

Gamifying Green Consumerism Websites: Can Gamification Mitigate Moral Licensing and Ideological Resistance to Green Behaviors?

Lewen Wei^a and Jessica Gall Myrick^b

^aTampere University, Tampere, Finland; ^bPennsylvania State University, University
Park, Pennsylvania, USA

Correspondence: lewen.wei@tuni.fi

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Abstract

Green consumerism is a growing trend that may contribute to a more sustainable society. However, lack of motivation to pursue a green lifestyle might subject consumers to well-documented moral licensing effects. Moreover, individuals with conservative ideological leanings are also less predisposed to take environmentally friendly actions, suggesting that sustainability communication strategies may need to differ by user ideology. The present study tested gamification techniques as a way to boost green motivations for consumers with varying political ideologies. Through an online experiment (N = 531), we reported null findings with respect to the effects of gamification techniques and political ideology on consumers' behavioral intentions. Implications and directions for future work on sustainability communication are discussed.

Keywords: green consumerism, gamification, moral licensing, political ideology, sustainability communication

Introduction

In response to incremental environmental concerns, there has been a growing trend toward green consumerism such that consumers can adopt a more sustainable lifestyle by purchasing “green” and ethically-produced products, ranging from small daily groceries to large home appliances (Seyfang, 2005). However, green consumerism also prompts a moral quandary in that people need to make large and consistent efforts to accommodate a sustainability-oriented lifestyle (Luu, 2018). Thus, individuals who have already purchased green products may feel like they have done enough already, leading to withdrawal from their previous commitment to purchasing green products. Informed by research on the moral licensing effect (e.g., Merritt et al., 2010), such withdrawal can be further exacerbated when people feel that they have been consistently conforming to values of environmental protection in the past. Therefore, if environmental advocates intend to promote green consumerism, how can they effectively encourage people to continue purchasing green products without falling prey to the moral licensing effect after initial purchases of green products? Failure to establish a strong green identity that promotes consistent green consumerism could be attributed to a lack of motivation. Tempted by more convenient or affordable choices, consumers find moral satisfaction in their past green purchases without having to continue purchasing less convenient and/or more expensive green products. As a result, they may give themselves a psychological license to discontinue their efforts to buy green products.

One potential way to prevent this moral licensing effect and increase motivation to maintain their green behaviors is through gamifying the green communication experience that consumers encounter online. Informed by self-determination theory (SDT), which directly addresses motivational processes (Deci & Ryan, 1980), gamified websites can enhance users’ value perceptions associated with advocated causes (Hsu et al., 2017). As such, the current study intends to examine how a green consumer website with various gamification elements could potentially mitigate moral licensing effects, if any, and facilitate consistent pro-environmental behaviors. Furthermore, the political identity of a consumer may also play a role in shaping responses to green messaging such that partisan preferences shapes how they perceive environmental messages and respond to them, with conservatives less likely to support environmentalist efforts (McCright et al., 2014; Nisbet et al., 2015). Hence, how well gamification elements can spark motivations to “be green” may depend on one’s political identity to either accept or reject environmentally friendly practices. Taken together, the purpose of the present work is to test ways that gamified websites

can use theoretically informed interactive communication strategies to help overcome barriers to sustainable behavior presented by moral licensing and/or existing political beliefs.

Literature Review

Moral Licensing in Green Consumerism

Barriers to Green Consumerism

Green consumerism promotes socially conscious behaviors among consumers (Anderson & Cunningham, 1972) and encourages individuals to adopt pro-environmental values in and even beyond purchasing decisions (Sharma & Joshi, 2017). It can range from more abstract identification with the green ideology to more concrete everyday purchases (Sachdeva et al., 2015). To some extent, consuming green products manifests the process of building one's green identity that drives environmentally friendly behaviors (Whitmarsh & O'Neill, 2010). With that said, before such self-identity becomes stabilized, individuals may find themselves constantly struggling between choosing products that are environmentally friendly, but often harder or more expensive to acquire, and those products that are less environmentally conscious but easier to use and cheaper to buy. In a recent review, Joshi and Rahman (2015) identified a number of barriers to green consumerism and the development of a stable green identity, such as lack of social pressure (Gabler et al., 2013), too much perceived responsibility (Moisander, 2007), and societal norms (Connell, 2010). These barriers can lead to an incompatibility between means (i.e., efforts taken towards green consumerism) and ends (i.e., consistent green consumption) (Moisander, 2007). Such conflict between goals—wanting to be “green” but also wanting convenience and cheaper products—might demotivate people to continue pursuing a green lifestyle, which according to Mullen and Monin (2016), might psychologically subject people to moral self-licensing and to becoming less committed to making consistent progress on their goals.

Moral Licensing Effect

Moral licensing describes the psychological phenomenon that occurs when people perceive themselves as “licensed to refrain from good behavior when they have accrued a surplus of moral currency” (Sachdeva et al., 2009, p. 524). In contrast to moral consistency that advocates for consistent self-identity and behaviors (Cornelissen et al., 2008), moral licensing perceptions might lead individuals to feel as if they “are permitted to take an action or express a thought without fear of discrediting themselves” (Miller & Effron, 2010, p. 118) across a number of contexts ranging from employer-employee relationships in organizational settings (Lin et al., 2016) to online activism and civic actions (Lee & Hsieh, 2013). Documented

evidence suggests that past good deeds could morally free people from the pressure of pursuing consistent action, and instead subject them to future immoral cognitions and behaviors.

Some research has specifically probed moral licensing effects in consumers' choices. Eskine (2013) found that mere exposure to organic foods, one form of green consumer products, could attenuate consumers' prosocial intentions (i.e., willingness to help a stranger in need) and induce harsher moral judgements on certain behaviors (e.g., shoplifting). In the context of real-life purchasing, Mazar and Zhong (2010) also found that purchasing green products could promote immoral behaviors, such as cheating and stealing. That said, to date, how to regulate the potential moral licensing effect of consuming green products on future engagement with green consumerism activities, remains equivocal. The current study, then, proposes to go beyond looking for the existence of a moral licensing effect in this context by incorporating communication factors related to increased motivation (i.e., gamification) to help mitigate any potential moral licensing effects from using a green consumer website.

Notably, past research on moral licensing shows mixed findings when participants were asked to recall concrete actions (i.e., low level of abstraction) versus to report future intentions (i.e., high level of abstraction) such that expected outcomes might or might not occur in the process of abstract mental construal (Cascio & Plant, 2015; Mullen & Monin, 2016; Weibel et al., 2014). According to construal level theory (Trope & Liberman, 2010), discrepancies in level of abstraction can lead people to generate mental representations on a continuum from decontextualized to contextualized, from detail-poor to detail-rich (Conway & Peetz, 2012). Therefore, the present study assesses both concrete and abstract behavioral intentions as anchors to capture various types of intentions to continue a green lifestyle so as to observe to what extent people might be susceptible to moral licensing perceptions.

Gamification

Gamification refers to practices of selecting some game components and amplifying their effects in non-game contexts (e.g., Deterding et al., 2011). According to Deterding (2012), a well-enacted gamified system should be designed to boost users' motivations, wherein plausible gamification techniques can include winning badges (Hamari, 2017), accumulating points, and leveling up (Koivisto & Hamari, 2014) for reward. Empirical evidence informs the effects of gamified experience in inducing more favorable outcomes. For instance, Iosup and Epema (2014) found that incorporating gamification elements such as point systems and leaderboards could

significantly motivate undergraduate students to have better performance in and outside classrooms. Likewise, Barata and colleagues (2013) found being able to customize avatars and contents could boost one's motivation to produce more accomplishments. Hence, in the context of green consumerism where people grapple with maintaining consistent motivations in a similar vein to that in the academic setting, we also expect gamification to increase consumers' motivations of sticking to a green lifestyle in a more rigorous manner.

SDT, among many perspectives, is one helpful theoretical framework for understanding why gamification features of a green consumer website may be more effective at promoting green purchases (Deci & Ryan, 1980). SDT argues that individuals' motivations to enact certain behaviors hinge upon three factors: autonomy, competence, and relatedness. Autonomy describes individuals' need to be "self-endorsed" (p. 135) to foster willingness, competence requires challenges (Niemiec & Ryan, 2009), while relatedness posits the pursuit of being psychologically connected to others. When media allow users to experience autonomy, competence, and relatedness, they should be more motivating, according to the theory.

Avatar Customization

In cultivating a green identity, without the intrinsic motivation to consume green products voluntarily, it may become increasingly difficult for consumers to stick to green habits, particularly when they are surrounded by other product choices. Gamification bears great potential to address a perceived lack of autonomy by giving website users options to construct their green consumer experience as they would most like it.

Similar to real games that require players to decide the direction of progressions, gamification systems usually enable users to make meaningful choices (Nicholson, 2015). Such choices could range from customizing avatars to determining how to set up their goals. Hence, when consumers engage with media that gamify the green consumerism experience, they can take more responsibility for their choices. If their green identities break apart, their overall experience could be contaminated, which could lead, instead, to frustration. In the case of increased autonomy, though, consumers could be more likely to remain consistent in their green habits and therefore have an easier time avoiding self-licensing

Among all the autonomy-related gamification features, avatar customization, which is closely tied to identity construction, could be particularly effective in reducing the moral licensing effect. Allowing people to tailor their digital self-representations for higher levels of person-avatar similarity could strengthen individual sense of control

as well as self-identity (Hanus & Fox, 2015). This process could be further explained by how customizability helps facilitate identification with one's avatar as identity perceptions between avatar and self can merge (Birk et al., 2016). The process, in turn, facilitates the consolidation of one's green identity that might be abstract and implicit before. As found in Barata et al. (2013), avatar customization can lead to more desirable outcomes in a gamified environment. Hence, we predict that customized avatars on a green consumer website could better motivate people to purchase green products:

H1: Including avatar customization in a green consumer website will lead to smaller moral licensing effects on individual green consumerism than not doing so.

Feedback

In addition to being a crucial component of motivation according to SDT, other research suggests that when individuals lack information about their own competence, they experience self-doubt (Steele, 1988). Feedback is a common feature of gamification systems that can easily provide users with feedback and try to buffer the emergence of doubt. Research thus far has found that in gamified environment, evaluative features such as badges and performance graphs can elevate users' feelings of competence and also increase their motivations to improve their performance (e.g., Burgers et al., 2015; Sailer et al., 2017).

As argued by Bandura (1993), highlighting progress and personal achievements is conducive to building self-efficacy, which is a confidence in one's ability to perform a specific task. When engaged with a gamified environment, implementing features like letter boards, badges, and other forms of feedback could inform users and remind them of their goals, which if completed, would increase their positive experience and their self-efficacy (Hamari, 2017). In the context of green consumerism, for instance, a notification indicated that one had purchased green products for a consecutive period of time could potentially boost one's self-efficacy, serving as positive self-reinforcement and further encouraging this consumer to continue the behavior. As such, including a gamified feedback feature has been found to nudge people towards more eco-friendly purchase decisions (Berger, 2019). Hence:

H2: Including immediate feedback in a green consumer website will lead to smaller moral licensing effects on individual green consumerism than not doing so.

Social Connection

Human beings strive for connection with others because overcoming obstacles alone requires a great deal of mental efforts (Kagan,

2009). One potential barrier to consistent green consumption, or a lack of motivation to purchase green products, is that there is a lack of social connection, or supportive messages from and interactions with peers, for green consumers (Blythe & Harré, 2012). The absence of a sense of community and/or of encouragement from other people could dampen consumers' determination to adhere to green lifestyle goals.

A gamified website could increase the sense of relatedness through features that allow for social connection from other users and offer a sense of social influence (Hamari & Koivisto, 2015). Research has found that when applying gamification to health contexts like physical exercise, being able to connect with friends in the same platform fosters more positive attitude towards and behavioral intentions for future exercise (Hamari & Koivisto, 2015). This suggests that social connection can foster a greater sense of connectedness and greater goal pursuit (Giannetto et al., 2013), which could potentially help mitigate moral licensing effects:

H3: Including social connection information in a green consumer website will lead to smaller moral licensing effects on individual green consumerism than not doing so.

How Much Gamification is Enough?

In reality, different forms of gamification (offering users chances for customization, feedback, and social connection) typically do not all appear at once in the same system, which begs the question: Would gamification effectiveness be further amplified when the system affords multiple gamification element that address each of the aspects of SDT? On the one hand, more game elements could be conducive to creating more enriched game-like experiences with a website, which could potentially foster greater engagement with the task. On the other hand, leveraging gamification should involve optimizing gamified experience (Kim & Lee, 2012) by selecting the most effective element(s) in order to avoid overwhelming users. Hence, we propose a research question to probe the boundary, if any, of implementing multiple gamification elements in a single green consumer website:

RQ1: How will the (a.) specific type (customization, feedback, or social connection) and (b.) overall amount of gamification influence green consumption intentions?

Effects of Political Ideology

Thus far, we have discussed the potential demotivational and motivational forces exerted by moral licensing and gamification, respectively. However, apart from these situational impacts, individual consumers' dispositional characteristics are also of great

importance in determining the effects of a gamified green website. As mentioned above, one notable individual difference strongly related to eco-friendly values and behaviors is political ideology. Data suggest that for Americans for instance, beginning in 1992, support for government spending on environmental protection began to diverge by ideology, with conservative elites promoting anti-environmental attitudes and liberals reporting stronger support for environmental protection (McCright et al., 2014).

Environmental communication research has found that motivated reasoning occurs when people with different political identities consume environment-related messages; that is, audiences are motivated to attend to the aspects of the message that support their existing political views and to discount the parts of the message that counter their views (e.g., Hart & Nisbet, 2012; Schuldt & Roh, 2014). By adding gamification elements to an environmentally friendly message, it is possible that motivations generated by game-like elements may overcome or distract from ideological motivations to discount the message. This possibility is supported by work in consumer psychology finding that conservatives can be motivated to take part in sustainability behaviors like recycling if messages emphasize individualism and individual responsibility (Kidwell et al., 2013).

A website focused on individual consumer choices, particularly one that offers options to enhance consumerism experience in socially meaningful ways, may help overcome ideological resistance to green behaviors. If adding game-like features to eco-friendly digital messaging can reduce resistance to green behaviors, then gamification could be a very promising strategy for both mitigating moral licensing amongst individuals and in closing the ideological gap in green identity and behavior that currently exists. Yet, research has not yet thoroughly examined this nexus between technological affordances related to games and environmental messaging, leading to a research question about their interrelationship:

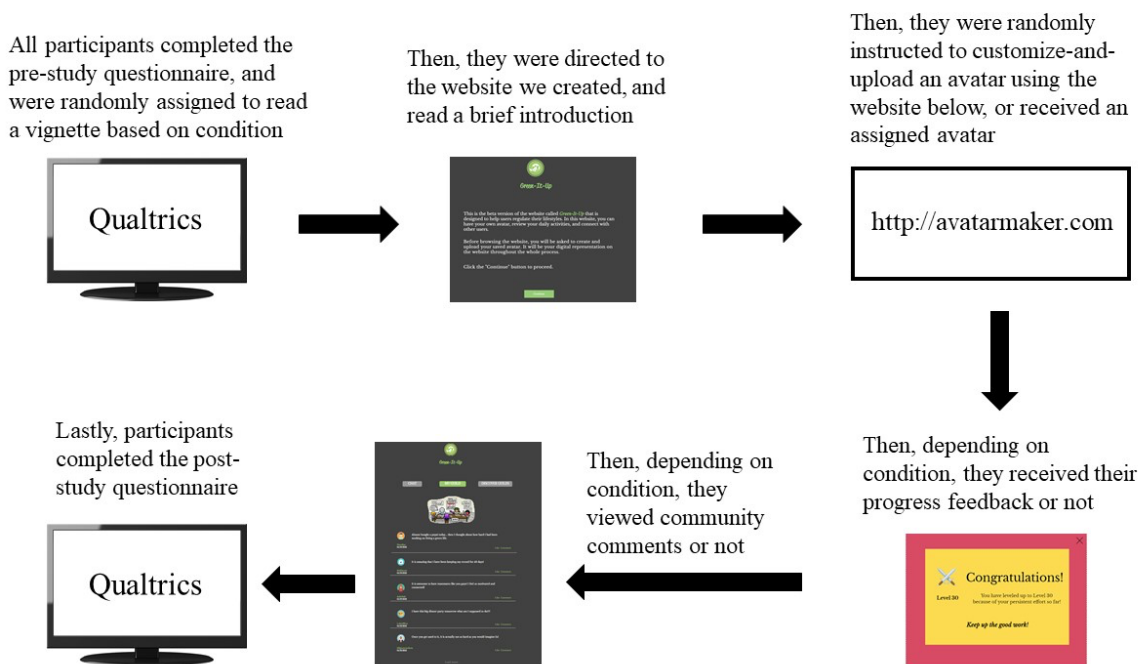
RQ2: How will the (a) specific type and (b) overall amount of gamification interact with political ideology to influence green consumption intentions?

Methods

To test our hypotheses and answer research questions, we conducted a 2 (licensing manipulation: control vs. past green consumption) x 2 (customization: absence vs. presence) x 2 (feedback: absence vs. presence) x 2 (social connection: no community vs. community) online between-subjects experiment. In addition to these four experimentally manipulated factors, we

measured the political ideology via self-report as the moderator. A visualization of the experimental procedure can be found in Figure 1.

Figure 1. A visualization of the experimental procedure.



Participants

Based on the study protocol approved by the institutional review board, from June 14, 2018 to June 16, 2018, we recruited 583 participants located in the United States from the online platform TurkPrime to ensure at least 30 participants per manipulated experimental condition. After reviewing the data, we found that 42 participants failed to customize an avatar as instructed, and 10 others did not complete the entire study. After removing those individuals, the final dataset included 531 participants.

There were 214 males and 310 females (four indicated “other” and three preferred not to disclose). They ranged in age from 18 to 80 years old ($M = 35.82$, $SD = 12.61$). Among all participants, 69.5% identified themselves as Caucasian, 12.4% as Asian/Pacific Islander, 10.5% as African American, and the rest as other races. In addition, 60.3% reported to hold a Bachelor’s Degree or higher, and 63.3% claimed to receive at least \$40,000 in annual household income.

Stimuli Construction

Vignettes for the Licensing Manipulation

Two vignettes were prepared in order to prime the goal of having a green identity. This procedure was based on past moral licensing research that used vignettes to prime goals (e.g., Merritt et al., 2010), which is an important step in testing potential moral licensing effects

as they are predicated on individuals having goals they would like to meet.

In the green consumerism vignette, participants were asked to imagine that they had been working to consciously purchase green and environmentally friendly products ranging from food and clothing to gas and hygiene products for the past 30 days consecutively, and they were to imagine they had done this in part by using the website *Green-It-Up*. By imaging they had been actively pursuing and achieving green consumerism goals, this condition set the participants up for potential moral licensing effects once they did use the main website. In the control vignette, participants read a Wikipedia excerpt about tennis, badminton, and table tennis. This material did not involve any information about green consumerism, identity development, or personal goals. Full details of these two vignettes can be found in Appendix A.

To check the legitimacy of our manipulation for licensing, we recruited 50 separate participants from the Amazon Mechanical Turk prior to the main study. These participants were compensated with \$0.10 to evaluate one of the two vignettes in terms of how strongly it was related to the goal of green consumerism. An independent-samples t-test revealed a difference, $t(48) = 1.98$, $p = .053$ (two-tailed), Cohen's $d = .56$, with the green consumerism vignette ($M = 5.45$, $SD = 1.46$, $SE = .29$) rated as more relevant to green consumerism goals than the control vignette ($M = 4.58$, $SD = 1.65$, $SE = .33$).

Website for Gamification Manipulation

Using a template from *Wix.com*, we created a mock website called *Green-It-Up* that was designed to help users pursue a green lifestyle. Participants were told the website was in the beta-testing stage and they were being recruited to help evaluate it and offer suggestions for further improvements. Full details of each step of the manipulation can be found in Appendix B.

After reading the study instructions on the first page, participants were first directed to the avatar creation page. For those who are assigned to customize their avatar, they were asked to create an avatar of their own will using the Avatar Maker website (<http://avatarmaker.com/>) and to then save it as a screenshot. Next, they were asked to upload the saved avatar to the *Green-It-Up* website. For those who were in the assigned avatar condition, they were told that the avatar shown on the page had been randomly assigned to them as their digital representation for the website. For these non-customized avatars, we randomly generated five avatars varying in gender and race at the same Avatar Maker website, and one of the five was randomly presented to participants to avoid

potential bias towards one particular avatar.

After this initial step, the feedback manipulation took place. For participants who were randomly assigned to be in the feedback condition, when they proceeded to the next page after the avatar page, a notification popped up congratulating the user on their progress and “leveling up” thanks to their persistent effort for the past 30 days. For participants in the no feedback condition, they did not receive any pop-up notifications about past progress. Next, all the participants would continue to review some sample activities they could record using the website.

On the following page, for participants who were randomly assigned to the community condition, they were told that they were part of a social connection community, and that they would read varying comments from five other members. These comments included some supposed other users of the website asking questions and some presenting their current progress, while others expressed gratitude for having such a website to pursue their green consumerism goals. For those in the non-community condition, this part of the website was not displayed.

Measurement

Unless indicated, all the variables were measured on a seven-point Likert-type scale, where 1 = strongly disagree and 7 = strongly agree.

Measured Independent Variable

From 1 (Strongly liberal) to 7 (Strongly conservative), we asked participants one question to indicate their political ideology, $M = 3.63$, $SD = 1.77$.

Other Measured Variables

A full list of measurement items along with their descriptive statistics and reliability is listed in Appendix C. For the covariate¹, we measured green identity adapted from Anderson and Cychosz (1994). For outcome variables, we measured both concrete future green consumption and abstract future green consumption (Gibbons et al., 1998; Ohtomo & Hirose, 2007).

Results

To address our hypotheses and research questions, we ran ordinary least squares (OLS) regressions in R. First, we checked whether the moral licensing effect occurred, irrespective of the gamification manipulations, by specifying only the main effects of moral identity, the licensing manipulation, three gamification techniques, and political ideology as the predictors in the OLS regression. We found that when participants were primed to think about their previous green efforts, they reported greater concrete future green

consumption than those in the control condition ($b = .27$, 95% CI [.01, .52], $p = .04$). However, we did not find such an effect on abstract future green consumption ($b = .01$, 95% CI [-.19, .21], $p = .93$). Such inconsistency might arise from the absence of moral licensing, or alternatively, the idiosyncrasies associated with self-report measures on behavioral intentions varying in level of abstraction.

We next examined if gamification and political ideology moderated the effect of the licensing manipulation on behavioral intentions by specifying OLS regressions with interaction terms. Table 1 presents the results on both concrete and abstract future green consumption intentions. Rejecting H1-3, we found using a single gamification technique (either avatar customization, feedback, or social connection) did not predict one's green consumptive intentions, whether primed for prior green efforts or not. In addressing RQ1 and RQ2, we did not find significant moderating effects caused by the combination of gamification techniques or political ideology. Although there was a five-way interaction on concrete consumption ($b = 1.05$, 95% CI [-.15, 2.25], $p = .09$) and a four-way interaction (among licensing manipulation, customization, social connection, and ideology) on abstract consumption ($b = -.63$, 95% CI [-1.13, .06], $p = .07$) that hinted at more nuanced patterns, given the number of higher-order interactions, we did not probe further in order to reduce the risk of committing Type I errors.

Table 1. Effects on concrete consumption and abstract consumption.

	Concrete consumption	Abstract consumption
(Intercept)	3.22 *** [2.14, 4.31]	3.94 *** [3.07, 4.81]
Green identity	0.44 *** [0.36, 0.53]	0.54 *** [0.47, 0.60]
License (0 = control)	1.26 [-0.45, 2.97]	0.11 [-1.26, 1.47]
Customization (0 = absence)	-0.35 [-1.98, 1.29]	-0.10 [-1.42, 1.21]
Feedback (0 = absence)	-0.03 [-1.54, 1.47]	0.28 [-0.92, 1.49]
Community (0 = absence)	-0.44 [-2.05, 1.17]	0.03 [-1.26, 1.32]
Ideology	-0.14 [-0.40, 0.12]	-0.16 [-0.37, 0.05]
License x Customization	-0.37 [-2.78, 2.03]	-0.72 [-2.65, 1.21]
License x Feedback	-1.04 [-3.44, 1.36]	-0.36 [-2.28, 1.57]
Customization x Feedback	-0.33 [-2.53, 1.86]	-0.68 [-2.44, 1.08]
License x Community	-0.54 [-2.94, 1.86]	-0.34 [-2.27, 1.58]
Customization x Community	0.13 [-2.19, 2.46]	-0.62 [-2.49, 1.24]
Feedback x Community	-0.24 [-2.53, 2.05]	-1.22 [-3.06, 0.61]
License x Ideology	-0.30 [-0.73, 0.13]	-0.11 [-0.46, 0.23]
Customization x Ideology	0.20 [-0.19, 0.58]	0.05 [-0.26, 0.36]
Feedback x Ideology	0.06 [-0.31, 0.43]	-0.10 [-0.40, 0.20]
Community x Ideology	0.07 [-0.32, 0.45]	-0.04 [-0.35, 0.27]
License x Customization x Feedback	0.39 [-2.90, 3.69]	0.43 [-2.21, 3.08]
License x Customization x Community	1.06 [-2.32, 4.44]	1.48 [-1.23, 4.19]
License x Feedback x Community	1.19 [-2.27, 4.64]	0.52 [-2.25, 3.29]
Customization x Feedback x Community	1.05 [-2.15, 4.26]	2.00 [-0.57, 4.57]
License x Customization x Ideology	0.16 [-0.46, 0.78]	0.31 [-0.19, 0.81]
License x Feedback x Ideology	0.30 [-0.28, 0.88]	0.19 [-0.28, 0.65]
Customization x Feedback x ideology	0.06 [-0.49, 0.61]	0.22 [-0.22, 0.66]
License x Community x Ideology	0.29 [-0.28, 0.86]	0.21 [-0.25, 0.67]

Customization x Community x ideology	-0.10 [-0.67, 0.48]	0.13 [-0.34, 0.59]
Feedback x Community x Ideology	0.09 [-0.46, 0.64]	0.29 [-0.15, 0.73]
License x Customization x Feedback x Community	-2.25 [-7.00, 2.50]	-1.52 [-5.33, 2.29]
License x Customization x Feedback x Ideology	-0.21 [-1.06, 0.64]	-0.25 [-0.93, 0.43]
License x Customization x Community x Ideology	-0.55 [-1.42, 0.31]	-0.63 [-1.33, 0.06]
License x Feedback x Community x Ideology	-0.52 [-1.34, 0.29]	-0.20 [-0.85, 0.46]
Customization x Feedback x Community x Ideology	-0.40 [-1.20, 0.41]	-0.51 [-1.15, 0.14]
License x Customization x Feedback x Community x Ideology	1.05 [-0.15, 2.25]	0.64 [-0.32, 1.61]
N	531	531
Model fit	$F(32,498) = 4.94, p < .001$	$F(32,498) = 10.04, p < .001$
R ²	.24	.39
Adjusted R ²	.19	.35

*** $p < .001$. Numbers presented in brackets are 95% confidence intervals of the parameters.

Discussion

Are Gamification Techniques Effective?

Our data showed a lack of moral licensing in the digital green consumerism context and, instead, provided support for moral consistency amongst users of an online green consumer interface. These findings add to a recent stream of critics of moral licensing such that some scholars have found only conditional support for the moral licensing effect in the environmental context (Bauer & Menrad, 2020; Gholamzadehmir et al., 2019), while others have failed to replicate the original findings of moral licensing (Sachdeva et al., 2009). Additional empirical evidence is needed to further illuminate motivational complexities in behaviors related to green consumerism activities performed in digital spaces where different affordances can be employed (or not) in order to potentially foster greater sustainability-related behaviors.

As such, gamification elements could still be of practical utility to facilitate continual green consumption, if people are less subject to moral licensing perceptions. In this study, we aimed to test two

overarching questions: (a) To what extent can different gamification techniques boost website users' motivations to pursue green lifestyles without being subject to moral licensing? And, (b) How would users with different political ideologies respond to such gamification effects in light of existing ideological differences in support for eco-friendly outcomes? Disconfirming our predictions, statistically significant interactions among licensing manipulation, gamification, and political ideology did not emerge, which may not be entirely surprising given the high number of experimental conditions. In some post-hoc analyses not pertinent to our core set of hypotheses, we even found some gamification features had backfired such that exposure to the non-gamified website led to a higher level of green consumptive intentions than exposure to the gamified version². We speculate that there might exist other boundary conditions for gamification to work in the green consumerism contexts. Hence, our null findings invite future research to continue exploring how to implement gamifications features in consumer experience to validate or falsify its effectiveness.

Interestingly, in assessing the outcomes of our gamification intervention on purchasing intentions, we did not find consistent results dealing with the effects of gamification on concrete versus abstract intentions. One possible explanation could be attributed to the motivational complexity related to green consumerism. According to Moisander (2007), different people tend to construe abstract consumptions in various ways because their references are based on different premises. Therefore, compared to concrete consumption (operationalized by the likelihood to purchase specific genres of products in the current study), asking participants to indicate their general intention (i.e., abstract consumption) failed to provide participants solid anchors to refer back to, thus resulting in inconsistent patterns.

Implications

The study has several theoretical implications. First, we explored both situational (i.e., gamification) and dispositional (i.e., political ideology) influences on the existence and strength of moral licensing effects in the context of green consumer websites. As such, we helped identify boundary conditions of existing moral licensing models. Our findings further raised more questions about the role of gamification as an important antecedent to effective sustainability communication.

Second, guided by SDT, our study expands the scope of gamification into contexts beyond education (e.g., Dicheva et al., 2015) and business (e.g., Kumar, 2013) to also address self-regulated

consumer behaviors. In light of the ineffectiveness of gamification techniques observed in the study, the findings invite further investigation into furnishing the theoretical framework of gamification. Moreover, while our null findings regarding gamification contradicted previous research, they suggest that the operationalization of different elements of motivation—autonomy, competence, and relatedness—might play a pivotal role in determining the effectiveness of gamification.

These results have several important implications for designing websites and other interactive spaces, like mobile applications, that are meant to promote eco-friendly behaviors. As such, it may behoove companies or organizations promoting green consumerism to carefully consider whether enhancing gamified experience would lead to desirable outcomes. When implementing a gamification system, it is imperative for practitioners to gather more empirical evidence to accurately understand consumers' preferences beforehand for the sake of cost-effectiveness.

Limitations and Future Work

The current study bears some limitations for future work to address. First, there are numerous ways to operationalize gamification to increase the effectiveness of the three critical parameters (i.e., autonomy, competence, relatedness). For instance, complementary to providing feedback, badges have also been used to increase user engagement (Hamari, 2017). Therefore, scholars are encouraged to further test alternative gamification operationalizations.

Second, restrained by the large number of experimental conditions we had, we were unable to test underlying psychological mechanisms that accounted for moral licensing/consistency perceptions (e.g., intrinsic needs satisfaction). Future research might consider performing more advanced data analyses to further illuminate how people differing in political ideologies cognitively and emotionally process gamified experience.

Third, this online experiment only tested the short-term effects of gamification on motivating green consumerism activities in a mock website, which was captured by consumption intentions instead of real consumption behaviors. This could pose a threat to the external validity of the present study as individuals did not use the website in their daily lives and did not spend extended time with the site. To further validate the efficacy of gamification, future researchers could conduct longitudinal studies to observe whether gamified experience could influence environmentally friendly practices in the real world.

Notes

1. In this study, besides green identity, we also tested if demographics (i.e., gender, age, ethnicity, education level, household income) that have previously been correlated with green consumerism (Chekima et al., 2016) should be statistically controlled for. However, due to successful experimental randomization (i.e., there were no statistically significant differences across experimental conditions), the current paper only statistically controlled green identity throughout the data analysis.

2. We ran some post-hoc analyses to just look at effects of the three gamification techniques in green consumerism contexts. For instance, due to the absence of interaction effects observed in the main study, we specified another OLS regression that probed the main effect and interaction effect of customization, feedback, and community while listing green identity, political ideology, and licensing manipulation as the covariates. For concrete consumption, pairwise comparisons suggested that in the presence of a customized avatar, having a community on the website led to significantly lower future intentions than not ($p = .009$).

Lewen Wei (Ph.D.) is a postdoctoral research fellow of the Gamification Group in the Faculty of Information Technology and Communication Sciences at Tampere University. Her broad program of research focuses on how media technology and technology-mediated messages can influence people's cognitions, emotions, and behaviors.

Jessica Myrick (Ph.D.) is a Professor in the Donald P. Bellisario College of Communications and a co-funded faculty member in the Institutes of Energy and the Environment at Penn State University. She studies media processes and effects related to emotions and beneficial outcomes, such as improved health behaviors, decreased stigma toward outgroups, and increased civic engagement with environmental issues.

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Appendix A. Vignette Stimuli

For Licensing Groups

Green consumerism is the act of buying products and services that are compatible with environmental protection. These types of “green” consumer behaviors help promote sustainability whenever consumers pay attention to the origins and impacts of the products they purchase.

Today, we are asking you to put yourself “in the shoes” of a green consumer. Below is a scenario we would like you to read and imagine yourself in it. Try to put yourself in the mindset suggested by the below scenario.

A little over a month ago, you saw a news story about how some products people use every day, from pesticides used on non-organic foods to face wash with plastic beads that do not dissolve when washed down the drain and end up hurting fish, are causing environmental damage. The news story mentioned a new trend toward green consumerism whereby people pay attention to the materials used in products and how the products and services they use impact the environment. After thinking about it for a little while, you have decided to pursue green consumerism by adopting a lifestyle that helps protect and maintain the world in which we live. In order to achieve this goal of buying products that promote sustainability and help protect the environment, you have found a website that can help keep you on track. The website is called “Green-It-Up” and it allows you to record your daily purchases and activities and make sure your purchases are in line with your own pro-environmental values. For the past 30 days, every day, you have worked to consciously purchase organic food when grocery shopping. You have chosen cleaner energy options when traveling by using cleaner fuel, carpooling, biking, walking, or using public transportation. And, you have used only non-animal tested skincare and hygiene products with environmentally friendly ingredients. You are very determined to keep up this green lifestyle because you want to contribute to environment protection while still enjoying a comfortable lifestyle.

For Control Groups

Today we are asking you to review a few different types of media. The first type of media we are asking you to review is from Wikipedia. Below are portions of Wikipedia entries about various racquet sports. Because Wikipedia entries are produced by different and often anonymous users, we are interested in how content about similar topics is both the same and different across different entry writers. Please take a few minutes to read the entry segments below and notice both similarities and differences between not only the style of writing but between the different sports themselves.

1. Tennis is a racket sport that can be played individually against a single opponent (singles) or between two teams of two players each (doubles). Each player uses a tennis racket that is strung with cord to strike a hollow rubber ball covered with felt over or around a net and into the opponent's court. The object of the game is to play the ball in

such a way that the opponent is not able to play a valid return.

2. Badminton is a racquet sport played using racquets to hit a shuttlecock across a net. Although it may be played with larger teams, the most common forms of the game are "singles" (with one player per side) and "doubles" (with two players per side). Badminton is often played as a casual outdoor activity in a yard or on a beach; formal games are played on a rectangular indoor court.

3. Table tennis, also known as ping-pong, is a sport in which two or four players hit a lightweight ball back and forth across a table using small bats. The game takes place on a hard table divided by a net. A point is scored when a player fails to return the ball within the rules. Play is fast and demands quick reactions. Spinning the ball alters its trajectory and limits an opponent's options, giving the hitter a great advantage.

Appendix B. Manipulation of Gamification Elements

Manipulation of Avatar Customization



The screenshot shows a dark grey webpage for "Green-It-Up". At the top center is a green circular logo with a white recycling symbol. Below the logo, the text "Green-It-Up" is written in a green, cursive font. The main content area contains the following text:

Before we officially start, please use the website below to customize your own avatar to represent yourself in Green-It-Up.

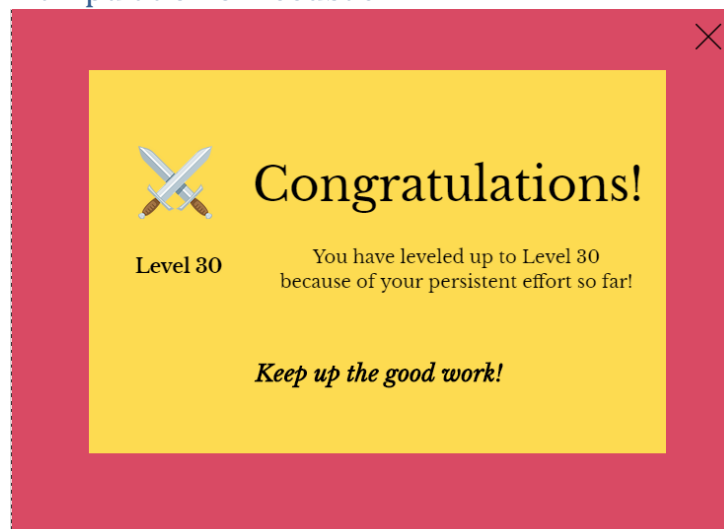
Please do not skip this part.

The steps are as follows:

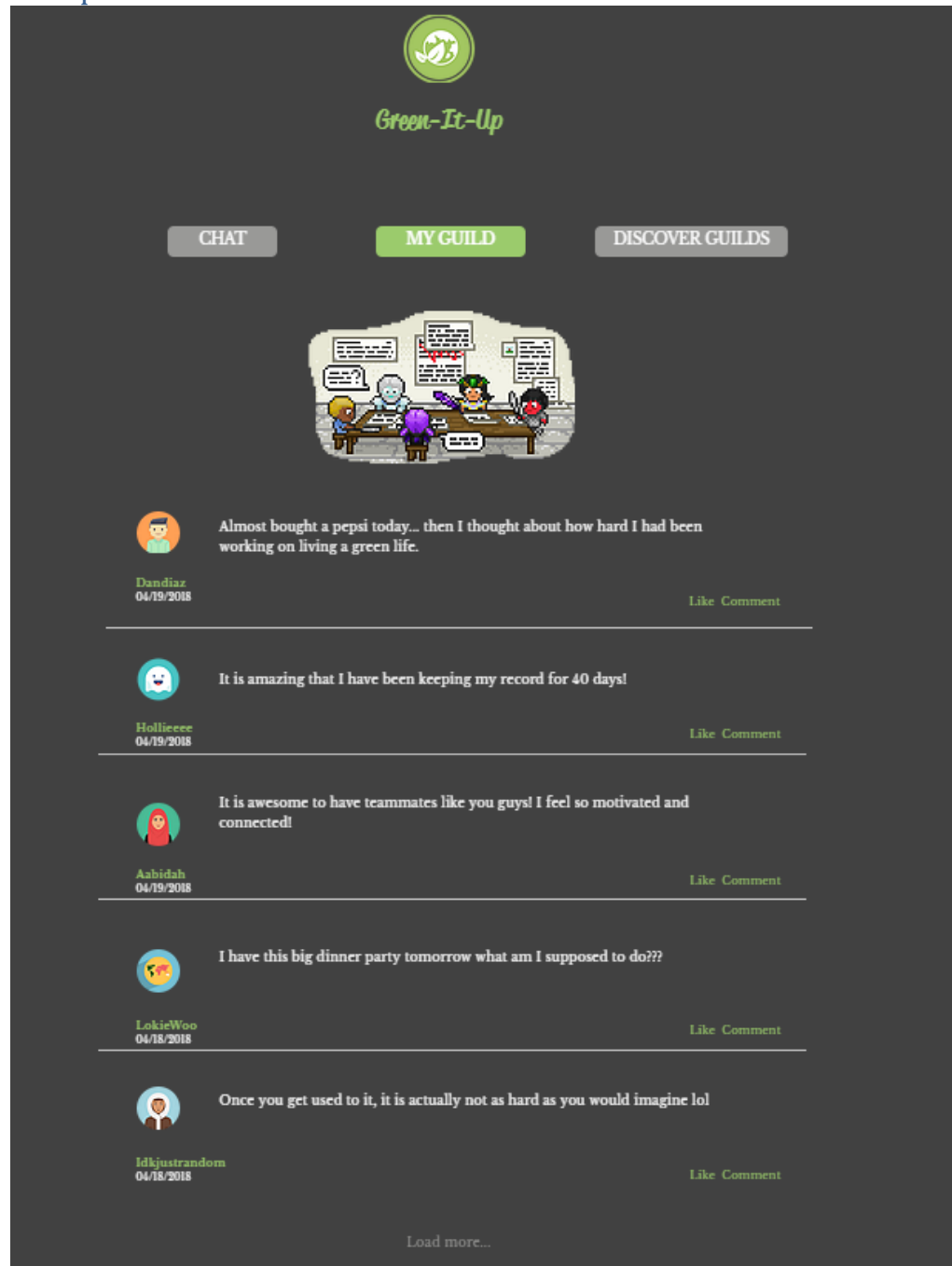
1. Right click and open <http://avatarmaker.com/> in another browser. **Do not** close the current browser
2. Customize an avatar of your own will.
3. Save your customized avatar using the "download" tab to your own computer.
4. Come back to the current page. Click the forward button to proceed. In the following page, you will be asked to upload your saved avatar.

Note: Please be sure to save your avatar as you will be asked to use it when browsing Green-It-Up. Also, there will be questions related to this in the final questionnaire.

Manipulation of Feedback



The screenshot shows a red-bordered pop-up window with a yellow background. In the top right corner, there is a red 'X' icon. On the left side, there is an icon of two crossed swords. To the right of the icon, the word "Congratulations!" is written in a large, bold, black font. Below the icon, the text "Level 30" is displayed. To the right of "Level 30", the text "You have leveled up to Level 30 because of your persistent effort so far!" is written in a smaller black font. At the bottom of the pop-up, the text "Keep up the good work!" is written in a bold, italicized black font.



Appendix C. Measurement Items

Variable	Items	M (SD)	α
Green identity	I consider myself as a person with green identity.	3.89 (1.60)	.96
	When I describe myself to others, I would include my involvement with green consumerism.		
	I have numerous goals related to green consumerism.		
	Green consumerism is a central factor to my self-concept.		
	I need to consume green products to feel good about myself.		

	Others see me as someone who consume green products regularly. For me, being a person with green identity means more than just consuming green products. I would feel a real loss if I were forced to give up consuming green products. Green consumerism is something I think about often.		
	In planning your next week's purchases, from 1 (regular) to 7 (organic/eco-friendly), how likely are you going to purchase the following products?		
Concrete green consumption	Fruits Milk Coffee Clothing Fan Soap	4.61 (1.64)	.86
Abstract green consumption	How willing will you purchase green products? How willing will you purchase pro-environment products? For the next three months, I intend to purchase green products. For the next three months, I intend to do my best to purchase pro-environment products.	5.32 (1.47)	.95

Note. *M* is Mean, *SD* is Standard Deviation, α is Cronbach's α .

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