PRIMING DESIGNERS TO COMMUNICATE SUSTAINABILITY

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Introduction

A prime is an artifact, exposure, or experience that stimulates increased cognitive accessibility of mental content [1, 2]. Priming designers is a new field of design research, and has thus far focused on generating more features [3], novel features [4], and addressing latent customer needs [5]. This article presents a design method that uses priming to give a targeted enhancement to designer's skills. The design method presented here enhances the designer's ability to communicate the sustainability of a product to the customer. The authors have determined that sustainable products face a special challenge in the market because many of their best features, such as decreased energy usage, recyclability, or material selection, are hidden from the customer. Designers need to communicate sustainability to the customer through product features that customer will identify as sustainable. We propose and test a new design method that designers can use to generate product features that communicate sustainability to the customer. The method involves priming the designer with a sensory-heightening activity before generating ideas for sustainable features. We investigate primes in the form of a questionnaire or a collage activity. The design method improves designers' ability to generate product features that communicate sustainability.

Methodology
Experiment Design
A controlled experiment was designed and conducted to test the priming effect on ideation under three prime conditions: (1) a questionnaire prime, (2) a collage prime, and (3) no prime, serving as a control condition. In all conditions, a bread toaster was selected as the product focus for ideation. Fig. 1 provides an overview of the experiment procedure.
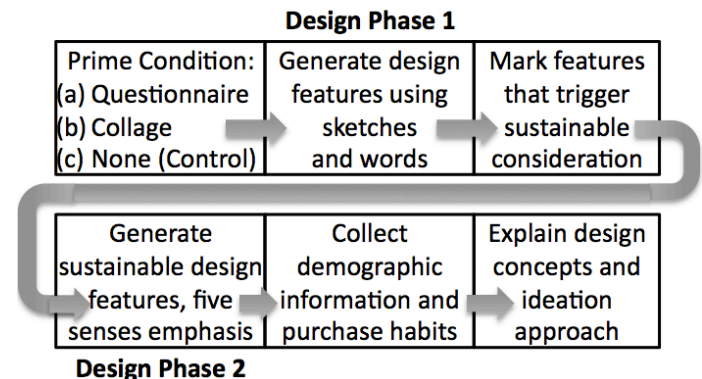

Fig. 1. An overview of the experiment.

Primes
Questionnaire prime: subjects answer a ten-minute questionnaire in which they write about: (1) three examples of things that they have done to reduce their environmental impact; and (2) the sponge or cloth they use at home to clean dishes using some or all of the five senses (sight, sound, touch, smell and taste).

Collage prime: subjects arrange pictures of sponges on a white background: (1) place eight images of dish sponges on the axes; and (2) place the sensory descriptor terms around the products (Fig.2).

Measures
The design outcomes are evaluated on four measures: number of features generated, sustainability trigger (the ability to trigger a customer's sustainability considerations, rated by two raters), number of good features, percentage of good features, where a "good" feature is defined as having an average sustainability

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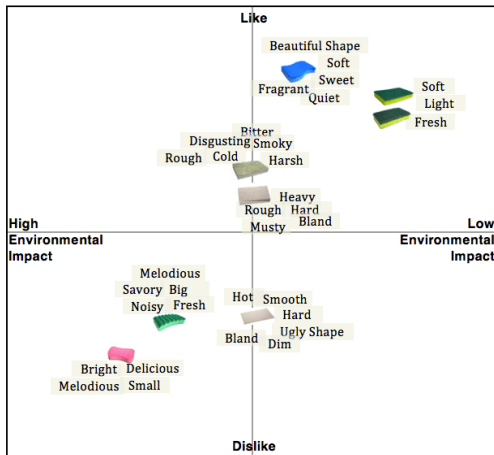trigger score larger than three on a five-point scale rating (Fig.3).

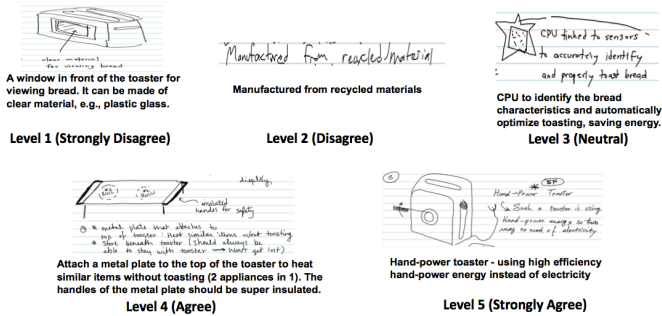Fig.2 Demonstration of a collage output.

Fig. 3 Example features at each level on sustainability trigger, rated from 1 strongly disagree to 5 strongly agree that the feature can trigger customers to think about sustainability.

Results

Analysis of variance shows that both primes significantly increased the number of good features; in addition, the collage prime also led to a larger number of features generated in total and increases the efficiency of good feature ideation (percentage of good features) as shown in Fig.4.
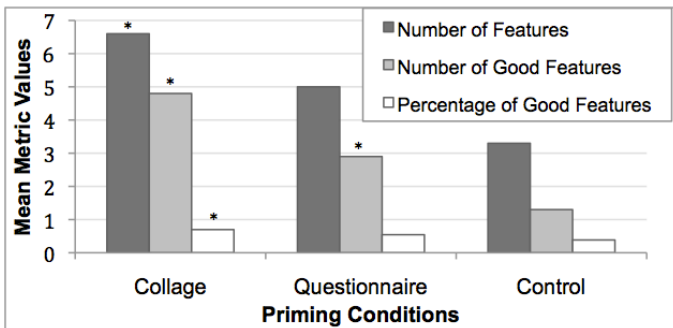

Fig.4. Effect of primes on the quantity of features for an individual ('*' $p<0.05$).

Analysis of variance and linear mixed model (LMM) analysis show that the collage group and questionnaire group generated features with significantly higher sustainability trigger scores than the control group, as depicted in Fig. 5.
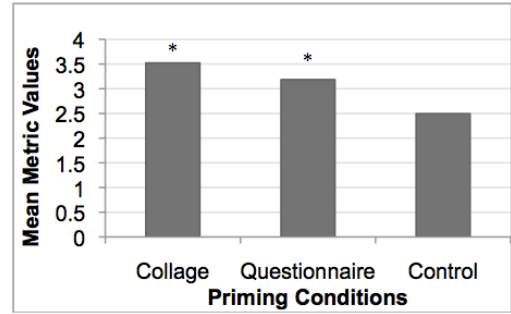

Fig.5. Effect of primes on sustainability trigger ('*' $p<0.05$).

Table 1. Summary of mean measurement values in collage, questionnaire and control conditions from Design Phase 2 ('*' $p<0.05$).

Measures	Collage		Questionnaire		Control	
	M	(SD)	M	(SD)	M	(SD)
Number of features	6.60*	(3.20)	5.00	(2.45)	3.30	(1.06)
Sustainability trigger	3.52*	(0.58)	3.19*	(0.68)	2.50	(0.96)
Number of good features	4.80*	(2.62)	2.90*	(1.97)	1.30	(1.16)
Percentage of good features	70%*	(21%)	54%	(25%)	39%	(30%)

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