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Announcement ..... 391

FROM THE GUEST EDITORS OF THE SPECIAL ISSUE  
"Creating" the JCP special issue on aesthetics in consumer psychology: An introduction to the aesthetics issue  
Taraana M. Paruch and Laura A. Ploschke ..... 393

ARTICLES

Effects of product size image on consumption of snack foods  
Adriana V. Machado and Laura G. Block ..... 398

Features to recall hair maintenance on track? Multivariate comparison and its effect on the aesthetic experience  
Andreas Kishner, Ryan S. Elder, and Craig Collins ..... 410

The good, the bad, and the ugly: Influence of aesthetics on product feature judgments  
Arjunan Dangi, Joseph W. Alba, and Darren W. Dahl ..... 419

Aesthetic package design: A behavioral, neural, and psychological investigation  
Maura Ramirez, Jiahui Zhai, Jennifer C. Garbarino, Thomas Bradley, and David White ..... 431

Makeover or Don't Makeover? The effect of order of exposure on relative liking  
Marie Perle, Kelli Miller, and Pavan Vaidyanath ..... 442

When and how aesthetics influences financial decisions  
Claudia Tassani and Suzanne R. Shiu ..... 452

The aesthetics of luxury fashion, body and identity formation  
Rahil Vahmani, Antonina Jy, John F. Murray, and Jonathan Dickson ..... 459

I like those glasses on you, but not in the mirror: Perceived, predicted, and actual interest  
Huiyong Cho and Norbert Schwarz ..... 471

Consumer preferences for cyber companions: An empirical analysis of similarity-based cyber relationships  
Guoyan Ding, Sun K. Ha, and J. Wesley Hutchinson ..... 478

Aesthetic principles and cognitive processes: How much of the beauty lies in the eye of the beholder?  
Mina Kozar and Nikita Garg ..... 483

Gender differences in the aesthetic evaluation order from music and other aesthetic stimuli  
Joan Meyer-Lepore and Ralf Utterlitz ..... 495

Understanding the impact of self-concept on the aesthetic perception of images  
Tangping Yang, Jing Zhang, and Laura A. Ploschke ..... 508

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## When and how aesthetics influences financial decisions

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### Abstract

We observe the influence of aesthetic design on consumer behavior involving financial products—an area where financial decision-makers say they do not take aesthetics into account. In a series of three studies we find that the look of a document in hypothetical investment decisions impacts stock valuation and behavior in some but not all situations. Specifically, our results show that calling attention to the influence of design on behavior moderates the effect, including the paradoxical finding that the effect of design is attenuated when investments involve entities for which aesthetics is of intrinsic value.

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The impact of aesthetics on choice is robust and well documented for physical product choices. Highly aesthetic consumer goods can garner a price premium for products where consumers rate price as more important than design (Townsend & Sood, *in press*) and aesthetics even influences consumption in the presence of contradictory verbal information (Madzharov & Block, 2010). Yamamoto and Lambert (1994) find that appearance significantly influences choice for industrial products although managers state that appearance should not and did not influence evaluation. In an attempt to understand the possible limits of design's impact on decision-making, we examine it in an extreme context: we observe the influence of aesthetics on behavior involving financial products—an area where, presumably, design has no apparent rational role. In a series of three studies we find that the overall look of financial documents—not associated with the company's product and for companies where design has no inherent value—impacts valuation and behavior in hypothetical investment decisions. Our results also reveal that the effect is moderated by calling attention to design's potential influence. This last point suggests an unexpected role for product category as a moderator.

Examining the mechanism through which aesthetics influences choice may help us also understand such effects for financial decision-making. Some early work on design's influence focused on visual dominance (Posner, Nissan, & Klein, 1976), suggesting that we are often unaware of the impact of information presented visually and it thus biases judgment. Another source of design's impact is through affective reaction (Reimann et al., 2010), such as through feeling-based, relatively automatic evaluative processes, in contrast to judgments made with higher-order cognitive evaluations (Page & Herr, 2002). Research on art infusion (Hagtvedt & Patrick, 2008a,b) offers a specific cognitive explanation of how aesthetics influences perceptions of the featured brand, product, or company. When a product is associated with a work of art, perceptions of luxury from the art spill over and are incorporated into the consumer's assessment of the product (Hagtvedt & Patrick, 2008a). Response to the aesthetics of a company's financial documents may influence company perceptions in the same manner.

### *Financial decision-making*

Financial decision-making is an area where use of cognition over emotion is particularly encouraged and aesthetics may be expected to have little effect. Research on how affect, mood,

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and social factors influence investment decisions is relatively new (Lucey & Dowling, 2005; Han, Lerner, & Keltner, 2007). While aesthetics has not been directly tested in the context of financial decisions, simple presentation changes have been found to influence credit card use (Ganzach & Karsahi, 1995), stock choice (Alter & Oppenheimer, 2006), stock trading decisions (Odean, 1998), and loan take-up (Bertrand, Karlan, Mullainathan, Shafir, & Zinman, 2005). Aesthetics may have a similar effect on such decisions.

#### *Mediation by awareness*

Like other presentational influences, aesthetics likely works at a level below awareness. Yet aesthetics differs from these other factors in that it is more apparent, recognizable, and difficult to ignore. Therefore, while we do not expect decision-makers to perceive design as influencing their financial decisions, we also predict a general understanding that appearance has the ability to influence behavior. Because of this, unlike option framing or fluency effects, mundane cues may be enough for a decision-maker to recognize the influence of an attractive document on behavior. Drawing attention to the beauty of a document and its ability to influence judgment may allow the viewer to compensate for its impact, though possibly with error as consumers act in effortful opposition to their bias for aesthetics. Therefore, we predict that awareness of the influence of aesthetics will moderate its effect; respondents made aware of design's possible influence will not show the same preference for companies represented by aesthetic documents.

We proceed through a series of three studies that consider the ways in which aesthetic design influences financial decisions, specifically in stock valuation and company ratings, and the underlying processes that appear to explain design's impact. Study 1 establishes the basic effect of aesthetics on company valuation and explores attention to aesthetics as a moderator. In Study 2 we further test this moderator using product category as the cue for attention, and also investigate pride of ownership as a mediator. Study 3 is our most stringent test of these effects using actual annual reports and a population of experienced investors.

#### *Operationalizing aesthetics*

In line with discussions by Lawson (1983) and Bloch, Brunel, and Arnold (2003) we focus on aesthetics separate from functionality. For financial documents, functionality might include fluency or any visual aspect that makes discerning the content of the document easier. In our stimuli, aesthetic variations are limited to areas of the document with no written content—e.g. borders or pictures. We also do not vary the number of images presented. When using pre-existing stimuli, we attempted to account for quantifiable aspects of aesthetics such as number of images, pictures, and colors. In doing so, our aim is to both observe the influence of particular aesthetic elements and also observe effects above and beyond these quantifiable aspects. In their discussion of how to operationalize

art, Hagtvedt and Patrick (2008a) explain that art is what the viewer categorizes it to be. Similarly, we define our high aesthetics and low aesthetics conditions based on how respondents categorize them in pretests.

#### **Study 1: aesthetics of annual reports with awareness as moderator**

In Study 1 we ask respondents about the role of aesthetics in decision-making before having them financially value a company based on its annual report. If respondents do not consider aesthetics a rational way to evaluate a company then drawing attention to the aesthetics of a company's document may attenuate the effect as investors attempt to compensate for its impact. We thus hypothesize the following:

**H1.** Respondents' higher valuation of a company with a more aesthetic annual report will be attenuated when they are first asked to consider whether the aesthetics of company information influences evaluation.

The awareness manipulation tests an alternative explanation for aesthetics' influence. Decision-makers could consider an aesthetically pleasing annual report as a signal that a company has sufficient disposable resources to spend on producing such documents. Higher ratings for companies with better looking annual reports could then be explained by the rational preference for companies that apparently have more capital. Evidence for such lay theories comes from research showing that artwork valuations vary with apparent production effort (Cho & Schwarz, 2008). If this holds for financial documents, then the effect should persist regardless of whether respondents are first asked about the influence of aesthetics on their judgments. If an up-front manipulation of attention to aesthetics attenuates the effect, then we can rule out an explanation based on aesthetics as a signal of increased disposable resources and, thus, good financial standing.

#### *Method*

##### *Participants and design*

Respondents were 255 students who participated for compensation. Participants were randomly assigned to one of four conditions in a 2 (annual report aesthetic level: high or low)  $\times$  2 (attention to aesthetics or control condition) between-subject design.

##### *Materials and procedure*

All participants were given a packet described as "an exact reproduction of the first three pages of an annual report" as well as a survey containing the awareness manipulation and valuation questions. The text and financial information in the annual report were taken from a real company, though the name was changed. All information in the two reports was exactly the same. Differences between the high and low aesthetics conditions were in the images shown, layout of the images,

and overall design. Care was taken so that the two reports did not differ in fluency. In pretests, 22 participants from the same population as the main sample all selected the “high aesthetic” condition stimulus when asked which one had better “overall looks/design.”

The survey’s first page was the attention to aesthetics manipulation. All respondents were asked to rate four items of information on a seven-point scale on importance in “your evaluation when thinking about investing in a company.” Three items were the same for both conditions with a fourth item that varied between conditions. In the attention to aesthetics condition, the fourth item was “how pretty/well-designed the information on the company is.” In the control condition, the fourth item was “rumors and gossip about top personnel.” After rating all four items, respondents were asked to identify which two were most important and which two were least important. The remainder of the survey packet asked for lowest selling price for shares of company stock (our dependent variable) plus an open-ended question about their perception of what the study was about. Responses from five participants who identified annual report design as part of the manipulation were not used.

## Results

### Manipulation check

As expected, “how pretty/well designed the information is” rated significantly lower (4.8) than “expectations for future stock price” (6.1,  $t(125)=7.82$ ,  $p<0.001$ ) and “profit margin” (5.9,  $t(125)=8.33$ ,  $p<0.001$ ). It rated similarly, though significantly higher, than “if the company is located in an urban or rural area” (4.1,  $t(125)=4.9$ ,  $p<0.001$ ) and “rumors and gossip about top personnel” (4.4,  $t(255)=2.78$ ,  $p<0.01$ ).

### Aesthetics, attention to aesthetics, and price

There is a main effect of aesthetics of the annual report on respondents’ lowest selling price ( $F(1,249)=7.99$ ,  $p=0.01$ ). See Table 1. This effect is driven by respondents in the control condition with a  $2 \times 2$  ANOVA revealing aesthetics ( $F(1,247)=7.64$ ,  $p=0.01$ ), attention to aesthetics ( $F(1,247)=10.46$ ,  $p=0.001$ ), and an interaction of the two ( $F(1,247)=3.97$ ,  $p=0.047$ ) all significant. Thus, as predicted, annual report aesthetics impacts respondents’ valuation of the company, but only when attention is not explicitly drawn to aesthetics. This

Table 1  
Lowest selling price based on annual reports.

	Low Aesthetics	High Aesthetics
Overall mean	\$139.78	237.38**
Aesthetic Aware	\$122.90	149.14*
Control (Aesthetic Unaware)	\$162.41	327.01**

Note: \*\* Indicates significantly larger at  $p<0.05$ .

\* Indicates significantly larger at  $p<0.10$ .

effect is observed in the significant valuation difference for the high aesthetics annual report between the attention and no attention conditions ( $M_{\text{attention}}=\$149.14$ ,  $M_{\text{control}}=\$327.01$ ,  $F(1,125)=8.32$ ,  $p=0.005$ ).

## Discussion

Study 1 offers a limiting condition on when aesthetics may impact valuation in financial decisions; when asked to consider whether aesthetics of company documents influences evaluation, respondents seem to compensate for its influence, resulting in no significant difference in valuation between the low and high aesthetic conditions. The fact that priming them to consider aesthetics’ influence has such an effect suggests that the effects of high design may be operating below awareness for most investors.

While Study 1 identified attention as a moderator, this particular manipulation is unlikely to occur naturally for actual financial decisions. We consider whether some other, more natural cue, such as company product, could have the same effect. For example, when evaluating companies that manufacture hedonic and design-related goods such as clothing, the influence of aesthetics on decision-making is likely to be cued more than when evaluating companies that manufacture functional goods where design is not of importance. In Study 2 we examine whether a company’s product category may focus attention on the influence of aesthetics on decision-making. Our hypothesis is therefore counterintuitive in that we propose that in categories where design is intrinsic to company success, financial document aesthetics will have *less* influence on judgments than in categories where design is not intrinsic to company success. Moreover, such a finding would be novel in that prior research has typically shown that aesthetics influences choice across both functional and hedonic products (e.g. Yamamoto & Lambert, 1994) while we suggest that the effect may be category dependent for investment decisions.

### Study 2: product category as moderating cue

Study 2 aims to offer an extension of the moderator found in Study 1 with greater real-world application. We also extend and broaden the results by employing a broader respondent audience (a general population sample) and by using a different dependent measure (rating of company product relative to its peers rather than stock price). Finally, to better understand the process through which aesthetics influences financial decision-making, we look at pride of ownership as a potential mediator. Based on Study 1’s findings, the following hypothesis is a more-realistic and stringent test of the moderator:

**H2.** In product categories where aesthetics is of greater importance and intrinsic to company success, financial document aesthetics will not influence company valuation, whereas in product categories where aesthetics is of less importance and not intrinsic to company success, aesthetics will influence company valuation.

Method

Participants and design

Respondents were 379 members of a general population sample who participated for compensation. Participants were randomly assigned to one of four conditions in a 2 (annual report aesthetic level: high or low) × 2 (company type: aesthetic related or aesthetic unrelated) between-subject design.

Materials and procedure

In all four conditions, participants were asked to imagine they own stock in CSTS Manufacturers and that, as a shareholder, they receive the company's annual report. They were then shown the cover and first page of the annual report that, presumably, had been downloaded from the company website. After reviewing the annual report, respondents were asked to rate the company's product on a seven-point scale where 7 indicated "best of its kind" and 1 indicated "worst of its kind." All respondents then answered a three-item psychological ownership measure adapted from Pierce, Kostova, and Dirks (2003) and Peck and Shu (2009), "I would feel proud to own stock in this company," "If I held this stock I would feel some personal ownership of this company," and "If I owned this stock I would identify with this company." A total "Pride of Ownership" variable was calculated by summing the ratings on these three measures. Finally respondents were asked basic demographic questions and thanked for their participation.

The first independent variable was whether or not participants saw a highly aesthetic annual report. The stimulus and variations between conditions were similar to those for Study 1. The second independent variable was the type of company respondents were told they were evaluating. In the "aesthetic related" condition, respondents were told that CSTS was a company which makes "glass vases (hand blown vases for decoration)" while in the "aesthetic unrelated" condition, they were told the company makes "bubble wrap (packaging for delicate objects)". Imagery and information in the stimuli was general enough to be relevant to both company types. A pretest with 45 respondents taken from the same sample as the main study confirmed that "design/overall attractiveness of products" was considered more important for a company that makes glass vases, our aesthetic related condition, than bubble wrap, our aesthetic unrelated condition ( $M_{\text{aesthetics related}}=6.4$ ,  $M_{\text{aesthetics unrelated}}=2.2$ ,  $t(43)=15.8$ ,  $p<0.001$ ).

Results

Analysis of potential moderators

In support of hypothesis 2, while the overall pattern of higher company product ratings for the more aesthetic annual reports exists for the respondent population as a whole ( $M_{\text{high aesthetics}}=5.1$ ,  $M_{\text{low aesthetics}}=4.8$ ,  $F(1,376)=5.24$ ,  $p=0.02$ ), the effect is driven by the non-aesthetics relevant context. Please see Table 2. An ANOVA reveals the main effect of aesthetics to

Table 2

Company product ratings based on annual reports.

	Low Aesthetics	High Aesthetics
Overall mean	4.79	5.08 **
Aesthetic Relevant Context (Vase Company)	4.81	4.84
Aesthetic Irrelevant Context (Bubble Wrap Company)	4.77	5.34 **

Note: \*\* Indicates significantly larger at  $p<0.05$ .

be significant ( $F(1,374)=5.94$ ,  $p=0.02$ ) with the interaction of aesthetics and aesthetic relevance also significant ( $F(1,374)=4.82$ ,  $p=0.03$ ). Indeed, an examination of the mean ratings reveals that when respondents were told the company manufactures vases (aesthetic related condition) there was no difference between the high aesthetic and low aesthetic conditions ( $M_{\text{Low Aesthetics}}=4.81$ ,  $M_{\text{High Aesthetics}}=4.83$ ,  $F(1,194)=0.03$ ,  $p=0.86$ ). However, when respondents were told the company manufactures bubble wrap, respondents who viewed the highly aesthetic annual report rated the company product higher ( $M_{\text{Low Aesthetics}}=4.77$ ,  $M_{\text{High Aesthetics}}=5.34$ ,  $F(1,180)=9.68$ ,  $p=0.002$ ). This confirms the moderator effect found in Study 1 but with a more naturally occurring manipulation.

Mediation analysis

We suspected that the impact of the aesthetics on evaluation could be driven by a greater pride of ownership towards the company. We examine this notion using a series of regressions as reported in Table 3. A Sobel Test reveals that this mediation is significant (Sobel test statistic: 2.57,  $I=0.005$ ), suggesting that pride from being associated with high aesthetics may explain our effects.

Discussion

In Study 2 respondents evaluate a company higher when the annual report is highly aesthetic versus when the annual report is not highly aesthetic—ironically, however, this is only the case when aesthetics is not evidently essential to company success (e.g. bubble wrap manufacturer), a variation of the moderating effect of awareness found in Study 1. When respondents are made aware of the potential influence of aesthetics on decision-making, either through direct questions as in Study 1 or through product category as

Table 3

Regression analysis revealing mediation by pride of ownership.

Independent variables	Regression	Dependent variables			
		1	2	3	4
Aesthetic level	$\beta$	0.117	0.130		0.039
	$p$	0.02	0.01		0.35
Ownership	$\beta$			0.606	0.601
	$p$			0.01	0.00

in Study 2, they are able to recognize and overcome this bias and correct their evaluations. That these effects occur both among a student sample as well as a general population sample and influence both selling prices as well as company product ratings hints at their robustness.

Study 2 also reveals psychological ownership to mediate aesthetics' impact on company judgment; high aesthetics leads to a greater pride of ownership than low aesthetics and this, in turn, leads to higher company product valuation. Like art infusion with consumer products (Hagtvedt & Patrick, 2008a), good design of a company's documents influences perceptions of the represented company. However, in this case, rather than a perception of luxury, it is a sense of affinity. This particular affinity and pride of ownership for the company may be due to the propensity to consider oneself in a positive manner (Alicke, 1985) coupled with widespread bias towards beauty (Dion, Berscheid, & Walster, 1972).

One goal of Study 2 was to test the effects in a more natural experiment by varying the significance of aesthetics in the product category rather than with direct questions. However, in both previous studies, the annual reports were hypothetical so that we could control all variables except for specific aesthetic elements. Having established the effect in this manner, we now wish to test it using actual annual reports published by real companies. Such a study illustrates the broader significance of this research and offers a more stringent test of aesthetic variations that occur naturally. Additionally, while we used a general population of adults in Study 2, an even more rigorous test is to see if aesthetics' influence holds even when evaluations are performed by experienced investors with formal training in finance, presumably taught to focus on specific pieces of information and ignore those that are irrelevant. To this end, Study 3 uses actual annual reports and a population of individuals trained in finance and is, therefore, our most stringent test.

### Study 3: influence of aesthetics of actual annual reports on judgments by experienced investors

To confirm that our findings are relevant to the decision-making of financial professionals using real investment materials, Study 3 examines the impact of various design elements on company perceptions. We offer Study 3 as a model of how companies might determine the profitability of investing in document aesthetics, or even one specific aesthetic element (e.g. number of colors on the cover). We expect that, as in Studies 1 and 2, aesthetics of company documents (annual reports) will positively influence company perceptions, even by trained individuals, and that making participants aware of aesthetics' possible influence will moderate the effect. Thus we hypothesize:

**H3.** All else being equal, the aesthetics of the annual report will be positively related to company rating and valuation by individuals with financial expertise. This effect will attenuate when respondents are first asked to consider whether aesthetics influences their evaluation.

## Method

### Participants and design

Participants were 55 individuals (78% male, average age of 28) who have taken at least one post-collegiate course in finance and, on average, three courses. Sixty percent (60%) regularly analyze company information for personal investment for themselves or close others and 40% have had a job or internship in the finance sector or in asset evaluation or trade. Respondents were randomly assigned to one of two conditions (attention to aesthetics or control).

### Materials and procedure

All respondents were given a sample of annual reports and a survey packet. The first page of the survey packet was the attention to aesthetics manipulation similar to Study 1 and involved rating the importance of various sources of information. We then presented participants with four to eight actual annual reports consisting of pairs of reports matched on industry but varying on aesthetics, with one highly aesthetic report and one less aesthetic report per pair. Aesthetics were determined both by independent rating as well as quantifiable factors such as the number of colors and images in the report. Respondents spent up to an hour and no less than 40 min reviewing information presented in the reports and answering various questions about the content. Specifically, they were asked which of the two reports in each pair they thought was a better investment, as well as to respond to the three-item psychological ownership measure used in Study 2. After reviewing all reports, they were asked to rank them based on how likely they were to invest in the companies. Respondents were then asked what they thought the study was about, asked about financial background and basic demographics, debriefed, and thanked for their participation.

## Results

### Perceived influence among experienced investors

We first wished to confirm that investors do not believe aesthetics to be a meaningful part of the investment decision process. To address this, after ranking the companies, the investors rated how various pieces of information influenced likelihood to invest. The highest rated pieces of information were net income (4.1 out of 5) and expectations for future stock price (4.1) with aesthetics (3.0) and aesthetic elements such as number of colors on the report cover (1.9) and number of pictures in the report (2.7) receiving lower ratings. Thus, experienced and trained investors do not perceive aesthetics to influence behavior as much as financial measures. Moreover, that we find these results immediately after they ranked the companies suggests that the impact of aesthetics as revealed in the rankings is not something of which experts are aware.

Separate examinations of the Aesthetic Aware and Control conditions reveal significant ratings differences. Respondents in the Aesthetics Aware condition rate the number of pictures in the annual report ( $M_{\text{Aesthetic Aware}}=2.3$ ,  $M_{\text{Control}}=2.6$ ,  $t(234)=1.7$ ,  $p=0.08$ ) and the number of colors on the cover ( $M_{\text{Aesthetic Aware}}=1.7$ ,  $M_{\text{Control}}=2.0$ ,  $t(234)=1.8$ ,  $p=0.07$ ) marginally lower than do

respondents in the Control condition. The implication is that, when asked up front about the influence of aesthetics on decision-making and made aware of its potential influence, respondents are even less inclined to admit to these factors influencing their behavior post-decision.

*Ranking of annual reports*

We next examine rankings by experienced investors for the annual reports based on likelihood of investing. Our analyses included variables for financial information (e.g. dividends, revenue, profit margin, income, and annual percent changes in these measures), as well as variables for quantifiable aesthetic factors (e.g. number of colors featured, average number of images per page, number of photographs per page, number of images on the cover). The inclusion of quantifiable aesthetic factors allows us to either isolate any effect to specific design element(s) (e.g. inclusion of more photographs) or identify the overarching aesthetics of the document, above and beyond quantifiable factors, as the primary cause of any effects.

An ordered logistic regression of company ranking (reverse-coded) reveals that, while aesthetics is not a significant predictor ( $\beta_{\text{aesthetics}}=0.167, p=0.657$ ), the interaction of aesthetics and awareness is ( $\beta_{\text{aesthetics} \times \text{aware}}=1.24, p=0.007$ ). Indeed, examining the results for respondents in the aesthetic awareness and control conditions reveals that when respondents are made aware of aesthetics, the only significant predictors of ranking are the percent change in revenue from the previous year ( $\beta_{\text{revenue change}}=0.01, p=0.004$ ) and the percent change in profit margin from the previous year ( $\beta_{\text{profit margin change}}=0.01, p=0.007$ ). However, in the control condition, not only is the aesthetics of the annual report a significant predictor ( $\beta_{\text{aesthetics}}=1.4, p=0.005$ ), but so is the number of featured colors in the report ( $\beta_{\text{featured colors}}=0.37, p=0.05$ ). The percent change in revenue ( $\beta_{\text{revenue change}}=1.9, p=0.09$ ) and the percent change in profit margin ( $\beta_{\text{profit margin change}}=2.8, p=0.09$ ) become only marginally significant predictors in this condition. See Table 4. Note that our final models, as reported in Table 4, only include factors that appeared as significant in at least one of the two conditions (Aesthetic Aware or Control).

Table 4  
Ordered logistic regression results for annual reports among experienced investors.

Independent variables	Aesthetic aware		Control (aesthetic unaware)	
	$\beta$	<i>p</i>	$\beta$	<i>p</i>
<b>Aesthetic</b>				
Aesthetics dummy	0.49	0.24	1.4	0.01
Number of featured colors in overall design	-0.02	0.88	0.37	0.05
<b>Financial</b>				
Percent change in revenue from previous year	0.01	0.00	1.9	0.09
Percent change in profit from previous year	0.01	0.01	2.8	0.09

This type of analysis also allows us to calculate relative return on aesthetic elements. For example, our results suggest that for an experienced investor comparing companies, including an additional featured color throughout the report will have the same impact on her investment ranking as a 20% improvement in revenue from the previous year, assuming she is not made aware of the potential influence of aesthetics. Taken together, our results reveal that aesthetic elements impact experienced investors' likelihood of investing as much as financial factors such as year-to-year change in profit or revenue.

*Pair comparisons—process explanation*

In addition to asking experienced investors to rank reports, we asked them to evaluate reports in pairs. Pairs of reports were matched on industry and contained one highly aesthetic report and one less aesthetic report as determined by pretest ratings. Consistent with previous results, logistic regression reveals that aesthetic awareness moderates whether they select the company with the more aesthetic report as the better investment ( $\beta_{\text{Awareness}}=-0.17, p=0.08$ ), though only marginally so. Pride of ownership, as measured by the three-item psychological ownership scale ( $\alpha=0.75$ ), also predicts selection of company with the more aesthetic report ( $\beta_{\text{Ownership}}=0.37, p=0.001$ ). These results are consistent with our findings from the report rankings as well as from Studies 1 and 2. We therefore find the effect not only when experienced investors are examining a group of annual reports, but also when asked to discriminate within pairs of reports.

*Discussion*

Study 3's results suggest that even experienced investors with formal training are influenced by annual report aesthetics. Moreover, aesthetic variation that appears in actual annual reports is enough to produce the effect. It is reassuring to find that, as with our other sample, the effect of document aesthetics on company perceptions can be overcome if experienced investors are primed upfront to be aware of it and to consider whether it ought to be taken into account. However, in compensating for aesthetic bias, other decision attributes appear to also be weakened. When primed to recognize aesthetics' influence on company perceptions, not only does design's influence decrease, but the influence of other, more rational bases for valuation does also. The beta values on change in revenue and change in profit approach zero in this condition, indicating that these factors' influence on choice is negligible. In an attempt to ignore one attribute, whose influence may not be entirely within awareness, the importance of other information may be misinterpreted.

**General discussion**

The motivation for this research was to understand when and how aesthetic design influences decision-making in a domain where aesthetics are claimed to be of low importance: financial decisions. The insights that emerge from our results are twofold. First, aesthetics' impact on financial decisions reveals how

robust the role of aesthetics is in evaluation and decision-making; its influence is, seemingly, boundless. That we observe the same pattern of results across different populations (students, general population, and experienced investors) and using different dependent measures (selling price, ratings, choice, and rankings) confirms the robustness of this effect: good design increases a company's perceived value.

Second, these studies offer insight on how and when this occurs; better looking documents produce increased pride of ownership for the company and this pride of ownership increases valuation. Neither the effect of aesthetics on valuation nor mediation by psychological pride of ownership are likely something of which decision-makers are aware. In fact, when made aware of aesthetics' possible effects, respondents appear to compensate for it. That this compensation happens simply by having a company whose products are related to aesthetics, as in Study 2, is perhaps the most surprising of our results, as this is a situation where aesthetic documents could be a useful signal about the company's design skills. This finding suggests that decision-makers are consciously overruling their preference for the company associated with beauty and behaving in a manner that they believe is more "accurate." Study 3 offers evidence for the confusion that occurs during this process; by compensating for the effects of aesthetics, other attributes used in evaluation are also downplayed. Future research might examine satisfaction and regret in financial decisions where individuals are primed to override a natural but seemingly less rational response. Further research could also explore the relationship between psychological ownership and high aesthetics in other product domains. This effect seems to imply an inherent personal connection to good looks and may be related to illusory superiority effects (Alicke, 1985).

Managerial implications of this research include a better understanding of return on investment for aesthetics in annual reports, other financial documents, or even investor-relations websites. Studies presented here imply that costs incurred in creating more beautiful investor products are rewarding. Additional research in line with our annual report study could help to better determine the specific tradeoff between design and financial performance, such as calculating return on investment from adding an additional color to a document's cover. Such investment in aesthetics will have greater consequence for companies associated with functional and non design-related products than for hedonic or design-related ones. While it seems likely that a company whose value comes from aesthetics must meet some threshold level of aesthetic design in all of its communications and products, the return on extra investment for aesthetic design is highest when decision-makers are not cued by product category to discount its importance.

## References

- Alicke, M. D. (1985). Global self-evaluation as determined by the desirability and controllability of trait adjectives. *Journal of Personality and Social Psychology*, *49*, 1621–1630.
- Alter, A., & Oppenheimer, D. (2006). Predicting short-term stock fluctuations using processing fluency. *Proceedings of the National Academy of Sciences*, *103*, 9369–9372.
- Bertrand, M., Karlan, D., Mullainathan, S., Shafir, E., & Zinman, J. (2005). *What's Psychology Worth? A Field Experiment in the Consumer Credit Market*. National Bureau of Economic Research Working Paper Series, Number 11892, December.
- Bloch, P. H., Brunel, F. F., & Arnold, T. J. (2003, (March)). Individual differences in the centrality of visual product aesthetics: concept and measurement. *Journal of Consumer Research*, *29*, 551–565.
- Cho, H., & Schwarz, N. (2008). Of great art and untalented artists: effort information and the flexible construction of judgmental heuristics. *Journal of Consumer Psychology*, *18*, 205–211.
- Dion, K., Berscheid, E., & Walster, E. (1972). What is beautiful is good. *Journal of Personality and Social Psychology*, *24*(3), 285–290.
- Ganzach, Y., & Karsahi, N. (1995). Message framing and buying behavior: a field experiment. *Journal of Business Research*, *32*(1), 11–17.
- Hagtvedt, H., & Patrick, V. (2008, (June)a). Art infusion: the influence of visual art on the perception and evaluation of consumer products. *Journal of Marketing Research*, *40*, 379–389.
- Hagtvedt, H., & Patrick, V. (2008b). Art and the brand: the role of visual art in enhancing brand extendability. *Journal of Consumer Psychology*, *18*, 212–222.
- Han, S., Lerner, J. S., & Keltner, D. (2007). Feelings and consumer decision-making: the appraisal tendency framework. *Journal of Consumer Psychology*, *17*(3), 158–168.
- Lawson, B. (1983). *How designers think*. Westfield, NJ: Eastview Editions.
- Lucey, B. M., & Dowling, M. (2005). The role of feelings in investor decision-making. *Journal of Economic Surveys*, *19*(2), 211–237.
- Madzharov, A. V. & Block, L. G. (2010). Effects of Product Unit Image on Consumption of Snack Foods. *Journal of Consumer Psychology*, Special Issue on Aesthetics, *20*(4), 398–409.
- Odean, T. (1998). Are investors reluctant to realize their losses? *Journal of Finance*, *53*, 1775–1798.
- Page, C., & Herr, P. M. (2002). An investigation of the processes by which product design and brand strength interact to determine initial affect and quality judgments. *Journal of Consumer Psychology*, *12*, 133–147.
- Peck, J., & Shu, S. B. (2009, (Oct)). The effect of mere touch on perceived ownership. *Journal of Consumer Research*, *36*, 434–447.
- Pierce, J. L., Kostova, T., & Dirks, K. T. (2003). The state of psychological ownership: integrating and extending a century of research. *Review of General Psychology*, *7*, 84–107.
- Posner, M. I., Nisbett, J. M., & Klein, R. (1976). Visual dominance: an information processing account of its origins and significance. *Psychological Review*, *83*, 157–171.
- Reimann, M., Zaichowsky, J., Neuhaus, C., & Weber, B. (2010). Aesthetic Package Design: A Behavioral, Neural, and Psychological Investigation. *Journal of Consumer Psychology*, Special Issue on Aesthetics, *20*(4), 431–441.
- Townsend, C., & Sood, S. in press. The Impact of Product Design on Choice: A Dual Process Explanation, in *Proceedings of the Society for Consumer Psychology*, eds. A. Duhachek & M. Meloy, St. Pete Beach, FL: Society for Consumer Psychology.
- Yamamoto, M., & Lambert, D. R. (1994). The impact of product aesthetics on the evaluation of industrial products. *Journal of Product Innovation Management*, *11*, 309–324.