

**Can You See Yourself Using This Brand?:
The Potential Impact of Facial Morphing In Advertising**

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Draft version for the New Media Research at UMN Conference, Sept. 15, 2006.

Photography was originally hailed as a technique to capture reality. However, it didn't take long for photographers to realize that they could use trick photography and photographic enhancements to alter reality. In advertising, photo alterations to improve the appearance of a brand have a long, if questionable, history. More recently, attention has focused on photographic techniques used to enhance the looks of models in advertising and other media. Imperfections in facial or body features can easily be removed with airbrushing. Sometimes entire body parts can be switched to make a more perfect look (Freydkin, 2003). These alterations can affect the consumers' perception of, and desire for, the brand.

An alternative way to influence consumers may be to select a source perceived to be similar to the consumer. Advertising trends have oscillated over the ages between using more idealized models and more ordinary looking models. These changes reflect an alternate belief in the impact of idealized versus more similar sources in attitude and behavioral change. While advertisers have long tried to improve on idealized images, recent techniques now allow for the growing possibility of technologically enhancing similarity. This can be done by morphing a photo of a model with a consumer's own photo. The result can be a model that consumers don't recognize, but whose features may provide a sense of self in the ad. Indeed, who is more similar to me than me? The impact of this subtle form of advertising is, as yet, unknown.

Similarity

Similarity has been recognized as an important source variable in altering attitudes and behaviors (McGuire 1969). Considerable evidence has shown that when people perceive the source of a message to be similar to themselves, they are more likely to be influenced by that source. Name similarity has been shown to influence perceptions of similarity to self, as well as liking, compliance, and even behavioral action (Garner 2005). People judged to be more similar are also viewed as more attractive (Shanteau & Nagy 1979), trustworthy (DeBruine 2002) and persuasive (Brock 1965).

In the realm of advertising, demographic similarity has received the greatest attention simply because it is quickly communicated. For example, in a global campaign, ads can be designed with appropriate ethnic or racial models for selected regional or national audiences. Similarly, in market segmentation, the race, gender, age or ethnicity of the models in an ad can be changed to better match the target segment being exposed to the message. Demographically similar sources are viewed as more credible and persuasive than less similar sources (Appiah 2001; DeShields & Kara 2000).

A more extreme form of similarity exists when one has a kinship or genetic relationship with another. To a certain degree, genotype is always manifested in phenotype – observable traits and features of the organism. By implicit evaluation of these traits it is possible to assess genetic relatedness. This is referred to as phenotype matching. Several animals are capable of phenotype matching including hamsters, monkeys and humans. Humans, however, are somewhat unique in their ability to rely on visual cues, especially facial resemblance, to make these judgments (DeBruine 2002). Recently, work in several fields have begun to explore phenotype matching by showing people photographs in which their face, or that of a relative, has been morphed with an unrelated person (Bailenson, Garland, Iyengar & Yee in press; Platek et al. 2002).

Digital Morphing

While not yet common, the advent of new technology has created the ability to utilize phenotype similarity between the consumer and a model in an ad. This can be done by digitally morphing the facial features of an advertising model with those of a consumer. Using digital photographs, a computer program can delineate corresponding points located at several facial landmarks such as the corner of the eyes and the mouth, and generate a new face based on a weighted average of the landmark specific characteristics of the source faces. Pixels values are averaged to represent information regarding both shape and color. Morphed faces are generally undetectable and realistic, although they typically have slightly smoother-looking skin and are a little more symmetrical than ordinary faces (DeBruine 2002).

Morphing as a technology has already been utilized in an advertising context. When General Mills decided to update the image of their spokes-character Betty Crocker for their 75th anniversary, they decided to use a morphed photo. They invited consumers to submit a photo of themselves. The new Betty Crocker was a morphed composite of 75 different consumers selected

from this contest. The result was a far more heterogeneous spokesperson that embodied characteristics of a large number of different racial and ethnic groups.

Morphing a consumer into an ad requires obtaining a digital photograph of them. However, photos of consumers are increasingly common on the Internet on personal web pages, blogs, face books and other sites. Additionally, some web sites for hair products, eyeglasses and clothes already have consumers sending in pictures of themselves in order to show what their product may look like on the consumer. It is just a matter of time until photographic databases of consumers will be accumulated along with other demographic and contact information (e-mail, address, phone number) as part of direct marketing campaigns (Bailenson, Iyengar & Yee 2005). By matching photos of consumers with stock advertising images and using already existing algorithms that can automatically detect and manipulate facial features, it would not be difficult to create morphed ads delivered by e-mail or on selected Internet pages for each individual consumer. Given the near term possibilities of using this type of advertising technique, it is important to begin to better understand its possible effects.

Influence of Self-morphing

A few recent studies have begun to examine the influence that exposure to self-morphed images can have on attitudes and behaviors (Bailenson et al. in press; DeBruine 2002; 2005). DeBruine (2002) found that people exhibited greater trust in an unknown on-line partner when the partner's photo was morphed with the subjects own face than when it was morphed with another person. In another study, she found that people exhibited greater altruistic behavior when the photo of the person they thought they were helping was a self-morphed photo than when it was morphed with a different person (DeBruine 2005).

Vote preference has also been found to be influenced by seeing photos of candidates that have been morphed with the respondents (Bailenson et al. in press; Bailenson et al. 2005). One study showed people photos of the 2004 Presidential candidates which had either been morphed with themselves, other people or not morphed at all. On preference measures, respondents expressed somewhat greater support for the candidate with whom their own image had been morphed (Bailenson et al. 2005). Further, another study using unknown political candidates found a gender by morphing interaction (Bailenson et al. in press). Men preferred a candidate morphed with their own image over a picture of a candidate that had not been morphed. Women, however, preferred an unaltered photo over one that was morphed with them.

This gender related difference may have been caused by using only a male candidate as the source photo. Morphing of a female with a male face may have created problems in the characteristic attributed to this candidate or in how people processed the resulting image. However, some evidence suggests the gender difference may represent a larger issue. Studies have reported that males are more positively affected by self morphing than females (Platek et al. 2001). Not only do males choose to help or support a self-morphed image more often from an array of pictures than do female subjects, but the males also indicated that choices were easier to make and they make these choices more rapidly than do female respondents. Males also show greater cortical activity than females when viewing images of children that have been morphed with them. Thus, it appears that males may be more sensitive to facial resemblance and that there may then be gender differences in self-referent processing and familiarity detection (Platek, Keenan & Mohamed, 2005).

Application to brand advertising

The consumer behavior literature suggests another way in which self-morphed images may work in an advertisement. Some authors argue that consumers develop or negotiate meanings for brands based on images of brand users (McCracken 1989). Their own use of these brands depends on the congruence of the self and brand images. Advertising conveys meanings about the brand through associative learning that "pair" the brand and the brand's endorser. Eventually the "meaning" of the endorser (endorser's image and traits) is transferred to the product itself.

Self-congruity theory

Self-concept is defined as "a set of knowledge and beliefs about one's self" (Graeff 1997, p.2). Self-congruity theory proposes that part of consumer behavior is determined by an

individual's comparison of their image of themselves and their image of a brand, as reflected in a stereotype of a typical user of the brand (Sirgy 1985). The concept of brand image is generally seen as subjective, with perception being more important than reality (Dobni & Zinkhan 1990). Brand image is determined by one's knowledge of brand users. While this may come from direct experience or indirectly from the media, for new or unknown brands, initial brand images may be strongly dependent on perceptions of the model in advertising.

Research indicates that consumers often have a preference for products and brands that have higher levels of correspondence with their actual or idealized self-concept. This occurs because the greater the congruity of self concept with a particular product, the greater the likelihood that the product will satisfy a consumer. Self-congruity has been used to explain and predict brand attitude, product use and ownership, store loyalty, purchase intention, and other aspects of consumer behavior (Dolich 1969, Heath & Scott 1998, Hong & Zinkhan 1995).

Typically, research in this area looks to find a correspondence between one's own self concept and that of the users of a brand. But in self-morphed ads, the portrayed user of the brand is partially one's self. In such a situation, will one's own self-perceptions be projected onto the brand? If so, may that lead to greater preference for this brand?

To examine these issues, an exploratory study was conducted to further understand the potential impact of self-morphing in advertising. Given the limited amount of prior research the purpose of this study was to begin to answer some important research questions regarding the potential outcomes of this technique as well as the process by which it may work. Specifically, the study addressed the following research questions:

RQ1: Do people recognize when and if self morphing has taken place in ads?

RQ2: Do people respond differently to ads in which a self-morph appears than they do to an unaltered ad or an ad that has a morph with another person?

RQ3: Do males and females respond differently to self-morphing?

RQ4: Are self traits transferred to a brand more when it contains a self-morphed image?

Methods

Participants

Participants were recruited from classes in a large, Midwestern University in exchange for extra class credit. A total of 149 students signed up for and completed the first part of the research study.

During the initial study, students were told they had an opportunity to sign up for a second study to receive additional extra credit. The second study was to take place the following week. All of the initial subjects chose to sign up. However, 8 subjects (4 males and 4 females) failed to provide contact information and were not scheduled for the second study. Of the remaining 141 students, 110 showed up at the assigned time the following week and participated in the second part of the experiment. Ultimately, data from two females in study 2 were discarded because they indicated they were familiar with the brand being advertised. Data from 2 additional subjects were also discarded because they failed to follow instructions in this study. Thus, a total of 106 subjects (50 males and 56 females) completed both parts of the study.

Procedure

In the first study subjects were told that they were going to be participating in research on social networking websites. They were informed that students at another university would be looking at several students' pictures and making personality assessments of them based on appearance traits. All they were being asked to do was to have a digital photo of themselves taken and to fill out a personality questionnaire. They were told that the researchers were interested in how accurate impressions would be given limited visual cues. All participants were asked to

make a neutral facial expression to eliminate the possible influence of visual cues (e.g., smile). This supported the cover story and was helpful in improving the quality of the morphing.

When participants returned for the second study they were told that they would be assessing advertisements. Within gender, subjects had been randomly assigned to one of three conditions (self-morph, other-morph or non-morph). They then sat in front of a computer to view ads and fill in a questionnaire. All subjects first saw a filler ad about cell phones. Participants were instructed to look at the ad like they normally would. After looking at the ad, they were asked to fill out a questionnaire about the brand. When they were finished filling out the questionnaire they clicked a button on the computer and were taken to a second ad that was also followed by a questionnaire. The second ad was the experimental manipulation.

Stimulus Ads

The product chosen for the experimental manipulation was a brand of face wash. This product category was chosen because it met three desired characteristics. First, the product was something that could be used by both males and females. Second, we wanted a product that provided a good rationale for containing a face shot of the model. Finally, a low-involvement product was desired so that attitudes would more likely be based on peripheral cues rather than on argument strength.

To make the ad as realistic as possible, a real brand was used. However, to avoid the influence of prior knowledge about the brand, the face wash selected was a European brand that was not available in the US. A check revealed that only two people indicated they had high familiarity with the brand and both were dropped from further analysis.

Ads were created using actual information and product pictures from the brand's web site (see Figure 1). The top one-third of the ad had a grey background with a picture of a model centered on this background. A web address offering more information appeared at the bottom of the ad. Male subjects were shown an ad with a male model, while female subjects saw an ad with a female model. Both models were shot from the shoulders up with their faces clearly visible. The male version the brand was called "isseo homme" and the female version was called "isseo femme".

Figure 1 - Example Advertisement

Good looks are more than skin deep...

..but it helps when your skin looks good

pH Balance Cleansing Balm **NEW**
Foaming cream cleanser- better than soap, smooth as moisturizer

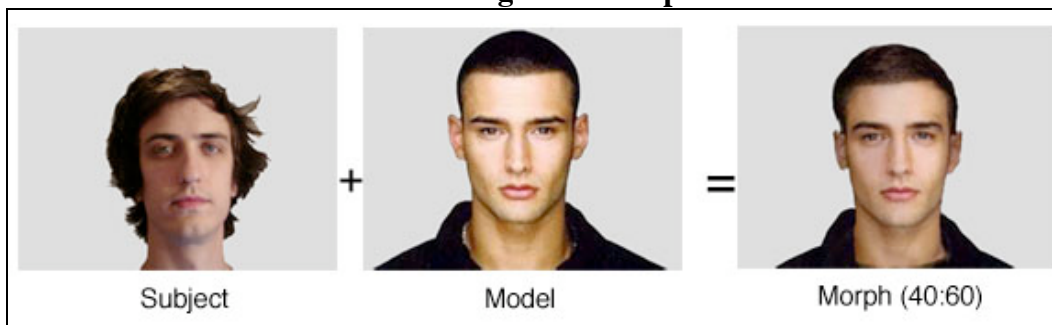
- Balances pH of the skin, tones and purifies
- Prepares the skin for daily exposure; helps defend against environmental stress and the effects of air pollution
- Eliminates sebum excess and impurities; skin feels fresh and rejuvenated

The entire isseo line is now available at drugstores nationwide.

Visit www.isseo.com to learn more about caring for your skin

Three different versions of the ad (non-morphed, self-morphed and other-morphed) were created for both men and women. In the non-morphed version, the model appeared naturally with no morphing being done. In the self-morph condition, the model was morphed using MorphX freeware at a 60:40 ratio (see Figure 2). Previous research has found this to be an optimal level of morphing for phenotype matching and is virtually undetectable by subjects at an explicit level (Bailenson et al. 2005). In the other-morph condition, a subject saw a picture of the model that had been morphed with another student. Using these three conditions allowed for a determination of whether a difference was due to simply altering an image versus one that was specifically related to the phenotype match of the subject themselves. Additionally, since each picture served as both a self-morph (for that subject) and an other-morph (for a different subject) any differences in the two conditions would not be due to the specific visual images themselves, but to the relationship of the image to one's-self.

Figure 2: Morph



Measures

To assess personality attributes ascribed to self, respondents were asked to indicate the degree to which each of 42 traits applied to them along a 7-point scale ranging from “not at all” (1) to “very much” (7). A week later in the second study, subjects rated the face wash brand on these same attributes. The attributes came from Aaker’s Brand Personality Scale (Aaker 1997). These attributes were selected because they have been found to apply well to brands, but were originally distilled from human personality traits (Aaker 1997). Therefore, they should represent human personality factors that might be projected onto a brand. This scale has been shown to have 5 major dimensions, each with between 2 and 4 facets. The five primary dimensions are: 1) Sincerity; 2) Excitement; 3) Competence; 4) Sophistication; and 5) Ruggedness.

In the second phase of the data collection, subjects were asked to list all the thoughts they had when viewing the ad. This was followed by items assessing attitude toward the ad, attitude toward the brand, and interest in trying/buying the brand along with the brand personality scale. Attitude toward the ad was measured by asking subjects to indicate on a 7-point scale how they felt the ad rated on each of 11 attributes such as believable, informative, clear, likeable, persuasive etc. Scores on these items were then summed and averaged to indicate overall attitude toward the ad. This measure was found to have high reliability ($\alpha=.96$).

Attitude toward the brand was assessed using a similar 6-item instrument. On a 1 to 7 scale subjects were asked to rate the brand on attributes such as quality, appeal, desirability, and usefulness. Scores on these 6 items were then averaged to form a brand attitude index ($\alpha=.95$). Willingness to buy was measured by averaging responses to two questions: “How much would you like to try this product?” and “How likely is it that you would buy this product?”

Results

Open-ended responses to the thought-listing question were reviewed to determine if any of the subjects recognized anything unusual in the picture of the model. None of the subjects in self-morph or other-morph condition gave any indication that they recognized that morphing (or any picture alteration) had taken place.

Although there is no explicit recognition that the photos were altered, there were some differences by gender and by condition within gender in the comments made about the model in the ad. Women in the non-morphed condition were more likely to comment on the model (56%) compared to those in the self-morph (29.5%) or other-morph (33%) condition. Virtually all of

these comments were neutral or positive in tone. Males in all conditions were equally likely to make comments about the model (44.4% in the self-morph condition, 40% other-morph and 47.1% non-morph). However, the types of comments differed by condition. For those in the self-morph condition, 37.5% were positive comments, 25% were negative comments and 37.5% were neutral. Males in the non-morph condition mainly made neutral comments (75%). Comments from those who saw the other-morphed model were equally split between negative and neutral comments, with none saying anything positive about the model.

Trait projection

It was hypothesized that self-morphing in advertising might work by transferring self traits to the brand being advertised. To examine this, self rating and brand rating were correlated for each personality trait. Separate analyses were done for subjects in each condition (see Table).

Two traits, masculine and feminine, were significant in all three conditions. This may be more related to gender differences than morphing and is treated separately here. In the self-morph condition, significant correlations were found between self and brand for 7 of the personality traits and 2 others approach significance. In all cases, these correlations were positive. For the non-morphed condition, only 2 attributes were significantly related and one of these was negative. Finally, in the other-morphed condition, 5 attributes show significant correlations. Interestingly, however, all of these were negatively correlated.

Table
Correlation between personality traits and brand traits in different morph conditions

Traits	Self-Morph, <i>r</i>	Other-Morph, <i>r</i>	Non-morph, <i>r</i>
Unique	.29 ^y	-.27	-.01
Up-to-date	.39*	-.15	.03
Independent	.53**	.15	-.02
Contemporary	.43**	.05	.18
Successful	.34 ^y	-.07	-.05
Glamorous	.40*	-.16	-.10
Feminine	.48**	.42**	.40*
Masculine	.61**	.57**	.48**
Western	.51**	.08	.63**
Tough	.45**	.28	.05
Rugged	.37*	.19	.07
Cheerful	.19	-.44**	.04
Sentimental	.20	-.38*	.19
Trendy	.27	-.49**	-.06
Cool	.04	-.34*	-.10
Smooth	-.01	-.45**	.04
Leader	.18	-.29	-.37*

Note: * = $p < .05$ ** = $p < .01$ ^y = $p < .10$

A closer examination of the specific traits that were significant suggests that their occurrence is not random. Instead, the correlations seem to occur for specific dimensions and facets. Ruggedness is the dimension that is composed of the fewest traits (5) in the brand personality scale (Aaker 1997). However, four of the five were significantly correlated with self traits for people in the self-morph condition.

Excitement is a dimension that includes 4 facets and 11 traits. Among the people in the self-morph condition, 3 of these traits showed significant correlations between self-ratings and brand-ratings. All three were components of a single facet (sub-dimension) labeled “up-to-date”. Another trait of Excitement (unique) approached significance for people exposed to the self-morph. Interestingly, among people who saw the other-morphed condition, this trait exhibited a correlation of similar magnitude, but in a negative direction. Those in the other-morphed condition also yielded significant negative correlations on 2 of the 3 traits making up another sub-

dimension of Excitement (“cheerful”). Thus, it appears that the traits that show relationships between self perception and brand perception cluster for specific facets, but show very different effects when exposed to a self-morphed versus other-morphed model.

Attitude and Behavior

The results generally showed significant gender effects across all conditions. In comparison to men, women demonstrated more positive attitude toward the ad ($F(1, 105)=16.92, p<.01$), more favorable attitude toward the brand ($F(1, 105)=7.75, p<.01$), and were more willing to purchase the product ($F(1,105)=9.2, p<.01$). Thus women appeared to be interested in this brand, perhaps as a reflection of the product category.

The more crucial issue in this study is whether there is a main effect of morphing or a morph by gender interaction. A significant gender by morphing interaction was found for attitude toward the ad ($F(2,105)=3.8, p<.05$). However, the pattern of results was somewhat surprising. Among women, those in the other-morph condition ($M=5.00, SD=1.0$) had more positive attitudes toward the ad than women in the self-morph ($M=4.51, SD=1.0$) or non-morphed ($M=4.51, SD=.9$) conditions. In contrast, men in the other-morph condition ($M=3.41, SD=1.3$) demonstrated the lowest attitudes toward the ad followed by those seeing the self-morphed ($M=3.84, SD=.9$) and non-morphed ($M=4.28, SD=1.1$) model. Thus, seeing an ad where the model was morphed with another person lead to relatively higher attitudes toward the ad for women, but comparatively lower attitudes for men.

A similar pattern of results was also found for brand attitudes. Overall, women had more positive evaluation of the brand in the other-morph condition than they did in self- and non-morphed conditions, while men in the other-morph condition evaluated the brand more negatively than in the other two conditions. A test of the significance of these findings found this interaction approached, but did not reach significance ($F(2,105)=2.96, p=0.56$). No significant gender by condition interaction was found in willingness to buy the brand.

Discussion

Recent years have shown a dramatic increase in efforts to personalize messages to consumers. Advances in consumer databases and Internet based communication have helped foster this change. This study was an initial effort to explore a potential next step in this trend where an advertising image is modified in appearance in order to attempt to maximize social influence. The results suggest that understanding the impact and processing of such messages may be a complex undertaking.

The findings suggest that to a degree self-morphed images may facilitate the transfer of self-traits to a brand. A larger number of significant positive correlations emerged between self perceived traits and brand traits in the self-morphed condition than in the other conditions. Thus, despite the fact that people don’t recognize that a models image has been altered to resemble them, this image does seem to transfer self meanings to the brand. Interestingly, a model morphed with another person seemed to facilitate some negative relationships between self and brand traits. Recent work in psychology has shown that perceptions of some degree of similarity are needed to begin the comparison process (Ruys, Spears, Gordijn & deVries, 2006). When similarity is high, as in the case when encountering a self-morph, people are motivated to assimilate a brand’s image with their own and this leads self traits to be transferred to the brand. Encountering an image morphed with a classmate may be sufficiently similar to engage the comparison process, but may lead people to contrast the brand with their own traits and foster an awareness of how the brand differs from their self perception. Interestingly, non-morphed ads appear to foster neither of these processes, suggesting that fashion models are seen as so different from the typical consumer that they fail to initiate any comparison process.

Despite the transfer of specific traits to the brand as a result of self-morphing, attitudes toward the ad and brand and purchase intent did not emerge as expected. Women exhibited higher attitudes toward the ad and brand when viewing a model morphed with another person than in the other two conditions. For males, the other-morph lead to less favorable attitudes. It’s important to note that all of the pictures in the self- and other-morph conditions were exactly the same. The only difference was whether the subject saw themselves or someone else.

One possible explanation for the findings is that the interaction is not actually due to gender, but to involvement. Women were much more interested in this product than men. Thus, any interaction with gender may really be masking an effect of involvement. However, since previous research has also found gender differences in the impact of self-morph visuals (Bailenson et al. in press; Platek et al. 2002, Platek, Keenan & Mohamed, 2005), there is reason to believe that this difference is a legitimate gender effect.

Future research needs to try to tease out the cause of and gender differences. Several possible lines of investigation may be helpful here. One involves the differences in making comparisons between men and women. Women may be more likely to engage in making comparisons with models in ads and such comparisons may lead to dissatisfaction with one's-self. Women may like the more normal looking models in the other-morphed condition. Men may prefer idealized models. Another area to examine is the prior research that finds that men are more sensitive to morphing images, especially in regard to self versus other phenotypes. Also, the specific traits that demonstrated significant comparisons between self and brand may have a differential impact for men and women, especially for a product like a face wash. Finally, previous studies have found that the effect of brand image on brand evaluations is moderated by the degree to which consumer's self-image is salient at the time they are evaluating a brand (Graeff 1997). Self-morphing may be a way of priming such considerations. Thus, having a self-morph in the ad may have a twofold influence: changing perception of the brand image by projecting viewer's own traits onto the brand, and priming self thoughts, which make this increased brand/self congruency more salient.

Any effort to look at source effects on ad and brand attitudes needs to keep in mind that these are complex relationships. The impact of any specific type of source may differ in different situations. Celebrities or idealized models are best in some situations, while factors such as similarity or expertise are preferable for other brands or products (Friedman and Friedman 1979). Similarly, if traits are transferred from self to brand through morphing, this doesn't mean that all self traits will be beneficial or meaningful in ad or brand evaluations. Some self-perceptions may even be negative ones or undesirable for a specific type of product. Thus great care will need to be used in applying a technique like self-morphing to advertising. Despite these limitations, the current study suggests that morphed images may influence consumers and the study of self-morphing may provide some interesting insights into how people process advertising messages and how self construal influences this processing.

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