BI Norwegian Business School - campus Oslo

GRA 19703

Master Thesis

Thesis Master of Science

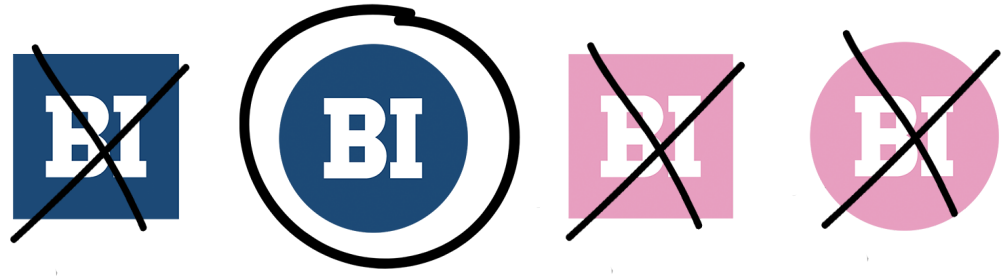
Shaping Young Minds: The role of logo shape, color and verbal context in forming assumptions about university value

Navn:	Jennifer Raines, Alireza Khosravi

Start:	15.01.2019 09.00
Finish:	01.07.2019 12.00

Shaping Young Minds:

The role of logo shape, color and verbal context in forming assumptions about university value



GRA 19703 : Master's Thesis

Study Programme: MSc Strategic Marketing Management

Thesis Advisor: Professor Luk Warlop

BI Oslo

Due: July 1, 2019

Submitted: June 28, 2019

Summary

As student mobility has increased worldwide, so has competition among universities. In order to attract the attention, and tuition fees, of prospective students, universities must make a good first impression, which relies on having a strong, positive brand image. However, limited empirical research has been conducted on branding that is specific to the higher education market. Research suggests that students typically desire a university that is both highly competent in meeting their educational needs and provides a warm environment in which they will feel comfortable. This paper explores how visual and verbal cues that suggest competence or warmth can be used in university branding in order to optimize prospective students' impressions of a university's value. Our findings suggest that the dimensions of competence and warmth can be most reliably communicated through textual content, but that the colors (and to a lesser extent, shapes) used in university advertising can also play a role. They also suggest the presence of multiple competence cues result in a university being perceived as more valuable than a combination of warmth and competence cues. While further research is needed in this field, these results have immediate managerial relevance. They suggest that universities looking to increase their perceived value among prospective students should add more competence cues to their advertising, especially in the form of text that highlights the school's rankings, reputation, commitment to research, and quality of faculty. However, universities should be cautious around increasing tuition fees in response to such increases in perceived value. Our research suggests that expected tuition is not directly correlated with perceived value.

Table of Contents

Introduction

In 2011, *Times Higher Education* published their first annual World Reputation Rankings of global universities in response to students increasingly seeking higher education outside the familiar options in their home countries (Guttenplan, 2013; Marginson, 2006). This trend has changed how universities must think about branding, as the most common causal assessment of a university's reputation—hearsay from family and friends—is no longer applicable when considering far-flung or unfamiliar institutions (Baldwin & James, 2000, Matherly, 2011; Szekeres, 2010). Instead, students' own initial judgements take precedence (Menon, Saiti, Socratous, 2007; Moogan, Baron, & Harris, 1999).

As prospective students encounter a school for which they have no existing knowledge, they must quickly form a first impression to decide whether the school is interesting enough to warrant further research (Dennis, Papagiannidis, Alamanos, & Bourlakis, 2016; Matherly, 2011; Stafford, 1994). Because humans process visual information considerably faster, more automatically and less sequential than textual information (Holbrook & Moore 1981), such schools' initial visual presentation becomes key to communicating the school's identity in order to capture the attention, and tuition dollars, of prospective students (Balaji, Roy & Sadeque, 2016; Hemsley-Brown, Melewar, Nguyen & Wilson, 2016; Hemsley-Brown & Goonawardana, 2007; Matherly, 2011; Saul, 2018).

Such increased international competition from greater student mobility, as well as budgetary constraints due to political pressure in many countries, has brought an interest in branding to the attention of many universities in recent years. However, despite recognizing the importance of visual identity on shaping prospective students' impressions of a school, there is scant academic research on how best to brand universities. Efforts are often based on applying methods proven in other consumer settings or general rules of thumb. For example, in 2014, Trinity College Dublin updated its logo, simplifying its blue, gold, red, white and brown coat of arms to a more graphic version using only the colors blue and white. This change was reportedly based on advice from a design firm that deemed that blue and gold are associated with value and convenience, lack a sense of quality and

sophistication, and would lead to unwanted associations with IKEA and Ryanair. One hundred thousand Euros later, there is little evidence whether this change had any impact on prospective students' evaluation or value assumptions of the university ("For Trinity College Dublin, what's in a name?," 2014).

In this paper, we will extend the extant research on the role of visual design in brand evaluation and apply it to the higher education market in response to the growing need for empirical research on university branding. Specifically, we will explore the research question: how do visual and verbal components of a university's brand identity (logo shape and color and associated text) interact to inform assumptions about the university's personality and overall value. Such research has immediate managerial relevance to institutions looking to position their universities to pique the interest of prospective students, maximize assumed value or command higher tuition fees.

Literature Review

Fundamental perceptions: warmth and competence

As humans, when we encounter a new person, we immediately form split-second evaluations in order to assess whether they will support or threaten our survival. Research suggests that within 100 milliseconds, we make judgments about a person's attractiveness, likeability, trustworthiness, competence and aggressiveness that remain relatively unchanged (Willis & Todorov, 2006). This ability lies deep in our evolutionary psychology, as an incorrect assessment can make a life or death difference in our quest for survival (Blanchard, Griebel, Pobbe, & Blanchard, 2011).

At the heart of such rapid evaluations lie two core concepts. First, we determine the valence of the intentions of the other person (positive or negative), and then we assess their ability to follow through on those intentions (Abele, Cuddy, Judd & Yzerbyt, 2008; Cuddy, Fiske & Glick, 2008). For example, if you were to see a sickly person who clearly wishes you ill, you would assess that he has bad intentions but no means to act on them, as you are much stronger or can easily run away from them. Thus, he is not a threat to you. Similarly, someone who clearly

has good intentions but lacks the ability to follow through on them is not a particularly valuable friend. While seemingly simplistic, such evaluations have been shown to account for 82% of the our social perceptions of others (Wojciszke, Bazinska & Jaworski, 1998).

Because such assessments have such a long and deep history in human evolution, we have developed diverse strategies and terminologies to identify these concepts of intention and ability. To communicate that someone has positive intentions, we might say they are moral, fair, generous, helpful, honest, righteous, sincere, tolerant, understanding, trustworthy or caring. And to communicate their ability to act on these intentions, we might use language such as clever, competent, creative, efficient, foresighted, ingenious, intelligent or knowledgeable. While each term does capture subtle, situational differences, research suggests that these terms can be simplified to the core concepts of "warmth" (intention) and "competence" (ability). To validate the salience of such a simplification, Abele and Wojciszke (2007) asked participants to rate a list of 300 trait terms that represented related constructs and found that a two-factor solution, with one factor comprising traits representing competence and the other with traits representing warmth, accounted for almost 90% of the variance.

Warmth and competence in brand evaluation

We do not only evaluate other people using the concepts of warmth and competence. Numerous studies have found that we have a tendency to anthropomorphize brands, assigning them human properties and tendencies (Belk, 1988; Fournier, 1998; Fournier, & Alvarez, 2012; Levy, 1985; MacInnis & Folkes, 2017; Plummer, 1985; Solomon, 1983; Touré-Tillery & McGill, 2015). Accordingly, interpersonal behavior models have been found to be applicable to human-brand relationships (Kervyn, Fiske & Malon, 2012). As such, is it not surprising that research shows that consumers evaluate brands on these same fundamental dimensions of warmth and competence (Aaker, Vohs & Mogilner, 2010; Kervyn et al., 2012). In the context of a brand, warmth tends to relate to dimensions of the brand's sincerity, kindness, generosity or service-mindedness, and competence is indicative of efficiency, effectiveness, success or leadership

(Aaker, 1997; Aaker et al., 2012; Aaker, Vohs & Mogilner, 2010; Hess & Melnyk, 2016; Kervyn et al., 2012). For example, non-profits tend to be seen as considerably warmer, but less competent, than for-profit businesses (Aaker et al., 2010).

While the application of warmth and competence constructs to brand evaluations is well documented, there is one very significant difference in how such concepts are applied to brands versus humans: the relative focus on warmth versus competence cues. In social contexts, warmth is judged before competence because, from an evolutionary perspective, the good or bad intentions of a potential threat are more important to survival than the other person's ability to act on those intentions (i.e. it is better to be safe than sorry and run away from someone who wishes you ill, regardless of their abilities) (Fiske, Cuddy & Glick, 2007). But, in business contexts, this pattern is reversed. Consumers tend to look for, and value, competence cues ahead of warmth cues in the context of both goods and services (Aaker et al., 2010, 2010; Cuddy, Glick & Beninger, 2011; Hess & Melnyk, 2016; Parasuraman, Zeithaml & Berry, 1985). This finding is consistent with literature in economics that suggests that in a transactional setting, consumers are looking for a fair, but not necessarily warm, exchange (Kahneman, Knetsch & Thaler, 1986). Branding literature also supports this premise through suggesting that brands are most commonly used as a guarantee of consistent quality and competence to differentiate products or services (Janiszewski & van Osselaer, 2000).

Interaction between warmth and competence cues

The fact that warmth take precedence in human-to-human relationships and competence take precedence in human-to-brand relationships does not tell the whole story of how these concepts shape evaluations. They also interact in complex ways. As discussed above, in the social sphere, warmth cues are sought first to assess the possibility of the stimulus being a serious threat. Only once warmth cues have been assessed, do competence cues become relevant. In combination, people perceived as both warm and competent are seen as very appealing, whereas those perceived as lacking in both warmth and competence are

viewed as very unappealing. When someone is perceived as high on one dimension and low on the other, reactions vary. High levels of warmth and low levels of competence lead to feelings of superiority and pity, while low levels of warmth but high levels of competence lead to feelings of envy and resentment (social embodiments of threat) (Fiske et al., 2007). Thus, to be optimally appealing as a person, it is quite straightforward: one should score high on both warmth and competence.

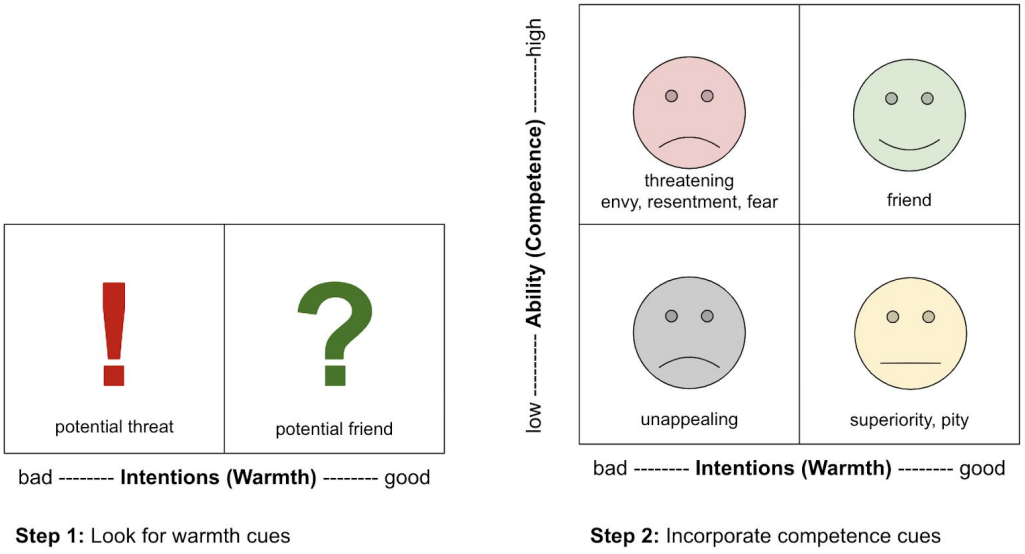


Figure 1. Combining warmth and competence cues in social assessments

As mentioned above, in brand contexts, we know that consumers tend to look for cues of competence first, as competence is valued in all transactional settings, while warmth is only valued in some (Aaker et al., 2010). In fact, when multiple cues are present, warmth cues tend to be ignored until competence is confirmed (Hess & Melnyk, 2016). This suggests a reversal of step one of the social assessment pattern.

Once competence has been determined, things get more complicated. Some studies suggest that, as in social settings, the ideal brand is one that rates highly on dimensions of both warmth and competence (Ivens, Leischnig, Muller & Valta 2015). For example, Hess and Melnyk (2016) found that when a brand is associated with multiple brand personality cues, brands with the most competence cues are valued less than brands exhibiting a combination of warmth and

competence cues. This research implicitly assumes that, as in social settings, warmth and competence are separate, desirable constructs.

However, another body of literature suggests that the presence of both warmth and competence cues lessen the overall value of the brand in the eyes of customers. For example, when a brand is attempting to position itself as innovative or high quality (competent), a positive CSR record (warmth cue) can actually lower purchase intentions (Wojciszke & Abele, 2008). This is a common finding in the literature on ethical or sustainable products. Consumers tend to associate high ethicality with gentleness and low ethicality with product strength. As a consequence, when consumers seek competence, as they do in most business settings, less warm (ethical/sustainable) products are valued more highly (Luchs, Naylor, Irwin & Raghunathan, 2010).

This pattern is likely because consumers make intuitive assumptions about the efficiency of markets. Rather than viewing warmth and competence as two separate constructs, they are positioned as contradictory extremes on a single spectrum, much like price and quality. Thus, consumers assume that in order to compete in the market, a product with high competence must compensate by being low in warmth, and via versa (Chernev & Carpenter, 2001). Jiang, Gorn, Galli and Chattopadhyay (2016) observed this phenomenon when testing consumer reactions to ads that highlighted the comfort (warmth) or durability (competence) of sneakers. They found that when the ad featured both warmth and competence cues, the brand was not rated highly on either dimension and was valued less than when a single dimension was featured.

One explanation for these contradictory findings is that warmth and competence are weighted in accordance to their congruence with a customers' consumption goals (van Osselaer & Janiszewski, 2001, 2012). Thus, it is understanding what the specific consumer is looking for in a product category that is salient in determining the optimal constellation of warmth and competence cues.

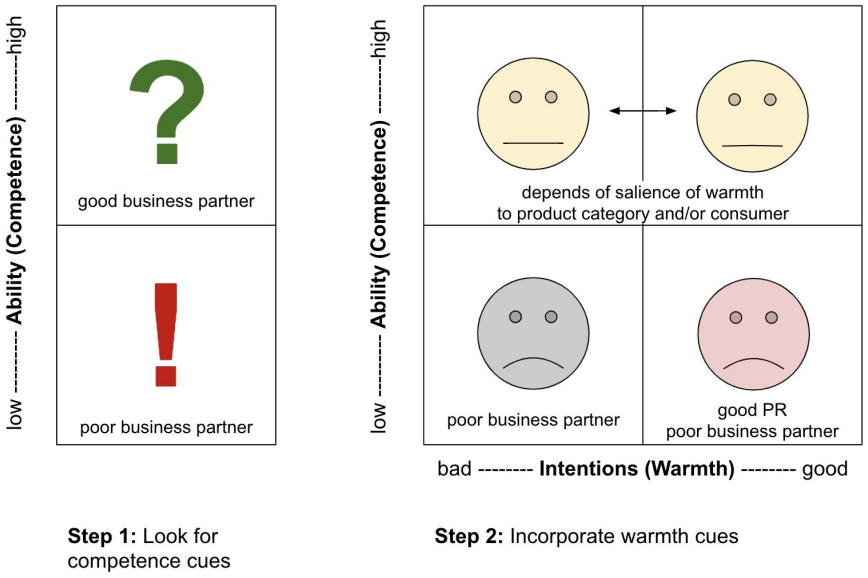


Figure 2. Combining warmth and competence cues in brand assessments

Salience of warmth and competence in university selection

To determine what role warmth and competence cues play in university selection, we need to answer the fundamental question: what makes a university valuable to prospective students? If students place value primarily on competence-related characteristics, we might expect their assessments of warmth and competence cues to be similar to those of typical brand evaluations (evaluate competence first and warmth cues may harm value). But, if more emphasis is placed on warmth, we would expect the evaluation of cues to be more similar to social assessments (evaluate warmth first, and a combination of warmth and competence is ideal).

At its core, higher education is a service industry. Universities co-create value by delivering services that are valuable to their students (Grönroos & Voima, 2013; Lemon & Verhoef, 2016). Multiple studies have sought to understand what makes a university valuable to prospective students. While the specifics of each study vary, there is broad agreement that schools are evaluated on two core dimensions: academic value (courses, career prospects, etc.) and emotional value (appealing campus, friendly staff, etc.; Alessandri, Yang & Kinsey, 2007 ; James, Baldwin & McInnis 1999; LeBlanc & Nguyen, 1999; Payne, 2003; Soutar & Turner, 2002; Stafford, 1994). Soutar and Turner (2002) capture a good snapshot of the overall findings. They report that the four most important determinants of university

preference are course suitability, academic reputation, job prospects and teaching quality, which map quite cleanly to the dimension of competence (Aaker et al., 2010). However, other attributes important to students were great campus atmosphere (5th most important), close to home (7th most important) and where friends were going (8th most important), which map to dimensions of warmth.

Overall, there is agreement that academic value is prospective students' primary concern. As Marginson (2006) put it, "the acid test is that when faced with the choice between a prestigious university with known indifference to undergraduate teaching, and a lesser institution offering better classroom support, nearly everyone opts for prestige" (p.3). Thus, it seems that universities resemble typical consumer-business relations with their primary emphasis on competence. Yet, it also suggests that competence and warmth are not seen as implicit tradeoffs, as with many consumer goods. While nearly everyone may prioritize competence over warmth in isolation, we can assume that the optimal university would rate highly on *all* of Soutar and Turner's determinants, both competence and warmth related.

This pattern in consistent with Melnyk, Klein and Völckner's (2012) memory theory. Applied to a university setting, it suggests that because competence is the most important characteristic for prospective students, only once it has been established do additional benefits (warmth) become salient. The same theory also suggests that when competence has been confirmed, further confirmations of it are unimportant. Thus, the optimal presentation of a university should feature a strong competence cue and a strong warmth cue.

Warmth and competence cues from visual identity

As discussed above, perceptions of the competence and warmth of a brand influence value assessments, purchase likelihood and brand loyalty. Accordingly, it is not surprising that brands regularly attempt to influence customers' perceptions of the brand through advertising and PR initiatives designed to influence assessments on these key dimensions (Kervyn et al., 2012). Companies often seek to boost competence perceptions through credible endorsements (Aaker

et al., 2010; Lafferty & Ronald, 1999; Seno & Lukas, 2007) or warmth perceptions through becoming more eco-friendly, CSR initiatives like donations to charity, or using smiling spokespeople in their campaigns (Hess and Melnyk, 2016; Luchs et al., 2010; Vaaland, Heide & Grønhaug, 2008). However, a growing body of research suggests that customers are becoming increasingly aware and resistant to such advertising efforts (Friestad & Wright, 1995; Odou & de Pechpeyrou, 2011). This suggests that more subtle cues may be a more effective way of influencing consumers' perceptions of warmth and competence (DePaulo, 1992; Hess & Melnyk, 2016; Fox & Spector, 2000).

Research in design, art and psychology suggests that the visual characteristics of a brand, such as their logo, typeface and color scheme, generate mental imagery and symbolic associations in the minds of consumers, which are carried over to their assumptions about the brand (Jiang et al., 2016; Grohmann, Giese & Parkman, 2013; MacInnis and Price, 1987). Thus, appropriate choices in a brand's visual identity could be an effective way to subtly, and more convincingly, cultivate perceptions of warmth and competence (DePaulo, 1992).

Brand inferences from logo shape

While the possibilities for the shape of a logo are essentially infinite, the simple classification of designs into predominantly rounded (curved, no sharp corners) or angular (straight lines, sharp corners) forms has proved salient in consistently eliciting differential consumer reactions. Such research goes as far back as 1921, when Lundholm asked participants to draw lines to express the affective tone of adjectives and found that angles were drawn for words like "hard" while curves were drawn for words like "gentle." More recently, Jiang et al. (2016) found that when a brand used a round logo, it was perceived as more warm and sensitive to customer needs than if that same brand used an angular logo. In the same vein, Hess and Melnyk (2016) found that when a brand is associated round shapes it is interpreted as more warm, while being associated with angular shapes implies competence.

Shape associations are remarkably consistent across populations and contexts (Block & Kramer 2009; Chebat & Morrin 2007; Labrecque, Patrick & Milne, 2013; Madden, Hewett & Roth, 2000; Silayoi & Speece, 2007; Walle, 1997). For example, Uher (1991) found that zigzag motifs were used among various ancient cultures in warlike contexts and were also associated with antagonistic words by contemporary people. And Shlomo, Shlomo, Simcha and Gadi (2016) found evidence that people think houses surrounded by sharp edged plants (instead of round-edged plants) are more safe. Such consistency is not surprising, as studies show that shape evaluations are a result of evolutionary neurobiology (Bar & Neta, 2006, 2007; Egómez-Puerto, Emunar & Enadal, 2016). As a result of their deeply embedded nature, logo shapes have proved very powerful in promoting brand associations, more so than other common techniques like using a friendly or authoritative looking spokesperson (Hess & Melnyk, 2016).

Brand inferences from colors

Though shape associations have proved very powerful, brand personality is inferred from many more cues than just logo shape alone. Take color, for example. The color of a brand's visual identity has the power to make the brand stand out from competitors or to signal that it belongs to a certain product class (Labrecque & Milne, 2012). There is much research on specific color associations and the conditions in which they vary (culture, age or personality), which is beyond the scope of this research (Byrnes, 1983; Chattopadhyay, Gorn & Darke, 2010; Labrecque, Patrick & Milne, 2013; Madden, Hewett & Roth, 2000; Priluck Grossman & Wisenblit, 1999). However, there are two colors that have been proven to be especially representative of warmth and competence across populations on account of their association with contemporary masculinity and femininity: pink and blue. Pink is strongly associated with warmth on account of its strong association with femininity (a cultural proxy for warm behaviors) and blue is strongly associated with competence due to its association with masculinity, which is a cultural proxy for competent behaviors (Clarke & Costall, 2007; Fraser & Banks, 2004; Labrecque & Milne, 2012; Murray & Deabler, 1957). Color cues also act in conjunction with logo shape cues to mold consumer response to logos, suggesting that a blue, angular shape will be rated as very

competent, and a round, pink shape will be seen as very warm, as observed by Labrecque and Milne (2012).

University inferences from logo design (*H1* & *H2*)

Based on the assumption that students evaluate a university's value first by establishing competence, but seek both competence and warmth in a university, and that competence can be convincingly conveyed through angular shapes and blue color, we propose:

H1: Universities with logos that incorporate at least one competence cue (blue color and/or angular shape) will be valued more highly than universities with logos that do not incorporate a competence cue (pink color and rounded shape), because universities whose logos include a competence cue will be perceived as more competent than universities whose logos do not include a competence cue.

However, given the evidence that competence and warmth are not seen as implicit tradeoffs in a university setting and both attributes are viewed positively (Soutar & Turner, 2002), we propose that Melnyk et al.'s (2012) memory theory is also applicable to a university setting. It suggests that once competence has been established by a single competence cue, further confirmation of competence becomes unimportant and instead warmth cues become salient (which can be conveyed through round shapes and pink color). Accordingly, we expect:

H2: Universities with logos that incorporate an incongruent combination of both competence and warmth cues (blue and rounded, or pink and angular) will be valued more highly than universities with logos that display congruent competence cues (blue and angular) or congruent warmth cues (pink and rounded), because universities whose logos incorporate an incongruent combination of competence and warmth cues will be perceived as both warm *and* competent, while universities whose logos incorporate congruent competence or warmth cues will be perceived as only competent *or* warm.

Brand inferences from text (*H3*)

In reality, logos are seldom evaluated in isolation, but in conjunction with verbal brand information, as in an advertisement or on a webpage (Jiang et al., 2016). Though, in general, humans process visual information faster and more automatically than textual information (Holbrook & Moore, 1981), verbal cues like the headline text in an ad often provide vital context for how to interpret the related imagery (Jiang et al., 2016). Eye-tracking experiments have found that when viewing an ad, people tend to first evaluate the overall visual appearance, then read the headline or large print, then the smaller print and then looked more carefully at the picture and/or logo (Rayner, Rotello, Stewart, Keir & Duffy, 2001; Wedel & Pieters, 2007). Coupled with Melnyk et al.'s (2012) memory theory, this implies that, in situations where universities cannot significantly change their existing logo or color scheme, modulating the tone of text immediately associated with the logo may be another effective way of introducing desirable warmth or competence cues. With this in mind, we expect:

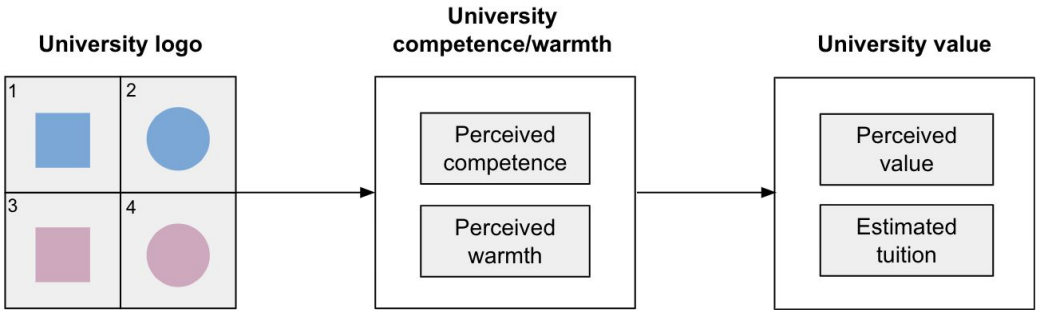
H3: Universities with logos that contain only competence cues (blue and angular) will be valued more highly when associated with warm text than when associated with competent text, and universities with logos that contain only warmth cues (pink and round) will be valued more highly when associated with competence text than when associated with warm text, because universities that display and incongruent combination of warmth and competence cues (from logo and text) will be perceived as both warm *and* competent, while universities that display congruent competence or warmth cues will be perceived as only competent *or* warm.

Research Methodology

Our research consisted of two studies conducted using an online Qualtrics survey. Study 1 was designed to test hypotheses 1 and 2, while Study 2 tested hypothesis 3. In addition, we designed a pre-test to confirm the validity of the stimuli used in our main studies.

Study 1

Study 1 was designed to test *H1* and *H2* using a 2 (logo shape: round vs. angular) × 2 (logo and text color: pink vs. blue) between-subjects design in order to avoid carryover effects and minimize the time and effort required by each participant. The logos used in the study were designed to embody the rounded or angular shape they represented (confirmed by a pre-test), yet also contain enough complexity to be perceived as realistic (Henderson & Cote, 1998). Subjects were randomly assigned to one of the four conditions and viewed a fictitious university name and logo that incorporated the characteristics of that condition. Other potentially confounding variables, such as logo details, font, size and layout were standardized across the conditions. After exposure, participants were asked to rate the university on dimensions of warmth and competence and overall value. Value was assessed using two measures, a value scale we developed to be specifically relevant to the academic context and through estimated tuition.



Note: Logos 1, 2 and 3 contain competence cues; logo 4 does not.

Figure 3. Visualization of Study 1

To test *H1,* we explored how competence, value and tuition estimates varied by university to determine whether universities with logos that contained at least one competence cue (blue color and/or angular shape) were indeed perceived as more competent, valuable and higher in estimated tuition than universities with logos that did not contain a competence cue (pink color and rounded shape), as predicted.

To test *H2*, we explored how the combination of competence and warmth cues affected warmth, competence, value and tuition estimates to determine whether

universities with logos that contain an incongruent combination of both competence and warmth cues (blue and rounded, pink and angular) were indeed perceived as more valuable than universities with logos that contained a congruent combination of competence or warmth cues (blue and angular, pink and rounded), as predicted.

Measurement scales

To determine perceived warmth, participants indicated how much they agreed with the following statements on a 5-point Likert scale (strongly disagree - strongly agree):

- The staff and students at this university will be kind.
- This university will offer a warm campus environment.
- Teachers and staff will be generous with their time at this university.

These specific statements were formulated to encompass the most relevant dimensions of school choice according to studies on university selection conducted by Hooley and Lynch (1981), Soutar and Turner (2002), Lin (1997) and Mazzarol et al. (1996) that map to Aaker and colleagues' dimensions of organizational warmth (2010)—specifically, campus atmosphere and friendliness. The underlined words were those used in our pre-test to represent the dimension of warmth.

To determine perceived competence, participants indicated how much they agreed with the following statements on a 5-point Likert scale (strongly disagree - strongly agree):

- This university has a reputation for academic competence.
- This university is known for its effective teaching style.
- Administration at this university is efficient.

These specific statements were formulated to encompass the most relevant dimensions of school choice according to studies on university selection conducted by Hooley and Lynch (1981), Soutar and Turner (2002), Lin (1997) and Mazzarol et al. (1996) that map to Aaker and colleagues' dimensions of organizational competence (2010)—specifically course suitability, academic

reputation, job prospects, and teaching quality. The underlined words were those used in our pre-test to represent the dimension of competence.

In order to measure perceived value, respondents were asked to assess the value of the education the university provides by answering the following questions using a 5-point Likert type scale:

- What quality of education would you expect to receive at this university? (very low quality - very high quality)
- What sort of salary would you expect to earn in an entry-level position immediately upon graduation from this university (compared to graduates in the same field from other universities)? (far below average - far above average)
- How easy would it be to get a job upon graduation with a diploma from this university? (very difficult - very easy)

Our rationale for equating estimated salary with educational value comes from research by Oosterbeek, Groot and Hartog (1992) that empirically shows that expected earnings from studying the same subject at different universities vary significantly.

Finally, respondents were asked to estimate the annual (out-of-state) tuition of the university, which we expected to positively correlate with the assessment of value. Our reasoning is that, in marketing literature, a common technique is to equate perceived value with the practical measure of willingness to pay (Boksberger & Melsen, 2011; Bolton & Lemon, 1999; Jiang et al, 2016; Ligas & Chaudhuri, 2012; Winer, 2005). Based on equity theory, customers expect to receive more value when they have paid more (Martins & Monroe, 1994; Patterson & Spreng, 1997; Zeithaml, 1988). We extended this line of reasoning to higher education by assuming that prospective students will associate higher tuition fees with the provision of greater education value and expect greater returns (in the form of future salary) from a high quality equation as well (Hu & Hossler, 2000). To appropriately frame the tuition estimates, respondents were asked to estimate tuition using a slider on a scale from $10,000 - $50,000 USD. These minimum and maximum tuition amounts were based on the minimum and

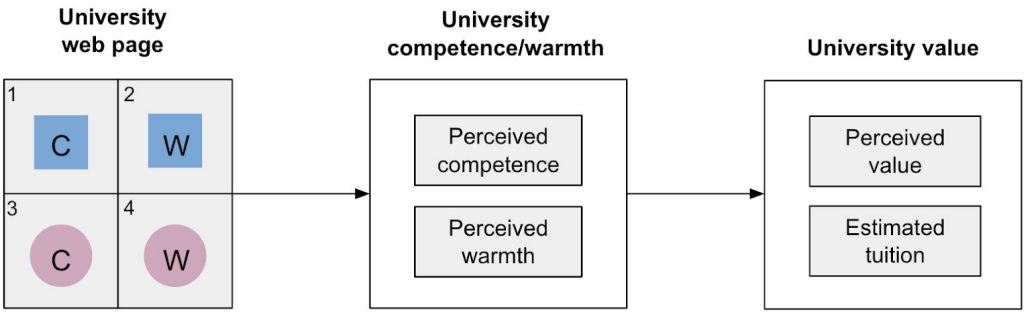
maximum annual undergraduate tuition for public and private four-year universities in 2017 according to the U.S. National Center for Education Statistics (U.S. Department of Education, 2017).

Questions about warmth and competence were shown to respondents in random order, followed by questions about value in random order. Finally, we asked respondents for their age, gender, student status and the U.S. zipcode of their residence while attending high school. Zipcode was used to find median income levels in that area (United States Census Bureau, 2017). These demographics were collected to see if they systematically affected how subjects responded to the stimuli in our studies.

Study 2

Study 2 was designed to test *H3* using a 2 (logo: round and pink vs. angular and blue) × 2 (associated text: warm vs. competence) between-subjects design in order to avoid carryover effects and minimize the time and effort required by each participant. It tested whether associated text that conveyed competence or warmth messages that were either incongruent or congruent with the warmth or competence signal of a university's logo had a similar effect to incongruent/ congruent color and shape associations predicted in Study 1, specifically that incongruent combinations would valued more highly on account of being perceived as both competent *and* warm.

University name, logo and a block of descriptive text were presented in the naturalistic setting of a simple web page. As in Study 1, extraneous variables such as size, layout, font, text length and background imagery were controlled for by being identical in all conditions. As in Study 1, subjects were randomly assigned to one of the four conditions. After exposure, participants were asked to rate the university on dimensions of warmth, competence, value and tuition using the same scales as in Study 1.



Note: C = competence text, W = warmth text. Logos 1, 2 and 3 contain competence cues; logo 4 does not.

Figure 4: Visualization of Study 2

Pre-tests required for Study 1 and Study 2

Both our main studies required that respondents be exposed to stimuli that are explicit competence or warmth cues. While the extant literature clearly suggests that the color blue and angular shapes signal competence and the color pink and round shapes signal warmth, by nature, shape and color are polytomous categorical variables. Thus, in order to choose the most representative variables for our studies, we tested three variations of each of these stimuli in isolation to ensure that the exact shapes and colors we used to signal competence and warmth in our main studies were indeed representative of the intended constructs. We conducted a similar test to select a block of text that was most representative of competence and of warmth to use in Study 2.

Because we wanted to ensure that additional cues of competence or warmth from stimuli not being tested did not interfere with our data, we also conducted a set of pre-tests to ensure the perceptual neutrality of the extraneous stimuli used in our studies (university name and font in both studies, and web page background image in Study 2). This was necessary because, while standardizing these features across all conditions would control for their effect within the study, if they generated strong associations of warmth or competence in isolation they could disrupt the sensitivity of the effect of the variables we were measuring.

Given the large number of stimuli that had to be pre-tested, in the interest of time, our pretest used a within-subjects design. (See Appendix A to view all stimuli included in the pre-test).

Shape

To select the competence and warmth cues used in Study 1 and Study 2, we tested that the angular and rounded shapes we used for logos were consistently associated with competence (angular) and warmth (rounded). Different shapes (a circle, vertical oval, horizontal oval, square, vertical rectangle, horizontal rectangle) with the same area and color (Pantone Neutral Grey) were presented to subjects and their assumptions of warmth and competence were collected. Specifically, participants were asked whether the shape represented warmth, generosity and kindness (warmth dimensions) and competence, effectiveness and efficiency (competence dimensions). These specific qualities were selected based on the most relevant dimensions of school choice according to studies on university selection conducted by Hooley and Lynch (1981), Soutar and Turner (2002), Lin (1997) and Mazzarol et al. (1996) and mapped to Aaker et al.'s dimensions of organization warmth and competence (2010). Once correlation between the various warmth and competence dimensions was confirmed, the shapes representing the most extreme examples of warmth and competence were used in Studies 1 and 2.

Color

To select the competence and warmth cues used in Study 1 and Study 2, we tested that the two colors used for logos were consistently associated with warmth (pink) and competence (blue). Three shades of pink and blue were presented in the form of an abstract paint brush stroke, so as to minimize the impact of shape on the interpretation. Subjects were asked to rate their assumptions of warmth and competence associated with each hue, using the same method as above. The colors that represented the most extreme examples of warmth and competence were then used in Studies 1 and 2.

Textual content

We also confirmed that the textual content used in Study 2 to suggest dimensions of warmth and competence was consistently interpreted as such by participants. Three variations of headline and body text emphasizing realistic dimensions of university competence (course suitability, academic reputation, job prospects, and teaching quality as suggested on Soutar and Turner, 2002) and warmth (campus atmosphere and friends as suggested by Soutar and Turner, 2002) were presented to subjects. Each text featured an identical word count (three-word headline and 42-word body text) and similar language (second-person point of view and informal language). Subjects were asked to rate their assumptions of warmth and competence associated with each hue, using the same method as above. The texts representing the most extreme examples of warmth and competence were then used in Study 2.

University name

To ensure that the university name used consistently in Study 1 and Study 2 had a minimal impact on competence and warmth assessments, we tested that the fictitious name of our university was interpreted as moderately warm and moderately competent. Three names were presented to subjects in the same size, black, arial font, to match the settings of our Qualtrics survey and keep attention on the name, rather than the design. The names that were tested were Marbell University, Coleburg University and Dormer University in order to present a variety of name sounds with no obvious association to an existing institution or person. Subjects were asked to rate their assumptions of warmth and competence associated with each name, using the same method as above. The name representing the best balance of warmth and competence (smallest absolute value of the difference in sum competence and sum warmth) was used in Studies 1 and 2.

Font

To ensure that the font used consistently in Study 1 and Study 2 had a minimal impact on competence and warmth assessments, we tested that the font we used for our university names and on our webpage was interpreted as moderately warm

and moderately competent. We tested Calibri, Candara and Arial typefaces in identical weights and color (black). Calibri and Candara were selected based on research by Shaikh, Chaparro and Fox (2006) that found them to be especially neutral in associated connotations. Arial was tested because it is shown to be the most commonly used font on the web (Ji, 2014). Subjects were presented with a block of *lorem ipsum* text in the selected font and instructed to focus on the font, not the text itself. Subjects were asked to rate their assumptions of warmth and competence associated with each font, using the same method as above. The font representing the best balance of warmth and competence (smallest absolute value of the difference in competence and warmth) was used in Studies 1 and 2.

Background image

To ensure that the background image used consistently in Study 1 and Study 2 had a minimal impact on competence and warmth assessments, we tested that the background image used in our web pages (for the sake of realism) in Study 2 was interpreted as moderately warm and moderately competent. We tested images that intentionally featured groups of students in an education setting (graduation, a table with notebooks, students with backpacks) to represent both the warmth and competence dimensions of education. All images were rendered in black and white so as not to interfere with testing the effect of color in our studies. Subjects were asked to rate their assumptions of warmth and competence associated with each image, using the same method as above. The image representing the best balance of warmth and competence (smallest absolute value of the difference in competence and warmth) was then used in Study 2.

Data collection

Ideally, the participants used in our pre-tests and our main studies should accurately represent universities' true target audience of potential students. Given the mobility of contemporary students, our studies could be applicable to global prospective students. However, to test our hypotheses, we limited our focus to the United States by using a purposive sample of US prospective or current students (US high school graduates, age 18-25) (Mack, Woodsong, Macqueen, Guest & Namey, 2005). Our rationale for this decision is that we include expected tuition

as a measure of willingness to pay as a key dependent variable in our studies. We expected that this measure would be easily understood by US students since very few US colleges are free and typical tuition fees are common knowledge among prospective students.

For our pre-test and main studies, we collected data through an online survey created using Qualtrics and conducted through Amazon MTurk. Some criticism has arisen around the use of MTurk respondents in such studies on account of the fact that that MTurk respondents, who are paid small sums to complete surveys, are incentivized to speed through the surveys and consequently do not give the required attention to survey questions, or that automated bots may be answering questions at random (Dreyfuss, 2018). However, many studies have confirmed that MTurk samples are highly reliable and produce data of comparable quality to typical traditional university student samples (Buhrmester, Kwang & Gosling, 2011; Irvine, Hoffman & Wilkinson‐Ryan, 2018). In fact, one study showed that MTurk subjects actually pay greater attention to detail in surveys than traditional university student samples (Hauser & Schwarz, 2016).

We justify conducting our studies online by the success of Jiang et al. (2016) and Hess and Melnyk (2016) in using online surveys to study similar phenomenon. To ensure that poor quality responses on account of rushed or inattentive respondents do not contaminate our data, we excluded participants from our analysis that responded in less than the time required to complete the survey based on a pre-test and those whose answers had a standard deviation of zero (Johnson, 2015; Smith, Roster, Golden & Albaum, 2016).

MTurk provides a function to only offer surveys to respondents pre-qualified on various characteristics (Amazon Mechanical Turk, 2016). Using this functionality, we specifically targeted US high school graduates between the ages of 18-25, capturing natural variation in age, gender and student performance level. With these tools, we collected a sufficiently unbiased and representative sample to comply with the requirements of our quantitative study (Kumar, 2014).

It must be noted that in reality, many potential university students are younger than 18 years old. However, these subjects could not be included in our studies due to MTurk's legal requirements. Additionally, European legal restrictions (GDPR) also precluded us from specific identifying data, such as IP addresses, from our respondents. As such, specific location and other demographic features were not controlled for. We do not anticipate this to be problematic, as prior research has confirmed the consistency of the associations of the shapes and colors in our tests associations across genders, cultures and age groups. Additionally, we did not expect family income to impact assessments of expected tuition because research suggests that students estimations of educational value (measured by tuition) is unrelated to their personal ability to pay such tuition (Biffl & Issac, 2002; Hu & Hossler, 2000). We confirmed this assumption by assessing the correlation between median income in the respondents zip code while attending high school and tuition estimates in each study.

Sample size

To ensure the quantitative validity of our study, it was necessary to predefine our sample size. Using too small of a sample could yield inaccurate or insignificant results and an overly large sample could compromise the accuracy of the results by naturally causing p-values to skew towards zero. Hence the proper sample size would help us to avoid type 1 and 2 errors (Lin, Lucas & Shmueli, 2013). Additionally, from a financial perspective, choosing a larger than necessary sample size would also be a waste of our limited, experimental budget.

The ideal sample size depends on the purpose of the study, population size, the risk of selecting a bad sample and the allowance for sampling error (Israel, 1992). Since the potential population for our study was so large (19.9 million projected university students in the United States alone) (U.S. National Center for Education Statistics, 2018), we could not adopt sampling methods suited for small populations (like population censuses) or formulas developed for finite populations (Israel, 1992). Thus, we relied on identifying our ideal sample size through defining the required level of precision (or acceptable level of sampling error), acceptable level of confidence and the degree of variability in the attributes

being measured. When choosing values for these parameters to define the sample size, we followed the strategy of choosing lower bound values to have smaller, but still reliable sample size. Since the vast majority of our statistical analysis was focused on descriptive statistics, any reliable sample size would suffice (Israel, 1992). We also made sure that the values used for these parameters were among the standard values used in similar studies (Miaoulis & Michener, 1976).

The level of precision refers to the range in which the true value of the population is estimated to be located. We considered a 5% interval. The confidence level refers to the degree to which the average results obtained from the sample matches the population, considering a normal distribution for the results. We considered the confidence interval as 80%. Finally, the degree of variability accounts for the distribution of relevant attributes in the population. Even though our sampling strategy was developed to select a relatively homogenous sample (students age 18-25), we set the degree of variability as 0.5 (a conservative level to generate a more accurate sample size). By plugging the above variables into Cochran's sampling formula for large populations, we calculated 164 as the required sample size for Study 1 and 2 (Cochran, 2007).

In our pre-tests, our main focus was to detect ambiguity in the stimuli we intended to use Study 1 and 2 (logo shapes, colors, text, accompanying background images, fonts and names) with a sufficient level of accuracy. By pre-testing a random sample of 30 participants, we could account for 80% power of detecting a potential problem which might be prevalent at a level of 0.05 (Perneger, Courvoisier, Hudelson & Gayet-Ageron, 2013).

Pre-test

Our pre-test had two main purposes. The first was to select versions of each of the stimuli for use in Study 1 and Study 2 (logo shape, logo color, university name and website text) that were most representative of the concepts of warmth and competence. And the second was to select the most neutral versions of the stimuli required in the studies for the sake of realism (school name, font and background

image), so that these stimuli would have a negligible effect on overall warm and competence assessments. (See Appendix A to view all stimuli).

Method

This pre-test was distributed to respondents who met the same demographic criteria as in our subsequent studies (US high school graduates, age 18-25). As we received each response, we evaluated the quality of their data. If the participant had completed the survey in significantly less than the estimated time required to read all of the questions survey (based on our own testing) or if their answers across constructs (warmth, competence, value) had a standard deviation of 0, their responses were not included in our analysis (Johnson, 2015). We continued to collect responses until we had fulfilled our predefined quota ($N = 30$) of high-quality respondents.

Results

Validating the measurement of key constructs

In order to confirm that the warmth and competence cues presented in the questionnaire were measuring the same construct, we calculated the correlation between groups of cues. All three dimensions of competence across all the stimuli correlated highly with one another suggesting that they indeed measured a single construct: competence and effectiveness ($r(28) = .93$, $p < .001$), competence and efficiency ($r(164) = .94$, $p < .001$), and effectiveness and efficiency ($r(28) = .97$, $p < .001$). Additionally, all three dimensions of warmth across all stimuli correlated highly with one another suggesting that they also measured a single construct: kindness and warmth ($r(28) = .95$, $p < .001$), kindness and generosity ($r(28) = .93$, $p < .001$), and warmth and generosity ($r(28) = .92$, $p < .001$). In extension, all three dimensions of competence and of warmth within each individual stimuli correlated highly with one another confirming the suggestion that they reliably measured the intended construct (Appendix A, Table A1).

Most competent/warm (shape, color, text)

Our approach for selecting the most competent/warm stimuli (shape, color, text) was to select the one that has the highest mean competence/warmth perception

relative to the other version of that stimuli. To ensure that the stimuli with the highest numerical competence/warmth was indeed perceptually different than the others, we conducted a one way analysis of variance (ANOVA) to test for the statistical significance of the difference in competence/warmth between versions of the stimuli. An alpha level of 0.05 was used as a significance criterion for all of these tests. We computed the partial omega squared as an index of effect size instead of partial eta squared, as it has proven to be more accurate (Field, 2013; Keppel, 1991; Olejnik and Algina, 2003). Effect size was interpreted based on the omega squared following the rule that large > 0.14, medium = 0.14 - 0.06, small = 0.06 - 0.01 and very small < .01 (Field, 2013).

Shape (most competent = square)

The mean competence rating in response to the square was 10.50 (*SD* = 2.93), in response to the horizontal rectangular it was 10.23 (*SD* = 2.96), and in response to vertical rectangular it was 8.97 (*SD* = 3.41). As expected, the mean competence rating in response to rounded shapes was lower. In response to the circle it was 8.93 (*SD* = 2.83); in response to the horizontal oval it was 7.27 (*SD* = 2.88); and in response to vertical oval it was 7.03 (*SD* = 2.98).

A repeated measures ANOVA revealed that the difference in perceived competence between all shapes was significant ($F(5, 145) = 9.70$, $p < .001$). The partial omega squared was 0.22 indicating the effect size is large. In addition, a paired samples t-test revealed that the difference in sum perceived competence between all angular shapes ($M = 29.70$, $SD = 7.31$) and all round shapes ($M = 23.23$, $SD = 6.09$) was significant ($t(29) = 4.98$, $p <. 001$). Accordingly, we focused our analysis on only the angular shapes in order to evaluate the specific perceived differences in competence between them.

A repeated measures ANOVA revealed that the difference in perceived competence between angular shapes was not statistically significant ($F(2, 87) = 2.09$, $p = 0.13$). A post hoc multiple comparison analysis (Tukey) revealed that the absolute mean competence rating was not significantly different for any pair of angular shapes: square versus horizontal rectangle ($M_{diff} = 0.27$, $p = 0.94$),

square versus vertical rectangle (M_{diff}= 1.53, p = 0.14), and horizontal rectangle versus vertical rectangle (M_{diff}= 1.20, p = 0.26). However, as we had to choose one shape to use consistently in our subsequent studies, we choose to use the square to represent competence on account of it possessing the highest numerical mean competence rating of all shapes tested.

Shape (most warm = circle)

The mean warmth rating in response to the square was 6.67 (*SD* = 2.88), in response to the horizontal rectangular it was 6.33 (*SD* = 2.66), and in response to vertical rectangular it was 6.40 (*SD* = 2.14). As expected, the mean warmth rating was higher for the rounded shapes. In response to circle it was 10.20 (*SD* = 2.91); in response to the horizontal oval it was 8.10 (*SD* = 2.96); and in response to the vertical oval it was 7.60 (*SD* = 2.86).

A repeated measures ANOVA revealed that the difference in perceived warmth between all shapes was significant (F(5, 145) = 13.06, p < .001). The partial omega squared was 0.29, indicating the effect size is large. In addition, a paired samples t-test revealed that the difference in sum perceived warmth between all angular shapes (*M* = 19.40, *SD* = 6.13) and all round shapes (*M* = 25.9, *SD* = 6.64) was significant (t(29) = 5.52, p <.001). Accordingly, we focused our analysis on only the round shapes in order to evaluate the specific perceived differences in warmth between them.

A repeated measures ANOVA revealed that the difference in perceived warmth between round shapes was statistically significant (F(2, 87) = 6.74, p < 0.01). A post hoc multiple comparison analysis (Tukey) revealed that the mean warmth rating was significantly higher for the circle versus the horizontal oval (M_{diff} = 2.1, p = 0.01) and for the circle versus the vertical oval (M_{diff} = 2.6, p = <.001). However, the mean warmth rating was only marginally significantly different between the horizontal oval and the vertical oval (M_{diff} = 0.5, p = 0.78). On account of the circle being perceived as significantly warmer than either of the ovals, we selected it as the shape to represent warm in our subsequent studies.

Color (most competent = dark blue)

The mean competence rating in response to the color dark blue was 11.73 (*SD* = 3.19), in response to medium blue it was 11.40 (*SD* = 2.57), and in response to light blue was 10.33 (*SD* = 2.90). As expected, the mean competence rating in response to pink hues were lower. In response to dark pink it was 8.00 (*SD* = 2.94), in response to medium pink it was 8.33 (*SD* = 2.54), and in response to light pink it was 7.87 (*SD* = 2.91). Also as expected, higher value shades of both colors were rated as more competent than lower value shades (Labrecque & Milne, 2012).

A repeated measures ANOVA revealed that the difference in perceived competence between all colors was significant ($F(5, 145) = 18.03$, $p < .001$). The partial omega squared was 0.36, indicating the effect size is large. In addition, a paired samples t-test revealed that the difference in sum perceived competence between all versions of blue ($M = 33.47$, $SD = 7.27$) and all versions of pink ($M = 24.20$, $SD = 7.46$) was significant ($t(29) = 5.7$, $p <.001$). Accordingly, we focused our analysis on only the different versions of blue in order to evaluate the specific perceived differences in competence between them.

A repeated measures ANOVA revealed that the difference in perceived competence between different versions of blue was not statistically significant ($F(2, 87) = 1.91$, $p = .155$). A post hoc multiple comparison analysis (Tukey) revealed that the mean competence rating was not significantly different for any pair of versions of blue: dark blue versus light blue ($M_{diff} = 1.4$, $p = 0.15$), dark blue versus medium blue ($M_{diff} = 0.34$, $p = 0.89$), and medium blue versus light blue ($M_{diff} = 1.07$, $p = 0.33$). However, as we had to choose one color to use consistently in our subsequent studies, we choose to use dark blue to represent competence on account of it possessing the highest numerical mean competence rating of all colors tested.

Color (most warm = light pink)

The mean warmth rating in response to the color light blue was 8.40 (*SD* = 2.25); in response to medium blue it was 8.10 (*SD* = 2.32), and in response to dark blue

it was 7.80 (*SD* = 2.55). As expected, the mean warmth ratings for pink hues were higher. In response to light pink it was 11.70 (*SD* = 2.79), in response to medium pink it was 11.40 (*SD* = 2.65), and in to response dark pink it was 10.53 (*SD* = 2.92). Also as expected, lower value shades of both colors were perceived as warmer than higher value shades (Labrecque & Milne, 2012).

A repeated measures ANOVA revealed that the difference in perceived warmth between all colors was significant ($F(5, 145) = 20.67$, $p < .001$). The partial omega squared was 0.40, indicating the effect size is large. In addition, a paired samples t-test revealed that the difference in sum perceived warmth between all versions of blue (*M* = 33.63, *SD* = 7.33) and all versions of pink (*M* = 24.30, *SD* = 5.94) was significant ($t(29) = 6.09$, $p <.001$). Accordingly, we focused our analysis on only the different version of pink in order to evaluate the specific perceived differences in warmth between them.

A repeated measures ANOVA revealed that the difference in perceived warmth between different versions of pink was not statistically significant ($F(2, 87) = 1.42$, $p = 0.248$). A post hoc tests multiple comparison analysis (Tukey) revealed that the mean warmth rating was not significantly different for any pair of versions of pink: light pink versus dark pink ($M_{diff} = 1.17$, $p = 0.24$), medium pink versus dark pink ($M_{diff} = 0.86$, $p = 0.45$), and light pink versus medium pink ($M_{diff} = 0.30$, $p = 0.90$). However, as we had to choose one color to use consistently in our subsequent studies, we choose to use light pink to represent warmth on account of it possessing the highest numerical mean warmth rating of all colors tested.

Text (most competent = reputation)

As expected, the mean competence rating for the three texts designed to exemplify competence was higher than for those texts designed to exemplify warmth. Texts designed to exemplify competence resulted in the following mean competence ratings: Reputation (*M* = 12.20, *SD* = 2.25), AwardWinning (*M* = 12.17, *SD* = 2.96 and BrightFuture (*M* = 11.57, *SD* = 3.19). Texts designed to exemplify warmth resulting in the following mean competence ratings:

BestCampus (M = 10.00, SD = 2.77), WarmWelcome (M = 9.30, SD = 3.44) and Friends (M = 8.57, SD = 3.35).

A repeated measures ANOVA revealed that the difference in perceived competence between all texts was significant ($F(5, 145) = 11.41$, $p < .001$). The partial omega squared was 0.26, indicating the effect size is large. In addition, a paired samples t-test revealed that the difference in sum perceived competence between all versions of competence text (M = 35.93, SD = 7.33) and all versions of warmth text (M = 27.87, SD = 7.89) was significant ($t(29) = 4.54$, $p < .001$). Accordingly, we focused our analysis on only the different version of competence text in order to evaluate the specific perceived differences in competence between them.

A repeated measures ANOVA revealed that the difference in perceived competence between different versions of competent text was not statistically significant ($F(2, 87) = 0.48$, $p = 0.623$). A post hoc multiple comparison analysis (Tukey) revealed that the mean competence rating was not significantly different for any pair of versions of the texts intended to be competent: AwardWinning versus BrightFuture ($M_{diff} = 0.6$, $p = 0.69$), Reputation versus AwardWinning ($M_{diff} = 0.03$, $p = 0.9$) and Reputation versus BrightFuture ($M_{diff} = 0.63$, $p = 0.66$). However, as we had to choose one text to use consistently in our subsequent studies, we choose to use the Reputation text to represent competence on account of it possessing the highest numerical mean competence rating of all texts tested.

Text (most warm= friends)

As expected, the mean warmth rating for the three texts designed to exemplify warmth was higher than for those texts designed to exemplify competence. Texts designed to exemplify warmth resulting in the following mean warmth ratings: Friends (M = 11.83, SD = 2.44), WarmWelcome (M = 11.70, SD = 2.69) and BestCampus (M = 10.97, SD = 2.46). Texts designed to exemplify competence resulting in the following mean warmth ratings: BrightFuture (M = 8.37, SD = 2.82), Reputation (M = 7.60, SD = 2.84) and AwardWinning (M = 7.53, SD = 3.15).

A repeated measures ANOVA revealed that the difference in perceived warmth between all texts was significant ($F(5, 145) = 21.36$, $p < .001$). The partial omega squared was 0.40, indicating the effect size is large. In addition, a paired samples t-test revealed that the difference in sum perceived warmth between all versions of warm text ($M = 34.5$, $SD = 6.42$) and all versions of competent text ($M = 23.5$, $SD = 7.38$) and was significant ($t(29) = 6.10$, $p < .001$). Accordingly, we focused our analysis on only the different versions of warm text in order to evaluate the specific perceived differences in warmth between them.

A repeated measures ANOVA revealed that the difference in perceived warmth between different versions of warm text was not statistically significant ($F(2, 87) = 1.02$, $p = 0.365$). A post hoc tests multiple comparison analysis (Tukey) revealed that the mean warmth rating was not significantly different for any pair of versions of the texts intended to be warm: Friends versus BestCampus ($M_{diff} = 0.87$, $p = 0.38$), WarmWelcome versus BestCampus ($M_{diff} = 0.73$, $p = 0.50$) and Friends versus WarmWelcome ($M_{diff} = 0.13$, $p = 0.97$). However, as we had to choose one text to use consistently in our subsequent studies, we choose to use the Friends text to represent warmth on account of it possessing the highest numerical mean warmth rating of all texts tested.

Most neutral (font, name, image)

Our approach for selecting the most neutral stimuli (font, name and image) was to select the stimuli that had the smallest absolute mean difference between sum competence ratings and sum warmth ratings. To ensure that stimuli with the highest numerical neutrality (smallest absolute value of mean difference between sum competence ratings and sum warmth ratings) was indeed perceptually different than the others, we conducted a one way analysis of variance to test for the statistical significance of the difference in neutrality between versions. An alpha level of 0.05 was used as a significance criterion for these tests.

Font (most neutral = Candara)

The absolute value of the mean difference between the sum competence ratings and sum warmth ratings in response to Arial was 4.20 (*SD* = 3.32); in response to Calibri it was 3.43 (*SD* = 3.11), and in response to Candara it was 2.97 (*SD* = 2.54). A repeated measures ANOVA revealed that the difference in perceived neutrality between fonts was not significant ($F(2, 87) = 1.29$, $p = 0.28$). The partial omega squared was 0.0064 indicating the effect size is very small.

A post hoc multiple comparison analysis (Tukey) revealed that the absolute mean difference in sum competence and warmth ratings were not significantly different between Arial and Candara ($M_{diff} = 1.23$, $p = 0.26$). Additionally, the differences in sum competence and warmth ratings were not significantly different between Calibri and Candara ($M_{diff} = 0.47$, $p = 0.82$) or between Arial and Calibri ($M_{diff} = 0.76$, $p = 0.59$). Since the difference in neutrality between all fonts is not statistically significant, we can assume they are all perceived as similarly neutral. However, as we had to choose one font to use consistently in our subsequent studies, we choose to use Candara to represent the most neutral font on account of it possessing the lowest overall numerical difference between sum competence and warmth of the fonts tested.

Name (most neutral = Marbell)

The absolute value of the mean difference between the sum of competence rating and sum of warmth ratings in response to the name Marbell was 2.7 (*SD* = 2.45), in response to Coleberg it was 2.8 (*SD* = 2.55), and in response to Dormer it was 3.1 (*SD* = 3.23). A repeated measures ANOVA revealed that the difference in perceived neutrality between names was not significant ($F(2, 87) = 0.17$, $p = .844$). The partial omega squared was 0.019 indicating the effect size is small.

A post hoc multiple comparison analysis (Tukey) revealed that the absolute mean difference in sum competence and warmth ratings was not significantly different between Dormer and Marbell ($M_{diff} = 0.4$, p = .84), between Dormer and Coleburg ($M_{diff} = 0.3$, p = 0.91) or between Coleburg and Marbell ($M_{diff} = 0.1$, p = 0.99). Since the difference in neutrality between all names is not statistically significant,

we can assume they are all perceived as similarly neutral. However, as we had to choose one name to use consistently in our subsequent studies, we choose to use Marbell to represent the most neutral name on account of it possessing the lowest overall numerical difference between sum competence and warmth of the those names tested.

Image (most neutral = graduates)

The absolute value of the mean difference between the sum of competence ratings and sum of warmth ratings in response to the image featuring students walking with backpacks ("Backpacks") was 2.63 (SD = 2.59); in response to the image featuring graduates ("Grads") it was 2.2 (SD = 2.28), and in response to students working together at a desk ("Desk") it was 4.2 (SD = 3.32). A repeated measures ANOVA revealed that the difference in perceived neutrality between images was not significant ($F(2, 87) = 4.35$, $p = 0.16$). The partial omega squared was 0.07 indicating the effect size is medium.

A post hoc multiple comparison analysis (Tukey) revealed that the absolute mean difference in sum competence and warmth ratings was significant between the images Grads and Desk ($M_{diff} = 2.00$, $p = 0.02$) and between the images Desk and Backpacks ($M_{diff} = 1.56$, $p = 0.07$). However, the absolute mean difference in sum competence and warmth ratings was not significantly different between the images Backpacks and Grads ($M_{diff} = 0.43$, $p = 0.81$). Therefore, we can conclude that Grads and Backpacks are perceived as significantly more neutral than Desk, but not significantly different from one another. However, ase we had to choose one image to use consistently in our subsequent studies, we choose to use Grads to represent the most neutral name on account of it possessing the lowest overall numerical difference between sum competence and warmth of the images tested.

Study 1

This study was designed to test our first two hypotheses. *H1* predicts that universities with logos that incorporate at least one competence cue (blue color and/or angular shape) will be valued more highly than universities with logos that do not incorporate a competence cue (pink color and rounded shape) because

universities whose logos include a competence cue will be perceived as more competent than universities whose logos do not include a competence cue. This is based on the assumption that competence is necessary for potential students to see a university as valuable. *H2* predicts that universities with logos that incorporate an incongruent combination of both competence and warmth cues (blue and rounded, or pink and angular) will be valued more highly than universities with logos that display congruent competence cues (blue and angular) or congruent warmth cues (pink and rounded), because universities whose logos incorporate an incongruent combination of competence and warmth cues will be perceived as both warm *and* competent, while universities whose logos incorporate congruent competence or warmth cues will be perceived as only competent *or* warm. This is based on the assumption that both competence and warmth are desirable characteristics for potential students selecting a university.

Method

Our online survey measured respondents' perceptions of a university's competence, warmth, value and estimated tuition, based solely on the impression formed by exposure to the university's name (standardized) and logo (four conditions). The shape and color cues that were highest in competence and highest in warmth were selected from our pre-test to form the four otherwise identical logos for Study 1 (blue square, blue circle, pink square, pink circle). The effect of other cues was minimized by using the the university name and font that was rated as most neutral in our pre-test across all conditions.

Figure 5: Study 1 stimuli

Study participants were randomly assigned between one of the four conditions and were asked to evaluate the logo on three measures of competence

(competence, effectiveness, efficiency), three measures warmth (warmth, kindness, generosity) and three measures value (expected quality of education, ability of a diploma from the school to help them get a job, expected salary upon graduation relative to other similar schools) on 5-point Likert-type scales, and to estimate tuition using a slider ($10,000 - $50,000 USD) (see Research Methodology, Study 1 for more detail). As we received each response, we evaluated the quality of their data. If the participant had completed the survey in significantly less than the estimated time required to read all of the questions (based on our own testing) or if their answers across constructs (warmth, competence, value) had a standard deviation of 0, their responses were not included in our analysis (Johnson, 2015). We continued to collect responses until we had fulfilled our predefined quota (*N = 164*) of high-quality respondents. (See Appendix B to view the full questionnaire).

Results

Validating the measurement of key constructs

We began our analysis by confirming that all three measures of competence, of warmth and of value all correlated positively and highly with one another in order to validate that they represented a single construct. An alpha level of 0.05 was used as a significance criterion for this and all subsequent tests ($p < .10$ denotes marginal significance).

All three competence measures (competence, effectiveness, efficiency) correlated highly with one another suggesting that they indeed measure a single construct: competence and effectiveness ($r(164) = .72$, $p < .001$), competence and efficiency ($r(164) = .65$, $p < .001$), and effectiveness and efficiency ($r(164) = .63$, $p < .001$). All three value measures of value (expected quality of education, ability of a diploma from the school to help them get a job and expected salary upon graduation relative to other similar schools) were also highly correlated with one another: education quality and expected salary ($r(164) = .804$, $p < .001$), education quality and job prospects ($r(164) = .688$, $p < .001$), and expected salary and job prospects ($r(164) = .706$, $p < .001$), indicating that they reliably measure a single construct. And all three dimensions of warmth (warmth, kindness, generosity)

also correlated highly with one another: kindness and warmth ($r(164) = .480$, $p < .01$), kindness and generosity ($r(164) = .447$, $p < .01$), and warmth and generosity ($r(164) = .497$, $p < .01$), indicating that they too reliably measure a single construct. Given these results, we measured the competence, warmth and value of each university as the mean sum competence, warmth or value rating, based on the sum of all three competence or value ratings (scale of 3-15).

Estimated tuition was measured directly in thousands of US dollars. Respondents input their estimate using a scale ranging from $10,000 - $50,000 USD (based on typical US university tuition), which prevented any obvious outliers. We thought it possible that estimated tuition might depend on one's ability to pay said tuition, rather than serving as an independent measure of expected value or quality. But, in comparing the family income level of respondents (based on median household income in home zip code when attending high school), we saw that income was not significantly correlated with estimated tuition ($r(164) = .031$, $p = .716$).

By plotting the mean and standard deviation for each construct by logo, there were some clear numeric trends (blue logos were rated as more competent than pink logos, and pink logos more perceived as more warm than blue logos). However, we immediately noticed that the standard deviation was quite high across logos and measurements, making it difficult to draw conclusions without further analysis.

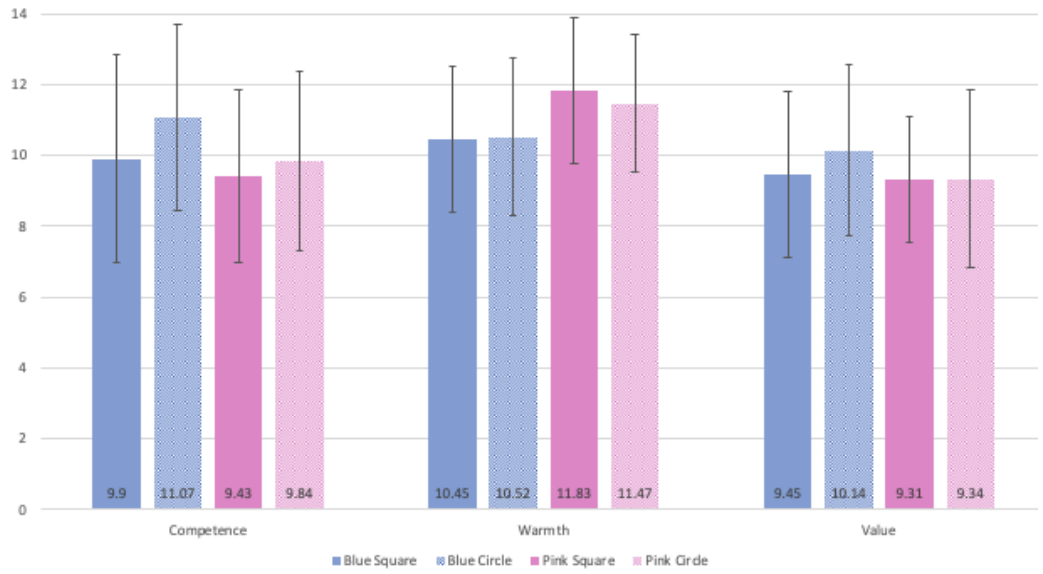


Figure 6. Mean perceived competence, perceived warmth, perceived value for each logo tested in Study 1 (error bars show standard deviation)

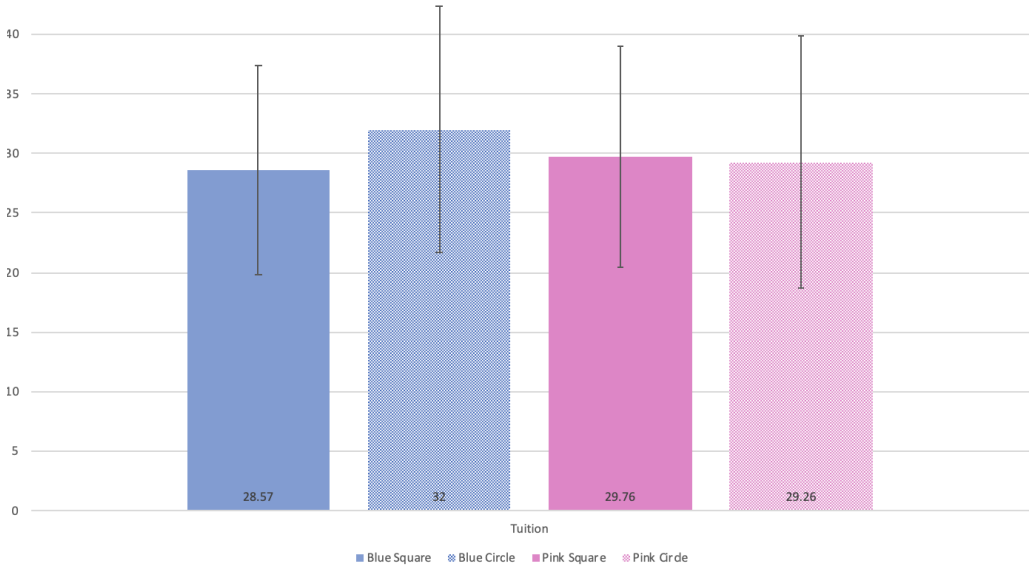


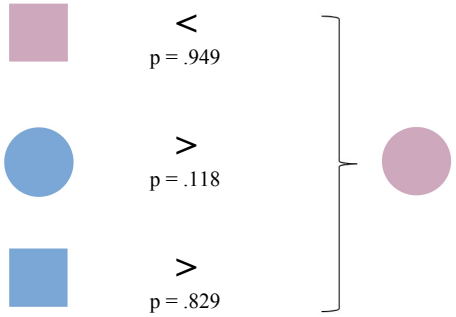
Figure 7. Mean estimated tuition for each logo tested in Study 1 (error bars show standard deviation)

Variation in perceived value

To test whether or not the presence of a competence cue of any type (blue color, square shape or both) in a university's logo resulted in higher perceived value, as *H1* predicts, we conducted a 1x4 ANOVA comparing the variation in perceived value between the four logo conditions. While overall there was no significant difference in perceived university value between logos ($F(3,160) = 1.234$, $p =$

.299), we were interested in specifically comparing the perceived value of the university with the pink circular logo (no competence cue) to the perceived value of each of the universities with logos that possessed at least once competence cue.

Contrast tests revealed that the university with the pink square logo (one competence cue: square shape) (M_{PS} = 9.31, SD = 1.77) was not perceived as significantly more valuable than the one with the pink circle logo (no competence cues) (M_{PC} = 9.34, SD = 2.52; $t(160)$ = - .064, p = .949). The university with the blue circle logo (one competence cue: blue color) (M_{BC} = 10.14, SD = 2.4) was not perceived as significantly more valuable than the one with the pink circle logo (no competence cues) (M_{PC} = 9.34, SD = 2.52; $t(160)$ = 1.571, p = .118). And the university with the blue square logo (two competence cues: blue color and square shape) (M_{BS} = 9.45, SD = 2.34) was also not perceived as significantly more valuable than the one with the pink circle logo (no competence cues) (M_{PC} = 9.34, SD = 2.52; $t(160)$ = .216, p = .829).



*Note: significance is denoted by asterisk *(p < .10), ** (p < .05), *** (p < .001)*

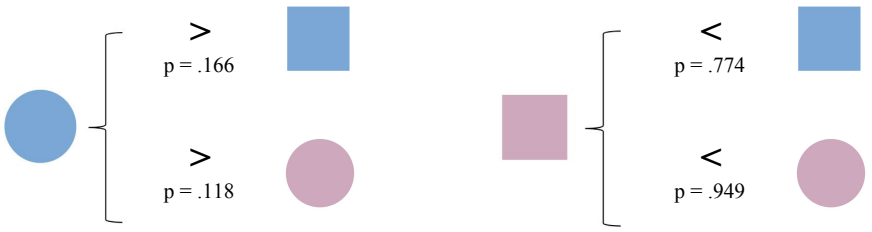
Figure 8. Three contrast tests comparing the perceived value of universities whose logos contain a competence cue (blue color, square shape or both) to the university whose logo does not contain a competence cue

These results suggest that, contrary to *H1,* when a university's logo contains a competence cue (square shape, blue color or both), the university is not perceived as significantly more valuable than when their logo does not contain a competence cue. However, recall that we predicted that universities with a logo that contained a competence cue would be more valuable *because* the university would be interpreted as more competent. Thus, further analysis is required to determine

whether this effect is because the presence of our pre-tested competence cues in universities logos does not result in the university being interpreted as more competent or whether this effect occurs for another reason. We will explore this question in greater detail below.

To test whether the presence of both a competence cue (blue color or square shape) and a warmth cue (pink color or circular shape) results in higher perceived value than the presence of congruent competence cues (blue and square) or congruent warmth cues (circular and pink), as *H2* predicts, we conducted an additional series of contrast tests.

These tests confirmed that the university with the blue circle logo (incongruent combination: competent color, warm shape) (M_{BC} = 10.14, *SD* = 2.43) was not perceived as significantly more valuable than the one with the blue square logo (congruent combination: competent color, competent shape) (M_{BS} = 9.45, *SD* = 2.34; *t*(160) 1.390, *p* = .166) or than the one with the pink circle logo (congruent combination: warm color, warm shape) (M_{PC} = 9.34, *SD* = 2.52; *t*(160) = 1.571, *p* = .118). The university with the pink square logo (incongruent combination: warm color, competent shape) (M_{PS} = 9.31, *SD* = 1.77) was also not perceived as significantly more valuable than the one with the blue square logo (congruent combination: competent color, competent shape) (M_{BS} = 9.45, *SD* = 2.34; *t*(160) = -.288, *p* = .774) or than the one with the pink circle logo (congruent combination: warm color, warm shape) (M_{PC} = 9.34, *SD* = 2.52; *t*(160) = -.064, *p* = .949). In fact it was perceived as less valuable than both universities with congruent-cue logos, but the differences were not significant.



*Note: significance is denoted by asterisk *(p < .10), ** (p < .05), *** (p < .001)*

Figure 9. Contrast tests comparing the perceived value of universities whose logos contain an incongruent combination of warmth and competence cues to universities whose logos contain a congruent combination of warmth or competence cues

These results suggest that, contrary to *H2,* when a university's logo contains both a competence cue and a warmth cue (of either combination of color and shape), the university is not perceived as significantly more valuable than when their logo contains a congruent combination of two competence cues or two warmth cues. Again, this effect may be because the presence of our pre-tested competence cues in universities logos do not result in the university being interpreted as more competent. If this is the case, additional warm cues would not be expected to add to the perceived value of the university because competence must be established in order for warmth cues to become salient. Or, it could be that warmth cues are not being effectively interpreted as warm, in which case we cannot expect them to have the intended effect. However, before exploring the relationship between competence cues and competence, and warmth cues and warmth, we repeated the tests above using estimated tuition as the measure of value.

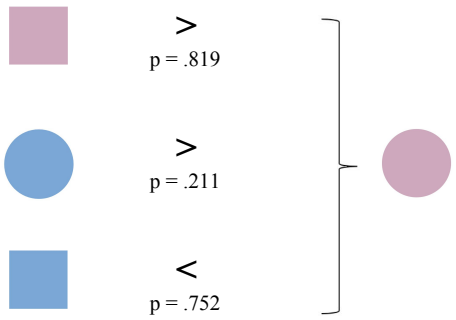
Variation in estimated tuition

Based on equity theory, we assumed that perceived value and tuition estimates would be highly correlated, since people expect to receive more value when they have paid more (Martins & Monroe, 1994; Patterson & Spreng, 1997; Zeithaml, 1988). However, in our data, we observed that mean perceived value and estimated tuition were not significantly correlated ($r(164) = .052$, $p = .506$). This suggests that estimated tuition may be capturing a different type of value than our perceived value measurements. Accordingly, we repeated the same analysis as for

perceived value with estimated tuition to test whether the predictions of our hypotheses were more visible under this condition.

To test whether or not the presence of a competence cue of any type (blue color, square shape or both) resulted in higher estimated tuition for a university, as *H1* predicts, we conducted a 1x4 ANOVA comparing the variation in estimated tuition between the four logo conditions. While overall there was no significant difference in estimated tuition between logos ($F(3,160) = .968$, $p = .410$), we were interested in specifically comparing the estimated tuition of the university with the pink circular logo (no competence cue) to the perceived value of each of the universities with logos that possessed at least one competence cue.

Contrast tests revealed that estimated tuition was not significantly higher for the university with pink square logo (one competence cue: square shape) ($M_{PS} = 29.76$, $SD = 9.28$) than for the one with the pink circle logo (no competence cues) ($M_{PC} = 29.26$, $SD = 10.56$; $t(160) = .299$, $p = .819$). Estimated tuition was not significantly higher for the university with the blue circle logo (one competence cue: blue color) ($M_{BC} = 32.00$, $SD = 10.34$) than for the one with the pink circle logo (no competence cues) ($M_{PC} = 29.26$, $SD = 10.56$; $t(160) = 1.255$, $p = .211$). Estimated tuition was also not significantly higher for the university with the blue square logo (two competence cues: blue color and square shape) ($M_{BS} = 28.57$, $SD = 8.76$) than for the one with the pink circle logo (no competence cues) ($M_{PC} = 29.26$, $SD = 10.56$; $t(160) = -.317$, $p = .752$). In fact, it was lower, but not significantly so.



p = .819

p = .211

p = .752

*Note: significance is denoted by asterisk *(p < .10), ** (p < .05), *** (p < .001)*

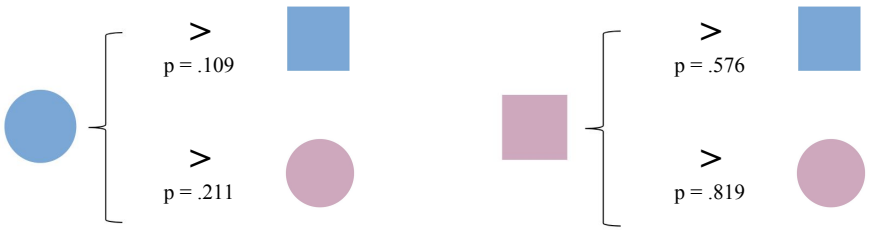
Figure 10. Three contrast tests comparing the estimated tuition of universities whose logos contain a competence cue (blue color, square shape or both) to the university whose logo does not contain a competence cue

These results suggest that, contrary to *H1,* when a university's logo contains a competence cue (square shape, blue color or both), the estimated tuition for the university is not significantly higher than when their logo does not contain a competence cue. However, as with perceived value, this effect may be because the presence of our pre-tested competence cues in universities logos do not result in the university being interpreted as more competent. We will explore this further below.

To test whether the presence of both a competence cue (blue color or square shape) and a warmth cue (pink color or circular shape) in a university's logo results in higher estimated tuition than the presence of congruent competence cues (blue and square) or congruent warmth cues (circular and pink), as *H2* predicts, we conducted a series of contrast tests.

These tests revealed that estimated tuition for the university with the blue circle logo (incongruent combination: competent color, warm shape) (M_{BC} = 32.00, *SD* = 10.34) was not significantly higher than for the one with the blue square logo (congruent combination: competent color, competent shape) (M_{BS} = 28.57, *SD* = 8.76; $t(160) = 1.613$, $p = .109$) or for the one with the pink circle logo (congruent combination: warm color, warm shape) (M_{PC} = 29.26, *SD* = 10.56; $t(160) = 1.255$, $p = .211$). Also, estimated tuition for the university with the pink square logo (incongruent combination: warm color, competent shape) (M_{PS} = 29.76, *SD* =

9.28) was not significantly higher than for the one with the blue square logo (congruent combination: competent color, competent shape) (M_{BS} = 28.57, *SD* = 8.76; *t*(160) = .560, *p* = .576) or for the one with the pink circle logo (congruent combination: warm color, warm shape) (M_{PC} = 29.26, *SD* = 10.56; *t*(160) = .229, *p* = .819).



*Note: significance is denoted by asterisk *(p < .10), ** (p < .05), *** (p < .001)*

Figure 11. Contrast tests comparing the estimated tuition of universities whose logos contain an incongruent combination of warmth and competence cues to universities whose logos contain a congruent combination of warmth or competence cues

The direction of these relationships is consistent with *H2* and suggestive that when a university's logo contains both a competence cue and a warmth cue (of either combination of color and shape), the university's estimated tuition is higher than when their logo contain a congruent combination of two competence cues or two warmth cues, however the differences are not statistically significant.

Given that our two hypotheses hinge on the competence and warmth cues included in our fictive university logos signaling that a university is competent or warm, it is important to understand if our respondents interpreted the competence and warmth cues as expected. If competence cues did not consistently map to perceived competence and warmth cues to perceived warmth, this might explain our inconsistent results for perceived value and estimated tuition.

Variation in perceived competence

Recall that we selected the competence cues of square shape and dark blue color based on a pre-test that indicated that this shape and hue had very strong competence associations. We assumed that these same effects would also lead respondents to rate universities as more competent when their logos contained

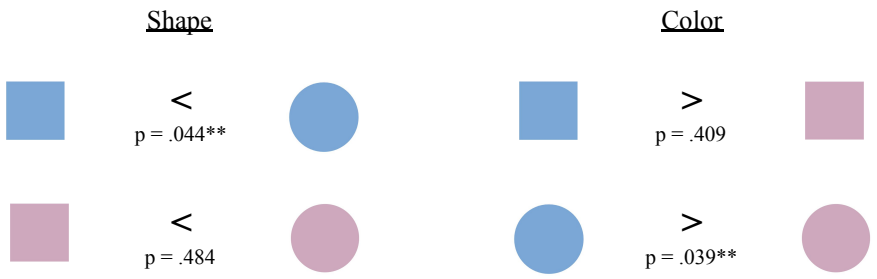
these strong cues of competence. To test whether the presence of our competence cues resulted in higher perceived competence, as *H1* predicts (and *H2* assumes), we conducted a 2x2 ANOVA to examine the effect of each competence cue (blue color and square shape) in a university logo's effect on the perceived competence of the university.

Overall there was a significant difference in perceived competence between logos ($F(3,160) = 2.999$, $p = .032$). There was a main effect for color ($F(1, 160) = 4.283$, $p = .040$). As anticipated, the estimated marginal mean for blue logos ($M = 10.488$, $SE = .288$) was higher than that of pink logos ($M = 9.635$, $SE = .295$). There were also marginally significant main effects for shape ($F(1, 160) = 3.677$ $p = .057$). Contrary to our expectations based on the extant literature and the results of our pre-test, the estimated marginal mean for circular logos ($M = 10.457$, $SE = .295$) was higher than that of square logos ($M = 9.667$, $SE = .288$). There was not a statistically significant interaction between the effects of logo color and shape on competence rating ($F(1, 160) = .835$, $p = .362$).

However, more specific pairwise contrasts revealed that these effects do not tell the whole story. While universities with circular shaped logos were perceived as more competent than universities with squares shaped logos, that difference was only significant when the logos were blue in color. The university with the blue circle logo ($M_{BC} = 11.07$, $SD = 2.61$) was perceived as significantly more competent than the one with the blue square logo ($M_{BS} = 9.90$, $SD = 2.94$; $t(160) = 2.028$, $p = .044$), but the university with the pink circle logo ($M_{PC} = 9.84$, $SD = 2.52$) was not perceived as significantly more competent than the one with the pink square logo ($M_{PS} = 9.43$, $SD = 2.45$; $t(160) = .701$, $p = .484$).

Similarly, blue color in a logo only leads to a university being perceived as more competent when their logo is round. When comparing universities with circular logos, those with blue circular logos ($M_{BC} = 11.07$, $SD = 2.61$) had significantly higher competence ratings than those with pink circular logos ($M_{PC} = 9.84$, $SD = 2.52$; $t(160) = 2.083$, $p = .039$), but universities with blue square logos ($M_{BS} =$

9.90, *SD* = 2.94) were not perceived as significantly more competent than ones with pink square logos (M_{PS} = 9.43, *SD* = 2.45; *t*(160) = .828, *p* = .409).

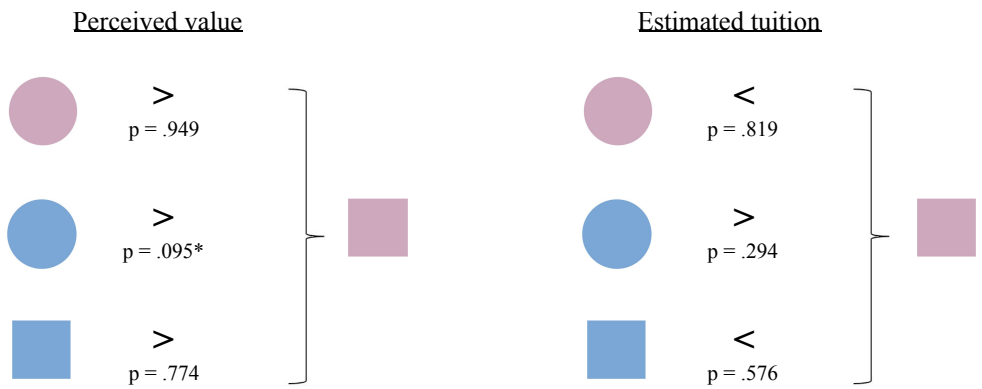


*Note: significance is denoted by asterisk *(p < .10), ** (p < .05), *** (p < .001)*

Figure 12. Contrast tests comparing the effect of blue color and square shape as competence cues in university logos

Testing H1 with updated competence cues

Since, contrary to our expectations, circular shape and blue color in university logos signaled university competence most often to our respondents, we would then expect the proof for *H1* to be that universities with logos that contain a competence cue (blue color, circular shape, or both) would be greater in value and estimated tuition than the university with the logo that does not contain a competence cue (pink square). However, reviewing the results above and running the additional contrast tests comparing perceived value between of the university with the blue circle logo (two competence cues, according to results above) (M_{BC} = 10.14, *SD* = 2.43) and the university with the pink square logo (no competence cues, according to results above) (M_{PS} = 9.31, *SD* = 1.77 ; *t*(160) = 1.678, *p* = .095) and estimated tuition between the one with blue circle logo (M_{BC} = 32.00, *SD* = 10.34) and the one with the pink square logo (M_{PS} = 29.76, *SD* = 9.28; *t*(160) = 1.053, *p* = .294), shows that this is not consistently the case.



*Note: significance is denoted by asterisk *(p < .10), ** (p < .05), *** (p < .001)*

Figure 13. Contrast tests comparing the perceived value and estimated tuition of universities whose logos contain a competence cue to the university whose logo does not contain a competence cue (using updated definition of competence cue: blue color, circular shape or both)

The expected pattern that universities whose logos include competence cues will be valued more highly is present for perceived value, but the differences are not significant, and the pattern is inconsistent when measuring value as estimated tuition. In order to retest *H2* using this updated definition of competence cues, we first needed to ensure that our assumed warmth cues were being interpreted as expected, in order to define what were congruent and incongruent combinations of competence and warmth cues.

Variation in perceived warmth

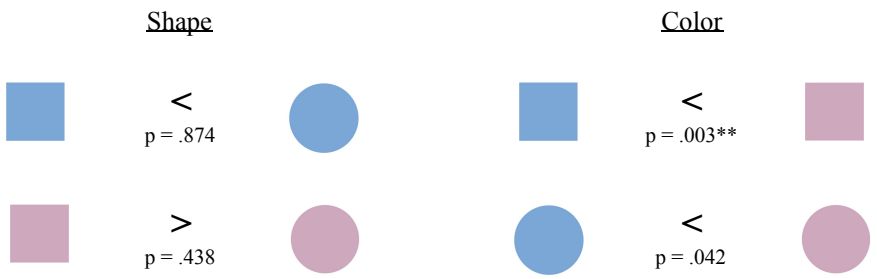
Recall that we selected the warmth cues of circular shape and light pink color based on a pre-test that indicated that this shape and hue have very strong warmth associations. We assumed that these same effects would also lead respondents to rate universities as more warm when their logos contained these strong cues of warmth. To test whether the presence of our warmth cues resulted in higher perceived warmth, as *H2* assumes, we conducted a 2x2 ANOVA to examine the effect of each warmth cue (pink color and circular shape) in a university logo's on the perceived warmth of the university.

Overall there was a significant difference in perceived university warmth between logos ($F(3,160) = 4.615$, $p = .004$). There was a main effect for color ($F(1, 160) = 12.998$, $p < .001$). As anticipated, the estimated marginal mean for pink logos (*M*

= 11.654, *SE* = .231) was higher than that of blue logos (*M* = 10.488, *SE* = .226). But there was not a significant main effect for logo shape ($F(1, 160) = .199$ $p = .656$). Contrary to our expectations based on the extant literature and the results of our pre-test, the estimated marginal mean for circular logos (*M* = 10.999, *SE* = .231) was slightly lower higher than that of square logos (*M* = 11.143 *SE* = .226), but the difference was too small to be significant. There was not a statistically significant interaction between the effects of color and shape on warmth rating ($F(1, 160) = .445$, $p = .506$).

Specific pairwise contrasts revealed that, consistent with the strong main effect for color, universities with pink logos were perceived as more warm than universities with blue logos, regardless of the logo's shape. The university with the pink square logo ($M_{PS} = 11.83$, $SD = 2.05$) was perceived as significantly warmer than the one with the blue square logo ($M_{BS} = 10.45$, $SD = 2.05$; $t(160) = 3.060$, $p = .003$), and the university with the pink circle logo ($M_{PC} = 11.47$, $SD = 1.93$) was perceived as significantly warmer than the one with the blue circle logo ($M_{BC} = 10.52$, $SD = 2.22$; $t(160) = 2.052$, $p = .042$).

But, for logo shape, the warmth associations were inconsistent. The university with the pink square logo ($M_{PS} = 11.83$, $SD = 2.05$) was perceived as slightly warmer than the one with the pink circle logo ($M_{PC} = 11.47$, $SD = 1.93$), but the difference was not significant *(*$t(160) = .777$, $p = .438$). But the pattern reversed for universities with blue logos. The university with the blue circle logo ($M_{BC} = 10.52$, $SD = 2.22$) was perceived as slightly warmer than the one with the blue square logo ($M_{BS} = 10.45$, $SD = 2.05$), but again the difference was not significant ($t(160)$ .158, $p = .874$).



*Note: significance is denoted by asterisk *(p < .10), ** (p < .05), *** (p < .001)*

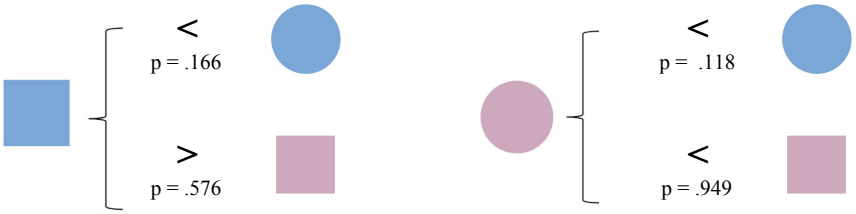
Figure 14. Contrast tests comparing the effect of pink color and circular shape as warmth cues in university logos

Testing H2 with updated competence and warmth cues

Since the university with the blue circle logo was clearly interpreted as the most competent, and the cues of circular shape and blue color were consistently (though not always significantly) interpreted as more competent than square shape and pink color, we found it reasonable to retest *H2* using the circular blue logo to represent congruent competence cues. There was not as clear of a choice to represent congruent warmth cues as pink color was consistently interpreted as warm but comparing logo shapes yielded inconsistent results for warmth. However, based on the facts that the congruent warmth cue must be pink, the pink square is perceived as less warm than the pink circle (even though not significantly so), and the pink square represents the opposite cues of the congruent competence cue combination (blue circle), it seemed reasonable to use it to represent the congruent warmth cue condition.

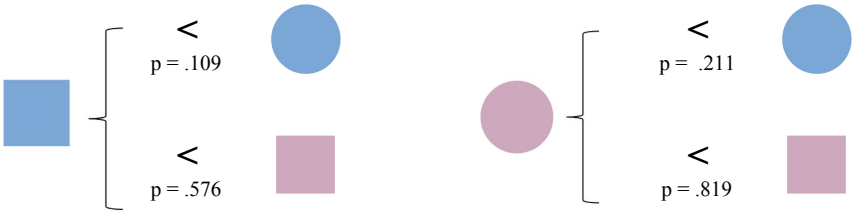
Interestingly, these changes provided a complete reversal of our initial interpretation of congruent and incongruent competence and warmth cues. The two logos that we initially labeled as containing an incongruent combination of competence and warmth cues, based on the extant literature and our own pre-test, turned out to possess the closest example of congruent competence cues (blue circle) and congruent warmth cues (pink square). And the two logos that we initially labeled as containing a congruent combination of competence cues (blue square) or warmth cues (pink circle), based on the extant literature and our own pre-test, turned out to possess the closest example of incongruent competence and warmth cues—middling values in both measures. In terms of further analysis, this

meant that our previous comparisons of incongruent and congruent shapes held, they simply changed in direction.



*Note: significance is denoted by asterisk *(p < .10), ** (p < .05), *** (p < .001)*

Figure 15. Contrast tests comparing the perceived value of universities whose logos contain an incongruent combination of warmth and competence cues to universities whose logos contain a congruent combination of warmth or competence cues (based on updated definitions of warmth and competence cue: warmth = pink, square; competence = blue, circle)



*Note: significance is denoted by asterisk *(p < .10), ** (p < .05), *** (p < .001)*

Figure 16. Contrast tests comparing the estimated tuition of universities whose logos contain an incongruent combination of warmth and competence cues to universities whose logos contain a congruent combination of warmth or competence cues (based on updated definitions of warmth and competence cue: warmth = pink, square; competence = blue, circle)

These results revealed there is still an inconsistent pattern between incongruence and perceived value and a directional (but non-significant) pattern suggesting that universities with logos that contain congruent competence or warmth cues result in higher estimated tuition. However, considering that logo shape was not a significant warmth or competence cue in most cases, and that one of the congruent cue logos (blue circle) was rated (numerically) highest in perceived value and the other congruent cue logo (pink square) was rated (numerically) lowest in perceived value, these results suggest that incongruence/congruence of warmth

and competence cues is most likely not a meaningful predictor of university value in this study.

Discussion

In combination, *H1* predicts that logos with one or more competence cues should be valued higher than those logos with no competence cues and *H2* predicts that logos with an incongruent combination of warmth and competence cues should be valued higher than logos with a congruent combination of two competence (or warmth) cues. This expected pattern is built on the assumption that competence is necessary for value, but both competence and warmth are desirable in a university, and that a university can possess both simultaneously.

Given the unexpected ways in which our competence cues were interpreted by participants, we cannot reject the null hypothesis for *H1* on the basis that universities with logos that contain the expected competence cues of blue color and square shape are rated higher in competence and thus higher in tuition. If we modify *H1* to define competence cues as those cues that participants perceived as higher in competence (blue color and circular shape), we do see a clear trend that the universities with logos that contain one or more of these cues are consistently perceived as higher in value (measured as perceived value only). But, there was no clear trend that universities with logos containing both competence and warmth cues are perceived as more valuable or are higher in estimated tuition than those with a congruent combination of competence or warmth cues, thus we cannot reject the null hypothesis for *H2*.

However, our results do suggest an alternative explanation. Recalling the logic behind our hypothesis, we expected that when confronted with an obvious competence cue, participants would feel that the competence of the university has been established and thus look for, and value, a secondary warmth cue. In our study, participants perceived blue color as the most powerful signal of perceived competence. Thus, it follows, that when confronted with a blue logo, competence would be established and they would find value in a secondary warmth cue. The fact that the participants perceived the circular shape (especially when blue) to be

more significantly competent, and the blue circular logo also had the highest value suggests that optimal perceived value is not created through the combination of competence and warmth cues, but rather through the additional confirmation of competence, even when the initial competence cue is especially strong.

This logic not only offers a possible explanation for why the university with the blue, circular logo rated highest in competence and value, but it also provides a plausible explanation for the observed pattern for pink logos. Given that the color pink was perceived as a strong warmth cue, we expected that participants would see little value in logo shapes that provide further confirmation of warmth and instead attach value to shapes that signal competence. While the differences were not significant in our study, the university with the pink circle logo was perceived as slightly more competent and less warm than the university with the pink square logo, and the one with the pink circle logo was also rated as more valuable.

If indeed this alternative explanation is valid and more competence is better for building perceived university value, then we would expect to observe the following pattern for competence and value in our data (in descending order): blue circle logo (two competence cues), blue square logo (one strong competence cue, one warmth cue), pink circle logo (one warmth cue, one weaker competence cue), pink square logo (two warmth cues). In fact, this is precisely the pattern we observe. But, what is even more interesting is that warmth seems to play as role as well. The most valuable universities are the ones rated higher in competence *and* lower in warmth.

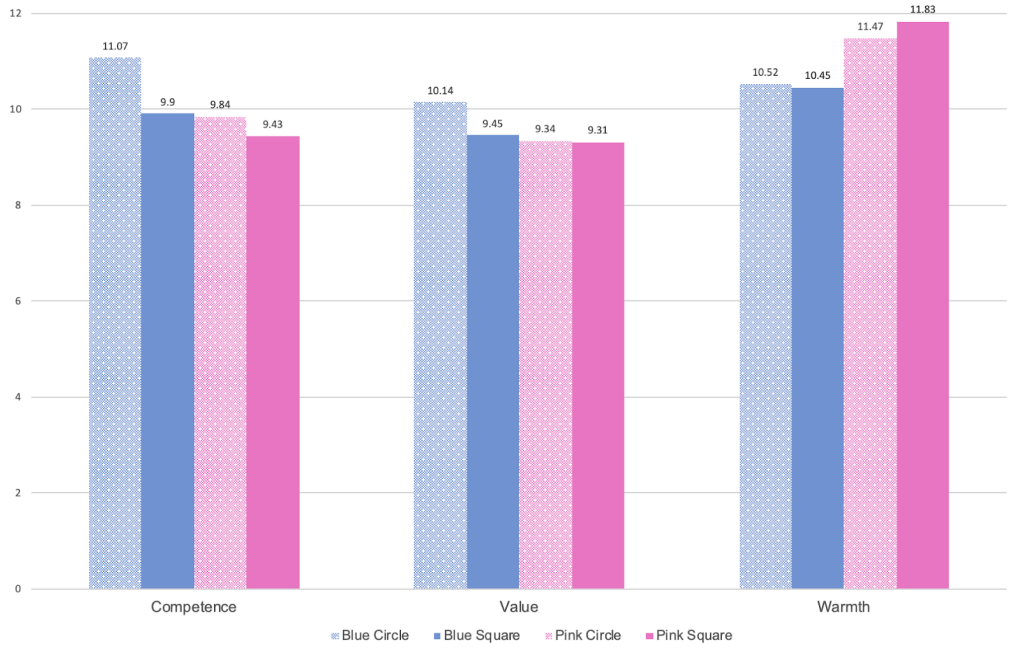


Figure 17. Perceived competence, value and warmth between logos

This suggests that, contrary to *H2,* prospective students may not view warmth and competence as independent and desirable constructs, but rather as implicit tradeoffs, like price and quality. Thus, students may assume that in order to compete in the market, a university with truly high competence must compensate by being low in warmth, and via versa, as Chernev and Carpenter (2001) suggest is often the case in other consumer choice settings.

Accordingly, it may be just as relevant to the value pattern we observe that the university with the blue circle logo is highest in value not just because its logo has the most competence cues, but also because it has the least warmth cues (and visa versa for the university with the pink square logo). For the two universities with logos with one warmth cue and one competence cue each, there is evidence that warmth cues erode value. As would be expected with logos that contain one competence cue and one warmth cue, perceived competence for the university with the blue square logo (M_{BS} = 9.90, *SD* = 2.94) and the university with the pink circle logo *(*M_{PC} = 9.84, *SD* = 2.52) are extremely similar. But, because pink color is much stronger warmth cue than square shape, the university with the pink circle logo (M_{PC} = 11.47, *SD* = 1.93) rates much higher in warmth than the one with the blue square logo (M_{BS} = 10.45, *SD* = 2.05). If only competence was relevant to

establishing value, we would expect the university value to be identical for the two logo shapes, but, because warmth seems to erode value, the university with the blue square logo is perceived as more valuable (M_{BS} = 9.45, SD = 2.34) than the one with the pink circle logo (M_{PC} = 9.34, SD = 2.52). However, note that these differences are not significant in our dataset and should be subject to further research. Nevertheless, the numeric trend itself is clearly visible.

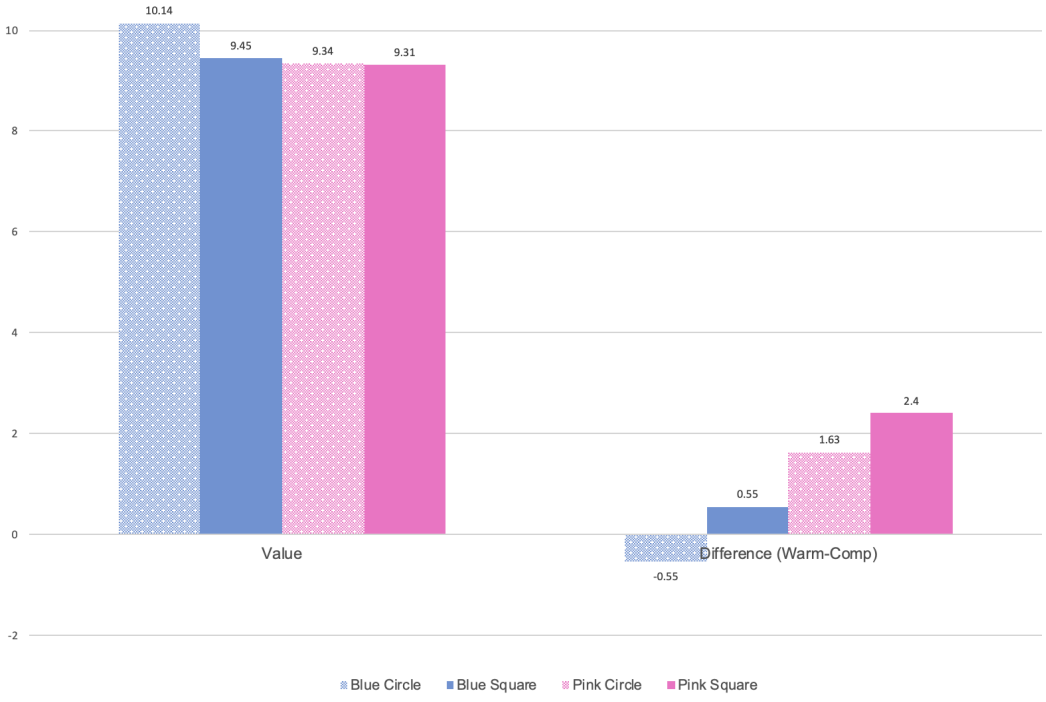


Figure 18. Perceived value per logo and the difference in warmth and competence per logo (sum warmth minus sum competence)

The fact that this alternative explanation better explains the patterns found in our data suggests that it is more likely to be true than our hypothesis about a combination of both competence and warmth cues being optimally valuable, though more research is needed to confirm this alternative hypothesis. Additionally, the fact that this explanation does not explain the pattern found in tuition estimates suggests that while an abundance of perceived competence and a lack of perceived warmth may lead to perceived value, translating that into higher tuition estimates may be more complex and rely on additional information than that collected in our study.

Study 2

The main objective for our second study was to test whether the same patterns for university value based on the congruence and incongruence of warmth and competence cues hold in a more realistic setting, where participants are exposed to not just a university logo in isolation, but a logo associated with written text, as they might encounter in an advertisement or on a webpage. The insignificance of differences in many of the comparisons between universities in Study 1 suggested that being exposed to a university name and logo in isolation may not provide adequate information to reliably estimate the school's competence, warmth, value or tuition. We were hopeful that by placing our warmth and competence cues in a setting with greater ecological validity (a simple web page), respondents would be able to form stronger impressions about the university.

Study 2 tested our third hypothesis. *H3* predicts that web pages that feature an incongruent combination of both competence and warmth cues from the university logo and the associated text (blue square logo with warm text or pink circular logo with competence text) will be valued more highly, and result in higher estimated tuition, than web pages that feature congruent combinations of competence or warmth cues from the university logo and associated text (blue square logo with competence text or pink circular logo with warmth text), because the incongruent combination of both competence and warmth cues will lead to the university being perceived as both competent *and* warm while congruent competence and warmth cues will be lead to the university being perceived as only competent *or* warm. Like *H2*, this hypothesis is built on the assumption that competence is necessary for value (*H1)*, but that both competence and warmth are desirable in a university and that a university can possess both simultaneously. Thus, in testing *H3,* we will also repeat the tests for *H1*, confirming that the presence of a competence cue from logo, text, or both, results in higher competence and value ratings than the absence of a competence cue of any kind.

Method

Our online survey measured respondents' perceptions of a university, based solely on the impression formed by exposure to an image approximating a simple web

page containing the university's logo and a block of text. Only two logos were included in this test, the blue square logo (containing two congruent competence cues, confirmed by our pre-test) and the pink circle logo (containing two congruent warmth cues, confirmed by our pre-test). Though there was some evidence in Study 1 that participants interpreted circular shapes as more competent and square shapes as more warm, these trends were not significant or consistent. Thus we choose to rely on the data from our pre-test that identified square shapes as more competent and round shapes as more warm to inform the construction of our two contrasting logos for this study. We reasoned that even if the same shape effect as in Study 1 were observed in Study 2, the fact that blue color was found to be the strongest competence cue and pink color was found to be the strongest warmth cue should allow the logos we chose to represent competence and warmth in this study to be consistently interpreted as such.

The text box for the text matched the shape of the logo so as not to introduce incongruent shape cues. The associated texts used for each stimuli were those that were rated highest in perceived competence and warmth in our pre-test. The effect of other cues was minimized by consistently using the university name, font and background image that was rated most neutral in our pre-test.

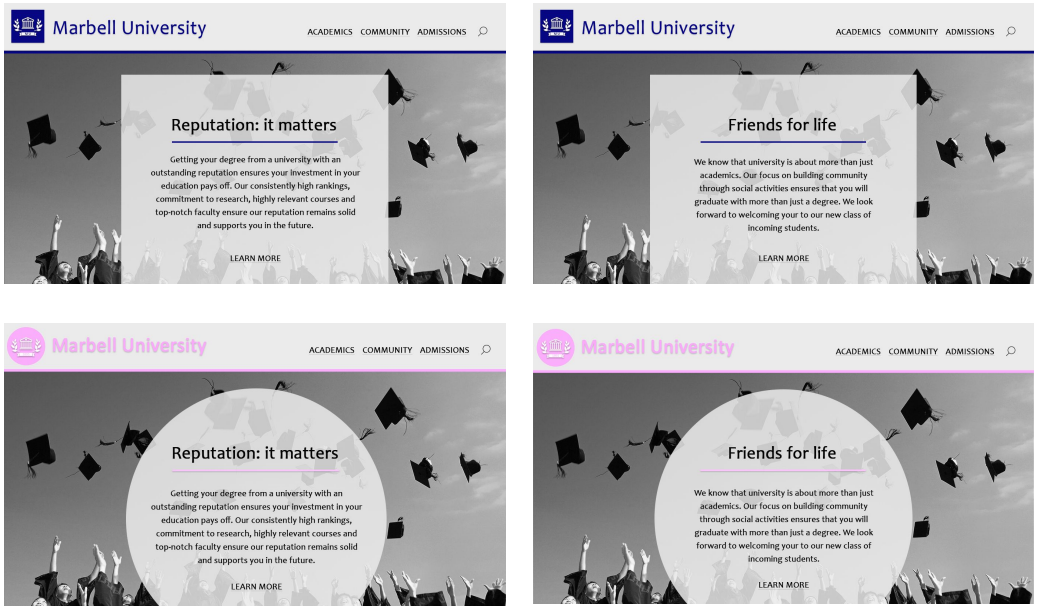


Figure 19. Study 2 stimuli

Study participants (N = 164) were randomly assigned between one of the four conditions (blue square logo with competent text, blue square logo with warmth text, pink circle logo with competence text, pink circle logo with warmth text) and were asked to evaluate the university on competence, warmth, value and tuition using the same scales as in Study 1. As we received each response, we evaluated the quality of their data. If the participant had completed the survey in significantly less than the estimated time required to read all of the questions (based on our own testing) or if their answers across constructs (warmth, competence, value) had a standard deviation of 0, their responses were not included in our analysis (Johnson, 2015). We continued to collect responses until we had fulfilled our predefined quota of 164 high-quality respondents. (See Appendix C to view the full questionnaire).

Results

Validating the measurement of key constructs

Similar to Study 1, we began our analysis by confirming that all three measures of each competence, warmth and value all correlated positively and highly with one another in order to validate that they represented a single construct. An alpha level of 0.05 was used as a significance criterion for this and all subsequent tests ($p <$ .10 denotes marginal significance).

All three dimensions used in our survey for measuring competence (competence, effectiveness, efficiency) were reasonably correlated with one another suggesting that they indeed measured a single construct: competence and effectiveness ($r(164) = .716$, $p < .001$), competence and efficiency ($r(164) = .652$, $p < .001$), and effectiveness and efficiency ($r(164) = .630$, $p < .001$). Similarly, all three dimensions of warmth were also reasonably correlated with one another suggesting that they too measured a single construct: kindness and warmth ($r(164) = .650$, $p < .001$), kindness and generosity ($r(164) = .586$, $p < .001$), and warmth and generosity ($r(164) = .475$, $p < .001$). And finally, all three dimensions of value were also reasonably correlated with one another suggesting that they too measured a single construct: education quality and expected salary ($r(164) = .758$, $p < .001$), education quality and job prospects ($r(164) = .673$, $p < .001$), and

expected salary and job prospects ($r(164) = .613$, $p < .001$). Given these results, we measured the competence, warmth and value of each university as the mean sum competence, warmth or value rating, based on the sum of all three competence or value ratings (scale of 3-15).

Estimated tuition was measured directly in thousands of US dollars. Respondents input their estimate using a scale ranging from $10,000 - $50,000 USD (based on typical US university tuition), which prevented any obvious outliers. Again, we thought it possible that estimated tuition might depend on one's ability to pay said tuition, rather than serving as an independent measure of expected value or quality. But, in comparing the family income level of respondents (based on median household income in home zip code when attending high school), we saw that income was not significantly correlated with estimated tuition ($r(164) = -.052$, $p = .559$). The fact that this correlation was so low and in the opposite direction of the correlation between family income and estimated tuition found in Study 1 ($r(164) = .031$, $p = .716$), offers further confirmation that these two constructs are not related.

In plotting the mean and standard deviation for each measure, by condition, there were some clear numeric trends (webpages with competent text were rated as more competent and valuable than those with warm text, those with warm text were rated as more warm than those with competent text, and pink circular logos with competent text commanded the highest tuition estimates). However, we immediately noticed that the standard deviation was quite high across conditions and measurements, making it difficult to draw conclusions without further analysis.

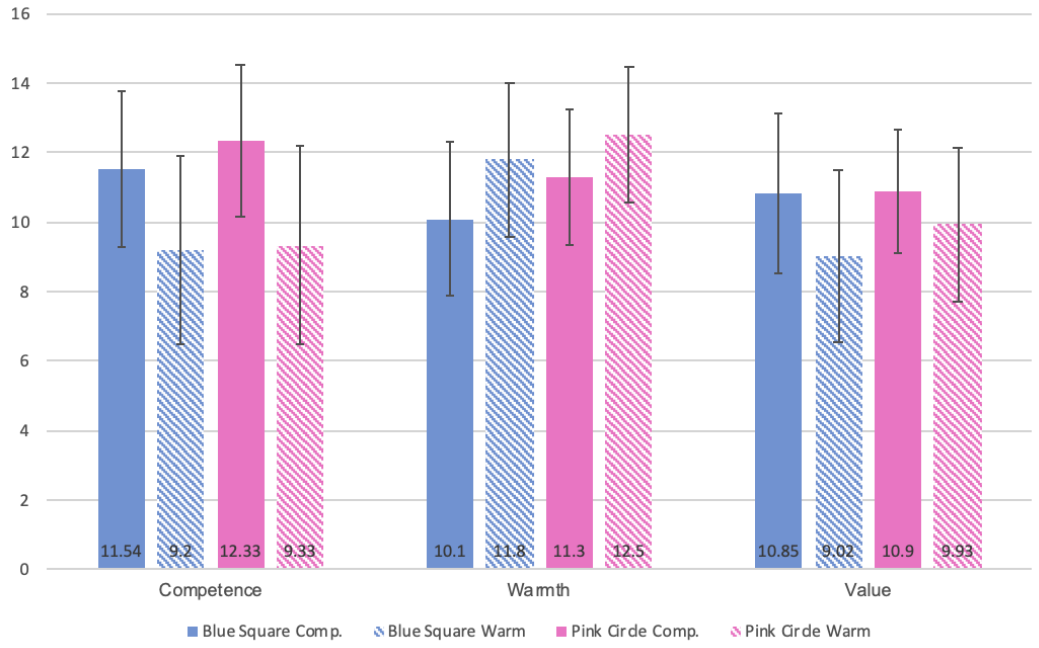


Figure 20. Mean perceived competence, perceived warmth, perceived value for each condition tested in Study 2 (error bars show standard deviation)

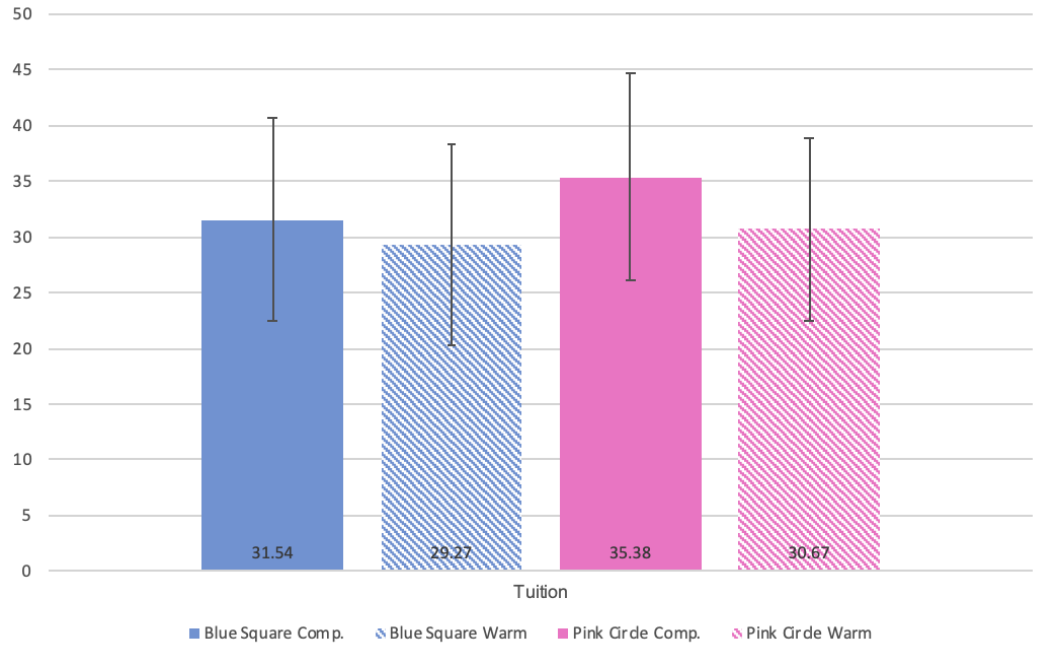


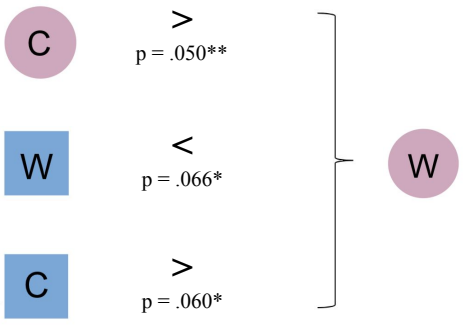
Figure 21. Means for estimated tuition for each condition tested in Study 2

Variation in perceived value

To test whether or not the presence of a competence cue of any type (blue square logo, competent text or both) resulted in higher perceived value, as *H1* predicts, we conducted a 1x4 ANOVA comparing the variation in perceived value between the four web pages. Overall there was a significant difference in perceived value

between conditions ($F(3,160) = 6.527$, $p < .001$). But we were interested in specifically comparing the perceived value of the university whose web page featured the pink circular logo with warm text (no competence cues) to the perceived value of each of the web pages that possessed at least one competence cue (blue square logo, competent text or both).

Contrast tests revealed that the university with the web page displaying the pink circular logo with competent text (one competence cue: text) ($M_{PCC} = 10.90$, $SD = 1.77$) was perceived as significantly more valuable than the one with the web page displaying the pink circular logo with warm text (no competence cues) ($M_{PCW} = 9.93$, $SD = 2.24$; $t(160) = 1.978$, $p = .050$). But, the university with the web page displaying the blue square logo with warm text (one competence cue: logo) ($M_{BSW} = 9.02$, $SD = 2.48$) was not perceived as significantly more valuable than the one with the web page displaying the pink circular logo with warm text (no competence cues) ($M_{PCW} = 9.93$, $SD = 2.24$; $t(160) = -1.853$, $p = .066$). In fact, it was perceived as marginally significantly less valuable. Finally, the university with the web page displaying the blue square logo with competent text (two competence cues) ($M_{BSC} = 10.85$, $SD = 2.32$) was perceived as marginally significantly more valuable than the one with the web page displaying the pink circular logo with warm text (no competence cues) ($M_{PCW} = 9.93$, $SD = 2.24$; $t(160) = 1.896$, $p = .060$).



*Note: significance code *(p < .10), ** (p < .05), *** (p < .001). C = competence text, W = warmth text.*

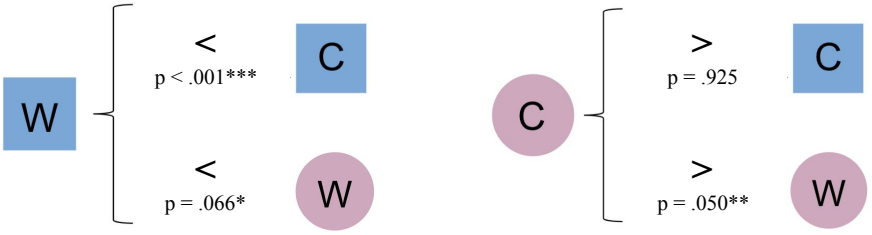
Figure 22. Three contrast tests comparing the perceived value of universities whose web pages contain a competence cue (blue square logo, competence text or both) to the university whose web page does not contain a competence cue

These results suggest that when a university's web page contains the competence cue of competence text, then the university is perceived as more valuable than when their webpage contains warmth text. However, the competence cue of blue square logo does not seem to have the same effect. In fact, its presence on a webpage may result in the university being perceived as less valuable. However, recall that we predicted that universities whose web pages contained a competence cue would be more valuable because the university would be interpreted as more competent. Thus, further analysis is required to determine whether these effects can be explained by how each of the competence cues affects the perceived competence of the university on whose web page they are present. We will explore this in greater detail below.

To test whether the presence of both a competence cue (blue square logo or competence text) and a warmth cue (pink circular logo or warmth text) results in higher perceived university value than the presence of congruent competence cues (blue square logo and competent text) or congruent warmth cues (pink circular logo and warmth text), as *H3* predicts, we conducted an additional series of contrast tests.

These tests confirmed that the university with the web page displaying the blue square logo with warm text (incongruent combination: competent logo, warm text) (M_{BSW} = 9.02, SD = 2.48) was not perceived as significantly more valuable than the university with the web page displaying a blue square logo with competent text (congruent combination: competent logo, competent text) (M_{BSC} = 10.85, SD = 2.32; $t(160) = -3.726$, $p < .001$) as *H3* predicts. Rather, it was perceived as significantly less valuable. The university with the web page displaying the blue square logo with warm text (incongruent combination: competent logo, warm text) (M_{BSW} = 9.02, SD = 2.48) was also not perceived as significantly more valuable than the one with the web page displaying the pink circle logo with warm text (congruent combination: warm logo, warm text) (M_{PCW} = 9.93, SD = 2.24; $t(160)$ -1.853, $p = .066$), as *H3* predicts. Rather, it was perceived as marginally significantly less valuable.

The university with the web page displaying the pink circular logo with competent text (incongruent combination: warm logo, competent text) (M_{PCC} = 10.90, *SD* = 1.77) was perceived not as significantly more valuable than the one with web page displaying the blue square logo with competent text (congruent combination: competent logo, competent text) (M_{BSC} = 10.85, *SD* = 2.32; *t*(160) = .094, p = .925). However, the university with the web page displaying the pink circular logo with competent text (incongruent combination: warm logo, competent text) (M_{PCC} = 10.90, *SD* = 1.77) was perceived as significantly more valuable than the one with the web page displaying the pink circular logo with warm text (congruent warmth cues of color and shape) (M_{PCW} = 9.93, *SD* = 2.24; *t*(160) = 1.978, *p* = .050).



*Note: significance code *(p < .10), ** (p < .05), *** (p < .001). C = competence text, W = warmth text.*

Figure 23. Contrast tests comparing the perceived value of universities whose web pages contain an incongruent combination of warmth and competence cues to universities whose web pages contain a congruent combination of warmth or competence cues

These results suggest that, contrary to *H3,* an incongruent combination of competence and warmth cues (from logo and text) on a university's webpage does not consistently result in higher perceived value. However, the specific combination of competence and warmth cues seems to influence the value assessment. When a university's web page contains a blue square logo and warm text, it is rated as consistently less valuable than universities that have web pages that feature either featuring congruent competence or congruent warmth cues. But when it has a webpage that contains a pink circular logo and competence text, it is perceived as more valuable than the university whose webpage features a pink circular logo and warm text, but relatively equal in value to the university whose webpage contains a blue square logo and competent text. This suggests that regardless of logo, using competent text instead of warm text on their webpage

results in significantly greater perceived university value. In contrast, changing logos on a university's web page has marginal to no significance on value perceptions.

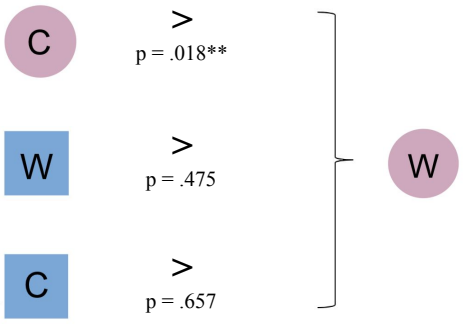
Again, this effect may be because simply because the competence cue of competence text leads to the university being interpreted as more competent (and thus more valuable), but the competence cue of blue square logo does not lead to increased perceived competence. If this is the case, additional warm cues would not be expected to add to the perceived value of the university because competence must be established in order for warmth cues to become salient. Or, it could be that warmth cues are not being effectively interpreted as warm, in which case we cannot expect them to have the intended effect. However, before exploring the relationship between competence cues and competence, and warmth cues and warmth, we repeated the tests above using estimated tuition as the measure of value to confirm if the same pattern is present.

Variation in estimated tuition

Based on equity theory, we assumed that perceived value metrics and tuition estimates would be highly correlated, since people expect to receive more value when they have paid more (Martins & Monroe, 1994; Patterson & Spreng, 1997; Zeithaml, 1988). In Study 2, we observed that mean perceived value and estimated tuition were indeed significantly, positively correlated ($r(164) = .459$, $p < .001$). This suggests that, unlike in Study 1, estimated tuition may be capturing a similar sort of measure of value or quality as our perceived value measurements. However, we were interested to know whether the specific pairwise comparisons were also consistent across perceived value and estimated tuition.

Overall there was a significant difference in estimated tuition between web pages ($F(3,160) = 3.484$, $p = .017$). We were first interested in specifically comparing the estimated tuition of the university whose web page featured the pink circular logo with warm text (no competence cues) to the perceived value of each of the universities with web pages displaying at least one competence cue (blue square logo, competent text or both).

Contrast tests revealed the following: the university with the web page displaying the pink circular logo with competent text (one competence cue: text) (M_{PCC} = 35.38, *SD* = 9.23) was perceived as significantly more valuable than the one with the web page displaying the pink circular logo with warm text (no competence cues) (M_{PCW} = 30.67, *SD* = 8.27; *t*(160) = 2.393, *p* = .018). But, the university with the web page displaying the blue square logo with warm text (one competence cue: logo) (M_{BSW} = 29.27, *SD* = 9.01) was not perceived as significantly more valuable than the one with the web page displaying the pink circular logo with warm text (no competence cues) (M_{PCW} = 30.67, *SD* = 8.27; *t*(160) = -.715, *p* = .475. And the university with the web page displaying the blue square logo with competent text (two competence cues) (M_{BSC} = 31.54, *SD* = 9.09) was also not perceived as significantly more valuable than the one with the web page displaying the pink circular logo with warm text (no competence cues) (M_{PCW} = 30.67, *SD* = 8.27; *t*(160) = .445, *p* = .657).



*Note: significance code *(p < .10), ** (p < .05), *** (p < .001). C = competence text, W = warmth text.*

Figure 24. Three contrast tests comparing the estimated tuition of universities whose web pages contains a competence cue (blue square logo, competence text or both) to the university whose web page does not contain a competence cue

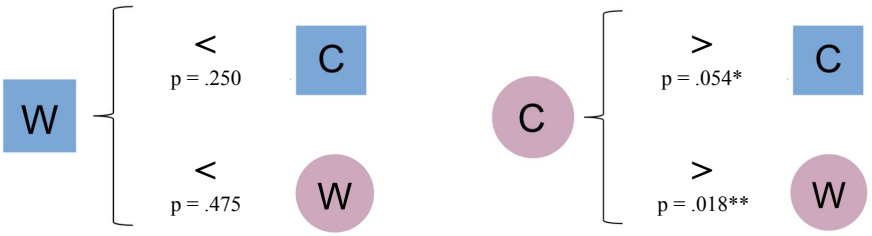
These results suggest that when a university's web page contains a competence cue, tuition estimates are higher, but that the difference is only significant when the web pages combines the competence cue of competence text and a pink circular logo. If indeed, estimate tuition is predicted by perceived competence, this suggests that the interaction of cues is relevant to establishing competence and higher tuition estimates. Further analysis is required to determine whether

these effects can be explained by how each of the competence and warmth cues affect the perceived competence and warmth of the university on whose web page they are present. We will explore this in greater detail below.

To test whether the presence of both a competence cue (blue square logo or competence text) and a warmth cue (pink circular logo or warmth text) results in higher perceived value than the presence of congruent competence cues (blue square logo and competent text) or congruent warmth cues (pink circular logo and warmth text), as *H3* predicts, we conducted an additional series of contrast tests.

These tests confirmed that there was no significant difference in estimated tuition between the university with the web page displaying the blue square logo with warm text (incongruent combination: competent logo, warm text) (M_{BSW} = 29.27, *SD* = 9.01) and the one with the web page displaying the blue square logo with competent text (congruent combination: competent logo, competent text) (M_{BSC} = 31.54, *SD* = 9.09; *t*(160) = -1.153, *p* = .250). There was also not a significant difference in estimated tuition between the university with the web page displaying the blue square logo with warm text (incongruent combination: competent logo, warm text) (M_{BSW} = 29.27, *SD* = 9.01) and the one with the web page displaying the pink circle logo with warm text (congruent combination: warm logo, warm text) (M_{PCW} = 30.67, *SD* = 8.27; *t*(160) = -.715, *p* = .475).

The university with the web page displaying the pink circular logo with competent text (incongruent combination: warm logo, competent text) (M_{PCC} = 35.38, *SD* = 9.23) had marginally significantly higher estimated tuition than the one with the web page displaying the blue square logo with competent text (congruent combination: competent logo, competent text) (M_{BSC} = 31.54, *SD* = 9.09; *t*(160) =1.940, p = .054). And the university with the web page displaying the pink circular logo with competent text (incongruent combination: warm logo, competent text) (M_{PCC} = 35.38, *SD* = 9.23) was perceived as significantly more valuable than the one with the web page displaying the pink circle with warm text (congruent combination: warm logo, warm text) (M_{PCW} = 30.67, *SD* = 8.27; *t*(160) = 2.393, *p* = .018).



*Note: significance code *(p < .10), ** (p < .05), *** (p < .001). C = competence text, W = warmth text.*

Figure 25. Contrast tests comparing the estimated tuition of universities whose web pages contain an incongruent combination of warmth and competence cues to universities whose web pages contain a congruent combination of warmth or competence cues

These results suggest that variation in estimated tuition per condition follows the same directional pattern that we observed for variation in perceived value, though the significance levels change. While for perceived value, regardless of logo, using competent text instead of warm text resulted in significantly greater value, the same is not the case for estimated tuition. When a university has a web page displaying the pink circular logo, including competence text does result in higher estimated tuition (and perceived value), but when the logo is the blue square, competence text does not have a significant effect (unlike when we analyzed perceived value—then the web page with competent text was highly significantly more valuable in this condition). While in terms of perceived value, changing logos had marginal to no significance on value perceptions, for estimated tuition, if the text was competent, the use of a pink circle logo instead of a blue square logo resulted in significantly higher estimated tuition. But, the effect of the logo was not significant when warmth text was used. This suggests that tuition may be a more complex construct. While correlated with perceived value, it likely also includes other dimensions that we have not specifically accounted for.

Given that our hypotheses assume that competence cues in the logo and text displayed on a university's web page signal that the university is competent, and that warmth cues in the logo and text displayed on the web page signal that a university is warm, it is important to understand if our respondents interpreted the competence and warmth cues on our web pages as expected. If competence cues did not consistently map to perceived competence and warmth cues to perceived

warmth, this may suggest alternative explanations for the patterns in value and estimated tuition that we observed.

Variation in competence

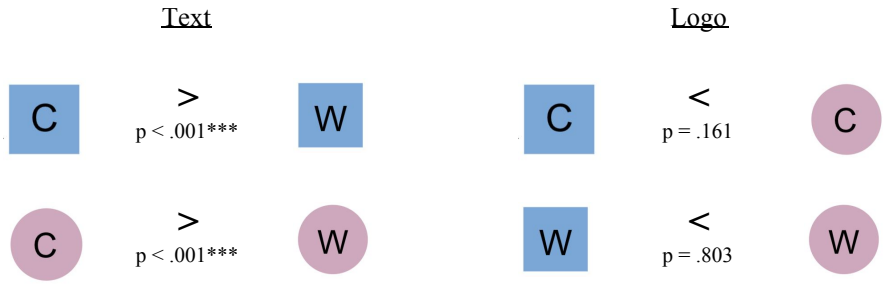
Recall that we selected the competence cues of square shape, dark blue color and competence text based on a pre-test that indicated that this shape, hue and block of text had very strong competence associations. We assumed that these same effects would also lead respondents to rate universities as more competent when their web pages contained these strong cues of competence. To test whether the presence of our competence cues resulted in higher perceived competence, as *H1* predicts (and *H3* assumes), we conducted a 2x2 ANOVA to examine how the presence of each competence cue (blue square logo and competence text) on a university's web page affects the perceived competence of the university.

Overall there was a significant difference in perceived university competence between the different web pages ($F(3, 160) = 15.937$, $p < .001$). There was a strong main effect for text ($F(1, 160) = 45.954$, $p < .001$). As anticipated, the estimated marginal mean for competence text ($M = 11.931$, $SE = .280$) was higher than that of warmth text ($M = 9.264$, $SE = .276$). There was not a significant main effect for logo ($F(1, 160) = 1.387$ $p = .241$). But, contrary to our expectations based on the extant literature and the results of our pre-test, the estimated marginal mean for the pink circular logo ($M = 10.829$, $SE = .278$) was higher than that of blue square logo ($M = 10.366$, $SE = .278$). There was not a statistically significant interaction between the effects of text and logo on competence rating ($F(1, 160) = .683$, $p = .410$).

However, more specific pairwise contrasts revealed that these effects do not tell the whole story. As the strong main effect for text suggests, universities with web pages featuring competence text were consistently perceived as more competent than universities with web pages featuring warmth text. The university with the web page displaying the blue square logo with competence text ($M_{BSC} = 11.54$, $SD = 2.24$) was perceived as significantly more competent than the one with the web page displaying the blue square logo with warmth text ($M_{BSW} = 9.20$, $SD = 2.71$;

$t(160) = 4.210, p < .001$). And the university with the web page displaying the pink circular logo with competence text ($M_{PCC} = 12.33, SD = 2.18$) was also perceived as significantly more competent than the one with the web page displaying the pink circular logo with warmth text ($M_{PCW} = 9.33, SD = 2.86$; ; $t(160) = 5.377, p < .001$).

The effect of logo was also consistent, though not significant. A university with a web page displaying the blue square logo with competence text ($M_{BSC} = 11.54, SD = 2.24$) resulted in lower (but not significantly lower) competence ratings than the university with the web page displaying the pink circular logo with competence text ($M_{PCC} = 12.33, SD = 2.18$) ($t(160) = -1.409, p = .161$). The same pattern occurred when comparing the university with the web page displaying the blue square logo with warmth text ($M_{BSW} = 9.20, SD = 2.71$) and the one with the web page displaying the pink circular logo and warmth text ($M_{PCW} = 9.33, SD = 2.86$). Paired with warmth text, the university with the web page displaying the blue square circular logo was rated lower in competence, but not significantly so ($t(160) = -.250, p = .803$).



*Note: significance code *(p < .10), ** (p < .05), *** (p < .001). C = competence text, W = warmth text.*

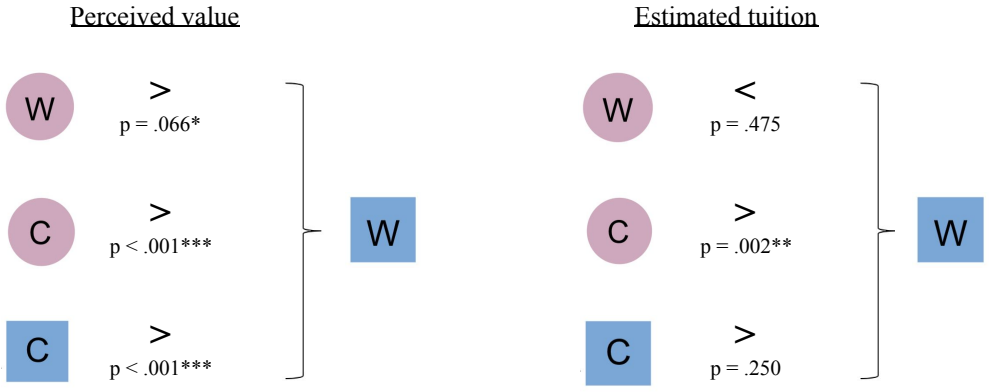
Figure 26. Contrast tests comparing the effect of logo and text as competence cues on university web pages

Testing H1 with updated competence cues

Since, contrary to our expectations, it was competence text and the circular pink logo that signaled competence most often to our respondents (though the difference for logo was not significant in our dataset), we would then expect the proof for *H1* to be that the universities with web pages displaying one or more of these competence cues (competence text, pink circular logo, or both) would be

rated higher in value and estimated tuition than the university with the web page without a competence cue (blue square logo with warmth text).

Reviewing the results above and running the additional contrast tests comparing perceived value between the university with the web page displaying the pink circle logo with competent text (two competence cues, according to results above) (M_{PCC} = 10.9, *SD* = 1.77) and the university with the web page displaying the blue square logo with warm text (no competence cues, according to results above) *(M_{BSW} = 9.02, SD = 2.48*; *t*(160) = 2.797 *p* < .001) and estimated tuition between these two universities (M_{PCC} = 35.38, *SD* = 9.23; M_{BSW} = 29.27, *SD* = 9.01; *t*(160) = 3.086 *p* < .002), shows that this is consistently the case when measuring value on the perceived value scale. But the pattern is not consistent when measuring value as estimated tuition.



*Note: significance code *(p < .10), ** (p < .05), *** (p < .001). C = competence text, W = warmth text.*

Figure 27. Contrast tests comparing the perceived value and estimated tuition of universities whose web pages contain a competence cue (pink circular logo, competence text or both) to universities whose web pages do not contain a competence cue

All the universities with web page containing a competence cue were at least marginally significantly higher in perceived value than the university whose webpage contained no competence cues. But, these results are not consistent when measuring value through estimated tuition, However, the only significant relationship (pink circular logo with competence text vs. blue square logo with warmth text) does follow the same directional pattern as for perceived value. Like

in Study 1, it seems likely that estimated tuition may be measuring a more complex construct that includes additional factors not accounted for in our study.

In order to retest *H2* using this updated definition of competence cues, we first needed to ensure that our assumed warmth cues are being interpreted as expected, in order to define what are congruent and incongruent combinations of competence and warmth cues.

Variation in warmth

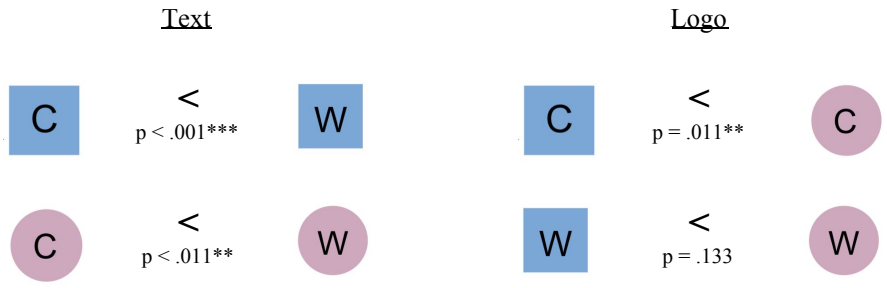
Recall that we selected the warmth cues of pink color, circular shape and warmth text based on a pre-test that indicated that this color, shape and block of text had very strong warmth associations. We assumed that these same effects would also lead respondents to rate universities as more warm when their web pages contained these strong cues of warmth. To test whether the presence of our warmth cues results in higher perceived warmth, as *H3* assumes, we conducted a 2x2 ANOVA to examine how the presence of each warmth cue (pink circular logo and warmth text) on a university's web page affected the perceived warmth of the university.

Overall there was a significant difference in perceived warmth between universities based on their web pages ($F(3, 160) = 9.632$, $p < .001$). There was a strong main effect for text ($F(1, 160) = 19.658$, $p < .001$). As anticipated, the estimated marginal mean for warmth text ($M = 12.152$, $SE = .230$) was higher than that of competence text ($M = 10.699$, $SE = .233$). There was also a significant main effect for logo ($F(1, 160) = 8.374$ $p = .004$). As anticipated, the estimated marginal mean for the pink circular logo ($M = 11.90$, $SE = .232$) was higher than that of blue square logo ($M = 10.95$, $SE = .232$). There was not a statistically significant interaction between the effects of text and logo on warmth rating ($F(1, 160) = .599$, $p = .440$).

However, more specific pairwise contrasts revealed that these effects do not tell the whole story. As the strong main effect for text suggests, universities with web pages displaying warmth text were consistently perceived as more warm than

universities with web pages with competence text. The university with the web page displaying the blue square logo with warmth text (M_{BSW} = 11.80, SD = 2.22) was perceived as significantly warmer than the one with the web page displaying the blue square logo with competence text (M_{BSC} = 10.10, SD = 2.23; $t(160)$ = 3.683, $p < .001$). And the university with the web page displaying the pink circular logo with warmth text (M_{PCW} = 12.50, SD = 1.95) was also perceived as significantly warmer than the one with the web page displaying the pink circular logo with competence text (M_{PCC} = 11.30, SD = 1.98; $t(160)$ = 2.588, $p < .011$).

But the effect of logo was not so consistent. Web pages displaying a pink circular logo only resulted in higher perceived university warmth when it was associated competent text. The university with the web page displaying the pink circular logo with warmth text (M_{PCW} = 12.50, SD = 1.95) did not result in significantly higher warmth ratings than the one with the web page displaying the blue square logo with warmth text (M_{BSW} = 11.80, SD = 2.22; $t(160)$ = 1.508, p = .133). But the university with the web page displaying the pink circular logo with competence text (M_{PCC} = 11.30, SD = 1.98) was perceived as significantly warmer than the one with the web page displaying the blue square logo with competence text (M_{BSC} = 10.10, SD = 2.23; $t(160)$ = 2.578, p = .011).



*Note: significance code *(p < .10), ** (p < .05), *** (p < .001). C = competence text, W = warmth text.*

Figure 28. Contrast tests comparing the effect of logo and text as warmth cues on university web pages

These results suggest that warmth text is a very strong warmth cue, as we expected, but logo is not. While the pink circular logo does signal warmth, its

effect is only significant when there is not a stronger warmth cue present (warm text).

Testing H3 with updated competence and warmth cues

How our intended warmth and competence cues were interpreted by respondents has clear implications on how we test the validity of *H3*. In summary, competence text was interpreted as a strong competence cue and warmth text was interpreted as a strong warmth cue. However, the pink circular logo was interpreted as a moderate cue of warmth and also as weak cue of competence, and the blue square logo did not act as a reliable competence cue or warmth cue. These definitions make it less obvious how to define a congruent or incongruent combination of warmth and competence cues.

Table 1.

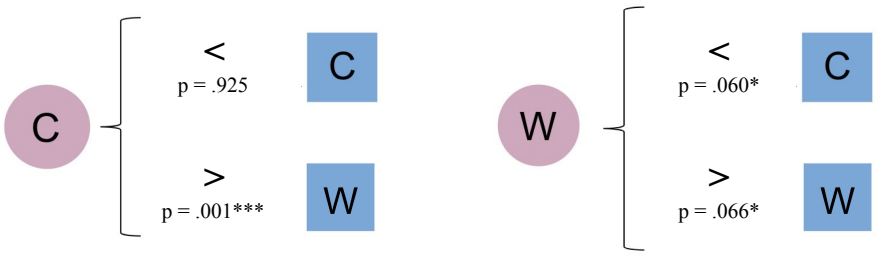
Competence and warmth cues per web page (when competence and warmth cues are defined by the perceived competence and warmth of stimuli by Study 2 respondents)

	Competence cues	Warmth cues
W	1 - pink circular logo (weak)	2- warmth text (strong) and pink circular logo (moderate)
C	1 - competent text (strong)	1 - pink circular logo (moderate)
C	1 - competent text (strong)	*none*
W	*none*	1 - warmth text (strong)

Recalling our original congruent and incongruent competence and warmth combinations, our congruent combinations contained only warmth cues or only competence cues and our incongruent combinations contained a combination of one competence cue and one warmth cue (or indeterminate relative strength). Following this same logic, for these stimuli, the webpage featuring the pink circular logo and competent text and the webpage featuring the pink circular logo and warm text represent the best examples incongruent combinations of warmth

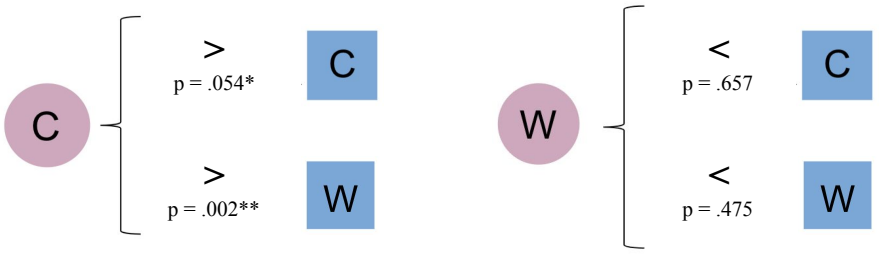
and competence cues. The webpage featuring the blue square logo and competence text is the best example of a congruent competence stimuli (though there is only one competence cue, it is not augmented with a warmth cue) and web page featuring the blue square logo and warmth text is the best example of a congruent warmth stimuli (though there is only one warmth cue, it is not augmented with a competence cue).

Reviewing the various comparisons conducted above for relative perceived value and estimated tuition in this context, it shows that the universities whose web pages contain the most incongruent combinations of both warmth and competence cues (pink circular logos and either type of text) are not consistently perceived as higher in value than the universities with web pages that contain the most congruent warmth or competence cues. (Pairwise contrast tests analyzed in the previous sections are presented again in Figures 29 and 30 for easy reference). This implies that offering a combination of warmth and competence cues on a university webpage is not a key factor in establishing high perceived value.



*Note: significance code *(p < .10), ** (p < .05), *** (p < .001). C = competence text, W = warmth text.*

Figure 29. Contrast tests comparing the perceived value of universities whose web pages contain the most incongruent combination of warmth and competence cues to universities whose web pages contain the most congruent combinations of warmth or competence cues (when competence and warmth cues are defined by the perceived competence and warmth of stimuli by Study 2 respondents)



*Note: significance code *(p < .10), ** (p < .05), *** (p < .001). C = competence text, W = warmth text.*

Figure 30. Contrast tests comparing the estimated tuition of universities whose web pages contain the most incongruent combination of warmth and competence cues to universities whose web pages contain the most congruent combinations of warmth or competence cues (when competence and warmth cues are defined by the perceived competence and warmth of stimuli by Study 2 respondents)

Discussion

H3 predicted that the universities with web pages that contained both competence and warmth cues from their logo and associated text would be rated as significantly more valuable, and higher in estimated tuition, than universities with web pages featuring logos and text that contained a congruent combination of competence cues or a congruent combination of warmth cues. This is based on the assumption that web pages with one or more competence cues should be valued higher than web pages with no competence cues (*H1*). This expected pattern is built on the assumption that competence is necessary for value, but both competence and warmth are desirable in a university and that a university can possess both simultaneously.

Given the unexpected ways in which our competence cues were interpreted by participants, we cannot reject the null hypothesis for *H1* on the basis that universities with web pages that contained the expected competence cues of blue square logo and competence text were not rated higher in value or tuition. However, when competence cues were redefined based on participants' actual interpretation of them (competence cues = competence text and pink circular logo), *H1* is valid on the basis of perceived value. All the universities with web pages that contained a competence cue were at least marginally significantly higher in perceived value than the university whose web page did not contain a

competence cue (blue square logo with warm text), and there was always a significant difference in perceived competence between two web pages in order to observe a significant difference in perceived value. This supports the prediction that competence must be established in order for value to be perceived. However, the same cannot be said for estimated tuition. This implies that, as in Study 1, estimated tuition as a construct is significantly different than perceived value and is most likely being impacted by external factors that were not measured as a part of this study.

However, despite the conditional acceptance of *H1*, there was no clear trend that universities whose web pages contained the best approximation of an incongruent combination of competence and warmth cues are perceived as more valuable or are higher in estimated tuition than those that contained the best approximation of a congruent combination of competence or warmth cues. Thus, we cannot reject the null hypothesis for *H3*.

This combination of results suggests that the alternative explanation proposed in Study 1 may also offer an explanation here—that prospective students may not view warmth and competence as independent and desirable constructs, but rather as implicit tradeoffs. Accordingly, the most valuable universities should be high in perceived competence and low in perceived warmth. In reviewing the data, the relationship between increased competence and increased value is visible, but the relationship between lower warmth and increased value is not obviously present.

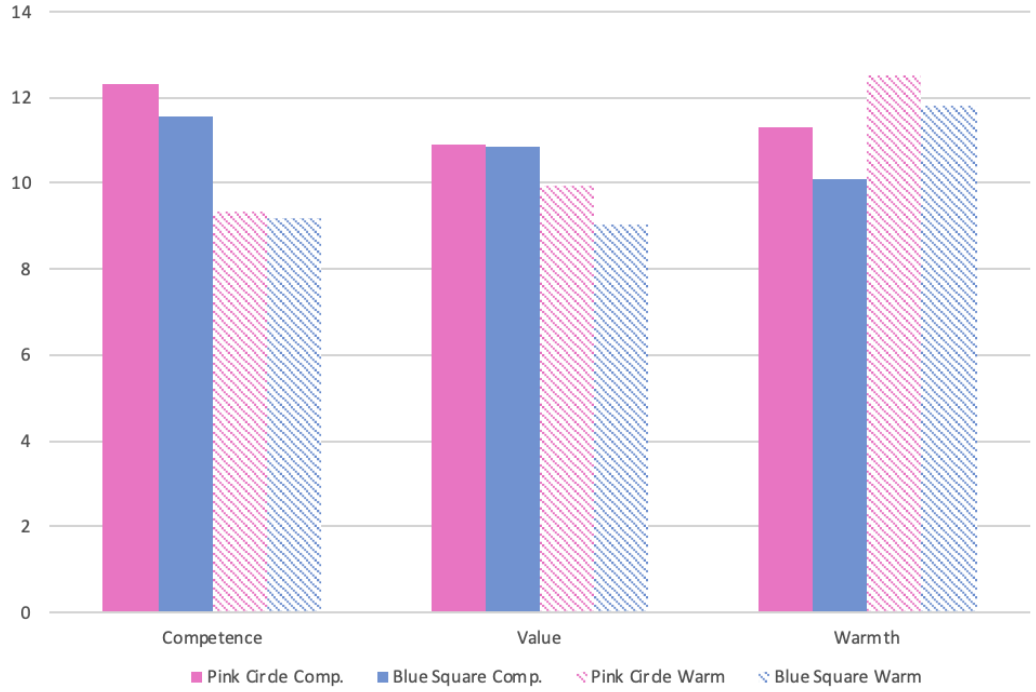


Figure 31. Perceived competence, value and warmth between university web pages

Following the logic of this alternative explanation, even when competence has been established by a strong competence cue, prospective students are looking for additional confirmations of competence. So, when presented with the strong competence cue of competence text, we would expect them to perceive the most value from the university whose web page pairs that text with a logo that also signals competence. Our results indicate that the pink circular logo signaled competence more than did the blue square logo (M_{diff} = 0.79) (though the difference was not significant), and we do see that the combination of pink circular logo and competence text was slightly more valuable (M_{diff} = 0.05) as well (but not significantly). However, along with providing a weak signal of competence, the pink circular logo condition also provided a stronger signal of warmth (M_{diff} = 1.2). If competence and warmth behaved as explicit tradeoffs, then the pink circular logo condition should not have been favored on account of the net effect being to lower competence (because the gain in warmth was higher than the gain in competence).

Additionally, when competence has not been established (warm text conditions), we would expect participants to find value in the university with the web page that signals competence. And indeed, it was the pink circular logo (slightly more

competent than the blue square logo; M_{diff} = 0.13) that resulted in higher perceived value (M_{diff} = 0.91). But, this was despite the fact that the pink circular logo was also interpreted as significantly warmer than the blue square logo (M_{diff} = 0.70). Again, if competence and warmth are treated as explicit tradeoffs, then the pink circular logo condition should not have been favored on account of the net effect being to lower competence (because the gain in warmth was higher than the gain in competence).

However, as these relationships are not significant, no clear conclusions can be drawn from these trends. It is possible they are simply a relic of the specific interpretation of the stimuli used in this study. Looking at the data trends more generally, one can see that the web pages that were rated higher in competence than in warmth were generally perceived as more valuable than those rated higher in warmth than competence, which is in alignment with the alternative hypothesis that competence/warmth are viewed as tradeoffs.

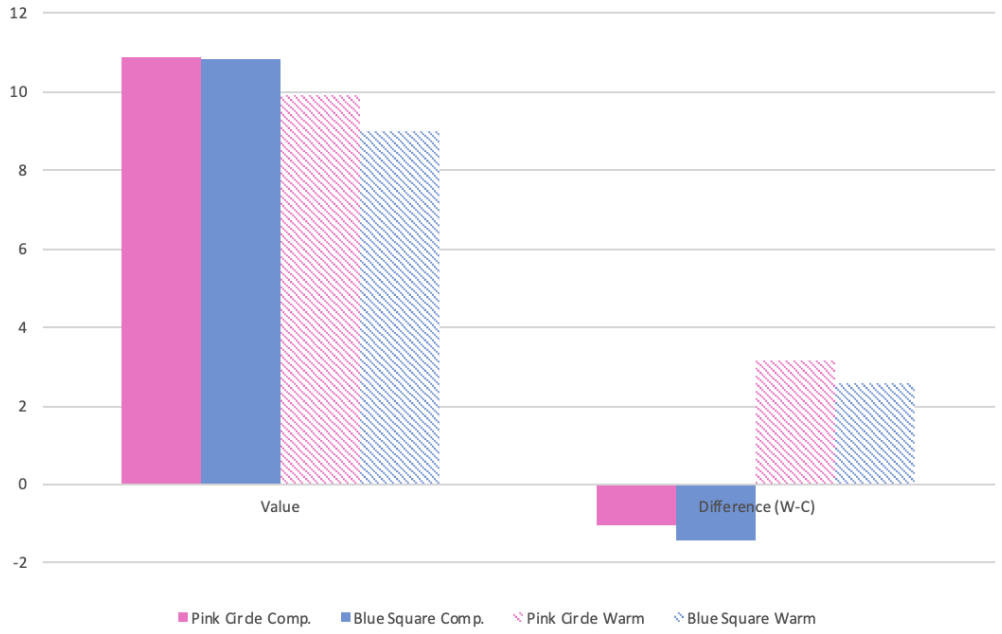


Figure 32. Perceived value per web page and difference in warmth and competence per web page (sum warmth minus sum competence)

General Discussion

Our research contributes to the literature on university branding by investigating how universities should brand themselves in order to be perceived as optimally

valuable to prospective students. The results of our studies confirm that prospective students view competence as a prerequisite for seeing a university as valuable. This finding suggests that the way prospective students evaluate the value of universities is similar to how consumers typically assess the value of brands of any kind—by first looking for competence cues (Aaker et al., 2010, 2010; Cuddy, Glick & Beninger, 2011; Hess & Melnyk, 2016; Janiszewski & van Osselaer, 2000; Parasuraman, Zeithaml & Berry, 1985).

However, once competence has been established, the research on value creation is less consistent. Our hypotheses specifically explored the validity of two contradictory value creation explanations in the context of assessing university value. One research stream suggests that warmth and competence are separate, desirable constructs (Hess & Melnyk, 2016; Ivens, Leischnig, Muller & Valta, 2015. Thus, a university that is perceived as both competent and warm will be most valuable. Another research stream suggests that competence and warmth are perceived as contradictory extremes on a single spectrum (Chernev & Carpenter, 2001; Jiang, Gorn, Galli and Chattopadhyay, 2016; Kahneman, Knetsch & Thaler, 1986; Luchs, Naylor, Irwin & Raghunathan, 2010; Wojciszke & Abele, 2008). Thus, the most valuable university would be one that is high in competence and low in warmth.

Our background research on what prospective students value in universities suggested that both competence and warmth dimensions were important to students in selecting a university (Alessandri, Yang & Kinsey, 2007 ; James, Baldwin & McInnis 1999; LeBlanc & Nguyen, 1999; Payne, 2003; Soutar & Turner, 2002; Stafford, 1994). Hence, we expected that universities that were high in both warmth and competence would be perceived as the most valuable. However, the results of our studies suggest that students' evaluations of universities is likely more similar to how consumers perceive price and quality—as contradictory extremes of a spectrum, or, at least that perceptions of warmth do not add value. However, the unexpected ways in which some of our intended competence and warmth cues were interpreted and the high standard

deviation and lack of significance of many of trends present in our data, make it impossible to come to any definitive conclusions.

Managerial Implications

The largely insignificant comparative results in Study 1 suggest that, when evaluating universities, seeing only the university's logo does not provide enough information to help prospective students assess the school's competence, warmth or value. Thus, universities wishing to significantly change their perceived competence, warmth or value, should think beyond only updating their logo. Given that logo color and shape have proven relevant to forming brand impressions in other industries, it suggests that there is something unique about how prospective students perceive university logos (DePaulo, 1992; Jiang et al., 2016; Grohmann, Giese & Parkman, 2013; MacInnis and Price, 1987). It may be that the high emotional and financial involvement of choosing a university makes subtle visual cues less effective in this setting. Or perhaps, in contrast to logos for packaged consumer goods, students' perceptions of university logos are so informed by tradition that they are viewed simply as unique identifying marks and that contemporary brand color and shape associations are not applicable in this context. However, with these caveats in mind, certain updates to a university's logo may pay off. Specifically, for universities that have square blue logos, making them round instead is likely to make prospective students see the school as more competent and valuable.

In general, adjusting verbal content associated with a university's brand identity is a more effective way to change perceptions about the school than making adjustments to the school's logo. For a university to be perceived as more competent, it should add more verbal content (on the website, brochures, etc.) highlighting the school's rankings, reputation, commitment to research, and quality of faculty. For a university to be perceived as more warm, it should add more verbal content highlight building community, social activities and friendship.

If the goal of a university is to increase the perceived value of the institution, they should focus on highlighting their competence as much as possible. Confirmations of competence from verbal content are most important, but additional signals of competence from visual cues are also likely to increase value. For the most part, messaging should remain consistently focused on competence, as too many warmth cues may erode perceived competence.

Limitations and Further Research

First of all, the high standard deviations observed in our data in both of our studies suggests that a larger sample size is needed to detect potentially significant effects, which provides a clear avenue for further research. In addition, similar studies should be repeated with ample sample sizes of different populations (nationality, age, gender, students seeking to enroll in Bachelor's/Master's/PhD programs) to test if the effects are stable across these conditions.

In combination, the results from Study 1 and 2 suggest that color and shape cues that are perceived as clearly competent or clearly warm in isolation may be perceived differently when interpreted in the context of a university logo. The fact that circles were perceived as a strong warth cue in isolation but as a competence cue in both our studies suggests that there may be something about circular university logos that conveys competence that we did not measure in this study (e.g. they are more familiar, more representative of a prototypical university logo, etc.). This is fertile ground for further research.

We recognize that university logos are usually more complex stimuli than those examples used in our study, often containing multiple shapes, colors and symbols. Since our study focused on theory testing, we had to simplify this complexity into two simple shapes and two colors with particular strong warmth and competence cues. However, in the real world, logos are likely to contain a combination of multiple shapes and colors that each have their own warmth or competence signals. In addition, the fact that we found that competence could not be established by visual cues alone may be a relic of the specific logo colors and shapes we choose. Further research should focus on exploring the presence and

interaction of competence and warmth cues from a wider and more complex variety of shapes and colors.

The verbal content used in our study as warmth or competence cues was also very minimal. In reality, universities are associated with a large amount of additional verbal and visual content alongside their logo, and some of this information (such as the school's age, location or reputation) may be critical for prospective students to establish value. The fact that such factors were not accounted for in our studies may explain the lack of clear results for how visual cues are connected to establishing value. Further research should explore the role of the presence and interaction of other types of warmth and competence cues such as accreditation stamps, awards, official rankings, photos, student testimonials, etc., as well as the interaction of a greater number of cues, as most university advertisements, websites or brochures are considerably more complex than the simple web page that we used in our studies.

Another area for further research would be to repeat this study in a more naturalistic study. For example, a prospective student could be exposed to a facebook ad featuring the university logo, upon clicking it they reach a landing page that provides additional information about the school and they must decide if they are interesting by clicking "learn more" or entering their email address.

The fact that we observed little effect on perceived value or estimated tuition from changing a university's logo shape or color alone, and the fact that logo alone failed to perform as a significant competence cue in Study 2, suggests that prospective students require more information than just a logo to make such an involved evaluation. Given that extant literature suggests that logo shape and color are proven ways to shape brand perceptions (Jiang et al., 2016; Grohmann, Giese & Parkman, 2013; MacInnis and Price, 1987), it would be interesting to investigate whether it is the involvement of the university decision itself that causes the lack of effect, or something else. Further research should explore whether logo warmth and competence cues are more powerful when making less involved decisions regarding a university, for example, when reviewing a university web page to enroll in a short-term course.

References

Aaker, J. L. (1997). Dimensions of brand personality. *Journal of Marketing Research*, 347-356.

Aaker, J., Vohs, K. D., & Mogilner, C. (2010). Nonprofits are seen as warm and for-profits as competent: Firm stereotypes matter. *Journal of Consumer Research*, 37(2), 224-237.

Aaker, J. L., Garbinsky, E. N., & Vohs, K. D. (2012). Cultivating admiration in brands: Warmth, competence, and landing in the "golden quadrant". *Journal of Consumer Psychology*, *22*(2), 191-194.

Abele, A., Cuddy, A., Judd, C., & Yzerbyt, V. (2008). Fundamental dimensions of social judgment. *European Journal of Social Psychology*, *38*(7), 1063-1065.

Abele, A., & Wojciszke, B. (2007). Agency and Communion From the Perspective of Self Versus Others. *Journal of Personality and Social Psychology,* 93(5), 751-763.)

Alessandri, S. W., Yang, S. and Kinsey, D.F. (2007), An Integrative Approach to University Visual Identity and Reputation. *Corporate Reputation Review,* 9(4), 258-270.

Amazon Mechanical Turk. (2016, August 24). Introducing Premium Qualifications. Retrieved from: https://blog.mturk.com/introducing-premium-qualifications-1e473456e7b0

Balaji, M. S., Roy, S. K., & Sadeque, S. (2016). Antecedents and consequences of university brand identification. *Journal of Business Research*, 69(8), 3023-3032.

Baldwin, G. & James, R. (2000). The market in Australian higher education and the concept of student as informed consumer. *Journal of Higher Education Policy and Management,* 22(2), 139–148

Bar, M. & Neta, M. (2006). Humans prefer curved visual objects. *Psychological Science,* 17, 645–648.

Bar, M., & Neta, M. (2007). Visual elements of subjective preference modulate amygdala activation. *Neuropsychologia,* 45(10), 2191-2200.

Belk, R. W. (1988). Possessions and the extended self. *Journal of Consumer Research,* 15(2), 139–168.

Biffl, G., & Issac, J. (2002). Should higher education students pay tuition fees?. *European Journal of Education*, 37(4), 433-455.

Blanchard, D. C., Griebel, G., Pobbe, R., & Blanchard, R. J. (2011). Risk assessment as an evolved threat detection and analysis process. *Neuroscience & Biobehavioral Reviews,* 35(4), 991-998.

Block, L., & Kramer, T. (2009). The effect of superstitious beliefs on performance expectations. *Journal of the Academy of Marketing Science,* 37(2), 161–169.

Boksberger, P. E., & Melsen, L. (2011). Perceived value: a critical examination of definitions, concepts and measures for the service industry. *Journal of Services Marketing*, 25(3), 229-240.

Bolton, R., & Lemon, K. (1999). A Dynamic Model of Customers' Usage of Services: Usage as an Antecedent and Consequence of Satisfaction. *Journal of Marketing Research*, 36(2), 171-186.

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science,* 6(1), 3-5.

Byrnes, D. A. (1983). Color associations of children. *The Journal of Psychology*, *113*(2), 247-250.

Chattopadhyay, A., Gorn, G. J., & Darke, P. (2010). Differences and similarities in hue preferences between Chinese and Caucasians. *Sensory Marketing: Research on the sensuality of products*, 219-239.

Chebat, J., & Morrin, M. (2007). Colors and cultures: exploring the effects of mall décor on consumer perceptions. *Journal of Business Research,* 60, 189–196.

Chernev, A., & Carpenter, G. S. (2001). The role of market efficiency intuitions in consumer choice: A case of compensatory inferences. *Journal of Marketing Research,* 38(3), 349-361.

Clarke, T., & Costall, A. (2007). The emotional connotations of color: a qualitative investigation. *Color Research and Application,* 33(5), 406–410.

Cochran, W. G. (2007). Sampling techniques. John Wiley & Sons.

Cuddy, A. J., Fiske, S. T., & Glick, P. (2008). Warmth and competence as universal dimensions of social perception: The stereotype content model and the BIAS map. *Advances in experimental social psychology*, *40*, 61-149.

Cuddy, A.J.C., Glick, P. and Beninger, A. (2011), The dynamics of warmth and competence judgments, and their outcomes in organizations, *Research in Organizational Behavior,* Vol. 31, pp. 73-98.

Dennis, Papagiannidis, Alamanos, & Bourlakis. (2016). The role of brand attachment strength in higher education. *Journal of Business Research,* 69(8), 3049-3057.

DePaulo, B.M. (1992), Nonverbal behavior and self-presentation, *Psychological Bulletin,* 111(2), 203-243.

Dreyfuss, E. (2018, August 17). A Bot Panic Hits Amazon's Mechanical Turk. Wired. Retrieved from: https://www.wired.com/story/amazon-mechanical-turk-bot-panic/

Egómez-Puerto, G., Emunar, E. & Enadal, M. (2016). Preference for curvature: A historical and conceptual framework. *Frontiers in Human Neuroscience,* 9, 712.

Field, A. (2013) *Discovering statistics using IBM SPSS Statistics, Fourth Edition*. London, UK: Sage.

Fiske, S. T., Cuddy, A. J., & Glick, P. (2007). Universal dimensions of social cognition: Warmth and competence. *Trends in cognitive sciences*, *11*(2), 77-83.

"For trinity college dublin, what's in a name?" (2014, Apr 13). *Sunday Business Post*. Retrieved from https://ezproxy.library.bi.no/login?url=https://search-proquest-com.ezproxy.library.bi.no/docview/1516032832?accountid=142923

Fournier, & Alvarez. (2012). Brands as relationship partners: Warmth, competence, and in-between. *Journal of Consumer Psychology,* 22(2), 177-185.

Fournier, S. (1998). Consumers and their brands: Developing relationship theory in consumer research. *Journal of Consumer Research,* 24(4), 343–373.

Fox, S., & Spector, P. E. (2000). Relations of emotional intelligence, practical intelligence, general intelligence, and trait affectivity with interview outcomes: it's not all just 'G'. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, *21*(2), 203-220.

Fraser, T., & Banks, A. (2004). *Designer's color manual: The complete guide to color theory and application*. San Francisco: Chronicle Books.

Friestad, M., & Wright, P. (1995). Persuasion knowledge: Lay people's and researchers' beliefs about the psychology of advertising. *Journal of Consumer Research*, *22*(1), 62-74.

Grohmann, B., Giese, J. L., & Parkman, I. D. (2013). Using type font characteristics to communicate brand personality of new brands. Journal of Brand Management, 20(5), 389-403.

Grönroos, C., & Voima, P. (2013). Critical service logic: making sense of value creation and co-creation. *Journal of the Academy of Marketing Science*, 41(2), 133-150.

Guttenplan, D. D. (2018, April 12). Vying for a Spot on the World's A List. The New York Times. Retrieved from: https://www.nytimes.com/2013/04/14/education/edlife/university-rankings-go-global.html

Hauser, D. J., & Schwarz, N. (2016). Attentive Turkers: MTurk participants perform better on online attention checks than do subject pool participants. *Behavior Research Methods*, 48(1), 400-407

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Publications.

Hemsley-Brown, & Goonawardana. (2007). Brand harmonization in the international higher education market. Journal of Business Research, 60(9), 942-948.

Hemsley-Brown, J., Melewar, T. C., Nguyen, B., & Wilson, E. J. (2016). Exploring brand identity, meaning, image, and reputation (BIMIR) in higher education: A special section. *Journal of Business Research,* 69(8), 3019-3022.

Henderson, P. W., & Cote, J. A. (1998). Guidelines for selecting or modifying logos. *Journal of Marketing*, 62, 14–30.

Hess, A. C., & Melnyk, V. (2016). Pink or blue? The impact of gender cues on brand perceptions. *European Journal of Marketing,* 50(9/10), 1550-1574.

Holbrook, M., & Moore, W. (1981), Feature Interactions in Consumer Judgments of Verbal versus Pictorial Presentations, *Journal of Consumer Research,* 8 (1), 103– 13.

Hooley, G.J. and Lynch, J.E. (1981), Modelling the student university choice process through the use of conjoint measurement techniques, *European Research*, Vol. 9 No. 4, pp. 158-70.

Hsu, J. (1996). *Multiple comparisons: theory and methods*. Boca Raton, FL: Chapman and Hall/CRC.

Hu, S., & Hossler, D. (2000). Willingness to pay and preference for private institutions. *Research in Higher Education,* 41(6), 685-701.

Irvine, K., Hoffman, D. A., & Wilkinson-Ryan, T. (2018). Law and Psychology Grows Up, Goes Online, and Replicates. *Journal of Empirical Legal Studies,* 15(2), 320-355.

Ivens, B., Leischnig, A., Muller, B., & Valta, K. (2015). On the Role of Brand Stereotypes in Shaping Consumer Response toward Brands: An Empirical Examination of Direct and Mediating Effects of Warmth and Competence. *Psychology & Marketing,* 32(8), 808-820.

Israel, G. D. (1992). Determining sample size.

James, R., Baldwin, G., & McInnis, C. (1999). Which University?: The factors influencing the choices of prospective undergraduates, 99(3). Canberra: Department of Education, Training and Youth Affairs.

Janiszewski, C. and van Osselaer, S.M.J. (2000), A connectionist model of brand–quality associations, *Journal of Marketing Research,* 37(3), 331-350.

Ji, C. (2014, April 4). The Most Popular Fonts On The Web: A Study. Retrieved from: https://jichu4n.com/posts/the-most-popular-fonts-on-the-web-a-study/

Jiang, Y., Gorn, G. J., Galli, M., & Chattopadhyay, A. (2016). Does your company have the right logo? How and why circular-and angular-logo shapes influence brand attribute judgments. *Journal of Consumer Research,* 42(5), 709-726.

Johnson, J.S. (2015), Improving online panel data usage in sales research. *Journal of Personal Selling & Sales Management,* 36(1), 1-12.

Kahneman, D., Knetsch, J.L. and Thaler, R. (1986), Fairness as a constraint on profit seeking: entitlements in the market, *The American Economic Review,* 76(4), 728-741.

Keppel, G. (1991). *Design and analysis:A researcher's handbook.* Englewood Cliffs, NJ: Prentice-Hall.

Kervyn, N., Fiske, S.T. and Malon, C. (2012). Brands as intentional agents framework: how perceived intentions and ability can map brand perception. *Journal of Consumer Psychology,* 22(2), 166-176.

Kumar, R. (2014), Research Methodology, A step by step guide for beginners, Sage publications

Labrecque, L. I., Patrick, V. M. & Milne, G. R. (2013), The Marketers' Prismatic Palette: A Review of Color Research and Future Directions. *Psychology and Marketing,* 30(2), 187–202.

Labrecque, L. I., & Milne, G. R. (2012). Exciting red and competent blue: the importance of color in marketing. Journal of the Academy of Marketing Science, 40(5), 711-727.

Lafferty, B. A., & Goldsmith, R. E. (1999). Corporate credibility's role in consumers' attitudes and purchase intentions when a high versus a low credibility endorser is used in the ad. *Journal of business research*, *44*(2), 109-116.

Leblanc, G., & Nguyen, N. (1999). Listening to the customer's voice: examining perceived service value among business college students. *International Journal of Educational Management,* 13(4), 187-198.

Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing,* 80(6), 69-96.

Levy, S. J. (1985). Dreams, fairy tales, animals, and cars. *Psychology and Marketing,* 2(2), 67–81.

Ligas, M., & Chaudhuri, A. (2012). The moderating roles of shopper experience and store type on the relationship between perceived merchandise value and willingness to pay a higher price. Journal of Retailing and Consumer Services, 19(2), 249-258.

Lin, L. (1997), What are student education and educational related needs?, *Marketing and Research Today*, Vol. 25 No. 3, pp. 199‐212.

Lin, M., Lucas Jr, H. C., & Shmueli, G. (2013). Research commentary—too big to fail: large samples and the p-value problem. Information Systems Research, 24(4), 906-917.

Luchs, M.G., Naylor, R.W., Irwin, J.R. and Raghunathan, R. (2010), The sustainability liability: potential negative effects of ethicality on product preference, *Journal of Marketing,* 74(5), 18-31

Lundholm, H. (1921). The Affective Tone of Lines: Experimental Researches. *Psychological Review*, *28*(1), 43.

MacInnis, D. J., & Folkes, V. S. (2017). Humanizing brands: When brands seem to be like me, part of me, and in a relationship with me. *Journal of Consumer Psychology*, *27*(3), 355-374.

MacInnis, D. J., & Price, L. L. (1987). The role of imagery in information processing: Review and extensions. *Journal of consumer research*, *13*(4), 473-491.

Mack, N., Woodsong, C., Macqueen, K., Guest, G. & Namey, E. (2005), Qualitative Research Methods: A Data Collector's Field Guide. Northeastern University, Module 1 (Qualitative Research Methods Review), 12-18.

Madden, T. J., Hewett, K., & Roth, M. S. (2000). Managing images in different cultures: a cross-national study of color meanings and preferences. *Journal of International Marketing,* 8(4), 90–107.

Makowski, (2018). The psycho Package: An Efficient and Publishing-Oriented Workflow for Psychological Science. Journal of Open Source Software, 3(22), 470. https://doi.org/10.21105/joss.00470

Marginson, S. (2006). Dynamics of national and global competition in higher education. *Higher Education,* 52(1), 1-39.

Martins, M. and Monroe, K.B. (1994). Perceived price fairness: a new look at an old construct. *Advances in Consumer Research*, 21, 75-8.

Matherly, L. L. (2011). A causal model predicting student intention to enrol moderated by university image: using strategic management to create competitive advantage in higher education. *International Journal of Management in Education,* 6(1-2), 38-55.

Mazzarol, T., Soutar, G.N. and Tien, V. (1996), Education linkages between Canada and Australia: an examination of the potential for greater student flows, *unpublished paper*, Institution for Research into International Competitiveness, Curtin Business School, Perth.

Melnyk, V., Klein, K. and Völckner, F. (2012). The double-edged sword of foreign brand names for companies from emerging countries. *Journal of Marketing,* 76(6), 21-37.

Menon, M. E., Saiti, A., Socratous, M. (2007). Rationality, information search and choice in higher education: Evidence from Greece. *Higher Education,* 54(5), 705–721

Miaoulis, G., & Michener, R. D. (1976). *An Introduction to Sampling*. Dubuque, Iowa: Kendall.

Moogan, Y., Baron, S., & Harris, K. (1999). Decision-making behaviour of potential higher education students. *Higher Education Quarterly,* 53(3), 211–228.

Murray, D. C., & Deabler, H. L. (1957). Colors and mood-tones. *Journal of Applied Psychology*, 41(5), 179–283.

Odou, P. & de Pechpeyrou, P. (2011). Consumer cynicism: From resistance to anti-consumption in a disenchanted world?. *European Journal of Marketing*, 45(11/12), 1799-1808.

Olejnik S and Algina J (2003). Generalized Eta and Omega Squared Statistics: Measures of effect size for some common research designs. *Psychological Methods,* 8(4), 434-447.

Oosterbeek, H., Groot, W., & Hartog, J. (1992). An empirical analysis of university choice and earnings. *De Economist*, *140*(3), 293-309.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *the Journal of Marketing*, 41-50.

Patterson, P.G. & Spreng, R.A. (1997). Modelling the relationship between perceived value, satisfaction and repurchase intentions in a business-to-business, services context: an empirical examination. *International Journal of Service Industry Management*, 8(5), 414-34.

Payne, J. (2003). *Choice at the end of compulsory schooling: A research review.* London: Department for Education and Skills.

Plummer, J. T. (1985). How personality makes a difference. *Journal of Advertising Research,* 24(6), 27–31.

Perneger, T. V., Courvoisier, D. S., Hudelson, P. M., & Gayet-Ageron, A. (2015). Sample size for pre-tests of questionnaires. Quality of Life Research, 24(1), 147-151.

Priluck Grossman, R., & Wisenblit, J. Z. (1999). What we know about consumers' color choices. *Journal of marketing practice: Applied marketing science*, *5*(3), 78-88.

Rayner, K., Rotello, C. M., Stewart, A. J., Keir, J., & Duffy, S. A. (2001). Integrating text and pictorial information: Eye movements when looking at print advertisements. *Journal of experimental psychology: Applied*, *7*(3), 219.

Saul, S. (2018, Jan 2) As Flow of Foreign Students Wanes, U.S. Universities Feel the Sting. *The New York Times.* Retrieved from: https://www.nytimes.com/2018/01/02/us/international-enrollment-drop.html

Seno, D., & Lukas, B. A. (2007). The equity effect of product endorsement by celebrities: A conceptual framework from a co-branding perspective. *European Journal of Marketing*, *41*(1/2), 121-134.

Shaikh, A. D., Chaparro, B. S., & Fox, D. (2006). Perception of fonts: Perceived personality traits and uses. *Usability News,* 8(1), 1-6.

Shlomo H., Shlomo D., Simcha L.Y., Gadi K.. (2016) Money in your palm: Sharp shaped vegetation in the surroundings increase the subjective value of houses. *Journal of Environmental Psychology,* 46, 176-187.

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: new procedures and recommendations. *Psychological methods*, 7(4), 422.

Silayoi, P., & Speece, M. (2007). The importance of packaging attributes: a conjoint analysis approach. *European Journal of Marketing,* 41(11/12), 1495-1517.

Smith, S. M., Roster, C. A., Golden, L. L., & Albaum, G. S. (2016). A multi-group analysis of online survey respondent data quality: Comparing a regular USA consumer panel to MTurk samples. *Journal of Business Research*, 69(8), 3139-3148.

Solomon, M. R. (1983). The role of products as social stimuli: A symbolic interactionism perspective. *Journal of Consumer Research,* 10(3), 319–329.

Soutar, G. N. & Turner, J. P. (2002). Students' preferences for university: A conjoint analysis. *The International Journal of Educational Management,* 16(1), 40–45.

Stafford, T. F. (1994). Consumption values and the choice of marketing electives: Treating students like customers. *Journal of Marketing Education,* 16(2), 26-33.

Szekeres, J. (2010). Sustaining student numbers in the competitive marketplace. Journal of *Higher Education Policy and Management,* 32(5), 429-439.

Touré-Tillery, M., & McGill, A. L. (2015). Who or what to believe: Trust and the differential persuasiveness of human and anthropomorphized messengers. *Journal of Marketing*, *79*(4), 94-110.

Uher, J.(1991). On zigzag desings: three levels of meaning. *Current Anthropology,* 32, 437.

United States Census Bureau (2017). *Income in the Past 12 Months (In 2017 inflation-adjusted dollars) 2013-2017 American Community Survey 5-year Estimates (S1901). Retrieved from: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF*

U.S. Department of Education (2018). *Fast facts: Back to school statistics.* National Center for Education Statistics. Retrieved from: https://nces.ed.gov/fastfacts/display.asp?id=372

U.S. Department of Education (2017). *Average undergraduate tuition and fees and room and board rates charged for full-time students in degree-granting postsecondary institutions, by control and level of institution and state or jurisdiction: 2015-16 and 2016-17 (Table 330.20).* National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2015 and Fall 2016, Institutional Characteristics component; and Spring 2016 and Spring 2017, Fall Enrollment component. Retrieved from: https://nces.ed.gov/programs/digest/d17/tables/dt17_330.20.asp?current=yes&fbclid=IwAR2vR72BI0MLVzR0HBA6URI6ZAUYbZxXyDGm8LDd8eC3a4CPeIGKl77w-wo

Vaaland, T. I., Heide, M., & Grønhaug, K. (2008). Corporate social responsibility: investigating theory and research in the marketing context. *European Journal of Marketing*, *42*(9/10), 927-953.

van Osselaer, S.M.J. and Janiszewski, C. (2001). Two ways of learning brand associations. *Journal of Consumer Research,* 28(2), 202-223.

van Osselaer, S.M.J. and Janiszewski, C. (2012), A goal-based model of product evaluation and choice, *Journal of Consumer Research,* 39(2), 260-292.

Walle, A.H. (1997). Global behaviour, unique responses: consumption within cultural frameworks. Management Decision, 35(10), 700-8.

Wedel, M., & Pieters, R. (Eds.). (2007). *Visual marketing:from attention to action.*

Willis, J., & Todorov, A. (2006). First Impressions: Making Up Your Mind After a 100-Ms Exposure to a Face. *Psychological Science,* 17(7), 592–598.
Winer, R. S., (2005). *Pricing.* Marketing Science Institute, Cambridge, MA

Wojciszke, B., Bazinska, R., & Jaworski, M. (1998). On the dominance of moral categories in impression formation. Personality and Social Psychology Bulletin, 24(12), 1251-1263.

Wojciszke, B. & Abele, A.E. (2008), The primacy of communion over agency and its reversals in evaluations. *European Journal of Social Psychology,* 38(7), 1139-1147.

Zeithaml, V.A. (1988). Consumer perceptions of price, quality and value: a means-end model and synthesis of evidence. *Journal of Marketing*, 52(3), 2-22.

Appendix A: Pre-test Stimuli

Most warmth and most competent stimuli

The following stimuli were rated on assumptions of warmth and competence. Each of the stimuli rated most warm and most competent were then used to signal warmth or competence Studies 1 and 2.

Figure A1: Shapes tested for warmth and competence perceptions in pre-test

Figure A2: Colors tested for warmth and competence perceptions in pre-test

A bright future

We know you take your future seriously, and so do we. Our focus on teaching and research quality makes us stand out from the crowd, and in the rankings, every year. Achieve your potential by joining our next class of incoming students.

Award-winning programs

Our degree programs are consistently rated among the best in the nation for teaching quality and relevance. Our lauded research faculty ensure we stay on the cutting edge. We are committed to delivery an education that will serve you for a lifetime.

Reputation: it matters

Getting your degree from a university with an outstanding reputation ensures your investment in your education pays off. Our consistently high rankings, commitment to research, highly relevant courses and top-notch faculty ensure our reputation remains solid and supports you in the future.

A warm welcome

Starting university is a very exciting time in your life. We are committed to creating a campus where everyone feels they belong and can achieve their goals. We will support you throughout your time with us to ensure your experience is rewarding.

Best campus environment

Our campus has been rated one of the best in the nation. Our students report that our social activities, welcoming atmosphere and focus on inclusivity make us stand out. We look forward to welcoming you to our incoming class of exceptional students.

Friends for life

We know that university is about more than just academics. Our focus on building community through social activities ensures that you will graduate with more than just a degree. We look forward to welcoming you to our new class of incoming students.

Figure A3: Verbal content tested for warmth and competence perceptions in pre-test

Most neutral stimuli

To ensure that the following stimuli used consistently in Studies 1 and 2 had a minimal impact on competence and warmth assessments, they were also rated on assumptions of warmth and competence. Each of the stimuli representing the best balance of warmth and competence (smallest absolute value of the difference in sum competence and sum warmth) were then used in Studies 1 and 2.

Figure A4: University names tested for warmth and competence perceptions in pre-test

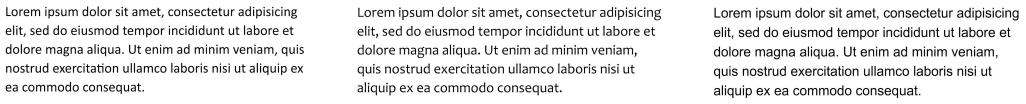


Figure A5: Fonts tested for warmth and competence perceptions in pre-test (from left to right: Calibri, Candara, Arial)

Figure A6: Background images tested for warmth and competence perceptions in pre-test

Table A1.

Correlation of each warmth and competence rating per stimuli

Shape	Competence	Effective	Kindness	Warmth
Effective	0.82***			
Efficiency	0.81***	0.92***		
Warmth			0.92***	
Generosity			0.84***	0.88***
Color				
Effective	0.93***			
Efficiency	0.86***	0.92***		
Warmth			0.75***	
Generosity			0.61***	0.69***
Text				
Effective	0.87***			
Efficiency	0.73***	0.83***		
Warmth			0.84***	
Generosity			0.70***	0.76***
Image				
Effective	0.51**			
Efficiency	0.54**	0.81***		
Warmth			0.62***	
Generosity			0.65***	0.51**
Font				
Effective	0.84***			
Efficiency	0.84***	0.83***		
Warmth			0.93***	
Generosity			0.79***	0.78***
Name				
Effective	0.57**			
Efficiency	0.59***	0.83***		
Warmth			0.55**	
Generosity			0.73***	0.71**

*Note: significance codes: $p < .001$ = ***, $p < .01$ = **, $p < .05$ = **

Appendix B: Study 1 Questionnaire

Survey stimuli

Study 1 was designed to test *H1* and *H2* using a 2 (logo shape: round vs. angular) × 2 (logo and text color: pink vs. blue) between-subjects design in order to avoid carryover effects and minimize the time and effort required by each participant. The survey for each respondent included one of the following logos:

Figure B1. Study 1 stimuli

Survey flow

1. Introduction
2. Questions about competence and warmth (randomized)
3. Questions about perceived value (presented in standardized order)
4. Estimated tuition slider
5. Demographics (presented in standardized order)

Survey text

1.

We are Masters students at BI Norwegian Business School conducting academic research on advertising. In this survey, you will be asked to share your first impressions about the name and logo of a university.

At the end of the survey, you will receive a code to paste in the box in MTurk to take credit for participating in the survey. *Be sure to copy your code before closing this window.*

This survey will take approximately 2 minutes to complete. We very much appreciate your help.

Note: Your data will be anonymized in accordance with European GDPR law.

Imagine that you are a prospective student considering where to study for your Bachelor degree. You have been living internationally and are completely unfamiliar with US universities. While browsing online, you notice a simple ad consisting of this university name and logo:

You have never heard of this university, so you must decide if you should click on the ad and find out more about this school — after all, it could be just what you are looking for.

In order to make your decision, you must make a series of assumptions about this university to decide if it is of interest to you. This survey consists of a series of questions about the assumptions you make about this school, based only on its name and logo.

At first, it may seem difficult to answer the questions about this university based on such limited information. However, keep in mind that people must make split-second assumptions about new brands and products everyday, sometimes based on viewing only their logo, a simple advertisement or packaging.

With this perspective, reflect on the image and *select the responses that first come to mind.* There are no right or wrong answers—but, please use the neutral response category *only* if the brand name and logo do not generate any impression at all.

2.

Please indicate to what extent you agree with the following statement about this university.

The staff and students at this university will be kind.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree

Please indicate to what extent you agree with the following statement about this university.

This university will offer a warm campus environment.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree

Please indicate to what extent you agree with the following statement about this university.

Teachers and staff will be generous with their time at this university.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree

Please indicate to what extent you agree with the following statement about this university.

This university has a reputation for academic competence.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree

Please indicate to what extent you agree with the following statement about this university.

This university is known for its effective teaching style.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree

Please indicate to what extent you agree with the following statement about this university.

Administration at this university is efficient.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree

Please indicate to what extent you agree with the following statement about this university.

3.

What quality of education would you expect to receive at this university?

Very low quality	Low quality	Average quality	High quality	Very high quality

Marbell University

What sort of salary would you expect to earn in an entry-level position immediately upon graduation from this university (compared to graduates in the same field from other universities)?

Far Below Average	Below Average	Average	Above Average	Far Above Average

Marbell University

How easy would it be to get a job upon graduation with a diploma from this university?

Very Difficult	Difficult	Neither easy nor difficult	Easy	Very easy

4.

Marbell University

Please estimate the annual, out-of-state tuition of this university.

Annual out-of-state tuition (in thousands of USD)	10	15	20	25	30	35	40	45	50

5.

Thank you so much for completing the survey. Before we send your completion code, please tell us a little bit more about yourself

How old are you? _____

What is your gender? Male Female Other

What is your nationality?

Are you currently a university student? Yes No

What was the zip code of your residence while attending high school? _____

Appendix C: Study 2 Questionnaire

Survey stimuli

Study 2 was designed to test *H1* and *H3* using a 2 (logo: round and pink vs. angular and blue) × 2 (associated text: warm vs. competence) between-subjects design in order to avoid carryover effects and minimize the time and effort required by each participant. The survey for each respondent included one of the following mock web pages:

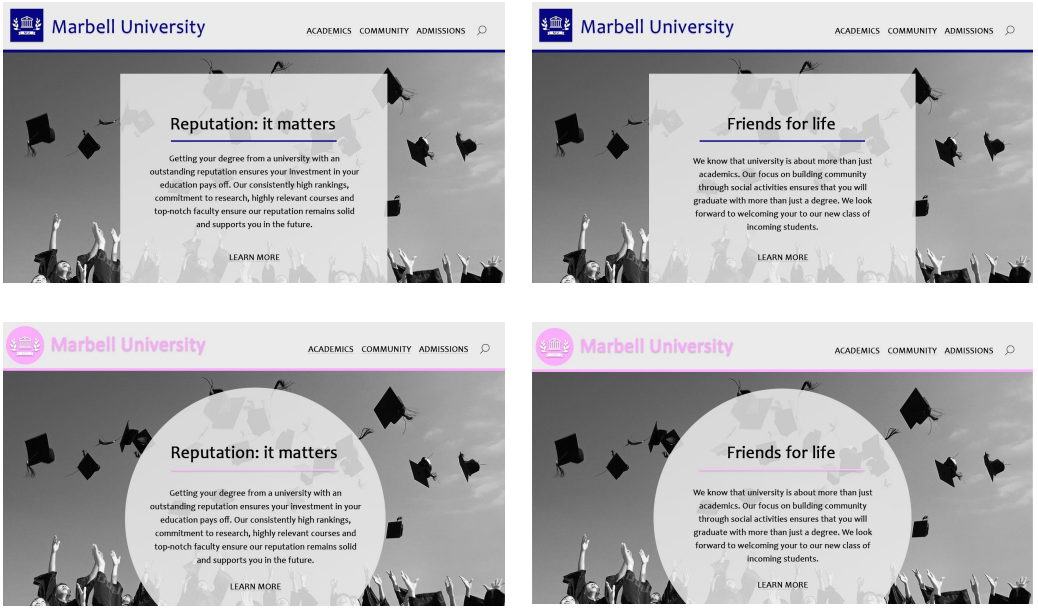


Figure C1. Study 2 stimuli

Survey flow

1. Introduction
2. Questions about competence and warmth (randomized)
3. Questions about perceived value (presented in standardized order)
4. Estimated tuition slider
5. Demographics (presented in standardized order)

Survey text

1.

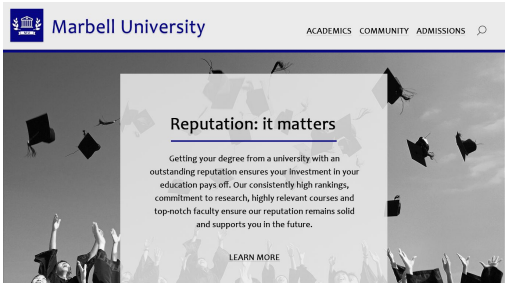
We are Masters students at BI Norwegian Business School conducting academic research on advertising. In this survey, you will be asked to share your first impressions about a university webpage.

At the end of the survey, you will receive a code to paste in the box in MTurk to take credit for participating in the survey. Be sure to copy your code before closing this window.

This survey will take approximately 2 minutes to complete. We very much appreciate your help.

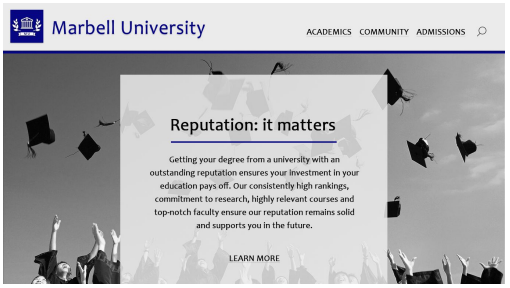
Note: Your data will be anonymized in accordance with European GDPR law.

Imagine that you are a prospective student considering where to study for your Bachelor degree. You have been living internationally and are completely unfamiliar with US universities. You stumble upon the following webpage:



You have never heard of this university, so you must decide if you should learn more about this school — after all, it could be just what you are looking for.

In order to make your decision, you must make a series of assumptions about this university to decide if it is of interest to you. This survey consists of a series of questions about the assumptions you make about this school, based only on this webpage.

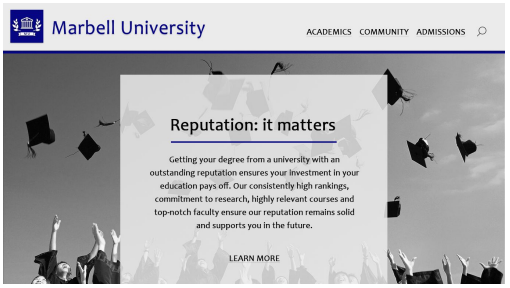


At first, it may seem difficult to answer the questions about this university based on such limited information. However, keep in mind that people must make split-second assumptions about new brands and products everyday, sometimes based on viewing only a simple advertisement.

With this perspective, reflect on the webpage above and select the responses that first come to mind. There are no right or wrong answers—but, please use the neutral response category only if the webpage does not generate any impression at all.

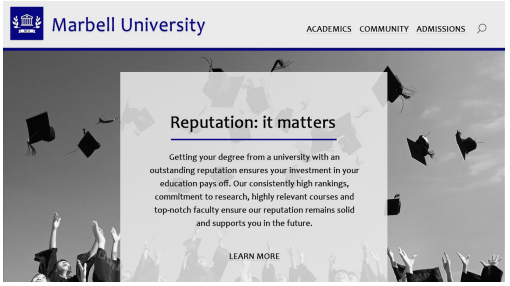
2.

Please indicate to what extent you agree with the following statement about this university.



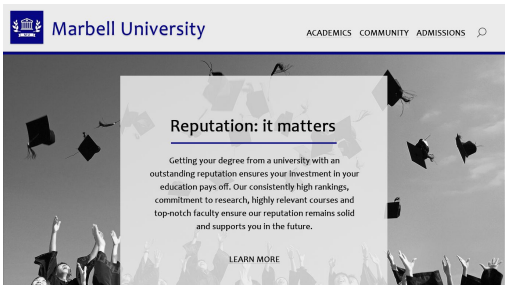
The staff and students at this university will be kind.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree

Please indicate to what extent you agree with the following statement about this university.



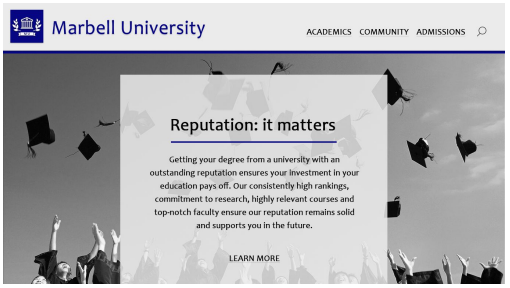
This university will offer a warm campus environment.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree

Please indicate to what extent you agree with the following statement about this university.



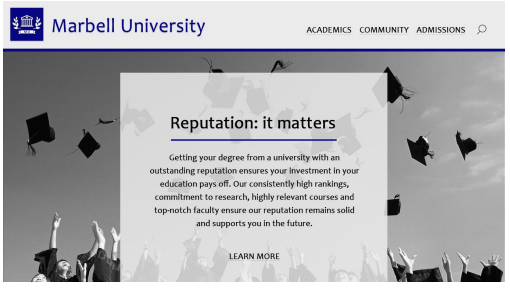
Teachers and staff will be generous with their time at this university.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree

Please indicate to what extent you agree with the following statement about this university.



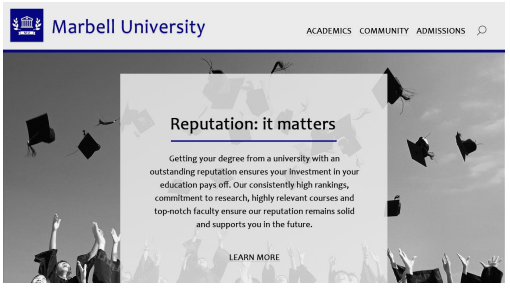
This university has a reputation for academic competence.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree

Please indicate to what extent you agree with the following statement about this university.



This university is known for its effective teaching style.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree

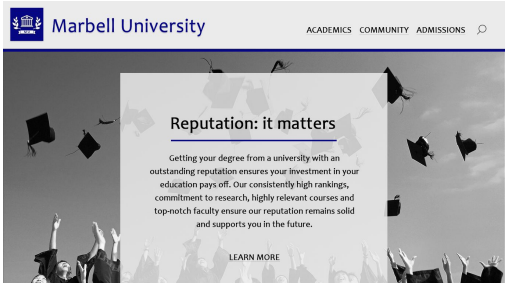
Please indicate to what extent you agree with the following statement about this university.



Administration at this university is efficient.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree

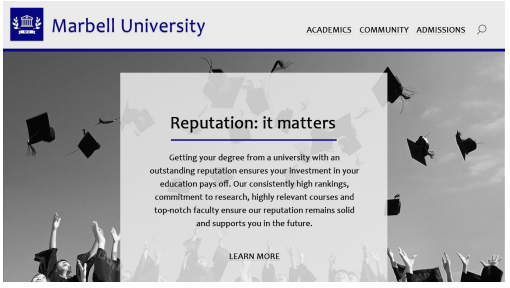
Please indicate to what extent you agree with the following statement about this university.

3.



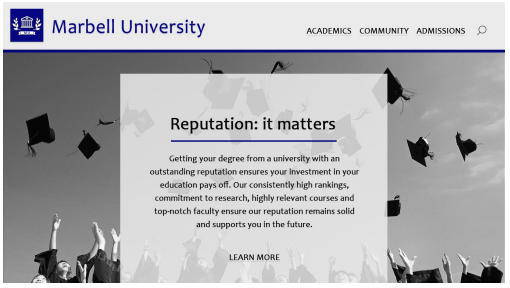
What quality of education would you expect to receive at this university?

Very low quality	Low quality	Average quality	High quality	Very high quality



What sort of salary would you expect to earn in an entry-level position immediately upon graduation from this university (compared to graduates in the same field from other universities)?

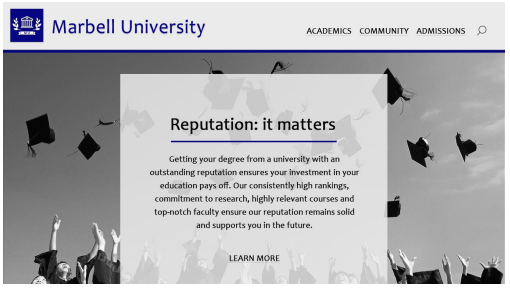
Far Below Average	Below Average	Average	Above Average	Far Above Average



How easy would it be to get a job upon graduation with a diploma from this university?

Very Difficult	Difficult	Neither easy nor difficult	Easy	Very easy

4.



Please estimate the annual, out-of-state tuition of this university.

Annual out-of-state tuition (in thousands of USD)	10	15	20	25	30	35	40	45	50

5.

Thank you so much for completing the survey. Before we send your completion code, please tell us a little bit more about yourself

How old are you? _____

What is your gender? Male Female Other

What is your nationality?

Are you currently a university student? Yes No

What was the zip code of your residence while attending high school? _____