JCPS-00395; No. of pages: 12; 4C:

Available online at www.sciencedirect.com

ScienceDirect

Journal of Consumer Psychology xx, x (2013) xxx – xxx

JCP JOURNAL OF CONSUMER PSYCHOLOGY

Research Article

Taking a shine to it: How the preference for glossy stems from an innate need for water☆,☆☆

Katrien Meert [a,1], Mario Pandelaere [a,*], Vanessa M. Patrick [b]

[a] *Ghent University, Faculty of Economics and Business Administration, Department of Marketing, Tweekerkenstraat 2, 9000 Ghent, Belgium*
[b] *University of Houston, Bauer College of Business, 334 Melcher Hall, University of Houston, TX, USA*

Received 28 February 2013; received in revised form 22 November 2013; accepted 22 December 2013

Abstract

Human beings are attracted to glossy objects. However, the investigation of whether this preference for glossy is a systematic bias, and the rationale for why, has received little or no attention. Drawing on an evolutionary psychology framework, we propose and test the hypothesis that the preference for glossy stems from an innate preference for fresh water as a valuable resource. In a set of six studies we demonstrate the preference for glossy among both adults and young children (studies 1A, 1B and 2) ruling out a socialization explanation, investigate the hypothesis that the preference for glossy stems from an innate need for water as a resource (studies 3 and 5) and, in addition, rule out the more superficial account of glossy = pretty (study 4). The interplay between the different perspectives, implications of the findings and future research directions are discussed.

Keywords: Esthetics; Preference; Glossy; Evolutionary psychology; Innate

Introduction

Human beings are attracted to glossy objects. Shimmering lipsticks, gleaming cars, dazzling diamonds and sequined gowns conjure up images of the good life. This attraction to glossy can also be observed in everyday objects. According to the Newspaper Association of America, 65% of surveyed respondents prefer glossy paper stocks. Gelineau (1981) points out the powerful influence of a glossy surface finish in color preference. Consumer products, modern sculptures and architectural buildings often reflect this preference for shiny or glossy surfaces. Indeed, some recent research even suggests that the glossiness of the surface material of a store display (for e.g. glass versus wood) has a positive impact on the products displayed on it (Zhu & Meyers-Levy, 2009). There is some evidence that this preference for glossy has existed from prehistoric times. Centuries ago, prehistoric man polished bone tools to achieve a shiny gleam (Henshilwood, D'Errico, Marean, Milo, & Yates, 2001). Paleolithic people also used ivory, mother of pearl and soapstone to make shiny ornaments. Certain modern-day hunter–gatherer tribes, such as the Yolngu of northern Australia, equate the inner brilliance of such materials with spiritual power (Williams, 2012).

Why do people like glossy? Although these examples demonstrate a general appreciation for glossy, previous research has not empirically investigated whether this preference for glossy is a systematic bias or identified the mechanism underlying this preference. Little research exists that systematically investigates

☆ The data for study 1A (April 2012), study 1B (April 2012), study 2 (October 2012), study 4 (December 2012) and study 5 (December 2012) were collected under the supervision of Katrien Meert at the consumer lab at Ghent University. The first author (Katrien Meert) collected the data for study 3 (January 2013) online.

☆☆ The research of Mario Pandelaere is financially supported by the National Bank of Belgium, the Flemish Science Foundation (FWO) and the Research Council of Ghent University.

* Corresponding author.
E-mail addresses: Katrimee.Meert@UGent.be (K. Meert), Mario.Pandelaere@UGent.be (M. Pandelaere), vpatrick@bauer.uh.edu (V.M. Patrick).
[1] Fax: +32 9 2644279.

1057-7408/$ -see front matter © 2013 Society for Consumer Psychology. Published by Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.jcps.2013.12.005

the rationale underlying the preferences for specific esthetic elements such as "individual colors, color combinations, form, texture, and spatial composition" (Palmer, Schloss, & Sammartino, 2013, p. 101).

At first blush, it appears that gloss should be related to beauty or visual appeal (a glossy = pretty notion). According to the "what is beautiful is good" hypothesis (Dion, Berscheid, & Walster, 1972), attractive individuals benefit from various types of positive discrimination. For instance, they are more likely to be hired or better paid (e.g., Dipboye, Arvey, & Terpstra, 1977; Frieze, Olson, & Russell, 1991; Marlowe, Schneider, & Nelson, 1996), and are judged more socially pleasing and intellectually competent (e.g., Eagly, Ashmore, Makhijani, & Longo, 1991; Feingold, 1992; Hope & Mindell, 1994; Langlois et al., 2000; Lorenzo, Biesanz, & Human, 2010; Mobius & Rosenblat, 2006). Similarly, esthetically appealing products have been linked to more favorable attitudes and higher purchase intentions (e.g., Bloch, Brunel, & Arnold, 2003) are more likely to be impulsively purchased (Bayley & Nancarrow, 1998; Norman, 2002), and garner higher prices (Bloch et al., 2003; Hassenzahl, 2008; Townsend & Sood, 2012).

To explain why attractive products are generally preferred, researchers propose that attractive products induce positive affect (e.g., Desmet & Hekkert, 2007; Erk, Spitzer, Wunderlich, Galley, & Walter, 2002; Hassenzahl, 2008; Hoegg & Alba, 2008; Holbrook & Zirlin, 1985; Norman, 2002) and trigger strong emotional responses (e.g., Coates, 2003; Dumaine, 1991). While ample research has investigated the consequences of beauty and attractiveness in general, it is less clear why people are attracted to shiny and glossy objects in particular—the current paper addresses this question.

We believe that the positive feelings evoked by attractiveness and beauty are not enough to explain why people tend to prefer glossy. In the current work, we aim to delve deeper to understand a more fundamental reason underlying our preference for glossy. To do so, we begin by recognizing that the preference for esthetics is a human universal (Dutton, 2002) and has strong biological underpinnings (Lacey et al., 2011; Ramachandran & Hirstein, 1999; Reimann, Zaichkowsky, Neuhaus, Bender, & Weber, 2010). Drawing on this notion, in the current research we rely on an evolutionary framework to propose and test the hypothesis that the preference for glossy stems from an innate preference for fresh water as a resource.

The remainder of the paper is as follows. We first present a brief background of the evolutionary psychology framework under which we make our arguments. Next, we present our theorizing to explain that people's preference for glossy is innate and stems from the human need for fresh water as a resource. We present a series of six studies in which we demonstrate the preference for glossy among both adults and young children (studies 1A, 1B and 2) ruling out socialization as the explanation underlying the preference for glossy, investigate the hypothesis that the preference for glossy stems from an innate preference for water as a resource (studies 3 and 5) and rule out the more superficial account of glossy = pretty (study 4). We conclude with a discussion of our findings, note potential boundary conditions and suggest future research directions.

Theoretical background

Evolutionary psychology has been shown to be a valid and convincing framework when studying consumer behavior in general (Barkow, Cosmides, & Tooby, 1992; Cosmides & Tooby, 1994; Griskevicius & Kenrick, 2013; Saad, 2013) and consumer preferences in particular (Hantula, 2003; Lynn, Kampschroeder, & Pereira, 1999; Saad, 2004, 2007; Saad & Gill, 2000). An increasing number of researchers now study the interplay between evolutionary psychology and consumer behavior (e.g., Colarelli & Dettmann, 2003; Griskevicius, Shiota, & Nowlis, 2010; Janssens et al., 2011; Miller, 2009; Saad, 2004), since an understanding of evolutionary motives can provide novel insights into consumer preferences and decision processes. The current research is similarly motivated and draws on the innate preference for fresh water as the underlying force that drives an individuals' preference for glossy.

Water as a resource

Human beings are drawn to nature (Wilson, 1984). Water, in particular has been implicated as an essential human resource. Ancient civilizations such as the Indus Valley Civilization and the Sumerians flourished in river valleys. Indeed, water-rich landmasses were, and still are, hubs for human growth and development (Solomon, 2010). Today, the presence of water has a relaxing and peaceful quality (e.g., Ulrich, Altman, & Wohlwill, 1983), and has a positive influence on people's level of restoration when feeling worried or stressed (Felsten, 2009; Korpela, Ylén, Tyrväinen, & Silvennoinen, 2010; Kweon, Ulrich, Walker, & Tassinary, 2008), and on people's emotional states in general (Ulrich, 1981, 1984; White et al., 2010).

From an evolutionary viewpoint the reverence for water makes sense. In fact, the role fresh water plays in our health is obvious—we can survive only a few days without it (Packer, 2002). Early humans who engaged in a nomadic lifestyle were thus more likely to survive when they frequently encountered environments with fresh water (Appleton, 1975). Especially those environments containing clear and flowing water (instead of stagnant water) increased chances of survival and hence were favored among humans (Herzog, 1985) because of the fewer potentially harmful bacteria (Kaplan, 1987; Orians & Heerwagen, 1992). Hence, detecting sources of fresh water to prevent dehydration is an essential daily task (Newman, 1970), which has changed little over our evolutionary past.

As it relates to esthetic preferences in particular, we do have some initial indications that the presence of water plays a role in these. Individuals tend to possess a major liking for realistic paintings with water as one of the central elements (e.g., Balling & Falk, 1982; Han, 2007; Lyons, 1983; Nanda, Eisen, & Baladandayuthapani, 2008; Purcell, Peron, & Berto, 2001). Even young children like the aspect of water in paintings (Bernaldez, Gallardo, & Abello, 1987; Danko-McGhee, 2006; Zube, Pitt, & Evans, 1983). 'The art instinct' shows that respondents believe that 40% of a landscape should have water in it (Dutton, 2009). Accordingly, people are prepared to pay significantly more for a house or a room with an aquatic view (Lange & Schaeffer, 2001;

Please cite this article as: Meert, K., et al., Taking a shine to it: How the preference for glossy stems from an innate need for water, *Journal of Consumer Psychology* (2013), http://dx.doi.org/10.1016/j.jcps.2013.12.005

Luttik, 2000), choose water-rich environments for their leisure destinations and favorite activities (e.g., Kaplan & Kaplan, 1989; Korpela et al., 2010), and link positive memories of childhood activities with water (Waite, 2007).

Understanding the preference for glossy

The preference for glossy can be understood using at least three accounts that are not necessarily at odds with one another. Perhaps the most obvious explanation for the preference for glossy is socialization. Individuals get socialized and learn to associate a glossy appearance with high-end goods and luxurious items. This explanation would suggest that adults should consistently exhibit a preference for glossy but this would not manifest in young children who have not yet learned the positive associations with glossy. The "what is beautiful is good" perspective previously described best summarizes the second account. What this suggests is that glossy is preferred due to its visual appeal. In fact, when making decisions, people look longer at options they ultimately choose than things they do not choose (Schotter, Berry, McKenzie, & Rayner, 2010). Shimojo, Simion, Shimojo, and Scheier (2003) discovered that this gaze bias is exaggerated and reinforced in decisions involving attractiveness, which they refer to as the gaze cascade effect. Specifically, people tend to spend longer examining stimuli they like (i.e., liking effect or preferential looking) and tend to like options that they spend more time looking at (i.e., mere exposure). Hence, one might suggest that the preference for glossy could be caused by the visually appealing appearance associated with glossiness. We call this the glossy = pretty hypothesis. Specifically, this explanation would suggest that glossy surfaces would be rated as esthetically pleasing only when they are visually processed and not when they are processed through an alternative sensory mechanism, namely touch. The third, and more fundamental perspective, is one that suggests that the preference for glossy is innate and stems from a biological need for water as a resource. It is this last account that is the focus of our investigation.

Numerous aspects of an individual's esthetic preferences have strong biological underpinnings (Lacey et al., 2011; Ramachandran & Hirstein, 1999; Reimann et al., 2010). Research with infants has shown that young children's esthetic and visual choices already exist long before their verbal communication skills develop, for instance, when showing interest in colors, textures, shapes, and so on (e.g., Cohen & Gainer, 1995; Fantz, Fagan, & Miranda, 1975; McCall & Melson, 1970). Infant children (2- to 3-month-olds) have been shown to discriminate between and exhibit a visual preference for attractive (versus unattractive) female faces (Slater et al., 1998). Accordingly, infants play significantly longer with an attractive (versus unattractive) doll (Langlois, Roggman, & Rieser-Danner, 1990), and young children prefer attractive to unattractive friends and classmates (Dion & Berscheid, 1974). Moreover, attractive faces are recognized among children across gender, race, and age (Langlois, Ritter, Roggman, & Vaughn, 1991).

Children also exhibit a liking for shiny objects. For instance, esthetic artworks in a museum are favored among 2- to 6-year-old children, and especially those with shiny surfaces, and with gold and silver items, such as jewelry and people with golden hair (Danko-McGhee, 2006). Stokrocki (1984) showed that children chose to utilize foil in their creations of boxes to enhance the attractiveness and visual stimulation. These findings suggest that the preference for glossy manifests very early in life, long before any exposure to contemporary cultural stereotypes thus challenging the notion that children learn what is attractive via exposure to cultural standards of beauty.

Some explanation for the innate preference for glossy can be found in prior research, which has indicated that glossy surface textures connote wetness. In particular, adults perceive glossy surface finishes as much wetter and less dry than matte and sandy surface finishes (Coss & Moore, 1990). Moreover, Coss, Ruff, and Simms (2003) tested whether the glossiness of objects enhanced infants' mouthing activities (i.e., licking the objects). Indeed, results showed significant increases in the percentage of mouthing when presenting glossy (vs. dull) plates or objects with a mirror finish. Moreover, observations among infants and toddlers showed behaviors highly resembling drinking activities when they were presented with glossy objects. Specifically, children licked glossy objects on their hands and knees in a manner that humans also drink from rain pools to suck water in less urbanized countries.

We propose that the preference for glossy surfaces may result from natural selection. Crucial to our hypothesis is the concept of adaptation, which is an inherited characteristic that consistently solved long-term problems during the species' evolution in order to survive and reproduce (Tooby & Cosmides, 2005). Hence, much of today's human mind is shaped by mental mechanisms that have evolved as adaptive solutions to evolutionary relevant problems (Barkow et al., 1992; Buss, 2005; Confer et al., 2010; Pinker, 2002; Tooby & Cosmides, 2005). The ability to detect, and the preference for, fresh water can be categorized as one of those evolved mental adaptations. In particular, since fresh water has a shiny surface, being drawn to shiny surfaces may have increased the probability of finding fresh water sources and thus have increased chances of survival. Based on the above theorizing we propose that the preference for glossy stems from an innate preference for fresh water as a resource.

Overview of the empirical investigation

We present a set of six studies to test our hypothesis. First we demonstrate the assumed preference for glossy among adults (study 1A). Next, we demonstrate that young children similarly demonstrate a preference for glossy thereby ruling out the explanation that the preference for glossy is 'learned' over time (study 1B). Study 2 tests whether the preference for glossy induces a systematic bias. In particular, it tests whether people's attraction to glossy images affects their liking for the image content. Study 3 is an initial test of the hypothesis that the preference for glossy stems from an innate need for fresh water as a resource. This study tests the proposed associations between glossy versus matte and wetness versus dryness. Study 4 extends these findings beyond the visual domain to exclude the account that the preference for glossy stems from visual appeal. Finally,

Please cite this article as: Meert, K., et al., Taking a shine to it: How the preference for glossy stems from an innate need for water, *Journal of Consumer Psychology* (2013), http://dx.doi.org/10.1016/j.jcps.2013.12.005

study 5 examines the association of glossy with the need for water more profoundly via thirst induction.

Study 1A: Establishing the preference for glossy in adults

Participants and procedure

Thirty-six respondents (19 women, 17 men) between the ages of 19 and 54 years (M = 29.42, SD = 11.96) received a random combination of four neutral dance leaflets (see Appendix A). A pretest with eight different dance leaflets printed on regular non-glossy paper indicated that these four leaflets were evaluated as neutral and identical. In the actual study, half of the leaflets were presented on glossy paper and the other half on non-glossy. The order and combination of leaflets were counterbalanced across participants. We instructed respondents to arrange the four leaflets according to their preference (1 = most preferred, 4 = least preferred). A mean ranking both for the glossy and the non-glossy leaflets could be computed for each participant. We also asked respondents to evaluate each leaflet on a 5-point scale (1 = not attractive, 5 = very attractive).

Results and discussion

As expected, a repeated measures GLM with both glossy and non-glossy rankings as dependent variables showed a significant effect of the type of paper on participants' choice ($F(1,35) = 68.10$, $p < .001$). In particular, glossy leaflets were significantly more preferred (M = 1.81, SD = .51) to non-glossy leaflets (M = 3.21, SD = .51). Furthermore, glossy (vs. non-glossy) leaflets obtained a significantly higher attractiveness score ($F(1,35) = 48.68$, $p < .001$; $M_{glossy} = 4.00$, SD = .71; $M_{non\text{-}glossy} = 2.82$, SD = .84), also supporting the preference for glossy. Given that rankings are in fact ordinal data, we additionally conducted a non-parametric (Wilcoxon) test. The analysis revealed similar findings: glossy leaflets were significantly more preferred to non-glossy leaflets ($z = -4.75$, $p < .001$).

In the past, many researchers have assumed that regular exposure to the media influenced children's standards, preferences and stereotypes with regard to attractiveness and beauty. However, Langlois et al. (1990) challenged this view and showed that standards of attractiveness are not learned through gradual exposure to current cultural standards of pleasant appearance. Rather, their findings suggest that these initial stages of preferences may be innate or present in infancy. Hence, in line with these results, we suggest an innate preference for glossy. Study 1B investigates this assumption.

Study 1B: Young children also prefer glossy

Participants and procedure

The goal of this study was to test the preference for glossy with young participants. Children's ability to understand consumption and to interpret underlying thoughts seems to develop between the ages of 7 and 11 years (e.g., Belk, Bahn, & Mayer, 1982; John, 1999). Moreover, they become aware of the purpose of advertising between the ages of 5 and 8 (e.g., John, 1999; Ward, 1974). Keeping this in mind, we conducted our experiment with 4- and 5-year-old children, since a previous test with 3- to 4-year-olds revealed that the imposed tasks were too difficult.

Thirty-four children (19 girls, 15 boys; M_{age} = 4.62, SD = .49) at a local kindergarten participated in the study. Just before the experiment, we gave them a short introduction of what to expect. Each child did the assigned task individually, in order to eliminate possible influence of other children. They received a random combination of four pictures of the local Santa Claus (see Appendix B). Half of the pictures were presented on glossy paper, whereas the other half was shown on non-glossy paper. The order was counterbalanced. A pretest using 8 different pictures of the local Santa printed on non-glossy paper with another sample of 4- to 5-year-old children (N = 19) who evaluated four pictures each indicated that the four depicted images were equally attractive when presented on the same type of paper. In the main experiment each child was instructed to pick out their favorite, second favorite, and finally, their least favorite Santa Claus picture; hence, a ranking could be compiled. Next, we asked the children to give each picture a number of stars ranging from 1 to 5 (the more stars, the more attractive) to indicate their liking of each of the pictures.

Results and discussion

Our results show that children significantly preferred the glossy images (M = 2.26, SD = .63) to the non-glossy ones (M = 2.74, SD = .63; $F(1,33) = 4.74$, p = .04), contradicting the possibility of a marked socialization effect. A non-parametric test confirmed this result ($z = -2.05$, p = .04). Moreover, more stars were allocated to the glossy (M = 3.54, SD = .81) than to the non-glossy pictures (M = 3.19, SD = .91), albeit not significantly ($F(1,33) = 1.95$, p = .17); possibly the young children did not fully understand this assignment.

Comparing the results of the adults (study 1 A) with that of the children (study 1B) suggests that the preference for glossy may not be simply innate, but also the result of socialization. Indeed, although one should exercise caution in comparing across studies, adults appear to prefer glossy pictures significantly more ($t(68) = 3.36$, p = .001) and non-glossy pictures significantly less ($t(68) = 3.45$, p = .001) than children do. Results concerning the attractiveness/liking scores were however fairly similar ($t_{glossy}(68) = 2.51$, p = .01; $t_{non\text{-}glossy}(68) = 1.78$, p = .08).

Young 4- to 5-year-old children are in what experts call the observation phase (John, 1999) or pre-operational phase (Piaget & Inhelder, 1969), in which they observe and choose by means of just one dimension or characteristic. Hence, some children might have observed the type of paper, while others might have focused more on the picture itself—which could explain the lower preference for glossy among children. Second, young children are confronted daily with drawings to puzzle and color in kindergarten. Hence, the content of the picture may affect their preferences more than that of adults. Finally, people might 'learn' to associate glossy with luxuriousness over time. Hence,

Please cite this article as: Meert, K., et al., Taking a shine to it: How the preference for glossy stems from an innate need for water, *Journal of Consumer Psychology* (2013), http://dx.doi.org/10.1016/j.jcps.2013.12.005

the intense attraction effect for glossy among adults might be the result of socialization in addition to the proposed innate effect.

Study 2 tests whether adults' preference for glossy pictures induces a systematic bias in their reactions to the content of the pictures. Specifically, when people simply have to rate the content of a picture (i.e., the depicted image) rather than the entire picture (i.e., depicted image + picture finishing) and the type of paper (glossy vs. matte) thus is irrelevant, the latter may still affect their ratings of the image content although it should not.

Study 2: Systematic preference for glossy

Participants and procedure

One hundred twelve respondents (74 women, 38 men; M_{age} = 24.21, SD = 7.88) were randomly assigned to one of the three conditions of a lab experiment. More specifically, the study was set up similar to the previous studies, however, we additionally manipulated the focus of participants' attention to either the *content* of the picture (group 1), the *type of paper* (group 2) or *both* (group 3). All participants were exposed to a random combination of four target landscapes. Again, half of the pictures were presented on glossy paper, whereas the other half was presented on non-glossy paper. The order was counterbalanced across participants. An online pretest (N = 36; different sample) had previously investigated the attractiveness of twenty landscapes on a 9-point scale. Consequently, four equivalent and equally attractive landscapes were selected for this study (see Appendix C).

Prior research has investigated how people use information when answering questions and making judgments (e.g., Schwarz, Strack, & Mai, 1991; Strack, Martin, & Schwarz, 1988). Specifically, if people are asked a specific and a general question after each other—and when both questions are perceived as related, then the answer on the general question excludes the previously given information on the first specific question. However, if only a general question is asked, people include all relevant information when answering.

The instructions for our experiment were designed keeping this notion in mind. Specifically, we instructed a first group of respondents (N = 36) to indicate the *landscape* they preferred (i.e., a specific question about the image content), to rank the remaining options according to their preferences and then to evaluate the landscapes on a 5-point scale. A second group of respondents (N = 39) was instructed with the same tasks, however, referring to the *photo* instead (i.e., a more general question referring to both the image content and appearance). Finally, we firstly asked a third group of respondents (N = 37) about the *landscape* (*A*), and afterwards, about the *photo* (*B*).

Finally, as an ultimate measure, we showed all participants the previously displayed pictures but we switched the non-glossy pictures into their glossy counterpart and vice versa. Next, we asked participants to indicate their preference again, to rank and evaluate the options on a 5-point scale. Within the second group of respondents, where a general focus was created, we expected to find a significant preference for glossy and therefore a switch in participants' preferences when we altered the type of paper for the pictures, while we did not expect to find this within the first group of respondents.

Results and discussion

Interestingly, in contrast to our expectations, the type of paper influenced all respondents. Even if a specific question referred to the landscape itself (i.e., the first group of respondents), glossy was significantly more preferred to non-glossy (Group 1: $F(1,35) = 16.58$, $p < .001$; Group 2: $F(1,38) = 26.44$, $p < .001$; Group 3A: $F(1,36) = 10.04$, $p = .003$; Group 3B: $F(1,36) = 68.49$, $p < .001$). Similar to studies 1A and 1B, non-parametric tests also showed that respondents preferred glossy to non-glossy (Group 1: $z = -3.36$, $p = .001$; Group 2: $z = -3.96$, $p < .001$; Group 3A: $z = -2.76$, $p = .01$; Group 3B: $z = -4.90$, $p < .001$).

Furthermore, glossy (vs. non-glossy) pictures obtained a significant higher liking score in each condition (Group 1: $F(1,35) = 15.82$, $p < .001$; Group 2: $F(1,38) = 16.79$, $p < .001$; Group 3A: $F(1,36) = 3.77$, $p = .060$; Group 3B: $F(1,36) = 38.42$, $p < .001$).

Additionally, all participants changed their preferences when we changed the type of paper. In particular, glossy was preferred to non-glossy again, irrespective of the participants' previous choices—exhibited through better rankings for glossy than for non-glossy (Group 1: $F(1,35) = 21.85$, $p < .001$; Group 2: $F(1,38) = 26.44$, $p < .001$; Group 3: $F(1,36) = 37.10$, $p < .001$) as well as through better liking scores (Group 1: $F(1,35) = 21.18$, $p < .001$; Group 2: $F(1,38) = 34.97$, $p < .001$; Group 3: $F(1,36) = 34.38$, $p < .001$). Non-parametric tests of the rankings data revealed similar results (Group 1: $z = -3.53$, $p < .001$; Group 2: $z = -3.80$, $p < .001$; Group 3: $z = -4.14$, $p < .001$). Hence, these results suggest a clear and powerful preference for glossy images.

Table 1 provides an overview of the mean values and standard deviations of both the rankings and the liking scores for glossy and non-glossy. In particular, the upper part of the table represents the descriptives for the original stimuli, while the lower part of the table presents the descriptives for the reversed stimuli.

While a part of our previous findings might suggest a socialization effect—due to the marked higher preference for glossy among adults (cf. study 1A) compared to children (cf. study 1B), children's preference for glossy still suggest that it partly reflects an innate effect. We therefore test whether the attraction to glossy stems from an innate preference for fresh water. In particular, study 3 tests whether glossy would be associated with wetness or water, while matte should not yield such a connotation.

Study 3: Does the preference for glossy stem from an innate need for water as a resource?

Participants and procedure

We conducted an online pretest to find equally attractive pictures of both aquatic landscapes and desert landscapes. Participants rated the attractiveness of either 20 water (N = 28)

Please cite this article as: Meert, K., et al., Taking a shine to it: How the preference for glossy stems from an innate need for water, *Journal of Consumer Psychology* (2013), http://dx.doi.org/10.1016/j.jcps.2013.12.005

Table 1
Study 2. Mean values and standard deviations for the rankings and liking scores of both the glossy and non-glossy pictures.

	Rankings				Scores			
	Glossy		Non-glossy		Glossy		Non-glossy	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Original stimuli								
Group 1	2.13	.55	2.88	.55	3.88	.69	3.28	.72
Group 2	2.09	.50	2.91	.50	3.79	.69	3.12	.73
Group 3A	2.20[a]	.57	2.80[a]	.57	3.64	.68	3.34[b]	.62
Group 3B	1.84[a]	.49	3.16[a]	.49	3.93	.74	2.95[b]	.67
Reversed stimuli								
Group 1	2.06	.57	2.94	.57	3.96	.58	3.22	.70
Group 2	1.99	.62	3.01	.62	4.05	.71	2.94	.87
Group 3	1.97	.53	3.03	.53	4.05	.65	2.96	.76

Note 1. Within each group, all mean differences are significant between glossy and non-glossy—both for the rankings as the scores.
Note 2. Between groups, (marginally) significant differences are labeled with superscripts.
[a] $p = .02$ (Bonferroni test).
[b] $p = .09$ (Bonferroni test).

or 20 desert landscapes ($N = 28$) using a 9-point scale (1 = not attractive at all, 9 = very attractive). All pictures were randomly presented. Results revealed that seven aquatic and seven desert pictures (see Appendix D) were rated roughly equally. An independent samples *t*-test showed no significant differences between the mean attractiveness ratings of these target landscapes ($t(54) = .92$, $p = .36$, $M_{aquatic} = 6.87$, $SD = .98$ versus $M_{desert} = 6.65$, $SD = .73$).

Ninety-two respondents (different from the pretest; 61 women, 31 men; $M_{age} = 35.84$, $SD = 16.78$) participated in an online study. In order to explain the difference between glossy versus matte, we first showed the participants a picture of a regular A4-paper and asked them to indicate on a slider ranging from 0 till 100 how glossy or matte they would rate the paper (0 = totally glossy, 100 = totally matte), and subsequently showed the participants a picture of some glossy magazines and asked them the same question. Next, we randomly assigned the participants to one of two conditions of the experiment, i.e., aquatic ($N = 47$) versus desert ($N = 45$). In both conditions, the participants viewed 11 pictures, i.e., the seven pretested target pictures and four filler pictures. We asked the participants to indicate how glossy or matte they perceived each picture, using the slider ranging from 0 (totally glossy) till 100 (totally matte). Hence, mean ratings for the aquatic and desert landscapes could be calculated.

Results and discussion

Participants are able to discern the differences between glossy versus matte surfaces. Specifically, the regular A4-paper was rated as significantly more matte ($t(91) = 14.16$, $p < .001$, $M = 80.42$, $SD = 20.60$), while the glossy magazines were rated as significantly more glossy ($t(91) = 10.50$, $p < .001$, $M = 20.10$, $SD = 27.31$) than the neutral midpoint (i.e., 50).

More importantly, however, aquatic landscapes were rated as significantly more glossy ($M = 27.36$, $SD = 13.75$) than desert landscapes ($M = 55.41$, $SD = 10.58$), $t(90) = 10.93$, $p < .001$, supporting our hypothesis that the preference for glossy might stem for an innate preference for fresh water. In addition, aquatic landscapes were perceived as significantly more glossy ($t(46) = 11.28$, $p < .001$) and desert landscapes as significantly more matte ($t(44) = 3.43$, $p = .001$) than the neutral midpoint (i.e., 50). So, while Coss and Moore (1990) showed that adults perceive glossy surface finishes as wetter than matte surface finishes, we find a reverse association prompting people to view aquatic landscapes as more glossy than desert landscapes. These results similarly support our hypothesis.

Despite this initial support for our hypothesis, we need to rule out the previously mentioned "what is beautiful is good" hypothesis (cf. introduction, Dion et al., 1972), specifically that individuals have a general tendency to prefer objects that have visual appeal. In fact, the gaze cascade effect (Shimojo et al., 2003) suggests that pleasant appearances could attract consumers' attention and stimulate gazing, which could cause liking. In the next study, we test whether the attraction to glossy surfaces still remains when eliminating this visual aspect while garnering additional support for our "water as a resource" hypothesis.

Study 4: Glossy = Pretty? Does the preference for glossy stem from visual appeal?

Participants and procedure

Forty-six participants (24 women, 22 men; $M_{age} = 21.63$, $SD = 4.41$) were blindfolded and were randomly assigned to one of two conditions of this between-subjects lab experiment. We instructed them to answer some questions while touching the surface of either a matte ($N = 23$) versus a glossy ($N = 23$) paper. A pretest ($N = 20$; different sample) using a 9-point scale (1 = rough; 9 = smooth) had indicated that participants perceived the surface of the glossy paper to be significantly more smooth ($M = 7.80$, $SD = .92$) than the surface of the non-glossy paper ($M = 4.10$, $SD = .99$; $t(18) = 8.64$, $p < .001$).

While touching the relevant paper, we asked the participants about their perceptions concerning the quality of the paper on a 9-point scale ranging from 1 (= not good at all) to 9 (= very good), and subsequently, about the perceived attractiveness of the paper on a similar scale (1 = not attractive at all, 9 = very attractive). Next, we instructed them to imagine themselves picturing an advertisement for a certain product displayed on the relevant paper and to indicate their thoughts about the quality of that product on a 9-point scale (1 = not good at all, 9 = very good). Finally, we asked the participants to imagine that the paper depicted a landscape and to indicate in percentages (while still blindfolded) the amount of water they imagined was depicted in the landscape; any effect of type of paper on estimated amount of water would substantiate the presumed connection between glossy and water presence.

Please cite this article as: Meert, K., et al., Taking a shine to it: How the preference for glossy stems from an innate need for water, *Journal of Consumer Psychology* (2013), http://dx.doi.org/10.1016/j.jcps.2013.12.005

Results and discussion

Results for the blindfolded participants replicated our previous studies. Specifically, the blindfolded participants rated both the quality (M = 7.83, SD = .83) and the attractiveness (M = 7.83, SD = .78) of the glossy paper (smooth surface) higher than the quality (M = 5.35, SD = 1.53) and attractiveness (M = 5.04, SD = 1.40) of the non-glossy (rough surface) paper (respectively, $t(44) = 6.84$, $p < .001$; $t(44) = 8.35$, $p < .001$). In addition, blindfolded participants rated an advertised product as being of higher quality when displayed on a glossy (M = 6.74, SD = .96) versus a non-glossy paper (M = 4.87, SD = 1.25; $t(44) = 5.67$, $p < .001$). Importantly, the participants imagined a significantly higher amount of water depicted in the landscape when touching a glossy (M = 51.91, SD = 15.44) versus a non-glossy paper (M = 35.65, SD = 16.12; $t(44) = 3.49$, $p = .001$). Gender did not influence any of these results.

Finally, we tested whether respondents' imagined percentage of water depicted in the landscape mediated their perceptions toward the quality and attractiveness of the relevant paper. Interestingly, for both dependent variables (i.e., quality and attractiveness of the relevant paper), the indirect path through the imagined percentage of water was significant (respectively, z = 2.09, $p < .001$; z = 2.45, $p < .001$), but we also obtained a direct effect of condition on the quality and attractiveness of the paper (respectively, $F(2,43) = 27.30$, $p < .001$; $F(2,43) = 38.85$, $p < .001$)—attesting to a significant partial mediation of imagined water percentage for both dependent variables. Sobel tests as well as bootstrap mediations confirmed these results. Hence, these findings suggest that part of the glossy appeal indeed is due to an association with water.

If glossy images are preferred due to its association with fresh water, the participants should demonstrate an enhanced liking for glossy, and respectively a lower liking for matte when they lack water i.e. are thirsty—Study 5 tests this hypothesis.

Study 5: Thirsty participants show an enhanced liking for glossy

Participants and procedure

To test our hypotheses, we draw on neutral pictures to eliminate possible confounding associations with regard to the content of the pictures during the experiment. Therefore, forty respondents participated in an online pretest. We asked the participants to indicate their attitude towards 10 pictures of planets on three Likert scales ranging from very negative (1) to very positive (9), bad (1) to good (9) and ugly (1) to pretty (9). The ratings were averaged for each picture. Results showed roughly equal ratings for eight pictures; hence, these were selected for the study (see Appendix E).

One hundred twenty-six participants (different from the pretest) were randomly assigned to one of the conditions of the 2 (Type of paper: glossy vs. non-glossy, within subjects) × 3 (Level of thirst: 1: control, 2: salty crackers, 3: salty crackers and water, between subjects)[2] mixed design. We introduced the participants to the lab experiment as an investigation of various preferences and choices. To hide the true purpose of the study, we first asked the participants to make gustatory evaluations. We instructed them not to drink or eat anything they brought with them during the experiment.

In order to manipulate thirst, in the salty crackers condition (N = 48), we told the participants that retailers were interested in the general preferences of the existing flavors regarding the brand TUC. We told the participants that new flavors would be added in the future, based on their existing observations. Participants read that their opinion would be greatly appreciated; hence, that it was very important to taste all five different flavors (bacon, cheese, paprika, salt & pepper, garlic & herb) extensively. Moreover, we asked the participants to rate each flavor on a slider ranging from 0 (not tasty at all) till 100 (very tasty) and to match the content of each cup with the right flavor. Altogether, the participants ate about eight salty TUC crackers, without drinking anything.

By contrast, in the salty crackers and water condition (N = 36), we instructed the participants with the same tasks regarding the TUC crackers, and additionally, with a similar task regarding five water flavors. Specifically, the participants first tasted the same five flavors of crackers and subsequently, five flavors of water. In this way, we reduced participants' thirst. We expected this condition to be very similar to the control condition (N = 42), in which participants did not receive any instructions regarding gustatory evaluations. After this manipulation, we asked the participants to indicate their level of current thirst on a 9-point scale (1 = not thirsty at all, 9 = very thirsty).

Subsequently, in a seemingly unrelated task, we asked all participants to make evaluations once again, this time regarding photographs of planets. Therefore, participants received a portfolio with eight target pictures. Half of the pictures were presented on glossy paper, whereas the other half was presented on non-glossy paper. Different portfolios were created in order to randomize the order of the pictures across participants. We instructed the participants to take a look at the portfolio, and to rank the eight pictures according to their preferences (1 = most attractive, 8 = least attractive).

At the end of the experiment, we gave the participants in the salty crackers condition the opportunity to drink some water. To finish, all participants were asked about the true purpose of the study, were thanked and debriefed.

[2] We initially had included a fourth condition in which the participants had to taste some fruit. We intended this fruit condition to serve as an alternative control condition because in the two experimental conditions participants received something while in the control condition they did not. Although we expected the fruit condition not to induce thirst, about half of the participants reported feeling thirsty—an unintended side effect. We decided to drop the fruit condition because it essentially represented a mix of the control condition and the salty crackers condition. In line with this, the results for the fruit condition were in between the latter two conditions.

Please cite this article as: Meert, K., et al., Taking a shine to it: How the preference for glossy stems from an innate need for water, *Journal of Consumer Psychology* (2013), http://dx.doi.org/10.1016/j.jcps.2013.12.005

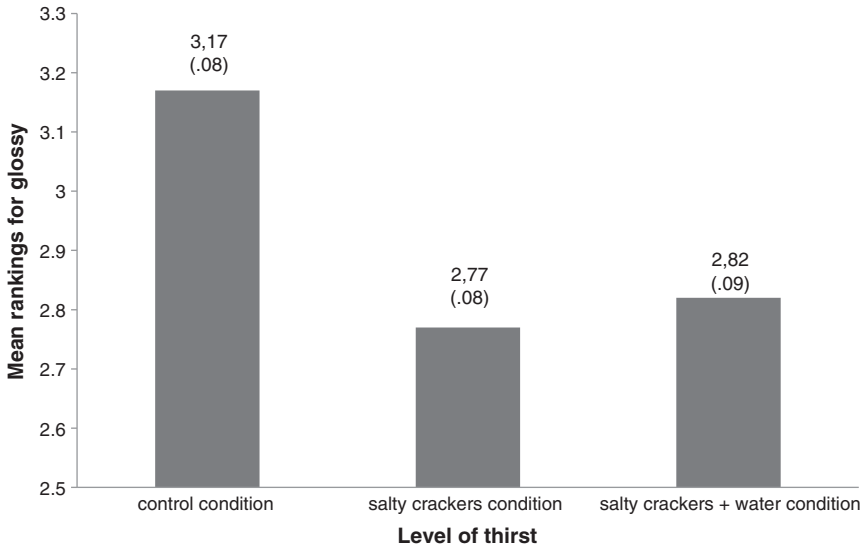

Fig. 1. Study 5. Respondents' mean rankings for the glossy pictures. *Note*. Numbers in parentheses represent standard errors.

Results and discussion

None of the participants guessed the true purpose of the study. As intended, results exhibit a successful manipulation. Participants' level of current thirst (on the 9-point scale) after the manipulation differed significantly across the three conditions ($F(2,123) = 82.06, p < .001$). Bonferroni tests revealed significant differences between all conditions (all p's $< .001$; $M_{control} = 5.52$, $SD = 1.89$; $M_{crackers} = 7.10$, $SD = 1.08$; $M_{crackers\ and\ water} = 2.53$, $SD = 1.89$).

We calculated the mean ranking across the four glossy images and the mean ranking across the four non-glossy images. We performed a 2 (Type of paper: glossy vs. non glossy, within subjects) × 3 (Level of thirst: control, salty crackers, salty crackers and water, between subjects) mixed ANOVA on respondents' mean rankings of the glossy and non-glossy pictures. Consistent with the previous studies, results showed better rankings for glossy ($M = 2.92$, $SE = .05$) than for non-glossy ($M = 6.08$, $SE = .05$) ($F(1,123) = 1053.86$, $p < .001$). However, although the basic preference for glossy is observed in all three conditions ($F_{control}(1,41) = 169.29$, $p < .001$; $F_{salty\ crackers}(1,47) = 913.87$, $p < .001$; $F_{salty\ crackers\ +\ water}(1,35) = 328.70$, $p < .001$), it does vary across the 3 conditions ($F(2,123) = 6.87$, $p = .001$). Non-parametric tests revealed similar results (Control: $z = -5.49$, $p < .001$; Salty crackers: $z = -6.19$, $p < .001$; Salty crackers + water: $z = -5.32$, $p < .001$). Fig. 1 displays the mean rankings (1 = most attractive, 8 = least attractive) of the glossy pictures.

In the salty crackers condition, the participants ranked the glossy pictures higher ($M = 2.77$, $SE = .08$) and the non-glossy pictures lower ($M = 6.23$, $SE = .08$) than the participants in the control condition ($M_{glossy} = 3.17$, $SE = .08$; $M_{non\text{-}glossy} = 5.83$, $SE = .08$). Planned contrasts show that these rankings are significantly different ($p = .001$).

Interestingly, however, participants' rankings in the salty crackers condition did not differ significantly from participants' rankings in the salty crackers and water condition ($M_{glossy} = 2.82$, $SE = .09$, $p = .62$; $M_{non\text{-}glossy} = 6.18$, $SE = .09$, $p = .62$). Accordingly, planned contrasts show that the rankings in the salty crackers and water condition are significantly different from the rankings in the control condition ($p = .01$).

This pattern of results suggests that simply being thirsty may not be needed to increase preferences for glossy images. In fact, the increased preference for glossy in the salty crackers and water condition may imply that any salient water cue (be it current thirst, recent thirst, or just the presence of water) is sufficient to induce a glossy image preference. While this is consistent with the proposed account of an innate preference for glossy images because of their association with water as a valuable resource, it is nevertheless interesting to assess whether current levels of self-reported thirst also influence the preference for glossy.

As an additional analysis, we performed a 2 (Type of paper: glossy vs. non glossy, within subjects) × 3 (Level of thirst: control, salty crackers, salty crackers and water, between subjects) mixed ANCOVA with the participants' level of current thirst (9-point scale) as a covariate on respondents' mean rankings of the glossy and non-glossy pictures.[3] While controlling for current levels of thirst does not eliminate the effect of condition on preference for glossy images ($F(2,122) = 8.19$, $p < .001$), the

[3] While one usually would not include a manipulation check as a covariate (or as a mediator) in an analysis, in the present case it appears that the manipulation check does not capture the entire manipulation. While we intended to manipulate current level of thirst only, we also seem to have induced salience of water. Because of this, it is unclear whether current level of thirst really induces a preference for glossy, or whether the increased preferences for glossy we observe in the experimental conditions is merely due to the salience of water in both these conditions.

Please cite this article as: Meert, K., et al., Taking a shine to it: How the preference for glossy stems from an innate need for water, *Journal of Consumer Psychology* (2013), http://dx.doi.org/10.1016/j.jcps.2013.12.005

participants' current level of thirst does significantly affect their preference for glossy($F(1,122) = 4.29$, $p = .04$). In particular, more thirst leads to a higher preference for glossy (B = .06, $SE = .03$, $t = 2.07$, $p = .04$). Hence, it appears that the effect of condition on mean rankings for glossy and non-glossy is partially mediated by one's current level of thirst.

Accordingly, we tested a formal mediation model for multi-category independent variables (Hayes & Preacher, 2013) that examines whether respondents' current level of thirst can partly explain the effect of condition on their preference for glossy. Indeed, the indirect path through current level of thirst was significant, both for the salty crackers and the salty crackers and water condition relative to the control condition, as the confidence interval excludes zero (respectively, LLCI = −.19, ULCI = −.02 and LLCI = .04, ULCI = .34) but we also obtained a direct effect of condition on the preference for glossy ($F(2,122) = 8.19$, $p < .001$)—attesting to a significant partial mediation of current level of thirst. Hence, these findings suggest that part of the preference for glossy images is indeed heightened in the presence of a current need for water.

In sum, while we propose that the preference for glossy may be an evolved adaptation stemming from the innate preference for fresh water, specific aspects of a situation may increase that preference. In particular, when people are thirsty the preference for glossy increases. This explains the difference between the control condition and the salty crackers condition. Interestingly, we obtained no significant difference in the preference for glossy between the salty crackers and the salty crackers and water condition. While the current level of thirst is rather low in the salty crackers and water condition, it is still the case that the participants in that condition recently had been thirsty, namely after eating the salty crackers but before drinking the water. This recent thirst appears to be sufficient to enhance preferences for glossy images. Future research may investigate how long after quenching one's thirst increased preferences for glossy persist.

General discussion

Prior research has examined the preference for attractiveness and beauty. However, little or no research has empirically investigated the mechanism underlying the preference for glossy in particular. The aim of the present paper is twofold. First, we document a fundamental preference for glossy images. Second, we offer a tentative explanation for this preference. Our studies seem to suggest that people exhibit a systematic preference for glossy. In fact, we did not only discover a preference effect for glossy images in very young children (study 1B), but also a systematic preference in adults across all other five studies. We also showed this preference across different modalities (i.e., vision and touch), and even when distinguishing between image presentation and image content (study 2).

One assumed link between glossy surface textures and wetness can be found in prior research (Coss & Moore, 1990). The current paper focuses on this account more deeply. Prior researchers posit that positive affect (e.g., Coates, 2003; Erk et al., 2002; Norman, 2002) or socialization (e.g., Langlois et al., 1991) may explain why consumers tend to prefer attractive appearances. Drawing on an evolutionary psychology framework, we propose that the preference for glossy might stem from an innate preference for fresh water. The results of six studies support this idea: Adults (studies 1A-2-4) as well as young children (study 1B) show a marked preference for glossy pictures. Furthermore, adults connect aquatic landscapes with glossy, and dry landscapes with matte (study 3). Study 5 further examines this association by inducing a need for water which, in turn, leads to a higher preference for glossy.

It is important to consider how these findings contribute to the challenge that the preference for pleasant appearances might be 'learned' over time. While our studies show that people's liking for glossy might stem from an innate preference for fresh water, it does not imply that this behavior is genetically programmed and that it downplays the role of learning. Hence, learned and evolved are not competing accounts. To the contrary, evolutionary psychology assumes the interaction of human nature with the external environment to present an interactionist framework (Colarelli & Dettmann, 2003; Confer et al., 2010). In other words, evolved psychological adaptations are required to enable and facilitate learning. Marketers increasingly link glossy with luxury, as a result of which our liking for glossy might be enhanced. Consequently, adults have a significant higher liking for glossy as opposed to children (cf. studies 1A-1B-2), and relate it to higher perceived quality (study 4).

Our findings raise several interesting issues to be addressed in future research. A first issue involves further consequences of presence of water. Since humans exhibit a general liking for cues such as mountains, flowers and nature sceneries with clear flowing water (Thornhill, 1998), it is not surprising that these evolved landscape preferences are commonly used to positively influence consumers (Colarelli & Dettmann, 2003) and to generate a favorable attitude toward the ad and the brand (Hartmann & Apaolaza-Ibáñez, 2010). Prior research has also discussed the restorative functions of the presence of water (e.g., Korpela et al., 2010; Kweon et al., 2008). Hence, as water is valued as a necessary resource to survive, we suggest that its presence might indeed induce a positive feeling that in turn, can impact subsequent choices. In particular, priming participants with aquatic landscape scenes should positively influence them, due to a sense of owning lots of resources (i.e., water). Hence, this perception might influence subsequent choices, such as taking more risks or giving more money away in, for instance, a dictator game (Hoffman, McCabe, Shachat, & Smith, 1994).

Second, research regarding processing fluency has indicated that any variable that facilitates fluent processing results in more positive affective reactions, more favorable judgments of preference and an increased liking (e.g., Reber, Schwarz, & Winkielman, 2004). Given the "what is beautiful is good" hypothesis (cf. introduction; Dion et al., 1972) and human's innate preference for fresh water (cf. introduction), it might be possible that glossy objects are perceived as easy to process which, in turn, adds to the found favorable evaluations.

In addition, although our findings suggest a general liking for glossy, future research may also investigate some potential boundary conditions. First, from a functional perspective, the preference for glossy might be reduced as it interferes with

Please cite this article as: Meert, K., et al., Taking a shine to it: How the preference for glossy stems from an innate need for water, *Journal of Consumer Psychology* (2013), http://dx.doi.org/10.1016/j.jcps.2013.12.005

readability. For instance, a survey of prescription label preferences among community pharmacy patrons revealed that a glossy surface is not recommended since it makes the label less legible (Luscombe, Jinks, & Duncan, 1992). Similarly, given the fact that gloss is the shiny surface appearance created when light is reflected from that surface (e.g., Hunter, 1975; Obein, Knoblauch, & Viénot, 2004; Smith, 1999), it is unclear whether a glossy surface finish would still be preferred in conditions of under- or overexposure of light.

The preference for glossy might change conditional on the circumstance. For instance, glossy wrapping for unhealthy food products (e.g., oven baked potato chips) might raise connotations of greasiness as a result of which such products might choose to use matte packaging. In a similar vein, an intellectual magazine printed on glossy (versus non-glossy) might weaken perceptions of its credibility, and clothes made out of patent leather or shiny fabrics might raise perceptions of commonness as a result of which their matte counterpart is most likely to be preferred. Similarly, the attraction to glossy is likely to vary between individuals. For instance, while the mainstream luxury handbag market is dominated by glossy bags, very high-end handbags in the portfolios of Chanel or Louis Vuitton are predominantly matte. Consumers interested in mainstream luxury will prefer glossy because of the association with luxury, while consumers with lots of cultural capital tend to engage in inconspicuous consumption and prefer subtle brand logos and muted colors in order to differentiate them from the mainstream consumers (Berger & Ward, 2010). In fact, since the preference for glossy might additionally stem from a socialization effect (cf. studies 1A-1B-4), some individuals might show counter-reactions (i.e., preferring matte) in order to distinguish themselves from the masses (Nueno & Quelch, 1998; Silverstein & Fiske, 2003).

Still, our results show that many consumers significantly prefer glossy to matte. Moreover, this preference seems to be partly innate, due to an association between glossy and wetness/water. Both being thirsty and recently having been thirsty seem to inflate extant preferences for glossy.

Appendix A. Sample stimuli

Samples of the stimuli used in the reported studies can be found online at http://dx.doi.org/10.1016/j.jcps.2013.12.005.

References

Appleton, J. (1975). *The experience of landscape.* London: Wiley.

Balling, J. D., & Falk, J. H. (1982). Development of visual preference for natural environments. *Environment and Behavior*, *14*(1), 5–28.

Barkow, J. H., Cosmides, L., & Tooby, J. (1992). *The adapted mind: Evolutionary psychology and the generation of culture.* NY: Oxford University Press.

Bayley, G., & Nancarrow, C. (1998). Impulse purchasing: A qualitative exploration of the phenomenon. *Qualitative Market Research: An International Journal*, *1*(2), 99–114.

Belk, R. W., Bahn, K. D., & Mayer, R. N. (1982). Developmental recognition of consumption symbolism. *Journal of Consumer Research*, *9*(1), 4–17.

Berger, J., & Ward, M. (2010). Subtle signals of inconspicuous consumption. *Journal of Consumer Research*, *37*(4), 555–569.

Bernaldez, F. G., Gallardo, D., & Abello, R. P. (1987). Children's landscape preferences: From rejection to attraction. *Journal of Environmental Psychology*, *7*, 169–176.

Bloch, P. H., Brunel, F. F., & Arnold, T. J. (2003). Individual differences in the centrality of visual product aesthetics: Concept and measurement. *Journal of Consumer Research*, *29*(4), 551–565.

Buss, D. M. (2005). *The handbook of evolutionary psychology.* New York, NY: Wiley.

Coates, D. (2003). *Watches tell more than time.* New York: McGraw-Hill.

Cohen, E. P., & Gainer, R. S. (1995). *Art: Another language for learning.* Portsmouth, NH: Heinemann.

Colarelli, S. M., & Dettmann, J. R. (2003). Intuitive evolutionary perspectives in marketing practices. *Psychology & Marketing*, *20*(9), 837–865.

Confer, J. C., Easton, J. A., Fleischman, D. S., Goetz, C. D., Lewis, D. M. G., Perilloux, C., et al. (2010). Evolutionary psychology. Controversies, questions, prospects, and limitations. *American Psychologist*, *65*(2), 110–126.

Cosmides, L., & Tooby, J. (1994). Better than rational: Evolutionary psychology and the invisible hand. *The American Economic Review*, *84*(2), 327–332.

Coss, R. G., & Moore, M. (1990). All that glistens: Water connotations in surface finishes. *Ecological Psychology*, *2*(4), 367–380.

Coss, R. G., Ruff, S., & Simms, T. (2003). All that glistens: II. The effects of reflective surface finishes on the mouthing activity of infants and toddlers. *Ecological Psychology*, *15*(3), 197–213.

Danko-McGhee, K. (2006). Favourite artworks chosen by young children in a museum setting. *International Journal of Education Through Art*, *2*(3), 223–235.

Desmet, P., & Hekkert, P. (2007). Framework of product experience. *International Journal of Design*, *1*(1), 57–66.

Dion, K. K., & Berscheid, E. (1974). Physical attractiveness and peer perception among children. *Sociometry*, *37*(1), 1–12.

Dion, K. K., Berscheid, E., & Walster, E. (1972). What is beautiful is good. *Journal of Personality and Social Psychology*, *24*(3), 285–290.

Dipboye, R. L., Arvey, R. D., & Terpstra, D. E. (1977). Sex and physical attractiveness of raters and applicants as determinants of resume evaluations. *Journal of Applied Psychology*, *62*(3), 288–294.

Dumaine, B. (1991). Design that sells and sells and. *Fortune Magazine*, (March 11), 86–94.

Dutton, D. (2002). Aesthetic universals. In B. Gaut, & D. M. Lopes (Eds.), *The Routledge companion to aesthetics*. London: Routledge.

Dutton, D. (2009). *The art instinct: Beauty, pleasure and human evolution.* New York: Bloomsbury Press.

Eagly, A. H., Ashmore, R. D., Makhijani, M. G., & Longo, L. C. (1991). What is beautiful is good, but...: A meta-analytic review of research on the physical attractiveness stereotype. *Psychological Bulletin*, *110*(1), 109–128.

Erk, S., Spitzer, M., Wunderlich, A. P., Galley, L., & Walter, H. (2002). Cultural objects modulate reward circuitry. *Neuroreport*, *13*(18), 2499–2503.

Fantz, R. L., Fagan, J. F., & Miranda, S. B. (1975). Early visual selectivity. In L. B. Cohen, & P. Salapatek (Eds.), *Infant perception: From sensation to cognition*. New York: Academic Press.

Feingold, A. (1992). Good-looking people are not what we think. *Psychological Bulletin*, *111*(2), 304–341.

Felsten, G. (2009). Where to take a study break on the college campus: An attention restoration theory perspective. *Journal of Environmental Psychology*, *29*(1), 160–167.

Frieze, I. H., Olson, J. E., & Russell, J. (1991). Attractiveness and income for men and women in management. *Journal of Applied Social Psychology*, *21*(13), 1039–1057.

Gelineau, E. P. (1981). A psychometric approach to the measurement of color preference. *Perceptual and Motor Skills*, *53*, 163–174.

Griskevicius, V., & Kenrick, D. T. (2013). Fundamental motives: How evolutionary needs influence consumer behavior. *Journal of Consumer Psychology*, *23*(3), 372–386.

Griskevicius, V., Shiota, M. N., & Nowlis, S. M. (2010). The many shades of rose-colored glasses: An evolutionary approach to the influence of different positive emotions. *Journal of Consumer Research*, *37*(2), 238–250.

Please cite this article as: Meert, K., et al., Taking a shine to it: How the preference for glossy stems from an innate need for water, *Journal of Consumer Psychology* (2013), http://dx.doi.org/10.1016/j.jcps.2013.12.005

Han, K. T. (2007). Responses to six major terrestrial biomes in terms of scenic beauty, preference, and restorativeness. *Environment and Behavior*, *39*(4), 529–556.

Hantula, D. A. (2003). Guest editorial: Evolutionary psychology and consumption. *Psychology & Marketing*, *20*(9), 757–763.

Hartmann, P., & Apaolaza-Ibáñez, V. (2010). Beyond savanna: An evolutionary and environmental psychology approach to behavioral effects of nature scenery in green advertising. *Journal of Environmental Psychology*, *30*(1), 119–128.

Hassenzahl, M. (2008). Aesthetics in interactive products: Correlates and consequences of beauty. In H. N. J. Schifferstein, & P. Hekkert (Eds.), *Product Experience* (pp. 287–302). San Diego, CA: Elsevier.

Hayes, A. F., & Preacher, K. J. (2013). Statistical mediation analysis with a multicategorical independent variable [White paper]. Retrieved from. http://www.afhayes.com/

Henshilwood, C. S., D'Errico, F., Marean, C. W., Milo, R. G., & Yates, R. (2001). An early bone tool industry from the Middle Stone Age at Blombos Cave, South Africa: Implications for the origins of modern human behaviour, symbolism and language. *Journal of Human Evolution*, *41*(6), 631–678.

Herzog, T. R. (1985). A cognitive analysis of preference for waterscapes. *Journal of Environmental Psychology*, *5*(3), 225–241.

Hoegg, J. A., & Alba, J. W. (2008). A role for aesthetics in consumer psychology. In Curtis P. Haugvedt, Paul M. Herr, & Frank R. Kardes (Eds.), *Handbook of consumer psychology* (pp. 733–754). Newbury Park, CA: Sage.

Hoffman, E., McCabe, K., Shachat, K., & Smith, V. (1994). Preferences, property rights, and anonymity in bargaining games. *Games and Economic Behavior*, *7*, 346–380.

Holbrook, M. B., & Zirlin, R. B. (1985). Artistic creation, artworks, and aesthetic appreciation: Some philosophical contributions to nonprofit marketing. *Advances in Nonprofit Marketing*, *1*, 1–54.

Hope, D. A., & Mindell, J. A. (1994). Global social skill ratings: Measures of social behavior or physical attractiveness? *Behaviour Research and Therapy Therapy*, *32*(4), 463–469.

Hunter, R. S. (1975). *The measurement of appearance.* New York: Wiley, 65–77.

Janssens, K., Pandelaere, M., Van den Bergh, B., Millet, K., Lens, I., & Roe, K. (2011). Can buy me love: Mate attraction goals lead to perceptual readiness for status products. *Journal of Experimental Social Psychology*, *47*(1), 254–258.

John, D. R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *Journal of Consumer Research*, *26*(3), 183–213.

Kaplan, S. (1987). Aesthetics, affect, and cognition: Environmental preference from an evolutionary perspective. *Environment and Behavior*, *19*(1), 3–32.

Kaplan, R., & Kaplan, S. (1989). *The experience of nature: A psychological perspective.* New York: Cambridge University Press.

Korpela, K. M., Ylén, M., Tyrväinen, L., & Silvennoinen, H. (2010). Favorite green, waterside and urban environments, restorative experiences and perceived health in Finland. *Health Promotion International*, *25*(2), 200–209.

Kweon, B. -S., Ulrich, R. S., Walker, V. D., & Tassinary, L. G. (2008). Anger and stress: The role of landscape posters in an office setting. *Environment and Behavior*, *40*(3), 355–381.

Lacey, S., Hagtvedt, H., Patrick, V. M., Anderson, A., Stilla, R., Deshpande, G., et al. (2011). Art for reward's sake: Visual art recruits the ventral striatum. *NeuroImage*, *55*(1), 420–433.

Lange, E., & Schaeffer, P. V. (2001). A comment on the market value of a room with a view. *Landscape and Urban Planning*, *55*(2), 113–120.

Langlois, J. H., Kalakanis, L., Rubenstein, A. J., Larson, A., Hallam, M., & Smoot, M. (2000). Maxims or myths of beauty? A meta-analytic and theoretical review. *Psychological Bulletin*, *126*(3), 390–423.

Langlois, J. H., Ritter, J. M., Roggman, L. A., & Vaughn, L. S. (1991). Facial diversity and infant preferences for attractive faces. *Developmental Psychology*, *27*(1), 79–84.

Langlois, J. H., Roggman, L. A., & Rieser-Danner, L. A. (1990). Infants' differential social responses to attractive and unattractive faces. *Developmental Psychology*, *26*(1), 153–159.

Lorenzo, G. L., Biesanz, J. C., & Human, L. J. (2010). What is beautiful is good and more accurately understood: Physical attractiveness and accuracy in first impressions of personality. *Psychological Science*, *21*(12), 1777–1782.

Luscombe, D. K., Jinks, M. J., & Duncan, S. (1992). A survey of prescription label preferences among community pharmacy patrons. *Journal of Clinical Pharmacy and Therapeutics*, *17*(4), 241–244.

Luttik, J. (2000). The value of trees, water and open space as reflected by house prices in the Netherlands. *Landscape and Urban Planning*, *48*, 161–167.

Lynn, M., Kampschroeder, K., & Pereira, A. (1999). Evolutionary perspectives on consumer behavior: an introduction. In E. J. Arnould, & L. M. Scott (Eds.), *Advances in consumer research*, *Vol. 26*. (pp. 226–230). Provo, UT: Association for Consumer Research.

Lyons, E. (1983). Demographic correlates of landscape preference. *Environment and Behavior*, *15*(4), 487–511.

Marlowe, C. M., Schneider, S. L., & Nelson, C. E. (1996). Gender and attractiveness biases in hiring decisions: Are more experienced managers less biased? *Journal of Applied Psychology*, *81*(1), 11–21.

McCall, R. B., & Melson, W. H. (1970). Complexity, contour, and areas determinants of attention in infants. *Developmental Psychology*, *3*, 343–349.

Miller, G. F. (2009). *Spent: Sex, evolution, and consumer behavior.* New York, NY: Viking.

Mobius, M. M., & Rosenblat, T. S. (2006). Why beauty matters. *American Economic Review*, *96*(1), 222–235.

Nanda, U., Eisen, S. L., & Baladandayuthapani, V. (2008). Undertaking an art survey to compare patient versus student art preferences. *Environment and Behavior*, *40*(2), 269–301.

Newman, R. W. (1970). Why man is such a sweaty and thirsty naked animal: A speculative review. *Human Biology*, *42*(1), 12–27.

Norman, D. A. (2002). Emotion & design: Attractive things work better. *Interactions*, *9*(4), 36–42.

Nueno, J. L., & Quelch, J. A. (1998). The mass marketing of luxury. *Business Horizons*, *41*, 61–68.

Obein, G., Knoblauch, K., & Viénot, F. (2004). Difference scaling of gloss: Nonlinearity, binocularity, and constancy. *Journal of Vision*, *4*(9), 711–720.

Orians, G. H., & Heerwagen, J. H. (1992). Evolved responses to landscapes. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 555–579). NY: Oxford University Press.

Packer, R. K. (2002). How long can the average person survive without water? Retrieved from. http://www.scientificamerican.com/article.cfm?id=how-long-can-the-average

Palmer, S. E., Schloss, K. B., & Sammartino, J. (2013). Visual aesthetics and human preference. *Annual Review of Psychology*, *64*, 77–107.

Piaget, J., & Inhelder, B. (1969). *The psychology of the child.* New York: Basic Books.

Pinker, S. (2002). *The blank slate: The modern denial of human nature.* New York: Viking.

Purcell, T., Peron, E., & Berto, R. (2001). Why do preferences differ between scene types? *Environment and Behaviour*, *33*, 93–106.

Ramachandran, V. S., & Hirstein, W. (1999). The science of art: A neurological theory of aesthetic experience. *Journal of Consciousness Studies*, *6*(6–7), 15–51.

Reber, R., Schwarz, N., & Winkielman, P. (2004). Processing fluency and aesthetic pleasure: Is beauty in the perceiver's processing experience? *Personality and Social Psychology Review*, *8*(4), 364–382.

Reimann, M., Zaichkowsky, J., Neuhaus, C., Bender, T., & Weber, B. (2010). Aesthetic package design: A behavioral, neural, and psychological investigation. *Journal of Consumer Psychology*, *20*(4), 431–441.

Saad, G. (2004). Applying evolutionary psychology in understanding the representation of women in advertisements. *Psychology & Marketing*, *21*(8), 593–612.

Saad, G. (2007). *The evolutionary bases of consumption.* London: Lawrence Erlbaum Associates.

Please cite this article as: Meert, K., et al., Taking a shine to it: How the preference for glossy stems from an innate need for water, *Journal of Consumer Psychology* (2013), http://dx.doi.org/10.1016/j.jcps.2013.12.005

Saad, G. (2013). Evolutionary consumption. *Journal of Consumer Psychology*, *23*(3), 351–371.

Saad, G., & Gill, T. (2000). Applications of evolutionary psychology in marketing. *Psychology & Marketing*, *17*(12), 1005–1034.

Schotter, E. R., Berry, R. W., McKenzie, C. R., & Rayner, K. (2010). Gazebias: Selective encoding and liking effects. *Visual Cognition*, *18*(8), 1113–1132.

Schwarz, N., Strack, F., & Mai, H. -P. (1991). Assimilation and contrast effects in part-whole question sequences: A conversational logic analysis. *The Public Opinion Quarterly*, *55*(1), 3–23.

Shimojo, S., Simion, C., Shimojo, E., & Scheier, C. (2003). Gaze bias both reflects and influences preference. *Nature Neuroscience*, *6*, 1317–1322.

Silverstein, M. J., & Fiske, N. (2003). *Trading up: The new American luxury.* London: Penguin Books Ltd.

Slater, A., Von der Schulenburg, C., Brown, E., Badenoch, M., Butterworth, G., Parsons, S., et al. (1998). Newborn infants prefer attractive faces. *Infant Behavior and Development*, *21*(2), 345–354.

Smith, K. B. (1999). Measuring the perception of glossy surfaces. *Pigment & Resin Technology*, *28*(4), 217–222.

Solomon, S. (2010). *Water: The epic struggle for wealth, power, and civilization.* New York: HarperCollins.

Stokrocki, M. (1984). The meaning of aesthetic awareness for preschoolers in a museum class. *Art Education*, *54*(3), 33–39.

Strack, F., Martin, L. L., & Schwarz, N. (1988). Priming and communication: Social determinants of information use in judgments of life satisfaction. *European Journal of Social Psychology*, *18*(5), 429–442.

Thornhill, R. (1998). Darwinian aesthetics. In C. Crawford, & D. Krebs (Eds.), *Handbook of evolutionary psychology* (pp. 543–572). Mahwah, NJ: Erlbaum.

Tooby, J., & Cosmides, L. (2005). Conceptual foundations of evolutionary psychology. In D. Buss (Ed.), *Handbook of evolutionary psychology* (pp. 5–67). Hoboken, NJ: Wiley.

Townsend, C., & Sood, S. (2012). Self-affirmation through the choice of highly aesthetic products. *Journal of Consumer Research*, *39*(2), 415–428.

Ulrich, R. S. (1981). Natural versus urban scenes: Some psychophysiological effects. *Environment and Behavior*, *13*(5), 523–556.

Ulrich, R. S. (1984). View through a window may influence recovery from surgery. *Science*, *224*(4647), 420–421.

Ulrich, R. S., Altman, I., & Wohlwill, J. F. (1983). *Behaviour and the natural environment.* New York: Plenum Press.

Waite, S. (2007). 'Memories are made of this': Some reflections on outdoor learning and recall. *Education*, *35*(4), 333–347.

Ward, S. (1974). Consumer socialization. *Journal of Consumer Research*, *1*(2), 1–14.

White, M., Smith, A., Humphryes, K., Pahl, S., Snelling, D., & Depledge, M. (2010). Blue space: The importance of water for preference, affect, and restorativeness ratings of natural and built scenes. *Journal of Environmental Psychology*, *30*(4), 482–493.

Williams, M. (2012). From blood red to brilliant white. Retrieved from. http://issuu.com/bermudaquest/docs/origins02?e=4042786/2986158

Wilson, E. O. (1984). *Biophilia.* Cambridge, MA: Harvard University Press.

Zhu, R. U. I. J., & Meyers-Levy, J. (2009). The influence of self-view on context effects: How display fixtures can affect product evaluations. *Journal of Marketing Research*, *46*(1), 37–45.

Zube, E. H., Pitt, D. G., & Evans, G. W. (1983). A lifespan developmental study of landscape assessment. *Journal of Environmental Psychology*, *3*(2), 115–128.

Please cite this article as: Meert, K., et al., Taking a shine to it: How the preference for glossy stems from an innate need for water, *Journal of Consumer Psychology* (2013), http://dx.doi.org/10.1016/j.jcps.2013.12.005