



Analysis

The influence of contextual cues on the perceived status of consumption-reducing behavior

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ABSTRACT

The question of whether and when behaviors that reduce overall consumption are associated with low status has not been adequately explored. Previous research suggests that some low cost environmentally-friendly behaviors are stigmatized, but has not accounted for the impact of contextual information on perceived status. Here, we use costly signaling theory to describe why consumption-reducing behaviors may be associated with low status and when and how this perception might change. We report two empirical studies in the U.S. that use a large sample of graduate students ($N = 447$) to examine the effects of contextual information on how consumption-reducing behaviors are perceived. We then explore the perceived appropriateness of consumption-reducing behavior for signaling status relative to alternative non-environmental behaviors. Using linear mixed-effects models, we find that information indicating that consumption-reducing behavior is a choice results in higher perceived status. However, we find that consumption-reducing behaviors are perceived to be less appropriate for conveying status than consumption-intensive behaviors. The environmental orientation of the respondent has little effect on perceptions of status in both studies. These results provide insights into the dynamic, evolutionary process by which sustainable consumption might become more socially acceptable and the social factors that may inhibit this process.

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1. Introduction

Consumption is in many ways a social process that communicates information about identity, signals status, and indicates membership in, or distinction from, social groups (Belleza et al., 2014; Berger and Heath, 2008; Sütterlin and Siegrist, 2014). Perceptions of the social signals associated with behaviors and purchases, and the ways other people interpret those signals, can shape consumption patterns. Here, we examine the status signals associated with environmentally-friendly forms of consumption to determine whether and in which contexts concerns about status might inhibit sustainable consumption, and we consider the dynamic process by which sustainable consumption might become more socially acceptable.

There is a long history of exploring the symbolic nature of consumption, the signaling function it serves, and how social context can shape consumption decisions or practices (see Jackson (2005), Miller (2009), and Axsen and Kurani (2012) for reviews). Status is

one characteristic that individuals can display through consumption, and the pursuit of status and social distinction can contribute to conspicuous overconsumption (e.g. Veblen, 1899). However, as awareness of environmental problems increases, norms about appropriate behavior can change along with the symbolic meaning attached to environmentally-friendly consumption. Recent studies have highlighted the symbolic value of pro-environmental behaviors (Noppers et al., 2014) and noted that behaviors can vary in their symbolic significance, which has important implications for how these behaviors are perceived and adopted (Sütterlin and Siegrist, 2014). Other studies suggest that being seen as environmentally friendly has social value and that status considerations can motivate high-cost, 'green' consumption (Delgado et al., 2015; Griskevicius et al., 2010; Sexton and Sexton, 2014).

However, fewer studies have explored the relationship between status and low cost environmental behaviors that reduce consumption of energy and materials. One study suggests that low cost environmental behaviors (e.g. riding the bus or line drying laundry) are associated with low status (Sadalla and Krull, 1995) while another suggests that low cost behaviors are not socially stigmatized (Welte and Anastasio, 2009). The relationship between low cost environmental behaviors and social status has not been adequately explored, nor has the implication of status perceptions for the spread of such behaviors.

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Both status and consumption are complex, multi-faceted terms. We define status to be one's relative standing or rank in a group¹ that has been awarded by others based on prestige and deference, and which typically, although not always, correlates with wealth or other socioeconomic indicators. Status is one form of social value associated with certain behaviors and consumption patterns. Status is also important because both theory (Henrich and Gil-White, 2001; Richerson and Boyd, 2005) and empirical research (Cohen and Prinstein, 2006; Van den Bulte and Stremersch, 2004) suggest that the behaviors and practices of higher status individuals are more likely to be adopted and spread. While by no means the sole determinant of consumption (Ropke, 2009), the perceived status of goods or services can impact their diffusion.

Low cost behaviors that reduce consumption are important because of the implications for sustainability. We use 'consumption-reducing behavior' in contrast to 'green' consumption and 'consumption-intensive' behaviors (see Box 1 for definitions). The distinction between 'consumption-reducing' and 'green' consumption is similar to the difference between 'curtailment' or 'conservation' behaviors (e.g., turning off the lights) and 'efficiency' behaviors (e.g., using energy efficient light bulbs) (Karlin et al., 2014).

Technological advances, particularly in improving material and energy efficiency, enable 'green' consumption but may be insufficient for reaching long-term sustainability goals (Jackson, 2009) due to rebound and substitution effects (Jenkins et al., 2011), and scale effects linked to rising affluence (Myers and Kent, 2004). 'Green' consumption may be more socially acceptable, but it perpetuates a society that values the acquisition of material goods. These concerns have led to calls for changes in the social and cultural structures that create the conditions for overconsumption (Speth, 2012). Conversely, 'consumption-reducing' behaviors may reduce overall material and energy consumption, but may be hindered by perceptions that associated lifestyles are relatively lower status.

Here, we use costly signaling theory to describe why consumption-reducing behaviors may be associated with low status and when and how this association might change. We report two empirical studies in the U.S. that use a large sample of graduate students to determine (i) the effects of contextual information on how those engaged in consumption-reducing behaviors are perceived, (ii) the appropriateness of consumption-reducing behavior for signaling status relative to alternative consumption-intensive behaviors, and (iii) group differences in these perceptions. The results suggest that information about the motivations for consumption-reducing behavior can clarify the social signal and increase the perceived status of such behaviors. However, such behaviors are still perceived to be less appropriate for conveying high status than consumption-intensive behaviors. These insights have important implications for the adoption and spread of sustainable consumption. In the following sections we discuss the relationship between status and consumption, explain how costly signaling theory helps us understand that relationship, and present and interpret key results.

1.1. Status and Consumption

Because humans are a highly social species, part of the benefit derived from consumption comes from how it is viewed by others (Heffetz, 2004). Individuals can use material consumption to display wealth and signal earnings potential, which are often equated with status (Godoy et al., 2007). Status is an important motivating force because high status individuals are evaluated more favorably, deferred to more,

¹ We each belong to multiple groups at a given time, particularly in modern society, and the size of relevant in-groups can range from small peer groups to political parties, religions, and nations. Further, behaviors can signal group identity and/or social differences. Thus, "rank or standing within a group" need not imply that social signals are only relevant for a small group of well-known peers.

Box 1 Definitions of key terms.

Consumption-reducing	Behaviors that provide either less of a good or service, or a qualitatively different good or service, than consumption-intensive behaviors but with lower environmental impact. The reduction or change in the good or service is typically achieved through behavioral change rather than the purchase of a particular product. These behaviors typically have no or low monetary costs but potentially substantial non-monetary costs (e.g. time, knowledge, effort, inconvenience).
Green consumption	Consumption that provides the same good or service as consumption-intensive behavior, but with lower environmental impact, which is typically achieved through the purchase of a product that increases efficiency.
Consumption-intensive	Non-environmental options that stand in contrast to green consumption or consumption-reducing behaviors (e.g., driving an SUV compared to driving a Prius (green consumption) or taking the bus (consumption-reducing)).

and have more resources allocated to them (Hardy and van Vugt, 2006; Henrich and Gil-White, 2001).

The relationship between consumption and status has been examined through research on conspicuous consumption (Veblen, 1899), positional goods (Hirsch, 1976), and symbolic capital (Bourdieu, 1977) (see Heffetz (2004) for a brief review). Conspicuous displays of consumption signal that one can afford to spend money on a product that has only slightly more (if any) functional value, but has greater symbolic value than a more commonplace product. Those who can afford such displays benefit from higher social ranking in societies in which wealth and high incomes are valued. The pursuit of status, therefore, provides one explanation for overconsumption. We consume luxury goods we do not 'need', in part, to signal our wealth and acquire status. Further, because relative status is more important than absolute status (van Vugt et al., 2014), we are compelled to match or exceed the consumption patterns of those around us to remain distinct and worthy of deference (Hirsch, 1976).

1.2. Costly Signaling, Status, and Sustainable Consumption

The economic cost of conspicuous consumption makes costly signaling theory an appropriate framework for understanding these dynamics. Costly signaling theory describes the mutually beneficial and reliable communication of traits or attributes that are hard to perceive directly (Bliege Bird and Smith, 2005). Particular behaviors or practices communicate a signal, which, when recognized by the observer, benefits both the sender and the receiver (Cronk, 2005). Using superficial cues to signal underlying traits allows for more efficient coordination between the sender and receiver (McElreath et al., 2003). For a superficial cue to be a reliable shortcut, the signal must accurately represent the underlying trait. In the context of conspicuous consumption, the costliness of a given purchase ensures that only those who can afford to display that signal can use it to communicate (Bliege Bird and Smith, 2005).

However, conspicuous consumption is not the only way to signal one's ability to absorb costs. Cooperative, prosocial behavior also entails individual costs and can therefore be status-enhancing (van Vugt et al.,

2007). In fact, we may act prosocially to gain social approval and the respect of others (Ariely et al., 2009). Prosocial individuals are seen as being more trustworthy, more desirable as friends, allies, and romantic partners, and are more likely to be elected as leaders (Gintis et al., 2001; Willer, 2009). Therefore, conspicuous consumption and conspicuous altruism (Griskevicius et al., 2007) are both communicative acts that signal one's ability to absorb costs.

The relationship between prosocial behavior and status is important in the context of sustainable consumption because green consumption can be considered prosocial. Owning a hybrid car could entail personal costs (less comfort and lower performance) for collective benefits (lower CO₂ emissions). Driving a Prius or ultracompact fuel-efficient vehicle can signal that one is more concerned about conserving energy and contributing to the collective good than about personal benefits derived from buying an equally priced, but more luxurious, higher performance vehicle.

Previous research suggests that symbolic attributes motivate sustainable consumption decisions (Noppers et al., 2014) and that green consumption can be associated with higher status. For instance, Griskevicius et al. (2010) find that being primed to think about status makes participants more likely to choose a green product over a more luxurious, non-green product of equal price. Similarly, Sexton and Sexton (2014) find that individuals are willing to pay more to drive a Prius because it signals their "environmental bona fides". Conversely, other studies have found that consumption-reducing behaviors, such as line-drying one's clothes and taking the bus, are associated with low status (Sadalla and Krull, 1995). Yet consumption-reducing behaviors can also entail personal costs involving time, convenience, and physical energy.

The status associated with pro-environmental behavior is a function of the relative cost to the individual (the more you give up, the more prosocial you are perceived to be), the strength of collective benefits provided, and the values of the person or group observing the behavior (Willer, 2009). Costly signaling theory helps explain why green consumption might be associated with high status to a greater extent than consumption-reducing behaviors even though both can entail personal costs and the latter may be more beneficial environmentally. In isolation, consumption-reducing behavior is not a reliable signal of prosociality because the costs of such behavior are not evident. The prosociality of consumption-reducing behavior is likely linked to whether it is a choice rather than a necessity, and thus to the motivations for the behavior. Imagine a bus rider who endures a longer, less convenient ride than if they had driven a vehicle. If riding the bus was a choice taken to reduce environmental impacts, then it could be viewed as prosocial; the rider bears the costs of the loss of flexibility and convenience. However, a rider taking the bus out of necessity borne of low income has no alternative, so the behavior is not costly in relative terms.

If the motivation for a behavior indicates the true costs incurred (Ariely et al., 2009; Willer, 2009), how might one differentiate between those who choose to take the bus and those who need to take the bus? A person who rides the bus out of choice may need to display more complex combinations of signals (Skyrms, 2010) to make clear their motivation and indicate the degree to which their behavior is prosocial. In previous studies that have considered single behaviors in isolation, status perceptions and symbolic value are measured in relation to the behavior and not the individual engaged in the behavior (e.g. Sütterlin and Siegrist, 2014). Such studies miss the potential importance of combinations of signals.

1.3. Social Markers, Signaling, and Groups

Social markers can indicate membership in a group and/or distinction from a group and might have evolved to facilitate cooperation between individuals who share social norms (McElreath et al., 2003). The argument outlined above suggests that combinations of behaviors

or other indicators (e.g. dress, dialect) may be needed to send a clear social signal. Maintaining this combination of signals is important because group composition and underlying traits can change, which requires signals to be updated (Bliege Bird and Smith, 2005), and because signals may be relevant for groups that extend beyond our well-known peers (see footnote 1).

Importantly, members of different social groups may interpret and respond to signals differently (Ariely et al., 2009; Cronk, 2005), which has implications for the adoption of those behaviors. As Willer (2009:39) notes, "the more group motivation is considered a meritorious trait within a given culture the more contributions will tend to earn an individual improved status standing among groups within, or influenced by, that culture."

In a group that values pro-environmental action, consumption-reducing behavior may be more readily recognized as prosocial and thus worthy of higher status than in a group with lower levels of environmental awareness and concern. Higher status is important because prestigious individuals are more likely to be copied (Henrich and Gil-White, 2001). As behaviors become more common within a group, frequency dependent payoffs may further facilitate the spread of a behavior (Henrich, 2004). Therefore, group level traits such as social norms and social markers can shape which behaviors are associated with high status and are more likely to be adopted within a given group (Henrich, 2004; Berger and Heath, 2008; Gambetta, 2009). Sexton and Sexton (2014) provided evidence for these dynamics when they found that driving a Prius confers greater social benefit in communities with strong environmental values than in other communities. In short, particular combinations of behaviors may be needed to send a clear social signal and costly social signals may have more valence, and thus greater social value, in some social groups than others.

However, previous research has not adequately explored whether additional contextual information can clarify a signal and affect perceptions of the individual engaged in particular behaviors. In addition, few studies other than Sexton and Sexton (2014) have explicitly considered the potential for pro-environmental behaviors to have greater (or different) signaling value in some groups than in others. The two studies reported below address these empirical shortcomings.

2. Study 1: Perceiving Status

Our first study addresses two questions:

- Question 1 Does additional information about an individual engaged in consumption-reducing behavior change the perceived status of this person? We expect that perceived status will be significantly higher if contextual information indicates that consumption-reducing behavior is a choice rather than a necessity, than if the information fails to signal that it is a choice (see Fig. 1 for a depiction of hypothesized relationships).
- Question 2 Does perceived status depend on the characteristics of the observer? We expect that perceived status will be higher for environmentally-oriented observers than for non-environmentally-oriented observers because the former will be more likely to interpret consumption-reducing behavior as being motivated by environmental concern and so a choice rather than a necessity (see Fig. 1).

2.1. Methods

We created scenarios describing a sequence of behaviors over the course of a Saturday morning in a typical household. The scenarios for a given respondent include the same consumption-reducing behavior, but systematically vary in the contextual information they provide.

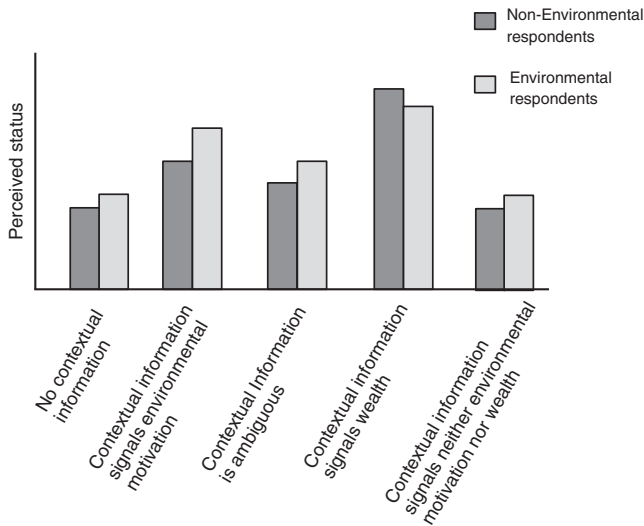


Fig. 1. Hypothesized mean perceived status of actors engaged in consumption-reducing behavior when different types of contextual information are provided. The conditions represent the five scenarios described in the methods and illustrate expected differences between respondent type and scenarios but may not accurately represent the magnitude of those differences.

We used the scenarios to elicit perceptions of status through an online survey using Survey Monkey.

The first section of the survey included five time diaries that describe the daily behaviors of a hypothetical person. This approach was modified from the activity list used by Sadalla and Krull (1995) and Welte and Anastasio (2009). Each time diary describes domestic activities and includes reference to one of three consumption-reducing behaviors (insulating windows with plastic sheeting,² riding the bus to the grocery store, repairing worn clothes) (see Table 1). These three baseline behaviors were chosen because they were identified as being associated with low status in a previous study (Sadalla and Krull, 1995) and were considered by undergraduate psychology students at a large mid-western U.S. university to be associated with low status ($N = 54$, unpublished data). We include three baseline behaviors to explore whether the relationship between status and consumption-reducing behavior holds across behaviors with different characteristics including how visible they are, how frequent they are, and the domain in which they take place (home energy, transportation, clothing).

The first time diary is the *null condition*, which includes a description of everyday activities and only the baseline, consumption-reducing behavior (see Table 1 for descriptions of the time diary for each baseline behavior). The other four time diaries add different types of contextual information to the null time diary. The *environmental treatment* duplicates the null but also includes reference to a behavior that is clearly pro-environmental, which may signal that the actor is motivated by environmental concern and that the baseline behavior is a choice. The *ambiguous treatment* duplicates the null but also includes reference to a behavior that could be viewed as pro-environmental, or could be indicative of other interests or motivations. Ambiguous behaviors have environmental benefits but are not necessarily an intentional choice motivated by environmental concern, and thus fail to provide clear information about the actor's motivations. The *luxury treatment* includes an additional behavior that does not reduce environmental impact but indicates wealth, thus signaling that the actor could afford alternatives to the baseline behavior. The fifth and final time diary is the *control treatment*, which refers to a behavior that is

² We consider plastic insulation to be 'consumption-reducing' behavior because it is a low cost way to reduce energy use relative to installing new, super-insulated windows. Further, plastic insulation is visible, and thus relevant for perceptions of status, and was identified as being associated with low status (see reference to unpublished data above).

neither pro-environmental nor associated with wealth in that it represents a necessary action that most anyone would take. Treatment behaviors differed so each time diary would be as believable as possible. For instance, it would not make sense to pair the treatment behaviors, "driving a fuel-efficient hybrid" or "drives to the farmers' market" with the baseline behavior "take the bus".

The five time diaries were presented in the above order for each respondent. Respondents were asked to rate the actor in each time diary on a semantic-differential scale from high status to low status.³ This adjectival pairing, also used in Sadalla and Krull (1995) and Welte and Anastasio (2009), formed the primary dependent variable.⁴ The baseline behavior remained the same across the five time diaries for a given respondent, as did the gender of the actor portrayed. Respondents could therefore take one of six surveys (three baseline behaviors \times two actor genders). The actors' names were changed to avoid the impression that all time diaries described the same individual. The study thus employs a within-subjects design for treatment effects, and a between-subjects design for baseline behaviors and actor genders.

To address whether the environmental orientation of the respondent affected how they perceived the status of behaviors, we recruited graduate students from different academic programs in five large U.S. universities located in New England, the Mid-West, and California. For one half of the sample, we recruited graduate students from environmentally-oriented programs (e.g. ecology, environmental studies, environment and natural resources, landscape architecture) who were expected to be part of groups that are generally concerned about environmental sustainability. For the other half of the sample we recruited students from graduate programs that were not considered to be environmentally-oriented (e.g., MBA, accounting, chemical engineering, economics, industrial and systems engineering, fashion and retail studies).

An email was sent to each graduate program containing a link to one of the six online surveys for their group (giving a total of twelve surveys: three baseline behaviors \times two actor genders \times two respondent categories). Once 40 respondents had logged off a survey, it automatically closed and subsequent participants were directed to the next open survey. This process continued in sequence until all six surveys were closed for both categories of respondents. Respondents were compensated with a \$10 Amazon.com Gift Card claim code upon completion of the survey.

The independent variables for question one were the *baseline behavior* (insulate windows, take the bus, repair clothes) and the *scenario* (null condition only, null + environmental treatment, null + ambiguous treatment, null + luxury treatment, null + control treatment) for each time diary. The gender of the actor and the gender of the respondent were included as controls. For question two, the environmental orientation of the respondent (*respondent category*) was also included as an independent variable.

2.2. Analysis

We conducted all analyses in R statistical computing version 3.0.2 (R Core Development Team, 2013). Perceived status was scored on a 7-point scale and is treated as an ordinal variable, so we fit a proportional odds mixed effects model in which *respondent* was the random effect. A visual test of the parallel slopes assumption (see Harrell (2001)) was conducted prior to fitting the models, which indicated that the assumption was generally met for all predictors. The assumption of parallel

³ The wording for this question was: "Now that you have formed your idea of what (name of actor) is like, please rate him/her on a scale from 1 to 7 along each of the following pairs of adjectives. Please pay close attention to the words on both the right and left side. For example, a "1" would mean that you would consider the person to be very attractive and a "7" would mean that you consider them not to be attractive at all."

⁴ We also asked about attractiveness, ambition, wealth, wastefulness, education, white-collar/blue-collar, pleasantness, phoniness, intelligence, modesty, prestige, arrogance, and leadership to avoid priming respondents on the study purpose.

Table 1
Structure of each set of time diaries. The basic structure is listed in the first row with wordings that are varied across diaries shown in **[bold italics]**. The baseline behaviors are shown in **bold underline** in each null condition and treatment and control behaviors are shown in **bold underline** in each subsequent row. All information for treatment and control behaviors replaces the bracketed text in the null condition. Five actor pairings are used: Bob–Alice, David–Janet, Michael–Sue, Joe–Nancy, and Richard–Mary. The female in the pair is the main actor in half the time diaries.

Basic time diary structure	[Bob] is in his 30s and lives with his wife [Alice] in a house in a city in the US. This is how Bob spends an average Saturday morning. Bob gets up at about 8:30 am and takes the dog for a walk down the road to a small park. When he returns home, he takes a shower and gets dressed in casual clothes. He prepares and eats breakfast and has a cup of coffee. He and Alice clean up from breakfast and he takes the trash outside to the trashcan. After breakfast, Bob [+ null condition]...He then [+ treatment] ^a			
Scenario	Null condition	takes a break and goes around the house putting sheets of plastic insulation on the windows to keep the cold air out as winter comes. After finishing most of the windows in the house, Bob [takes a break and sits down to read the paper].	walks a few blocks to get on a bus that takes him to the grocery store. When he gets home, Bob unpacks the groceries and then [sits down to pay some bills].	sits down to repair some worn clothes that he has been meaning to mend. After mending the clothes Bob [sits on the sofa and reads the newspaper].
	Environmental treatment	gets in his fuel-efficient hybrid car to get some groceries. When he returns from grocery shopping, he unpacks the groceries and then sits down to read the newspaper.	sits down to read through the owner's manual for the new solar panels they just had installed on their roof. After a little while, Bob stops to pay some bills.	goes to the local farmers market to buy some vegetables for the week. When he returns from the farmers market, he unpacks the vegetables and sits down to read the newspaper.
	Ambiguous treatment	gets in his compact hatchback car to get some groceries. When he returns from grocery shopping, he unpacks the groceries and then sits down to read the newspaper.	sits down to read through the owner's manual for the new high-efficiency furnace they just had installed. After a little while, Bob stops to pay some bills.	goes to the grocery store and buys some organic fruit and vegetables along with other items. When he returns from the store, he unpacks the groceries and sits down to read the newspaper.
	Luxury treatment	gets in a large SUV to get some groceries. When he returns from grocery shopping, he unpacks the groceries and then sits down to read the newspaper.	then sits down to pay some bills. After a while Bob goes into the kitchen to prepare lunch on their new top-of-the-line stainless steel gas stovetop .	goes to a nearby store to pick up some imported exotic fruits and cheeses , which he had ordered a week ago. When he returns from the store, he sits down to read the newspaper.
	Control treatment	[meets with a contractor who is coming to start work replacing the roof on their house, which was damaged in a recent storm . After this meeting, he sits down to...(read the newspaper or pay some bills depending on the text in the null condition)]		

^a A total of five time diaries are presented to subjects: Null condition only; null + environmental treatment; null + ambiguous treatment; null + luxury treatment; and null + control. The text "He then [+**treatment**]" that is presented in the basis structure is omitted from the null condition time diary.

slopes is that the effect of a given independent variable is the same across all categories of the dependent variable. However, given the complexity of interpreting proportional odds mixed effects models, we also fit a linear mixed effects model and compared the results. The signs and significance levels were equivalent for all variables in the two models as were the relative differences in coefficients between variables. For ease of interpretation we present only the results of the linear model here. The linear mixed effects model was fit by restricted maximum likelihood and p-values were obtained using *lmerTest* (). A visual inspection of residual plots did not reveal problems with homoscedasticity or normality.

2.3. General Results

A total of 484 graduate students responded to the survey; 243 from non-environmental programs and 241 from environmental programs. We removed 9 observations from the dataset (5 from the non-environmentally-oriented group and 4 from the environmentally-oriented group) because responses were uniform throughout the survey, indicating low attentiveness. An additional thirty-three respondents were removed from the analysis because they did not report their gender (a control variable). Fifty-five percent (241) of respondents were female and 45% (201) were male.

2.3.1. Question 1 Results

For the baseline behaviors, the mean perceived status was: 4.25 ($\sigma = 0.96$) for installing plastic insulation on windows; 3.99 ($\sigma = 0.84$) for riding the bus; and 4.11 ($\sigma = 0.81$) for repairing worn clothes. All three baseline behaviors had a median of 4 and a range of 2–7 (or 2–6 in the case of riding the bus).

The results of the linear mixed effects model were in line with expectations. Perceptions of status were significantly higher in the three treatments than in the null, but there was no significant difference between the null and control (Fig. 2 shows the mean perceived status

across all treatments; Table 2 provides the full regression results). Changing the reference category for *scenario* in the regression from the null condition to the environmental treatment allows us to see that perceived status in the environmental treatment was significantly higher than in the ambiguous treatment but significantly lower than in the luxury treatment.

We also fit models with interactions for *actor gender* × *scenario* and *baseline behavior* × *scenario*. The interaction for *actor gender* × *scenario* was not significant: whether the main actor in the time diaries was male or female did not influence perceptions of status. However the interaction for *baseline behavior* × *scenario* was significant. Perceived status increased less in the environmental treatment relative to the null for “repair clothes” than for the other two baseline behaviors (see Fig. 3). In addition, while perceived status was higher in both the ambiguous and luxury treatments than the environmental treatment for “repair

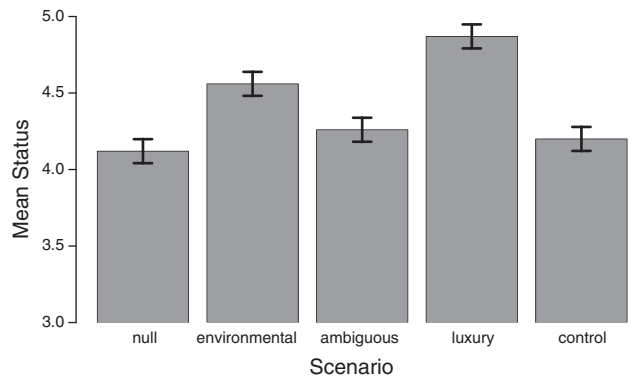


Fig. 2. Mean perceived status for each treatment across all baseline behaviors and for all respondents.

Table 2

Results of mixed-effects linear regression. Variable names are bold and variable categories are italicized. The two sets of coefficients for *scenario* represent the same model with a different reference category selected, which shows differences between treatments and the null condition (left), and how other treatments differed from the environmental treatment (right). The variance for the random effects (*respondent*) was 0.14. Goodness of fit was calculated as conditional R^2 (Nakagawa and Schielzeth, 2013), which is interpreted in the same way as standard R^2 values for linear models.

N = 447		
Variable	Beta (95% CI)	Beta (95% CI)
Scenario		
Null	–	–0.45 (–0.55, –0.35)***
Environmental	0.45 (0.35, 0.55)***	–
Ambiguous	0.14 (0.04, 0.24)**	–0.31 (–0.41, –0.21)***
Luxury	0.75 (0.65, 0.85)***	0.30 (–0.40, –0.20)***
Control	0.09 (–0.01, 0.19)	–0.35 (–0.45, –0.25)***
Baseline behavior		
Take the bus	–	–
Insulation	–0.04 (–0.16, 0.08)	–
Repair clothes	0.14 (0.02, 0.26)*	–
Respondent category		
Non-environmental	–	–
Environmental	0.05 (–0.09, 0.19)	–
Actor gender		
Female	–	–
Male	–0.06 (–0.16, 0.04)	–
Respondent gender		
Female	–	–
Male	–0.10 (–0.20, 0)	–
Conditional R^2	0.27	–

* $p < 0.05$.
 ** $p < 0.01$.
 *** $p < 0.001$.

clothes”, it was higher in the environmental treatment than the ambiguous treatment for “take the bus” and “insulate windows” (see Fig. 3). Thus, the effect of additional information on perceived status of the actor may depend upon characteristics of the baseline behaviors and/or of the added treatment behaviors.

2.3.2. Question 2 Results

Environmentally-oriented respondents rated actors higher in status across all treatments except for the control than non-environmentally-oriented respondents. However, these differences were not statistically significant. The non-significant interaction for *respondent category* × *scenario* and the non-significant interaction for *respondent category* × *baseline behavior* indicate that environmental respondents did not rate actors higher in status than non-environmental respondents for any scenario or baseline behavior (see Fig. 4), although the general trend was in line with our expectations (Fig. 1).

2.4. Study 1 Discussion

The mean perceived status of the baseline behaviors in the null condition was close to the neutral midpoint, indicating that they were neither low status nor high status. This result differs from research suggesting that low cost environmental behaviors are considered low status (Sadalla and Krull, 1995), but it is consistent with Welte and Anastasio (2009) who found that recycling and composting were not associated with low status in the U.S.

More importantly, we found that perceived status was significantly higher in the environmental and luxury treatment than the null condition. Additional information about an actor’s environmental concern and/or wealth increased perceived status, while additional information unrelated to wealth or environmental concern did not significantly change perceptions of status relative to the null. These results are consistent with Griskevicius et al. (2010) and Sexton and Sexton (2014) who found that high-cost, pro-environmental behaviors are associated with higher status.

The significant interaction *scenario* × *baseline behavior* suggests that the effect of additional information on perceptions of status depends on the baseline behavior and/or on the type of additional information provided. While characteristics of the baseline behaviors themselves may moderate the effect of the treatments, variation in the treatments may be more influential. For instance, visiting a farmer’s market (the environmental treatment for “repair clothes”) may have been less clearly pro-environmental or less indicative of wealth than installing solar panels or driving a fuel-efficient car. This difference could explain the lower boost in perceived status in the environmental treatment for

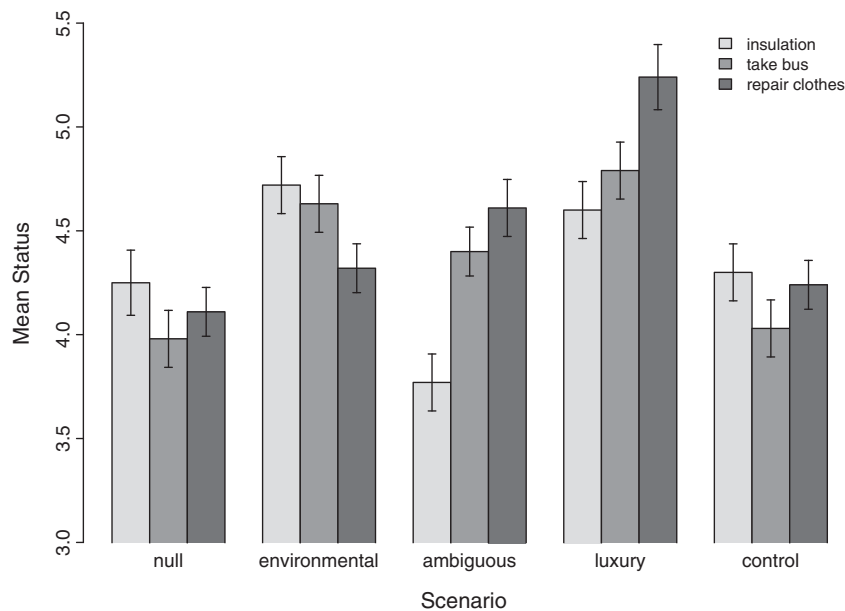


Fig. 3. Mean perceived status for each treatment by baseline behavior. Variation in levels of status among the behaviors indicates a significant interaction between *treatment* and *baseline behaviors*.

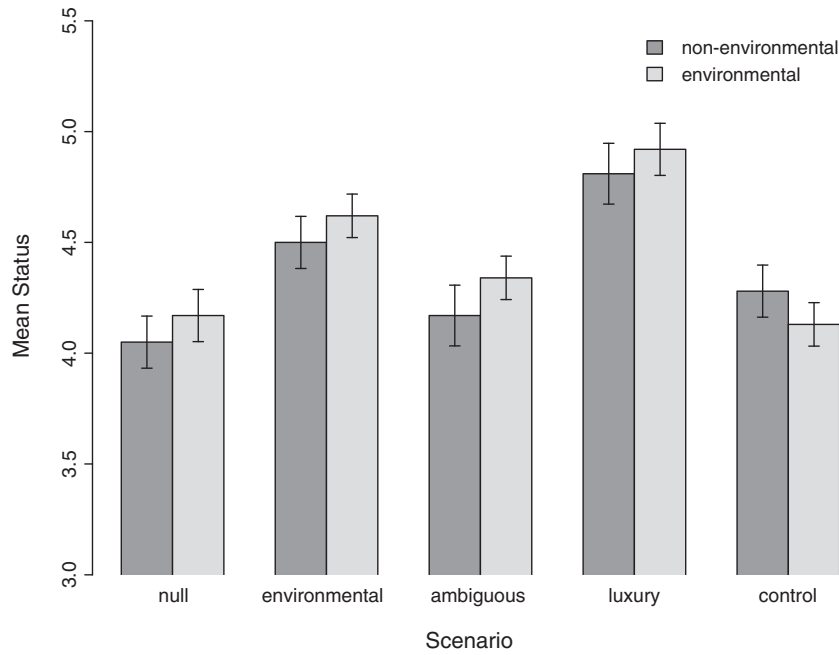


Fig. 4. Mean perceived status for each treatment by respondent category.

“repair clothes” relative to the other baseline behaviors. Similarly, buying exotic imported fruits and cheeses (the luxury treatment for “repair clothes”) could be considered more of a luxury, though less costly per purchase, than driving an SUV or buying a new stainless steel stove, which would explain the boost in perceived status in the luxury treatment for “repair clothes”. Future studies could standardize treatments across baseline behaviors to determine whether differences are a function of the baseline behaviors themselves.

The results also suggest that the environmental orientation and group affiliation of the observer has little effect on their perceptions of status. Respondents in environmental and non-environmental graduate programs differ in their interpretation of status signals in line with expectations (Fig. 1) but these differences are not significant (Fig. 4). One explanation is that students from the same broad cultural context (US graduate students) may not differ greatly in their environmental orientation and/or have a shared understanding of what constitutes high and low status behavior.

3. Study 2: Conveying Status

Study 1 examined how respondents perceive the behaviors of other people, but it did not provide insights into how respondents think about the status signal their behaviors send to other people, nor about the appropriateness of consumption-reducing behaviors for conveying status relative to alternative consumption-intensive behaviors. Whereas study 1 demonstrated that consumption-reducing behaviors are not considered low status, the perceived status of consumption-reducing behaviors relative to similar consumption-intensive behaviors (see Box 1) may still limit their adoption. Study 2 addresses these questions. As with study 1, we also ask whether the perceived appropriateness of these behaviors depends on the environmental orientation of the respondent. We expect that consumption-reducing behaviors will be perceived as less appropriate for conveying status by non-environmentally-oriented respondents but that the opposite will be true for environmentally-oriented respondents.

3.1. Methods

In the second section of the same survey used in study 1, respondents were asked the following question for a range of behaviors: “If

you wanted other people to think that you are above average in socio-economic status,⁵ how appropriate or inappropriate would it be to...(behavior)”. Here, we focus on socio-economics as a particularly salient attribute of status given our interest in exploring perceptions of pairs of behaviors that vary primarily in the level of material consumption involved. Responses on a scale of 1–7 were used as the dependent variable for the analysis. We modified the approach used by Sadalla and Krull (1995) by examining pairs of behaviors that differ in their environmental impact. Thus, respondents were asked about the appropriateness of riding a bike if one wants to convey status as well as about the appropriateness of driving a car (see Table 3 for pairings).⁶

Each respondent was presented with 5 pairs of behaviors, three of which were selected from the consumption-reducing vs. consumption-intensive pairings (Table 3) and two of which were controls that had no environmental implications. Behavior pairings were divided among surveys so that each pairing was included in three of the twelve surveys. The independent variable for study 2 was *behavior type* (consumption-reducing behavior or consumption-intensive behavior). *Respondent category* and *respondent gender* were used as control variables.

3.2. Analysis and Results

The analytical approach matched that of study 1 and the results of linear mixed effects models are again presented here.

The only pairing for which the consumption-reducing behavior was more appropriate for conveying status than the consumption-intensive behavior was the use of re-useable bags (see Table 4). There was no significant difference in appropriateness for conveying status between the pairings describing diet or chemical pesticide use. For all other pairings the consumption-intensive behavior was significantly more appropriate for conveying status.

The interaction for *respondent category* × *behavior type* indicated that environmental respondents felt that re-useable bags were significantly more appropriate for conveying status than did non-environmental

⁵ We also asked about attractiveness, uniqueness, interest in conservation, and likeability to avoid priming respondents on the study purpose.

⁶ Some respondents may not have viewed these categories as being mutually exclusive. However, given the strength of the effect (see Table 4), we do not believe this is problematic.

Table 3
Pairings for measuring appropriateness of consumption-reducing versus consumption-intensive activities.

Ride your bike to the grocery store	Take the bus to the store
Drive your car to the grocery store	Drive your own car to the store
Make some of your own household cleaning products	Avoid the use of chemical pesticides or fertilizer in your yard
Buy your household cleaning products from the store	Use chemical pesticides and fertilizers in your yard
Dry clothes on a clothesline	Buy used furniture for your home
Dry clothes in a clothes dryer	Buy only new furniture for your home
Use a rake to clear leaves from your yard	Repair broken household items instead of buying new ones
Use a gas-powered leaf blower to clear leaves from your yard	Always buy a new household item when one breaks
Eat only a vegetarian diet	Buy used clothes
Eat a diet that includes a lot of meat and fish	Always buy the latest clothes
Grow or raise food yourself at home	Always use reusable cloth bags when shopping
Buy all of your food from the store	Use paper or plastic bags when shopping

respondents. Although both environmental and non-environmental respondents found it significantly less appropriate for conveying status to make your own household cleaners than to purchase them from the store, environmental respondents found this behavior to be significantly less appropriate than did non-environmental respondents.

3.3. Study 2 Discussion

These results indicate potential social obstacles to more widespread adoption of consumption-reducing behaviors. All but three consumption-reducing behaviors were significantly *less* appropriate for conveying status than their more consumption-intensive counterparts – regardless of the environmental orientation of the respondent. However, following Sadalla and Krull (1995) we asked about the appropriateness of these behaviors for conveying *socio-economic* status. If we had left status undefined, and up to the interpretation of respondents, the results may have differed.

Interestingly, the three behaviors that were not less appropriate for conveying status have health implications (avoiding pesticide use,⁷ eating a vegetarian diet) or have garnered attention as a result of laws banning the use of plastic bags (using reusable bags). Some behaviors may rise to the level of a widely accepted cultural norm such that the more environmentally-friendly alternative is perceived to be more appropriate than its consumption-intensive counterpart for signaling higher socio-economic status. Such behavioral norms likely emerge as a result of complex cultural evolutionary processes (e.g. Richerson and Boyd, 2005). Understanding which behaviors reach this level of normalization, the way this happens, and how this impacts behavioral diffusion needs further study (e.g. Janssen and Jager (2002)).

4. General Discussion

The premise of this study is that reducing consumption is crucial for long-term sustainability, making it important to understand socio-cultural barriers to consumption-reducing behavior. The first study suggests that additional information about a person can clarify a signal and change the perceived status of that person. This result aligns with

research suggesting that the prosocial signal associated with charitable giving may depend on other information available to observers (Ariely et al., 2009). Consumption-reducing behavior need not be associated with low status, particularly when additional cues indicate that such behavior is intentional.

For the baseline behaviors, “take the bus” and “insulate windows”, perceived status was not significantly higher in the luxury treatment than the environmental treatment. Thus, respondents may have found environmental concern to be just as status enhancing as wealth. However, the behaviors in the environmental treatment were also relatively costly (e.g. hybrid vehicle, solar panels, farmers’ market), so respondents may have reacted to information about wealth rather than environmental motivation. Future research could disentangle wealth and environmental concern by using a low cost pro-environmental behavior (e.g. recycling) for the environmental treatment.

From a costly signaling perspective, the distinction between signaling wealth and signaling environmental concern is immaterial. The importance of this study is in showing that context matters and additional information, regardless of whether it signals wealth or environmental concern, can indicate that the behavior in question was not borne of necessity or a lack of options.

The results do, however, have implications for promoting low consumption lifestyles. To reduce consumption without being perceived as low status, a person can signal that a lower level of consumption is voluntary through a conspicuous purchase. That riding the bus is a choice could be signaled through subtle cues such as the clothes one wears, the expensive bike one rides to the bus stop, or owning latest smartphone model. A person can give themselves the “social space” to consume less by using – consciously or subconsciously – a single behavior or purchase to indicate that it is a choice.

A second way to reduce consumption is to disengage from the work-spend cycle (Schor, 2010), thereby reducing consumption as a result of lower income. In this case it may be more difficult to use an expensive purchase to signal that lower consumption is the result of choosing to work less in order to enjoy other valued activities. Instead, one could clarify the signal through a symbolic display of cultural capital (Bourdieu, 1986). Cultural capital includes attributes like educational attainment, skills, credentials, or patterns of speech that signify association with a particular group or capacities that are associated with higher status. The aforementioned bus rider could display their cultural capital through the book they are reading or another subtle social marker that indicates their affiliation with a well-respected institution.

Study 1 suggests that indicators of wealth can affect the perceived status of individuals engaged in consumption-reducing behavior, but it did not show that the status of a wealthy individual engaged in consumption-reducing behavior is equal to that of a wealthy person who is *not* reducing their consumption. Instead, consumption-reducing behavior may *reduce* the relative status of a wealthy individual. Further, study 2 suggests that consumption-intensive behavior is considered more appropriate than consumption-reducing behavior for signaling high socio-economic status. Because high status individuals are imitated more often than those of lower social standing (Henrich and Gil-White, 2001), the lower status associated with consumption-reducing behavior could be a barrier to the widespread adoption of more sustainable consumption patterns.

However, the structure and dynamics of social groups may provide insights into whether and how such a barrier could be overcome. Within groups that perceive even green consumption to have negative long-term social and environmental impacts, a complex of behaviors or other attributes may emerge to signal that consumption-reducing behavior is a prosocial choice. As this complex of signals becomes established (perhaps through prestige biased cultural transmission or other transmission biases (Richerson and Boyd, 2005)), these groups may shift from a norm in which overconsumption is a virtue to a social environment in which the pressures and environmental impacts of overconsumption may be avoided (see Chudek et al., 2013 for an outline of this

⁷ The wording, “avoid the use of chemical pesticides” could be considered leading and may explain the result for this pairing.

Table 4
Results of bivariate linear mixed effects models exploring the appropriateness of behaviors for conveying status. Coefficients and 95% confidence intervals are provided next to the behavioral condition that is most aligned with status (negative coefficients indicate that the non-environmental condition is most associated with status).

Behavior pairs	Appropriate for status	Behavior pairs	Appropriate for status
Bike to store		Use a rake for leaves	
Drive to store	− 1.27 (0.94, 1.60)***	Use leaf blower for leaves	− 1.48 (1.13, 1.83)***
Make household cleaning products		Eat a vegetarian diet	
Buy household cleaning products	− 1.07 (0.70, 1.44)***	Eat meat and fish	− 0.09 (− 0.28, 0.46)
Hang clothes on laundry line		Grow food at home	
Use clothes dryer	− 1.70 (1.37, 2.03)***	Buy food from the store	− 0.44 (0.07, 0.81)*
Take bus to store		Use reusable bags	0.78 (0.39, 1.17)***
Drive to store	− 4.09 (3.76, 4.42)***	Use paper or plastic bags	
Avoid use of chemical pesticides	0.30 (− 0.09, 0.69)	Buy used clothes	
Use chemical pesticides		Buy new clothes	− 3.68 (3.29, 4.07)***
Buy used furniture		Repair household items	
Buy only new furniture	− 3.82 (3.47, 4.17)***	Buy new household items	− 2.92 (2.53, 3.31)***

* $p < 0.05$.
*** $p < 0.001$.

process). Schor (1998) alludes to such social dynamics with reference to changes in attitudes towards status consumption “chipping away” at the symbolic meaning of consumer objects in relation to groups that value low cost lifestyles. Continued research on group dynamics and evolving social norms and social signals could provide insights into how consumption-reducing behaviors can become more common within and across groups.

In this study, however, we found few differences between the environmental and non-environmental groups in our sample, perhaps because graduate students differed in environmental orientation less than anticipated, or because recruiting students from universities across the U.S. did not allow for sufficient group structure. Future studies could recruit members of the general public who exhibit greater variation in environmental concern and/or belong to more distinct and salient social groups. Respondents from cities or communities with different infrastructure or social norms could be particularly valuable. For instance, riding the bus in one city may be easier and more convenient than in another city (but still costlier than driving), which may attract a broader demographic of riders and subsequently make riding the bus less likely to be viewed as low status. Similarly, different regions of the U.S. are thought to be more environmentally-progressive (e.g. Portland, OR) than others (e.g. Houston, TX), which may also have implications for the social payoffs associated with particular environmental behaviors.

Importantly, status is not the only component of symbolic value that matters, nor are status perceptions necessarily the most important factor motivating consumption (Shove, 2003; Jackson, 2005). The behaviors that we singled out for analysis could be viewed as components of broader practices, or routinized sets of actions (Ropke, 2009), and this has implications for the scale at which – and the degree to which – the relationship between status and consumption is important. However, status perceptions can be relevant for practice theory as well. Practices are comprised of materials, meanings, and competencies (Shove, 2003). The elements of a particular practice may therefore be associated with status by requiring expensive equipment and/or competencies that require wealth, leisure, or great effort to obtain. Moreover, symbolic value (e.g. status) is part of the meanings element of practice (Axsen et al., 2012).

It is important to emphasize that behaviors, practices, social norms, and conventions are not fixed. There are co-evolutionary dynamics between consumption patterns, norms, routines, physical infrastructure, and technologies. The presence of these dynamics further argues for exploring social signaling processes and whether and how perceptions of status vary by geographic region, cultural context, and social group.

5. Conclusions

This study suggests that additional cues can signal that consumption-reducing behavior is a choice, and thus an indicator of prosociality and worthy of higher status. However, we also found that consumption-intensive behaviors are still considered to be more appropriate for conveying high status relative to consumption-reducing behaviors. These results have implications for the spread of consumption-reducing behavior linked to long-term sustainability. While there are numerous obstacles to the adoption of consumption-reducing behavior, we make a contribution by exploring how perceptions of low status may be an obstacle to the spread of such behavior. The results of this study also point to the need for further research on the signals associated with different forms of consumption, as well as group dynamics and the evolution of social norms and perceptions of sustainable consumption.

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