.041$. No other significant differences were found between conditions (bootstrapped pairwise comparisons ps > .20). Excluding outliers, the mean income proportion of non-essential spending across groups was M = 0.31, 95% CI [0.24, 0.37]. Spending reduction averaged $M = -0.12$, 95% CI [-0.19, −0.06] in the control group, $M = -0.13$, 95% CI [-0.19, −0.07] in the egoism group, and $M = -0.02$, 95% CI [-0.16, 0.15] in the biospherism group. Fig. 4 presents the intervention effect on non-essential spending in the bootstrapped sample.

4.2.4. Subjective overconsumption

At intake, participants in the three condition groups did not differ in their reported overconsumption, $F(2,226) = 0.15$, p = .86. Overconsumption decreased in all three conditions post-intervention: control, $M = -0.66$, 95% CI [-0.94, −0.40], biospherism, $M = -0.95$, 95% CI [-1.39, −0.47], and egoism, $M = -0.97$, 95% CI [-1.34, −0.62]. No significant differences were found between conditions (all bootstrapped pairwise comparisons ps > .20). Fig. 5 presents the intervention effect on reported overconsumption in the bootstrapped sample.

4.2.5. Motivation

At intake, participants in the three condition groups did not differ in

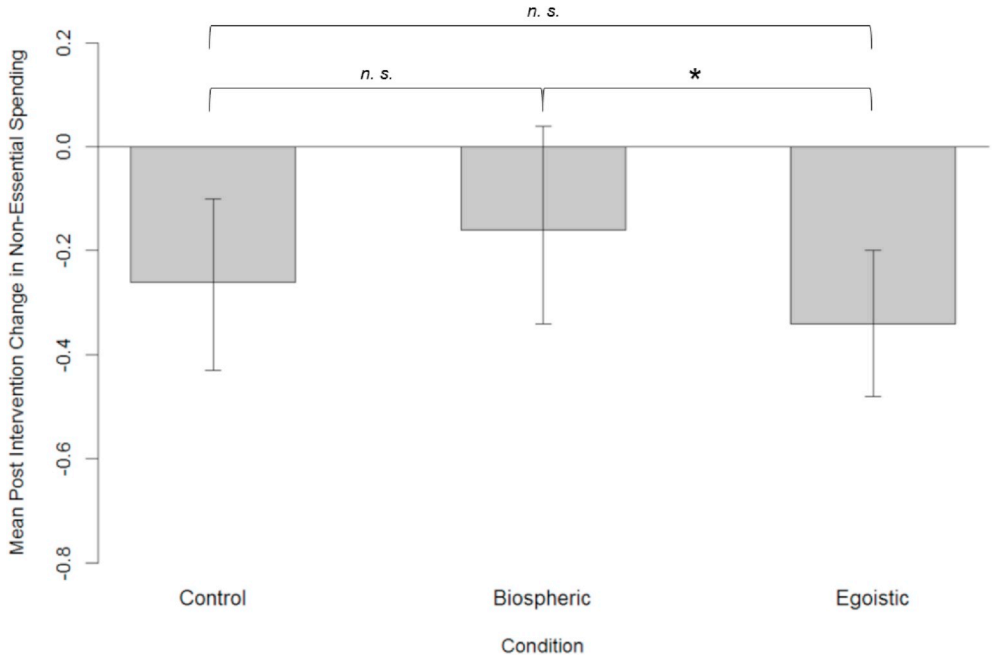

Fig. 4. Post-intervention Change in Non-Essential Spending. Error bars depict 95% CI intervals.

their motivation to curtail their consumption, $F(2,226) = 0.65$, $p = .53$. Post-intervention, motivation increased in the egoism condition $M = 0.56$, 95% CI [0.21, 0.96], but not in the control-, $M = 0.05$, 95% CI [-0.22, 0.33] or the biospherism conditions, $M = 0.15$, 95% CI [-0.42, 0.68]. Bootstrapped pair-wise comparisons showed a significant difference between the egoism and control conditions in motivation change, $M_{diff} = 0.52$, 95% CI [0.06, 1.01], $p = .038$, with an ANCOVA condition effect size of Partial $\eta^2 = 0.044$. No other significant differences were found between conditions (bootstrapped pairwise comparisons $ps > .24$). Fig. 6 presents the intervention effect on consumption-curtailment motivation in the bootstrapped sample.

4.2.6. Post-hoc analyses

Exploratory analyses tested the overall impact of the treatment conditions in comparison to the control condition. An ANCOVA analysis found that the two treatment conditions were successful in reducing participants' materialism (egoism: $M = -0.25$, 95% CI [-0.41, −0.09], and biospherism: $M = -0.23$, 95% CI [-0.41, −0.05]; condition effect size of Partial $\eta^2 = 0.049$). An additional ANCOVA test revealed that treatment conditions increased participants' voluntary simplicity score (egoism: $M = 0.41$, 95% CI [0.24, 0.59], and biospherism: $M = 0.27$, 95% CI [0.03, 0.53]; condition effect size of Partial $\eta^2 = 0.078$). The control condition neither reduced materialism nor increased voluntary simplicity.

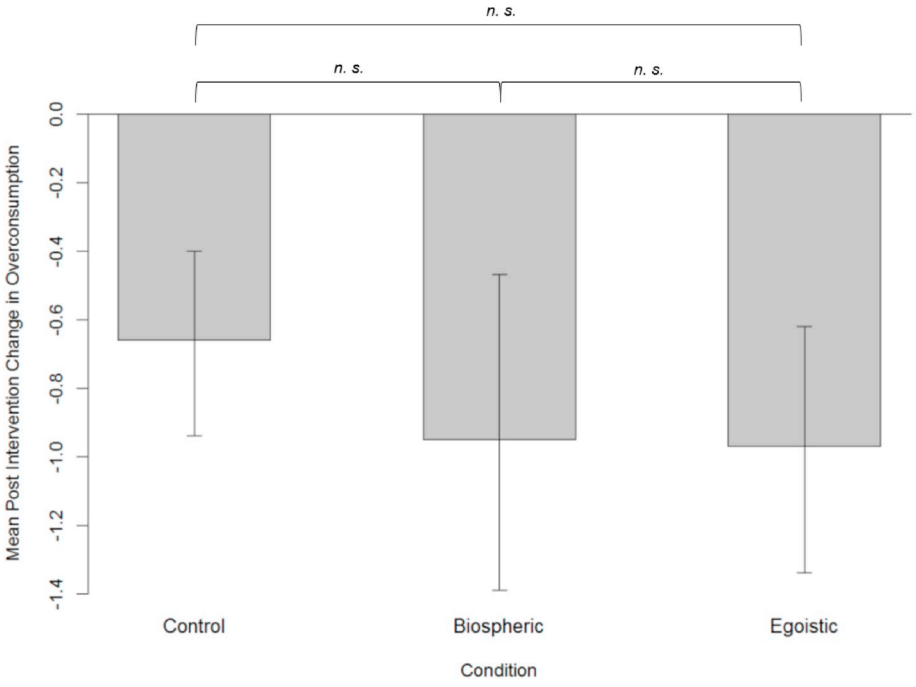

Fig. 5. Post-intervention Change in Overconsumption. Error bars depict 95% CI intervals.

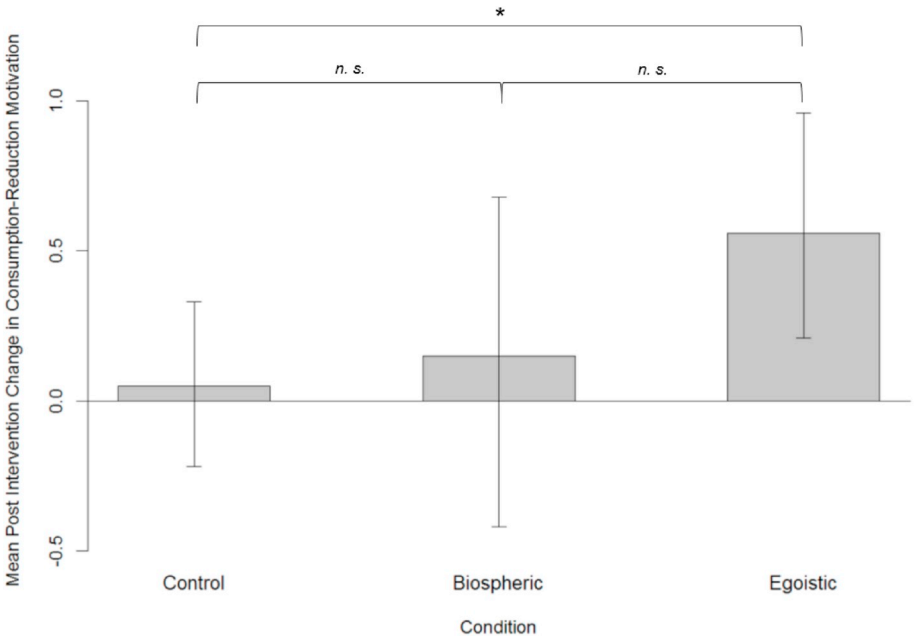

Fig. 6. Post-intervention Change in Consumption-Reduction Motivation. Error bars depict 95% CI intervals.

4.2.7. Survival analysis

A survival analysis found that the conditions significantly differed in their survival rates, $\chi^2(2) = 17.43$, $p < .001$ (Kaplan & Meier, 1958). The survival rate in the biospherism condition ($M = 3.84$) was significantly lower than in the control condition ($M = 5.54$; $\chi^2 = 17.37$, $p < .001$) and was descriptively lower than in the egoism condition, though this trend was not statistically significant ($M = 4.69$; $\chi^2 = 3.78$, $p = .052$). Additionally, the control condition presented higher survival rates than the egoism condition, $\chi^2 = 4.81$, $p = .038$. Thus, participants were most likely to stay in the intervention when allocated to the control condition, and least likely when placed in the biospherism condition (see Fig. 7).

4.3. Discussion

Study 2 tested the impact of egoistic and biospheric appeals on consumption curtailment in a week-long intervention in the field. Results indicated that while biospheric value orientation was positively associated with consumption curtailment motivation at intake, the biospheric appeal had no more influence on participants than the control condition did (i.e., simple reminders). Participants exposed to biospheric consumption-curtailment appeals experienced a decrease in subjective overconsumption, but no changes in actual spending behavior or motivation to curtail their consumption. Importantly, these participants were most likely to drop out of the intervention, though their dropping out precludes us from investigating why differential drop-out occurred.

Interestingly, the egoistic appeals seemed to perform most positively out of all three conditions. First, participants' egoistic consumption-curtailment goals at intake were associated with consumption-curtailment motivation. Second, participants randomly assigned to see egoistic appeals reported a reduction in overconsumption and reported spending, as well as a strong increase in consumption-curtailment motivation.

These results suggest that biospheric appeals may be ineffective in substantially promoting consumption curtailment. However, the study suffers from several key limitations: (1) Study 2 was underpowered based on apriori power analyses, (2) survival analyses presented non-random drop-out rates, and (3) the non-random study sample was fairly homogenous. Thus, Study 2 results should be interpreted with caution.

5. General discussion

This research examined the potential (in)effectiveness of biospheric appeals for consumption curtailment. Across three studies we consistently found that consumers' biospheric value orientation is positively associated with their willingness to live with less. However, in two experimental studies, we found that designing consumption-curtailment appeals through a biospheric frame is neither more effective than presenting the same call for action through an egoistic frame, nor is it more effective than using no appeal. In a preliminary exploration, self-described minimalists reported both biospheric and egoistic motivations for living with less (via proxy measurement). However, in Study 1, presenting participants with biospheric consumption-curtailment appeals was ineffective in promoting engagement in a minimalistic lifestyle, even for consumers who reported a strong biospheric value orientation. Finally, in Study 2, a week-long biospherism intervention for consumption curtailment was ineffective in reducing non-essential spending and increasing consumption-curtailment motivation. Conversely, simple reminders provided via a control condition reduced non-essential spending, and an alternative egoism intervention further increased participants' curtailment motivation. These results suggest that biospheric appeals for consumption-curtailment may be ineffective.

We examined several potential mechanisms to shed light on why biospheric appeals seemed to be ineffective in promoting consumption curtailment. One potential mechanism was incongruence of the appeal with consumers' pre-existing values (Bolderdijk et al., 2013; Gromet et al., 2013; van den Broek et al., 2017). Study 1 results found no moderating effect of consumers' biospheric or egoistic values on the effectiveness of biospheric appeals. In other words, biospheric appeals were neither more effective for biospheric participants nor less effective for egoistic participants in promoting consumption curtailment. The same was true for egoistic appeals.

Another potential mechanism was goal-expectancy. The motivation to pursue an outcome-focused goal—i.e., curtailing consumption to save money or save the environment—is impacted by the expectancy that the goal is attainable (Touré-Tillery & Fishbach, 2017). The biospheric goals presented to participants may have been considered unattainable. In the field, biospheric calls for action tend to be highly ambitious (e.g., protect the oceans, save the rain forest) and may be

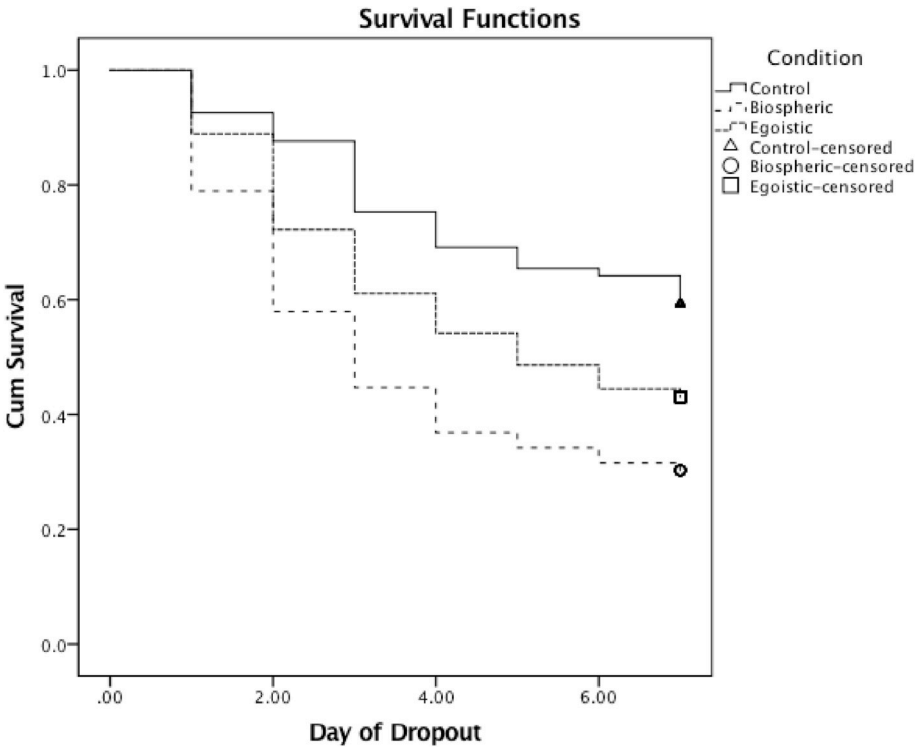

Fig. 7. Survival rate differences between conditions.

considered unattainable to many consumers. Thus, in Study 1 we tested the influence of biospheric and egoistic appeals on perceived self-efficacy and control, which influence goal expectancy (Touré-Tillery & Fishbach, 2017). We found no difference between biospheric and egoistic appeals in their impact on either of these factors.

Another potential explanation was denigration of the appeal presenter, i.e., the messenger. Previous research finds that consumers who willfully ignore the ethical attributes of products (e.g., organic), tend to negatively evaluate those who consider these attributes in their consumption decisions (Zane et al., 2016). Participants viewing biospheric appeals may have denigrated the presenter, thus decreasing the likelihood that the participant would relate to the presenter and their appeal. Study 1 results suggest that participants found the presenter to be as relatable in the biospheric appeals as she was in the egoistic appeals.

We also examined whether the biospheric consumption curtailment message was ineffective due to the affective response it triggered. Previous research suggests that critical pro-environmental messages may be perceived as patronizing or paternalistic (Meyer, 2015, p. 6), thus reducing goal commitment. In Study 1 we found no affect differences between participants viewing biospheric or egoistic appeals and those in the control condition.

In sum, a biospheric appeal used to promote consumption curtailment seemed to be ineffective in our two experimental studies. While the alternative approaches tested (i.e., an egoistic appeal and a simple reminder) were not highly effective, the results of Study 2 suggest that both approaches could encourage reductions in non-essential spending when introduced to motivated consumers over a longer period of time (i.e., one week). Egoistic appeals, in particular, may even strengthen consumers' motivation to curtail their consumption. The ineffectiveness of the biospheric appeal was not explained by any of the tested mechanisms in this research, which leaves much to be explored in future studies in this domain. In the following sections, we discuss the limitations of this research and potential ways to address these limitations in follow-up studies, as well as more immediate implications.

5.1. Limitations

One limitation of this research stems from the participant samples recruited—participants in the preliminary study presented only limited variance in their NEP measurement, suggesting a ceiling effect may have hindered our ability to identify an association between ecological concern and Minimalism involvement. Similarly, most participants across our studies were young, western, females. While this bias is apparent to some extent in associated voluntary simplicity research (Boujbel & D'Astous, 2012; Craig-Lees & Hill, 2002; Elgin & Mitchell, 1977; Huneke, 2005; Zavestoski, 2002), it limits the generalizability of our findings. It is entirely possible that consumers from different population segments would react differently to biospheric and egoistic consumption-curtailment appeals. For example, older, "off-line" Minimalists may be more ecologically minded than younger Minimalists who find video blogs and social media appealing.

Second, the effects of the tested appeals may change over time (Steg, Bolderdijk, et al., 2014). Our studies only account for fairly proximal effects of up to one week, which may not accurately represent longer-term impacts. While the ineffectiveness we find for biospheric appeals in studies 1 and 2 hints that consumers may become disengaged, ruling out the possibility of longer-term influence to occur, it is possible that the higher attrition-rates in Study 2 were the outcome of something other than disengagement (e.g., participants may have felt they've learned all they needed to from the intervention).

Third, the act of living with less, in this research, was defined specifically as Minimalism, and as sustainable. This leads to two important limitations. First, it is possible that consumers associate Minimalism with egoistic concerns of personal gain rather than environmentalism, leading the biospheric appeal to mismatch a pre-existing perception of Minimalism. We did not assess participants' a priori assumptions about Minimalism and therefore cannot control for this possibility. Second, it is entirely possible that consumers could live with fewer items in an unsustainable fashion by replacing these items often, i.e., over-

consuming. In the description of Minimalism provided to our participants, we incorporated consumption curtailment in an attempt to mitigate this risk.

Finally, this research reported relatively positive impacts of egoistic appeals for consumption curtailment, but these positive impacts were often not significantly different than the reporting of the control group. This suggests that while there is promise in situating sustainable behavior as serving self-interest (Black, 2010; Black & Cherrier, 2010, p. 406; Chancellor & Lyubomirsky, 2011; de Groot & Steg, 2009), there is still much to discover about how to position consumption-curtailment and other sustainable-behavior appeals.

5.2. Study implications and future research

Previous literature has suggested that the marketing field could contribute to consumption curtailment through a social-marketing perspective (Peattie & Peattie, 2009). This research proposes that the common biospheric approach taken by social marketers in the sustainable consumption domain may be ineffective for some consumers and should be carefully considered. Our results also demonstrate the potential benefit of "selfishly green" campaigns—putting the consumer at the center of the marketing campaign instead of the biosphere. Previous literature reports mixed-evidence on whether financial incentives might crowd out environmentalists' intrinsic motivation (Bolderdijk et al., 2015; Frey & Jegen, 2001; Steinhorst & Klöckner, 2017), but other selfish interests, such as well-being enhancement and stress reduction, may have universal and enduring motivation potential. However, it is unclear whether these appeals are best suited for a specific audience (e.g., young, highly educated, western females who are willing to actively follow social media content). Moreover, is it unclear how the video format of these appeals, which is used in many social media outlets today (e.g., YouTube, Instagram), compares to more traditional formats (e.g., billboard posters and television advertisements). Finally, there may be some pro-environmental and voluntary simplicity behaviors for which this approach may be ill-fitting, such as those behaviors that are commonly considered altruistic (e.g., supporting ethical labor certifications, donating to pro-environmental charities).

More generally, the framing of self-centered goals as promoting societally beneficial behavior is a promising research avenue. Future research could explore how self-centered goals could be utilized in promoting additional behaviors that may require sacrifice, for example, energy conservation (Lee, Fernandez, & Hyman, 2009; Steinhorst & Klöckner, 2017). The findings in this paper might suggest that the specific marketed behavior be carefully examined, and possible egoistic benefits of the behavior become the focal point of the marketing message. However, a missing link to this idea is how marketers could tap into consumers' selfish wants and needs without risking social-desirability bias. Future research might utilize anonymous social media environments—or even publicly-available digital records (Kosinski, Stillwell, & Graepel, 2013)—to discover consumers' egoistic needs.

Recent literature has reviewed the developing use of digital, social media, and mobile marketing methods (Lamberton & Stephen, 2016). One topic that might be further addressed and implemented in consumer research is the use of social media, and video stimuli, in particular, to implement consumer interventions. For example, future studies could test how para-social interactions (Horton & Richard Wohl, 1956) with social-media personas might promote healthy eating, financial savings, or charitable giving.

In sum, this research questions the commonly used biospheric appeals for consumption curtailment and suggests we further examine the benefits and effectiveness of such appeals. Some consumers are shifting toward living with less. While this growing movement can be ecologically beneficial, it may not necessitate "green" campaigning.

CRediT authorship contribution statement

Atar Herziger: Conceptualization, Methodology, Formal analysis, Investigation, Resources, Writing - original draft, Visualization, Supervision, Project administration. **Jana B. Berkessel:** Conceptualization, Methodology, Formal analysis, Investigation, Writing - review & editing, Visualization. **Kamilla Knutsen Steinnes:** Conceptualization, Methodology, Investigation, Resources, Writing - review & editing, Project administration.

Appendix A. video scripts

Video 1
What is Minimalism?

Topic	Self-transcendence	Self enhancement
Content	Introduction to Minimalism	
Condition Introduction	*"Welcome to the first video in the Minimalism series. In this video, I will discuss how I was introduced to Minimalism and what this lifestyle entails.* *"Remember why we are here—we want to* ***make the world a better place.*** *By being* ***environmentally friendly, conscience*** *and* ***ethical****, we can* ***make a positive impact on the world****."*	*"Welcome to the first video in the Minimalism series. In this video, I will discuss how I was introduced to Minimalism and what this lifestyle entails.* *"Remember why we are here—we want to* ***make our lives better.*** *By* ***being less stressed, more in control****, and* ***spending wisely****, we can* ***make a positive impact on our own lives****."*
Opening	*"This vlog consists of different episodes and I will focus on different topics in each one. I will share my story about how I started living as a minimalist and how I managed to declutter. Then, I will talk about how I managed to reduce my consumption, and how I faced obstacles along the way. In order to give you some insight into how it feels and what it really takes to adopt Minimalism, I will share my personal stories with you. I will also point out some specific, realistic goals that you could set for yourself, and I will suggest some methods you could implement in order to achieve these goals."*	
Gratitude for watching	*"I'm glad you are interested in watching my videos about Minimalism. I would love to give you a quick introduction into what 'Minimalism' is and what it means to me. I will also provide you with some of my own personal experiences and tips."*	
Definition	*"Minimalism means realizing that you can live by positive values with fewer clothes, fewer furniture, fewer interior design things. Simply fewer material items. For me, being a minimalist means realizing that I am true to my values when I reduce my material consumption."*	
Project 333	*"There is this famous project that I personally adopted called Project 333. This project challenged me to only use 33 pieces of clothing for* 3 months*. It was during those months that I realized how good it was to get rid of so many items and how great it was to simplify my life. I felt that I was being true to my values in a way."*	
Condition closing	*"In my vlog I would like to show you how you can set your goals to get started and steer your life in the right direction.* *"I will help you get to know Minimalism and learn about* ***the environmental goals you can achieve****."*	*"In my vlog I would like to show you how you can set your goals to get started and steer your life in the right direction.* *"I will help you get to know Minimalism and learn about* ***the well-being goals you can achieve****."*

Video 2
Where to start

Topic	Self-transcendence	Self enhancement
Content	Presenter's personal story of her decision to become a minimalist; her turning point	
Condition Introduction	*"Today we will discuss turning points—the places you get your sudden inspiration or motivation to change your consumerist lifestyle. Remember why we are here—we want to* ***make the world a better place.*** *By being* ***environmentally friendly, conscience*** *and* ***ethical****, we can* ***make a positive impact on the world****."*	*"Today we will discuss turning points—the places you get your sudden inspiration or motivation to change your consumerist lifestyle. "Remember why we are here—we want to* ***make our lives better.*** *By* ***being less stressed, more in control****, and* ***spending wisely****, we can* ***make a positive impact on our own lives****."*
The turning point	*"I would have never imagined myself like this two years ago. Somehow, these questions popped-up in my mind: How do I want to live? Do I want to be someone who is governed by urges to shop and by the continual desire to have more and newer things? That point was when I started to think about practicing Minimalism. Imagine yourself two years from now. Who are you and how do you want to live?"*	
Being happy	*"I used to believe that the secret to happiness involved buying anything I wanted. I thought that owning a bunch of things could make me happy. But then I realized that these two points are two entirely different things. I was never satisfied with my belongings and I did not feel like a better person due to having them."*	
Taking the first step	*"Taking the first step is always the hardest. That is why I followed a YouTuber who started leading a minimalistic lifestyle. He got started with the simplest actions and least effort: decluttering his car, and reducing the times he spent money on coffee 'to-go'. In my situation, I started to declutter my bag that was full of receipts. Immediately afterwards, I felt this tiny change affect my life in a big way."*	
Condition closing	*"I'm glad I shared my turning point with you. Maybe this will make it easier for you to think of your own values, goals, and your future-self. "This should help you get started in adopting Minimalism. When you commit to it, this will have great value in advancing your* ***environmental goals****."*	*"I'm glad I shared my turning point with you. Maybe this will make it easier for you to think of your own values, goals, and your future-self. "This should help you get started in adopting Minimalism. When you commit to it, this will have great value in advancing your* ***personal and financial goals****."*

Video 3
Decluttering

Topic	Self-transcendence	Self enhancement
Content	Present a method of how to declutter and the associated benefits	
Condition Introduction	*"Today we will discuss decluttering—how to do it, where to start, committing to it, and surviving the difficulties associated with decluttering. "Remember why we are here—we want to* ***make the world a better place.*** *By being* ***environmentally friendly, conscience*** *and* ***ethical****, we can* ***make a positive impact on the world****."*	*"Today we will discuss decluttering—how to do it, where to start, committing to it, and surviving the difficulties associated with decluttering. "Remember why we are here—we want to* ***make our lives better.*** *By* ***being less stressed, more in control****, and* ***spending wisely****, we can* ***make a positive impact on our own lives****."*
How to start	*"Start by taking a couple of minutes to write down reasons why you want to declutter and what you want to achieve through decluttering.*	
Where to start	*"Set a specific goal on where to start. You can either try to focus on one room at a time (i.e. kitchen, living room) or you can declutter things by category, (i.e. books, clothes). If you can't decide, try both ways and see what works for you. Then commit. Decluttering does not only involve getting rid of books and clothes, but also things like electronics, skincare and kitchen appliances."*	
Committing	*"Then, you should set a realistic goal for yourself about how many rooms/categories you will be able to declutter. Remember, it is better to actually achieve your decluttering goal (e.g., one room/category) than to set an unrealistic goal (e.g., to declutter three rooms/categories) and fail."*	
Timing	*"You should also set a timeframe for when this goal should be completed (e.g., in one day, three days, one week)."*	
Difficulties	*"You may find it difficult to get rid of items that you have an emotional attachment to. You can try to put all of these 'emotional' items in one box and save them for last—set a deadline for this. This way you can focus on getting rid of the 'easier' items first."*	
Condition closing	*"Now you know what declutterring means and how to start working at it. "This should help you get started in decluttering your own things, repurposing and donating things you don't use. When you commit to it, this will have great* ***environmental value in reducing consumption****."*	*"Now you know what declutterring means and how to start working at it. "This should help you get started in decluttering your own things, repurposing and donating things you don't use. When you commit to it, this will have great* ***personal value in reducing stress."***

Video 4
Capsule wardrobe

Topic	Self-transcendence	Self enhancement
Content	The appeal of the capsule wardrobe, and a guideline to adopt it	
Condition Introduction	*"Today we will discuss capsule wardrobes—what they are, and how to try one out for yourself.* *"Remember why we are here—we want to **make the world a better place.** By being **environmentally friendly, conscience** and **ethical**, we can **make a positive impact on the world**."*	*"Today we will discuss capsule wardrobes—what they are, and how to try one out for yourself.* *"Remember why we are here—we want to **make our lives better.** By **being less stressed, more in control**, and **spending wisely**, we can **make a positive impact on our own lives**."*
Recognize the problem	*"Your closet is probably full of stuff. Try and recognize what items don't fit you anymore, what items you don't like, and what items you only purchased because they were on sale or on a whim (like for an interview or wedding). Write down what items those are."*	
Aim	*"The notion of downsizing my wardrobe really appealed to me. Having only 33 items in your wardrobe, including both outerwear and innerwear, might not sound like a lot. But when you think about it, it is more than enough. Why does anyone need 10 pairs of shoes for example? I just like the idea of having a well thought out wardrobe, where you actually like and use all of the items it consists of. Thirty-three is just the number that worked best for me but the number in your capsule wardrobe might be different. Try to set your own, personal goal."*	
Plan	*"Start by selecting your top items from each clothing category in our wardrobe, like t-shirts. Decide what is realistic for you - is it five items? More? Less? Then, narrow that down. Choose what you think you could wear most often and put a number on this goal - for example, 'I will wear this at least once a week'. Place everything else either in a donation or a storage box. The first step when trying to clear out your wardrobe is to be harsh on yourself. Be critical of every single item you own. Break things down into three piles: (1) items you wear every week, (2) seasonal clothing and (3) less-used items that you might give to charity, friends and family, or sell. The second step is to test if your capsule wardrobe works well for you. You should set one week for testing it. This time-frame of testing can seem quite tough, but it can give you an insightful wake-up call regarding your wardrobe needs."*	
Overcome shopping obstacle	*"When it comes to adding new items to your capsule wardrobe, set some ground rules. Before you go shopping, set a goal as to how many items you can buy, what items you need exactly, and how much money you can spend. Write this goal down and commit to it."*	
Conclusion	*"I like that I don't have to worry so much about what to wear anymore. I am also really relieved that I don't have to worry much about shopping anymore. I hope trying out a capsule wardrobe will also appeal to you!"*	
Condition closing	*"Now you know how to build a capsule wardrobe, and have what you need to try it out for a week or two.* *"When you commit to it, having a capsule wardrobe can really make a positive impact on your **carbon footprint**."*	*"Now you know how to build a capsule wardrobe, and have what you need to try it out for a week or two.* *"When you commit to it, having a capsule wardrobe can really make a positive impact on your **daily stress levels**."*

Video 5
Buying less

Topic	Self-transcendence	Self enhancement
Content	Difficulties in reducing consumption, and some benefits of doing so	
Condition Introduction	*"Today we will discuss buying less—how to do it by creating plans, committing to them, and surviving the difficulties associated with reducing your consumption.* *"Remember why we are here—we want to **make the world a better place.** By being **environmentally friendly, conscience** and **ethical**, we can **make a positive impact on the world**."*	*"Today we will discuss buying less—how to do it by creating plans, committing to them, and surviving the difficulties associated with reducing your consumption.* *"Remember why we are here—we want to **make our lives better.** By **being less stressed, more in control**, and **spending wisely**, we can **make a positive impact on our own lives**."*
Recognize the problem	*"Part of being a minimalist is buying less things, in general. This was really hard for me because I got used buying things I didn't actually need. I actually had a habit of buying things I could live without."*	
Plan	*"To change my buying habits, I thought about what I wanted to buy less of. Then I thought of how many of these items I would like to cut back on, and a motivating plan for what I wanted to do with the money I had saved. If you want to change your buying habits, you should set new goals for yourself. For example, think about what you want to buy less of."*	
Motivation	*"Start by writing down 3 specific categories of things you could cut down on. Think about how good it would be once you buy less of these items."*	
Coffee example	*"One thing I was buying a lot of was 'to-go' coffee. So I started managing how many cups of coffee I could buy myself a week, realistically. I thought about the previous month for example, when I was in a rush to leave the house almost every morning and ended up getting coffee on my way to university. I thought that maybe I could start buying coffee less often, because I could make it at home by just getting up 15 min earlier in the morning."*	
Achievements	*"Changing habits is not easy, and it takes some time to integrate new behaviors into our day to day lives. When you actually managed to commit to it, it will feel great and empowering. This personal achievement can make you eager to try out new goals and see if you could be just as devoted to those."*	
Progress	*"Lastly, make sure to keep track of your progress. When you succeed, treat yourself! When you have a hard time, try figuring out why you were not able to meet the goal. Learn from it, and then adjust your plans to meet the goal. You will see that once you reach your buying goals you will feel that you really earned a reward, like a movie night with a friend!"*	
Condition closing	*"Now you have what it takes to plan out your first goals in reducing your consumption!* *When you commit to it, this will have great **environmental value in reducing your environmental impact**."*	*"Now you have what it takes to plan out your first goals in reducing your consumption!* *When you commit to it, this will have great **personal value in reducing stress and saving money**."*

Video 6
Dealing with obstacles

Topic	Self-transcendence	Self enhancement
Content	Identify possible obstacles in pursuing a minimalist lifestyle	
Condition Introduction	*"Today we will discuss obstacles—how to recognize obstacles and work to solve them.* *Remember why we are here—we want to* ***make the world a better place.*** *By being* ***environmentally friendly, conscience*** *and* ***ethical****, we can* ***make a positive impact on the world****."*	*"Today we will discuss obstacles—how to recognize obstacles and work to solve them.* *"Remember why we are here—we want to* ***make our lives better.*** *By* ***being less stressed, more in control****, and* ***spending wisely****, we can* ***make a positive impact on our own lives****."*
Recognize the problem	*"Think about some of the biggest obstacles that you might encounter in adopting Minimalism. For example, you might find that one of your biggest obstacles is figuring out how to deal with social situations in which you are likely to receive presents from others, like during birthdays or holidays. Or, you may feel an urge to go into stores whenever you see sales signs in shop windows. Finally, you may have trouble decluttering and find it hard to get rid of objects that have a sentimental value to you or that you are attached to in some way. I will explain some goals you can set to help overcome your own personal obstacles."*	
Implementation intentions	*"To help overcome such obstacles, start off by thinking of a main obstacle you face on a weekly basis. Think of when and where it tends to happen. Now, think of one action plan, an immediate reaction that could override the obstacle, and would be realistic to implement starting tomorrow. For example "If I see a 'Sale' sign in front of a store, then I will walk past the shop and not enter it." That one has worked wonders for me; it helped me avoid tempting situations.*	
Gifts example	*"Sometimes the obstacle is in your interactions with other people. For example, gifts can be a problem. I try and let my friends and family know about my life as a minimalist. Whenever it comes to holidays and birthdays, I try to plan ahead and let them know beforehand that I would prefer not to receive material things as gifts but would rather just spend quality time with them or do something special with them."*	
Shopping example	*"Sometimes the obstacle can be a hobby. Going shopping used to be a really social and enjoyable activity for me, a time when I could hang out with my friends and catch up. To overcome the urge of shopping, I've found it really helpful to replace shopping with other social activities like going for hikes, playing sports, have game nights etc. For example, I'm going hiking with some friends next weekend."*	
Condition closing	*"Now you have started to think of your own personal obstacles, and how those could be solved.* *"This should help you get started in recognizing and working through your obstacles. When you commit to it, this will have great value in* ***reducing your carbon footprint****."*	*"Now you have started to think of your own personal obstacles, and how those could be solved.* *This should help you get started in recognizing and working through your obstacles. When you commit to it, this will have great value in* ***reducing stress and gaining control over your life****."*

Appendix B

Image of video-stimuli presenter (identical for both treatment conditions)

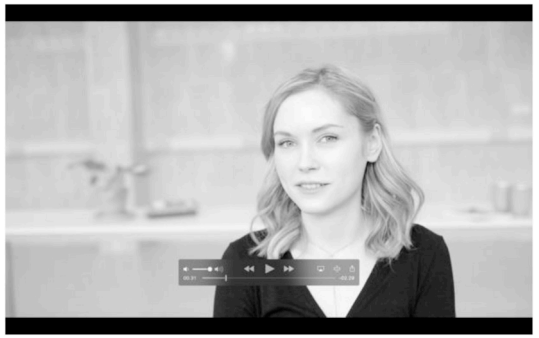

Image of video-stimuli in the biospheric condition

Image of video-stimuli in the egoistic condition

Appendix C. Study 2 Recruitment Postings: Platforms and Topics

Topic/Platform		Shopping	Students, Science	Ethical consumption	Simple living	Eco	Personal Growth	Finances, budgeting	Fashion	Lifestyle	Hobbies	Other [b]	Total
Facebook	Count	25	222	15	58	73	9	31	13	53	3	12	514
	% in Platform	4.9%	43.2%	2.9%	11.3%	14.2%	1.8%	6.0%	2.5%	10.3%	0.6%	2.3%	100.0%
	% in Topic	36.8%	73.8%	51.7%	74.4%	43.7%	33.3%	30.4%	20.0%	53.0%	5.1%	16.4%	48.1%
Reddit	Count	16	18	12	18	78	9	42	22	31	0	5	251
	% in Platform	6.4%	7.2%	4.8%	7.2%	31.1%	3.6%	16.7%	8.8%	12.4%	0.0%	2.0%	100.0%
	% in Topic	23.5%	6.0%	41.4%	23.1%	46.7%	33.3%	41.2%	33.8%	31.0%	0.0%	6.8%	23.5%
Forum	Count	22	30	1	0	16	9	26	30	16	56	24	230
	% in Platform	9.6%	13.0%	0.4%	0.0%	7.0%	3.9%	11.3%	13.0%	7.0%	24.3%	10.4%	100.0%
	% in Topic	32.4%	10.0%	3.4%	0.0%	9.6%	33.3%	25.5%	46.2%	16.0%	94.9%	32.9%	21.5%
Flyer and personal	Count	5	15	0	0	0	0	0	0	0	0	27	47
	% in Platform	10.6%	31.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	57.4%	100.0%
	% in Topic	7.4%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	37.0%	4.4%
Other [a]	Count	0	16	1	2	0	0	3	0	0	0	5	27
	% in Platform	0.0%	59.3%	3.7%	7.4%	0.0%	0.0%	11.1%	0.0%	0.0%	0.0%	18.5%	100.0%
	% in Topic	0.0%	5.3%	3.4%	2.6%	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%	6.8%	2.5%
Total	Count	68	301	29	78	167	27	102	65	100	59	73	1069
	% in Platform	6.4%	28.2%	2.7%	7.3%	15.6%	2.5%	9.5%	6.1%	9.4%	5.5%	6.8%	100.0%
	% in Topic	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

[a] The “Other” platform category includes guest blog posting, YouTube comments sections, and mailing services.
[b] The “Other” topic category includes general discussion groups (e.g., forum called “everything”) as well as public physical locations of recruiting.

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