MATCHING WITH THE STARS: WHAT DETERMINES CELEBRITY ENDORSEMENT CONTRACT FORMATION?

César Zamudio[1]
Kent State University
College of Business
Department of Marketing and Entrepreneurship
800 E. Summit St., Kent, OH, 44240, United States of America
Phone: +1 (330) 672 2170
Fax: +1 (330) 672 5006
E-mail: czamudi1@kent.edu

May 2014

MATCHING WITH THE STARS: WHAT DETERMINES CELEBRITY ENDORSEMENT CONTRACT FORMATION?

ABSTRACT

Celebrity endorsement research studies how the characteristics of firms and celebrities featured in promotional campaigns influence consumer attitudes and firm value. Before these campaigns are launched, firms and celebrities first negotiate at length to sign a celebrity endorsement contract. Current research has not investigated what determines the formation of these contracts - thus, firms lack advice as to their chances of landing a contract with their ideal celebrity. This article fills this gap in the literature. Using two-sided matching theory, I conceptualize the celebrity endorsement negotiation process as a two-sided matching market, and develop an empirical model of endorsement partner selection that allows extant theoretical models –the match-up hypothesis, and meaning transfer theory– to be tested in the context of firms' and celebrities' mutual choices. The model is estimated using a dataset of 120 endorsement contracts in the beauty industry. Findings suggest that brand personality is a major driver of endorsement partnerships and that recognition –celebrities' presence in the entertainment industry– moderates how appealing different contracts may be. The results of this article serve as a blueprint for firms to determine their likelihood of landing a contract with different types of celebrities.

Keywords: Celebrity endorsements, brand personality, advertising, meaning transfer, two-sided matching.

1. Introduction

Firms use celebrity endorsements as a promotional strategy due to their positive impact on stock prices (Agrawal and Kamakura 1995), sales (Elberse and Verleun 2012; Chung, Derdenger and Srinivasan 2013) and consumer attitudes and intentions (e.g. Forehand and Perkins 2005; Ilicic and Webster 2013). Commensurate with these benefits is the high monetary cost of a celebrity endorsement contract. For example, Pepsi's latest endorsement contract with Beyoncé Knowles was estimated at $50 million, roughly one-sixth of Pepsi's total advertising expenditures (Sisario 2012). But there is another, often overlooked, cost: the process of negotiating endorsement contracts is lengthy (Miciak and Shanklin 1994), and firms face the risk of being rejected by their preferred celebrity during the process. The cost of such rejection is critical, as firms' marketing strategies may crucially depend on successfully hiring a specific celebrity.

Surprisingly, the literature has little to say about how to minimize these potential costs and risks. Focus, instead, has been on investigating the impact of celebrity endorsements on sales (Elberse and Verleun 2012; Chung, Derdenger and Srinivasan 2013), firm value (Agrawal and Kamakura 1995; Ding, Molchanov and Stork 2011), and consumer attitudes and intentions (e.g. Misra and Beatty 1990; Tripp et al. 1994; Forehand and Perkins 2005; Ilicic and Webster 2013). In other words, focus has been on investigating the *consequences* of celebrity endorsements. By adopting such focus, the implicit assumption has been that firms can unilaterally choose celebrities, and that, conversely, celebrities can unilaterally choose firms, obscuring the risks and pitfalls that *antecede* contract formation. This implicit assumption should not be overlooked, for firms' and celebrities' chances to land a contract with each other depend on their preferences for each other, which lead to observed mutual choices in the form of endorsement contracts.

This research fills this gap in the literature by studying firms' and celebrities' mutual choices, and produces several contributions. First, using two-sided matching theory (Roth and Sotomayor 1990), I conceptualize the process of celebrity endorsement contract formation as the outcome of mutual choices (e.g. Zamudio, Wang and Haruvy 2013) with observed contracts (or "matches") as dependent variable. This conceptualization allows constructing an empirical model that allows celebrities' and firms' preferences to be inferred simultaneously. The preference metric is called matching value (Yang, Shi and Goldfarb, 2009) and measures the collective benefit that a celebrity and a firm produce when together. A dataset of 120 celebrity endorsement contracts in the beauty industry was used to measure matching value in the celebrity endorsements market. Focus is on the role that brand personality plays in determining contract formation. Second, past celebrity endorsements research has relied on theoretical models such as the match-up hypothesis (Kamins 1990) and the meaning transfer model (McCracken's 1989). Using the empirical model presented in this article, I empirically test the extent to which predictions stemming from these two theoretical models hold in the context of firms' and celebrities' mutual choices.

The results of this article shed light on the factors that determine celebrity endorsement contract formation. Brand personality is found to be a major determinant of celebrity endorsement contract formation. Contracts established between partners with congruent (that is, the same) brand personalities generate the most matching value for firms and celebrities, although some incongruent contracts are also attractive, which may occur due to firms' repositioning strategies. This finding lends partial support to the match-up hypothesis. Furthermore, the results of this article show that celebrity recognition (that is, whether a celebrity works in the music, TV or movie industries) moderates the matching value produced from

contract formation. This means that firms and celebrities prefer each other differently depending on whether celebrities are recognized or not. This result is supportive, and provides the first test, of the implications of McCracken's (1989) meaning transfer model – specifically, that celebrity recognition should be an important moderator of celebrity endorsement contract formation. More generally, the results presented here serve as a blueprint for firms to determine their likelihood of landing a contract with different types of celebrities.

The remainder of the article is organized as follows. Section 2 surveys current research in celebrity endorsements and presents a two-sided matching conceptualization of the celebrity endorsement market. Section 3 develops an empirical model counterpart to the theoretical conceptualization. Section 4 discusses the data used in this study. Section 5 presents model estimates. Section 6 finishes the paper with a discussion and future research directions.

2. Theoretical Underpinnings

2.1 Current Research in Celebrity Endorsements

Celebrity endorsement research to date focuses on the consequences (that is, firm outcomes) of establishing a celebrity endorsement contract – specifically, on how certain metrics change after an endorsement is signed and the firms' campaign(s) involving the celebrity are executed. Two research streams, which I label "demand-side" and "supply-side", have examined these consequences. The commonality in both streams is the implicit assumption that both celebrities and firms can unilaterally choose an endorsement partner – that is, choices are one-sided, instead of being two-sided and thus representing a mutual choice (Zamudio, Wang and Haruvy 2013). An overview of the two research streams and the positioning of this study is shown in Table 1.

TABLE 1
Current Research on Demand and Supply-Side Issues in Celebrity Endorsements

	Demand-side	Supply-side
		Economic value of endorsements
	Kahle and Homer (1985)	Agrawal and Kamakura (1995)
	Kamins (1990)	Mathur, Mathur and Rangan (1997)
	Misra and Beatty (1990)	Louie and Obermiller (2001)
	Tripp, Jensen and Carlson (1994)	Ding, Molchanov & Stork (2011)
	Lafferty and Goldsmith (1999)	Elberse and Verleun (2012)
One-sided	Till and Busler (2000)	Chung, Derdenger and Srinivasan (2013)
	Bower (2001)	
	Forehand and Perkins (2005)	*The endorsement industry*
	Ryu, Park and Feick (2006)	Miciak and Shanklin (1994)
	Ilicic and Webster (2013)	Erdogan, Baker and Tagg (2001)
		Erdogan and Drollinger (2008)
Two-sided	Zwilling and Fruchter (2013)*	**This study**

* It is not possible to produce a two-sided model of the demand side, as it would require consumers to be paired with celebrities or firms. However, Zwilling and Fruchter (2014) develop an algorithm that allows the attributes of product categories and celebrities to be artificially matched using consumer preferences as input. This is why their study is labeled as two-sided.

The demand-side stream of research investigates consumers' response to stimuli featuring real or fictitious celebrity endorsements (e.g. Forehand and Perkins 2005). This stream primarily examines the general issue of congruence –that celebrity endorsements between firms and celebrities similar along a specific dimension should induce positive consumer response, as compared to a situation where the celebrity and the firm are not similar (Kamins 1990).[2] Congruence has been explored in the context of firms' and celebrities' perceived attractiveness (Kahle and Homer 1985; Bower 2001), personalities (Misra and Beatty 1990), expertise (Till and Busler 2000; Till, Stanley and Priluck 2008), credibility (Lafferty and Goldsmith 1999), ethnicity (Ryu, Park and Feick 2006) and the information provided by the celebrity and the brand (Ilicic and Webster 2013). Recently, Zwilling and Fruchter (2013) develop an algorithm that uses

---

[2] Note that the word "match" is sometimes used in the literature to refer to a congruent celebrity endorsement contract (e.g. Choi and Rifon 2012). To clarify, in this study the word "match" refers to an observed celebrity endorsement contract, and "congruence" refers to the situation where a celebrity endorsement contract between a firm and a celebrity that are similar alongside a specific characteristic is signed.

consumer input to empirically verify which celebrities should endorse products in specific categories. Although the results of these studies are illuminating, they do not focus on the antecedents of endorsement formation, and implicitly assume that a firm can pick whichever celebrity best improves a specific consumer response metric on the basis of the congruence between the firm and the celebrity.

The supply-side stream of research investigates two aspects of celebrity endorsements. The first aspect is how endorsement contracts impact firms' financial metrics. Agrawal and Kamakura (1995), Mathur, Mathur and Rangan (1997), and Elberse and Verleun (2011) show that contract announcements and celebrities' achievements, respectively, are associated with abnormal stock returns, although other studies reach different conclusions under different conditions (Louie and Obermiller 2001; Ding, Molchanov and Stork 2011). Elberse and Verleun (2012) and Chung, Derdenger and Srinivasan (2013) find that endorsements by celebrity athletes that are top performers in their athletic discipline, such as Tiger Woods and Nike, can lead to higher sales even if the celebrity is the subject of a scandal. These studies also implicitly assume that firms can unilaterally select a specific celebrity.

The second aspect studied in the supply-side stream is the process by which firms and celebrities establish endorsement contracts. This process is complex and uncertain (Miciak and Shanklin 1994), and begins when the firm develops a celebrity list and, concurrently, a campaign strategy. This strategy is developed concurrently because firms understand the risk of a potential endorser rejecting a firms' endorsement request, and thus the communication strategy may change conditional on which celebrity the firm hires. Although an advertising agency may spearhead the celebrity selection process (Erdogan and Drollinger 2008), the firm ultimately decides whether a contract is signed or not. In the next step, each celebrity is evaluated along a

set of criteria (Miciak and Shanklin 1994) such as the congruence between the celebrity and the firm, product and audience (Erdogan, Baker and Tagg 2001), cost, and the likelihood of landing a contract with each celebrity. This last criterion – how likely a contract is to be landed – stands at odds with the implicit assumption that firms can unilaterally select a celebrity endorser.

Once celebrities are evaluated, negotiations to potentially sign an endorsement contract begin. The celebrity may not negotiate all aspects of the potential contract. This responsibility may rest with the celebrity's agent (Erdogan and Drollinger 2008) who is in many cases responsible for developing the celebrity's human branding and marketing strategies (Goodman 2011), as is the case with fashion models and their agents (Parmentier et al. 2013). Lastly, a contract is signed followed by the development of promotional campaign(s) that includes the celebrity. This general negotiation process has been found to be used outside the U.S. as well (Erdogan, Baker and Tagg 2001).

2.2 A Two-Sided Matching Perspective on Celebrity Endorsements

The lengthy negotiation process and uncertain partner availability that characterize celebrity endorsement contract formation can be analyzed using two-sided matching theory. This theory (Roth and Sotomayor 1990) proposes that situations in which two groups[3] of market participants, or *sides*, attempt to partner or *match* with participants on the other side, belong to a class of markets known as two-sided matching markets (henceforth TSMM). Unlike markets for goods, here the participants themselves may be thought of as being exchanged. The fundamental unit of analysis is the match —a partnership between two market participants that is the outcome of both participants having mutually chosen each other.

---

[3] Although, as discussed above, agents and middlemen may play a role in such markets, these are not incorporated conceptually in papers that employ this theoretical lens.

TSMMs can exhibit different structures. In a *one-to-one* TSMM, participants can match with only one other member, as in the marriage (Gale & Shapley, 1962) and online dating (e.g. Hitsch, Hortaçsu and Ariely 2010) markets. In a *many-to-one* TSMM, participants in one side can match with only one other participant, but participants on the other side can have multiple matches, as in the NBA player (Yang, Shi and Goldfarb 2009) and doctoral candidate (Zamudio, Wang and Haruvy 2013) markets. In a *many-to-many* TSMM, participants can match with multiple others, as in the market for car parts, where manufacturers can source parts from multiple suppliers and the converse (Fox 2010). The celebrity endorsement market belongs to the latter class because firms can establish multiple celebrity endorsement contracts, such as CoverGirl and L'Oreal, whose ongoing endorsement campaigns feature many "Cover Girls" or "spokesmodels". Celebrities can also establish multiple contracts (Tripp, Jensen and Carlson 1994).

TSMMs unfold in a series of steps. Firms and celebrities first assess whether to seek a celebrity endorsement contract or not. This step results in a set of unmatched firms and celebrities looking for a partner. Second, firms and celebrities assess the utility they may derive from each other and compete to find a partner that maximizes their individual utility. Instead of relying on the construct of individual utility, TSMM models use the construct of matching value instead (Fox 2010). Matching value is defined as the combined benefit that both partners derive from each other when together, over and above any type of monetary considerations such as contract fees (Yang, Shi and Goldfarb 2009; Zamudio, Wang and Haruvy 2013), and is a function of the interaction of partners' characteristics. A match that generates higher matching value is more desirable for both parties involved, as each can obtain higher benefits. Therefore,

the outcome of a matching market (i.e., who matches with whom) is driven by the potential matching values of pairs of agents (Fox 2010).

The result of a TSMM, after celebrities and firms conclude negotiations, is an equilibrium outcome, a set of matches or mutual choices (Zamudio, Wang and Haruvy 2013) which is the dependent variable usually observed. In equilibrium, no partner should be willing to switch for another partner, either because the other desired partner is unwilling to switch, or because the matching value produced by both partners would be reduced if a swap occurred (Fox 2010). The consequences of the endorsement contracts (e.g. improvement in consumer attitude) are observed only after the matches are formed. Fig. 1 presents an overview of the two-sided matching conceptualization of the celebrity endorsements market.

_____

Insert Figure 1 about here
_____

3. An Empirical Model of Celebrity Endorsement Contract Formation

An empirical model to estimate matching value in the celebrity endorsements market can be formulated using endorsement contracts as the dependent variable, and firm/celebrity characteristics as independent variables. Because matches are the outcome of mutual choices, choice models such as the Logit model are not adequate, as these only consider the preferences of firms or celebrities, one at a time. For example, these models are used to determine consumers' utility for grocery items (e.g. Kamakura and Russell 1989), which, by definition, do not possess agency. Thus, applying these models would imply retaining the implicit assumption of unilateral choices.

In addition to relaxing this assumption, the two-sided matching model that will be developed in this section corrects for potential biases from ignoring the fact that observed

contracts between firms and celebrities are mutual, and not unilateral, choices,. This correction

has been shown to lead to different implications in terms of congruity (Yang, Shi and Goldfarb

2009) and to capture moderating effects that simpler methods cannot (Zamudio, Wang and

Haruvy 2013).

3.1. Model specification

Recall that observed matches are the market's equilibrium outcome, and that, in

equilibrium, no firm or celebrity should be willing to switch their partner. Consequently,

observed matches in the data are more likely to occur than matches that were never observed.

The latter are known as counterfactual matches, and can be generated from the data by

combining participants who matched with each other to those who did not. A key idea behind the

model formulation is that, because counterfactual matches never occurred, then observed

matches, which did occur, should have provided firms and celebrities with a higher matching

value – otherwise, swaps would have been made. Higher matching value by a pair of market

participants implies better payoffs for both parties involved, although the individual payoffs for

each party cannot be recovered.

To be specific, suppose a match between celebrity c_1 and firm d_1 is observed.[4] Denote

this match as $\{c_1, d_1\}$. Assume another match is $\{c_2, d_2\}$. In equilibrium, partners would not be

willing to switch, implying the following *pairwise stability* condition (Fox 2010):

(1) $$f(c_1, d_1) + f(c_2, d_2) > f(c_1, d_2) + f(c_2, d_1)$$

In Eq. 1, the function $f(c_i, d_m)$ denotes the matching value between any celebrity c_i and firm

d_m, which depends on their characteristics. Let X_{c_1} denote celebrity c_1's characteristics, and Y_{d_1}

---

[4] We chose not to model firms' and celebrities decision to enter the market. This would require data on firms who chose not to have a celebrity endorser, which is difficult, if not impossible, to obtain retrospectively.

denote firm d_1's characteristics. The matching value of a match –e.g. $\{c_1, d_1\}$– can then be expressed as

(2) $$f(c_1, d_1) = \alpha X_{c_1} + \gamma Y_{d_1} + \beta X_{c_1} Y_{d_1} + \varepsilon_{c_1 d_1}$$

where $\varepsilon_{c_1 d_1}$ is an error term with unspecified distribution (Fox 2010).

Comparing every match with every possible counterfactual can be done by inserting Eq. 2 into Eq. 1 for each of its four terms. The terms α and γ cancel each other out, resulting in the following inequality:

(3) $$\beta X_{c_1} Y_{d_1} + \varepsilon_{c_1 d_1} + \beta X_{c_2} Y_{d_2} + \varepsilon_{c_2 d_2} > \beta X_{c_1} Y_{d_2} + \varepsilon_{c_1 d_2} + \beta X_{c_2} Y_{d_1} + \varepsilon_{c_2 d_1}$$

The individual effects of firm and celebrity characteristics drop out of the inequality in Eq. 3. An important consequence of this feature is that transfers (e.g. fees, royalties), being present in both sides of the inequality, would drop out as well and thus need not be included in the model for unbiased estimation of β. Thus, in Eq. 3, β measures the matching value obtained by both partners in a match, over and above monetary transfers, along a specific interaction.

3.2. Estimation

A large number of counterfactual matches can be produced from matching data. These counterfactuals allow estimating β using Manski's (1975) semiparametric maximum score estimator. This estimator does not require specifying the probability distribution of the error terms. Let $\{c_i, c_j, d_m, d_n\}$ denote all quartets of celebrities and firms available in the data within market $k=1,...,K$, and denote $\{c_i, d_m\}$ and $\{c_j, d_n\}$ as observed matches. The estimator is written as

(4) $$\max_f g(f) = \frac{1}{k} \sum_{k \in K} \left\{ \sum_{\{c_i, c_j, d_m, d_n\} \in m} 1[f(c_i, d_m) + f(c_j, d_n) > f(c_i, d_n) + f(c_j, d_m)] \right\}$$

Eq. 4 means that, for every market in the data, the matching value generated by each pair of observed matches is compared to the matching value generated by each pair of counterfactual matches. 1[·] is an indicator function that takes the value of 1 when the matching value produced by the observed matches is superior to the counterfactuals and 0 otherwise. Thus, the estimator finds the optimal matching value that causes the maximum proportion of inequalities, or comparisons, satisfy the equilibrium condition (Fox 2010). Consequently, the maximum score can be thought of as the fit of the model: a higher maximum score implies that a larger number of the inequalities in the data satisfy the structural condition. If the maximum score is less than 100%, which is expected (Fox 2010), this implies that there could still be additional data describing market participants such that the maximum score may increase. For example, Yang, Shi and Goldfarb (2009) report a maximum score of approximately 70%. The subsampling method is used to generate confidence intervals for the parameter estimates (Politis, Romano and Wolf 1999).

3.2 Testing the Predictions of Current Celebrity Endorsement Models

Current celebrity endorsement studies rely on several theoretical models to formulate their hypotheses and investigate the consequences of celebrity endorsement contracts. In this section, how to incorporate currently used theories to investigate the antecedents of celebrity endorsement contract formation is discussed.

One of the most commonly used models in current celebrity endorsements research is the match-up hypothesis (Forkan 1980), which suggests that endorsements between congruent firms and celebrities improve product and advertisement evaluations (e.g. Kamins 1990). The match-up hypothesis suggests that the interaction between congruent (incongruent) firm and celebrity characteristics should positively (negatively) influence matching value. To test the match-up

hypothesis in the context of firms' and celebrities' mutual choices, the model specification includes the brand personality of firms and celebrities in X_{c_i} and Y_{d_m}. Positive (negative) values of β for congruent (incongruent) interactions would support the match-up hypothesis model.

The meaning transfer model (McCracken 1989) argues that well-recognized celebrities have symbolic properties imbued with meaning assigned by consumers over time. The celebrity endorser transfers some of his or her meaning to firms' products. The meaning that less-known celebrities may transfer is thought not to be as powerful as that of well-known celebrities. Instead, less-known celebrities are believed to transfer primarily demographic information. The meaning transfer model thus suggests that, first, brand personality should influence matching value, and that brand personality should be moderated by celebrity recognition. To test these implications in the context of firms' and celebrities' mutual choices, the model specification includes celebrity recognition in X_{c_1} and allows it to moderate firms' and celebrities' brand personality interactions. If the values of β from interactions for recognized celebrities are different than those produced by unrecognized celebrities, the meaning transfer model would be supported.

4. Methodology

4.1 Sample

A sample of 120 celebrity endorsement contracts between 37 firms in the beauty industry and 91 female celebrities was assembled for analysis. All of these contracts ended during the year 2009. Detailed information on these contracts is rare, and thus it is assumed is that these contracts were either renewed or started around the same time period, implying that these were

the outcomes of the same market[5]. Therefore, the data consists of a single celebrity endorsements market. Because brand personality forms part of the model specification, only firms that practice umbrella branding were incorporated to the sample, so as to ensure that the brand personality of the firm is consistent across its advertisements. The variables included in the study, along with their measurement, are shown in Table 2.

TABLE 2
Firm and celebrity characteristics studied

Variable	Measurement
Firm variables	
Firm industry	Discrete - 1 for firm's industry (cosmetics, fashion, or fragrance); 0 otherwise.
Firm brand personality	Dummy set – 1 for the firm's brand personality (Exciting, Competent, or Sophisticated); 0 is the benchmark (Sincere brand personality).
Firm sales	Continuous (millions of dollars)
Celebrity variables	
Celebrity brand personality	Dummy set – 1 for celebrity's brand personality (Exciting, Competent, or Sophisticated); 0 is the benchmark (Sincere brand personality).
Recognition	Discrete - 1 if celebrity defined as recognized (movies, music and TV); 0 otherwise (supermodels).
Age	Continuous
Joint variables	
Brand fit	Discrete; 1 if celebrity and firm share same brand personality.

4.2 Brand personality

Brands are said to be associated with human traits and personalities (Aaker 1997). Celebrities, too, are human brands (Thomson 2006). Recall that firms carefully weigh the congruence between the firm and the celebrity before forming an endorsement contract (Erdogan, Baker and Tagg 2001), and that the match-up hypothesis suggests that an endorsement

---

[5] A "market" is defined idiosyncratically. For example, in the market for professional basketball players, Yang, Shi and Goldfarb (2009) define five markets per year, one per player position; in the marketing doctoral candidate market, Zamudio, Wang and Haruvy (2013) include every doctoral candidate that declares candidacy in a calendar year as part of yearly, entry-level markets for assistant professors in marketing.

should be effective when firms' and celebrities' characteristics are congruent (Kahle and Homer 1985).

Brand personalities of firms and celebrities were included in the model as a key driver of celebrity endorsement contract formation. Since the dataset includes more than 100 combined firms and celebrities, it would be cumbersome for potential survey respondents to independently rate, describe or classify their brand personalities. Instead, a secondary data approach was developed. For each endorsement in the data, trade press articles describing the firm, the celebrity endorser, or the endorsement contract were gathered. These articles, along with semantic analysis and Web chatter data, provided adjectives useful to classify them via content analysis (Kassarjian 1977). Specifically Aaker's (1997) relevant brand personalities were used: sincere, exciting, competent, and sophisticated. The rugged personality appeared to be male-dominant and was not considered for this study. A detailed description of the content analysis procedure is discussed in the Appendix.

The result of the above analysis was a set of brand personality dummy variables for celebrities and firms. These dummy variables were interacted to construct variables that denoted congruent or incongruent matches on the basis of brand personality. In this article, a celebrity endorsement contract is defined as "congruent" when the brand personalities of the firm and the celebrity involved in a contract are the same. Other combinations are considered not congruent.

4.3 Celebrity characteristics

Celebrity recognition. When a celebrity is "recognized", this means that the public is familiar with her[6] as she is likely to make appearances in entertainment media through

---

[6] A potential recognition variable can be Q-scores, a popular metric used to gauge the consumer appeal of brands and celebrities. However, a cursory search in the Q-score website (www.qscores.com) revealed that a large part of the firms and celebrities in this study do not have associated Q-scores.

interviews, movies, TV shows, and so forth, and is thus charged with more meaning (McCracken 1989). A measure of recognition was constructed using a dummy variable that takes the value of 1 if a celebrity primarily works in the music, TV and movie industries, and 0 if not. In the data, the latter case implies that the celebrity is a supermodel. The rationale behind this distinction is as follows. Celebrities in the entertainment industry (movies, music and TV) are highly recognizable and significantly charged with meaning in comparison to supermodels. Although both types of celebrities are extensively sought by companies, the details of entertainment celebrities' life are much more prominent in popular culture (McCracken 1989). A downside is that whether celebrities are recognized only by some consumer groups cannot be determined. However, because the analysis involves firms' and celebrities' preferences, and because the set of industries and firms in the data is somewhat similar, this is a reasonable assumption.

4.4 Firm characteristics

Sales: A firm's sales denote the firm's size and are used as a control. For instance, only large firms may afford the endorsement fees of certain celebrities. Multiple databases (e.g. COMPUSTAT) and Web articles were used to gather sales figures for each firm in the sample. Sales are measured in billions of dollars.[7]

Industry: Companies in the beauty and healthcare industries are quite different from each other. Some focus on apparel and accessories, while others focus on beauty products such as lotions and creams. Finally, others specialize in fragrances. For this reason, firms in the sample

---

[7] As will be made clear when we discuss estimation results, sales are used only for identification purposes. For this reason, we do not use a transformation such as the log of sales. However, when using this transformation, the results remain qualitatively similar.

are categorized into Cosmetics, Fashion, and Fragrance firms. Industry effects in the present study are used as controls only and not shown.

5. Results

Table 3 displays descriptives from the endorsement dataset. Considerable heterogeneity exists in the firms and celebrities included in this study. On the firms' side, most of the contracts were signed by cosmetics firms, followed by fashion and fragrance firms. Also, sales vary greatly from firm to firm, as some firms are boutiques (such as Agent Provocateur and Miu Miu) whereas others are larger and offer much broader assortments (such as L'Oreal and CoverGirl). Most importantly, there is also considerable variation in the firms' brand personalities, with sophisticated firms being the most common in signing celebrity contracts. Variation in celebrities' characteristics was also observed. Most celebrities are also sophisticated. Roughly half of the sample consists of recognized celebrities. There is some variation as to age, with a maximum of 63.

Table 3 also shows the distribution of congruent and incongruent contracts. The patterns in the distribution of these contracts were found to be significantly different from each other ($\chi^2(9) = 39.36$). Congruent contracts can be read on the diagonal. Only one cell (competent celebrity/exciting firm) is empty - all others exhibit some incidence. As current literature suggests that firms engage in congruent contracts, one could expect these types of contracts to be predominant. Instead, the data shows that only 40% of contracts in the data are congruent. Further, the incidence of congruent contracts varies by each brand personality. For example, 66.67% of contracts established by sophisticated firms are congruent, whereas only 12.5% of contracts established by sincere firms are congruent.

TABLE 3
Celebrity endorsement contract descriptives

Variable	Mean/Pct	Std. Dev.	Min	Max
Firm variables				
Sales (millions of dollars)	$2,638.58	$4,529.99	$28.77	$23,891.10
Industry				
Cosmetics	63.33%	-	-	-
Fashion	30%	-	-	-
Fragrance	6.67%	-	-	-
Firm brand personality				
Sincerity	26.67%	-	-	-
Excitement	20%	-	-	-
Competence	18.33%	-	-	-
Sophistication	35%	-	-	-
Celebrity variables				
Celebrity brand personality				
Sincerity	17.5%	-	-	-
Excitement	20%	-	-	-
Competence	18.33%	-	-	-
Sophistication	44.17%	-	-	-
Recognition	45.83%	-	-	-
Age	32.14	8.50	19	63
Brand personalities – (C) Celebrity, (F) Firm				
	(F) Exciting	(F) Competent	(F) Sophisticated	(F) Sincere
(C) Exciting	11	5	5	3
(C) Competent	0	5	3	14
(C) Sophisticated	7	7	28	11
(C) Sincere	6	5	6	4

Descriptives with * include contracts with qualifying celebrities. If discrete variables are shown, percentages are used instead of means.

5.1 Equilibrium model estimates

The model developed in Section 3 is estimated in this section. Before proceeding, a comment on estimation must be made. To achieve point identification, a requirement of the two-sided matching model (Fox (2010) provides estimation details) is to set one of the interaction parameters to either -1 or +1. After that, and judging by the maximum score of the model (using the resulting maximum scores, as in Eq. 4), one of the two, either the +1 or -1 parameter, is kept. If the +1 yields the highest fit, then firms and celebrities of the same type, as measured by the

variables involved in the interaction, would prefer each other more strongly. Firms' sales and celebrities' age were chosen to this end, as they are both continuous. The best fit resulted with setting this parameter to +1, which suggests that larger firms derive more matching value from older celebrities, and the converse.

Results are shown in Table 4. All effects are simultaneously estimated in the same model. The results measure the matching value produced by firms' and celebrities' brand personality interactions. These interactions include a benchmark set at zero for identification, as in a linear regression. Thus, results from the set of interactions should be compared to the corresponding benchmark.

TABLE 4
Equilibrium model of firms' and celebrities' matching value

Celebrities' brand personality	Firms' brand personality			
	Exciting	Competent	Sophisticated	[Sincere]
Exciting	88.99* (86.24, 91.75)	7.38* (5.53, 10.13)	-1.85 (-4.03, 0.67)	0
Competent	NA	-7.89* (-9.02, -0.99)	-8.13* (-12.42, -5.97)	0
Sophisticated	9.83* (6.93, 11.26)	-1.02* (-3.18, -0.06)	65.42* (63.80, 67.99)	0
[Sincere]	0	0	0	0
	Firms' sales			
Celebrity age	+1			
Number of inequalities in data	7,086			
Maximum score	61.56%			
Subsamples	210			

N=120 contracts. Significant estimates (95%) marked with *; confidence intervals shown in parentheses. Benchmark variables in brackets [ ]. NA indicates that not enough observations were available to estimate the parameter.

In Table 4, an estimate is significant if the 95% confidence interval of its empirical distribution (shown in parentheses) does not contain zero. Any non-significant estimate should be interpreted as the interaction having no significant effect on matching value as compared to

the benchmark case and, thus, does not significantly impact the outcomes of the celebrity endorsements market. Because of data limitations, the effects of interactions with less than three observations were not estimated, and are marked as NA. Interactions between industry dummy variables and celebrity brand personality types are estimated as controls, and not shown in the table.

The value of every estimate is directly comparable in magnitude to others. Because the estimates measure matching value which, in turn, is a measure of utility, they can be interpreted in a similar manner as utility coefficient results from choice models that deal with one-sided choices (e.g. Kamakura and Russell 1989), except that the estimates measure the matching value produced by both partners instead of individual utility.

Some of the estimates shown in Table 4 do not conform to the match-up hypothesis. Congruent matches between competent firms and celebrities are found to significantly and negatively affect matching value, with a reduction of matching value of 7.89, as compared to the benchmark, which is defined as matches involving sincere firms or celebrities with any type of partner. Notice that the matching value for the benchmark brand personalities, as in a linear regression, cannot be recovered and is thus set at zero. Furthermore, some incongruent matches may positively impact matching value: those between sophisticated celebrities and exciting firms (matching value measured at 9.83), and those between exciting celebrities and competent firms (matching value measured at 7.38). Thus, the match-up hypothesis doesn't hold for all types of brand personality match-ups. In addition, it is interesting to note that incongruent celebrity endorsements have asymmetric effects. For example, competent celebrities and sophisticated firms produce a negative matching value of -8.13, but competent firms and sophisticated celebrities would be expected to produce negative matching value (-1.02). In another example,

sophisticated celebrities and exciting firms can derive positive matching value (9.83) from being together; yet, on the flip side, sophisticated firms and exciting celebrities derive a statistically insignificant matching value (-1.85).

The results from this first model suggest that Exciting firms are in the best situation when considering a celebrity endorser, as the matching value they produce with any type of celebrity is non-negative (non-significant estimates are considered to be zero). Competent celebrities always produce negative matching value as compared to the benchmark case. The results of this first model indicate that sophisticated and exciting firms should look for congruent match-ups as least risky option, as these types of contracts produce the most matching value for both firms and celebrities with those personalities, and thus the likelihood of these being signed should be expected to be greater. However, for competent firms, instead of a congruent match-up, the results suggest that exciting celebrities should be targeted instead.

5.2 The moderating effect of celebrity recognition

The next model tests the moderating effect of recognition on the matching value produced by firms and celebrities when signing celebrity endorsement contracts. The results of this model are shown in Table 5. All effects are simultaneously estimated.

The gain in maximum score is 9.98%, which implies that the moderating effect substantially helps explain equilibrium outcomes. This maximum score is in line with other two-sided matching models (e.g. Yang, Shi and Goldfarb 2009). The moderating effects model reveals that negative matching values are equally prevalent for celebrity endorsements among recognized and unrecognized celebrities – specifically, one of the estimated matching values in

each set of interactions is negative. Consequently, most of the estimates shown produce more matching value when compared to the benchmark case.

TABLE 5
The moderating effect of recognition in celebrity endorsement matching value

		Firms' brand personality			
	Celebrities' brand personality	Exciting	Competent	Sophisticated	[Sincere]
Recognized celebrities	Exciting	8.06* (7.24, 8.61)	5.78* (4.87, 6.27)	NA	0
	Competent	NA	1.21 (-0.05, 2.37)	-2.90* (-5.68, -2.28)	0
	Sophisticated	NA	NA	184.22* (179.37, 189.62)	0
	[Sincere]	0	0	0	0
		Firms' brand personality			
	Celebrities' brand personality	Exciting	Competent	Sophisticated	[Sincere]
Unrecognized celebrities	Exciting	141.39* (136.91, 146.32)	NA	1.97* (0.78, 4.95)	0
	Competent	NA	NA	NA	0
	Sophisticated	17.19* (15.38, 19.95)	-2.45* (-2.85, -1.62)	34.50* (33.05, 38.61)	0
	[Sincere]	0	0	0	0
		Firms' sales			
	Celebrity age	+1			
	Number of inequalities in data	7,086			
	Maximum score	71.54%			
	Subsamples	210			

N=120 contracts. Significant estimates (95%) marked with *; confidence intervals shown in parentheses. Benchmark variables in brackets [ ]. NA indicates that not enough observations were available to estimate the parameter.

Most of the estimates for competent celebrities were not possible to recover due to a lack of observations. However, as opposed to the earlier model, when including the moderating effect of celebrity recognition, these celebrities are now found to produce positive matching value. This occurs in a congruent matchup, when competent, recognized celebrities match with competent firms. This result also means that, once the moderating effect is added, all congruent match-ups that were estimated produce positive matching value. However, some incongruent celebrity

endorsements contracts are again found to produce positive matching value – for example, recognized, exciting celebrities and competent firms (5.78) and unrecognized, sophisticated celebrities and exciting firms (17.19).

The results of the moderating effects model are crucial because these represent the first test of McCracken's (1989) meaning transfer theory – not of meaning transfer directly, but of the implications of this theory. Specifically if, for the same type of match, the matching value produced by recognized and unrecognized celebrities is different, then McCracken's (1989) theory holds, in the sense that first, recognition is a significant moderator and, second, that firms build expected meaning transfer into their matching value expectations. Evidence is found for the moderating effect predicted by this theory. For instance, when firms and celebrities are both sophisticated, recognized celebrities produce a positive matching value of 184.22, whereas unrecognized celebrities produce around five times less value at 34.50. Similarly, when firms and celebrities are both exciting, recognized celebrities produce a matching value of 8.06, whereas unrecognized celebrities produce a matching value of 141.39, seventeen times higher. These estimates are different from each other because their confidence intervals do not overlap. The results, thus, suggest that celebrity recognition is an important moderator, as predicted by McCracken (1989), and that it has complicated effects in how firms and celebrities mutually choose each other.

6. Discussion

In this article, I extend current understanding of the celebrity endorsements problem by focusing on the mutual choices that celebrities and firms make when signing endorsement contracts. Firms' and celebrities' mutual choices are conceptualized as the outcome of a TSMM

and presented an empirical counterpart that allows the match-up hypothesis and meaning transfer models to be tested in the context of celebrity endorsement contract formation. When studying brand personality, I find that the match-up hypothesis does not hold in all instances of firms' and celebrities' mutual choices in terms of brand personality. Furthermore, strong empirical support for McCracken's (1989) meaning transfer theory in this context is found as well. This is the first empirical test of the moderation effects predicted by this theory. The results of this article carry important managerial and theoretical implications, which are discussed next.

6.1 Managerial implications

This is the first study to empirically investigate how firms and celebrities actually go about choosing each other with endorsement contract data. Data on firms' and celebrities' mutual choices reveal that not every congruent match, in terms of brand personality, is necessarily the most preferred, despite being suggested as most adequate by extant literature. Furthermore, incongruent celebrity endorsement contracts are found to be asymmetric. This means that, for example, a contract between an exciting firm and a sophisticated celebrity, when compared to a contract between an exciting celebrity and a sophisticated firm, are of a quite different nature, and thus advice that may apply in one scenario need not apply to the other. To this end, further research into the reason why these contracts are different may be worthwhile. In particular, the different ways in which consumers interpret and react to advertising executions arising from these different brand personality arrangements invites further investigation.

Attempting to sign a celebrity endorsement contract implies a potential risk of rejection. Whereas some contracts should be expected to be highly preferred, and thus highly likely to be signed, others should be expected to be received very negatively and thus very unlikely to be

23

signed. For exciting firms, a congruent match-up seems less risky, as these produce positive matching value regardless of celebrity recognition. However, exciting firms also produce positive matching value with other types of celebrities as well. Interestingly, for competent firms, both the base and the moderating effects model reveal that an incongruent match with exciting celebrities always produces the highest matching value for these firms. Congruent matches with recognized celebrities are also expected to produce positive matching value. Finally, for sophisticated firms, the base model reveals that straying from a congruent match-up is risky, as other match-ups produce negative matching value. The moderating effects model, again, reveals that these firms have more latitude, as matches with unrecognized, exciting celebrities also produce positive matching value.

One explanation for why certain incongruent matches generate positive matching value may be complementarity. For example, competent firms may find it worthwhile (and at a low risk, because matching value is positive) to sign a contract with an exciting celebrity. These types of incongruent, yet positive, matches may be ideal when the firm is considering a repositioning strategy. One example is when Michael Jackson, an exciting celebrity, endorsed Pepsi, which was perceived as competent at the time, "to make Pepsi look young and Coke look old" (Herrera 2009). An alternative explanation may be relative scarcity. Many unrecognized celebrities (i.e. supermodels) are sophisticated, as compared to recognized celebrities. This means that sophistication may be expected of, and indeed abundant in, unrecognized celebrities, and thus the additional meaning transfer value to a firm that is already sophisticated may be comparatively low. On the flip side, sophistication may not be expected of a recognized celebrity in the popular media, and thus the additional meaning transfer value for a sophisticated firm by virtue of finding a rare, congruent and recognized celebrity to match with is comparatively high.

Overall, the results from the equilibrium models can serve as a roadmap for firms and celebrities to manage risk and understand the relative likelihood that mutual choices may occur when looking for a partner in the celebrity endorsements market. Furthermore, results also highlight that only certain repositioning strategies based on brand personality matchups are most likely to materialize: specifically, those that produce positive matching value.

6.2 Theoretical implications

The main theoretical contribution of this paper is to extend the supply-side literature on celebrity endorsements to consider firms' and celebrities' mutual choices. This extends current understanding of celebrity endorsements by focusing on the antecedents of endorsement formation. Furthermore, several extant theoretical models are incorporated and tested in the conceptual and empirical framework presented in this article. Using this framework, I present quantitative evidence on whether two of these –match-up hypothesis and meaning transfer– hold in the context of firms' and celebrities' mutual choices and the congruence of their brand personalities.

I also provide the first empirical test of the moderating effect of recognition as predicted by McCracken (1989). Interestingly, the moderating effects of recognition can be very large. This implies that celebrity endorser choice can be quite complicated, as both brand personality and recognition interplay when determining firms' or celebrities' potential partners. Furthermore, and more generally, the results of this paper highlight the need for including theory-grounded moderating effects into celebrity endorsement studies, as analysis that ignore these effects may yield incorrect conclusions.

Finally, to the best of my knowledge, this is the first study to address the role of firms'

own brand personality in the utility they derive from the choices they make. More generally, I

present an algorithm that allows to describe firms, celebrities, or any other entity with a brand

personality, on the basis of secondary, web-based data, and to assess the robustness of the

resulting data using novel approaches like the analysis of chatter data.

6.3 Limitations and further avenues of research

This study is not without limitations. In terms of data, the analysis includes only female

celebrities and beauty-related firms. It could be worthwhile to include athletes and male

endorsers as well as firms in other industries for further study. Also, although a comprehensive

search for celebrity endorsements was conducted, the sample is not large enough so that all

effects in the empirical model could be estimated. Furthermore, the data does not include

attractiveness and credibility, which could influence matching value. However, this last omission

may not necessarily be a limitation, as, first, the sample consists primarily of attractive

celebrities, which implies little or no variation in this variable, and credibility may not

necessarily apply to firms' and celebrities' mutual choices, but rather to consumers' attitudes

toward the endorsement contracts resulting from those choices.

Along these lines, an interesting avenue of research can be to develop an integrative

model that bridges the gap between the supply side (that is, the antecedents of celebrity

endorsement contracts) and the demand side (that is, the consequences of these contracts). This

extension could be done by including consumer preferences into the matching value specification

shown in this study. It may be that, for firms' and celebrities' mutual choices, reasons other than

consumer utility may dominate their choices. Furthermore, simulations could potentially be

conducted to empirically determine what the ideal set of firms' and celebrities' mutual choices should be so as to maximize both firms' and celebrities' matching value as well as consumers' utility.
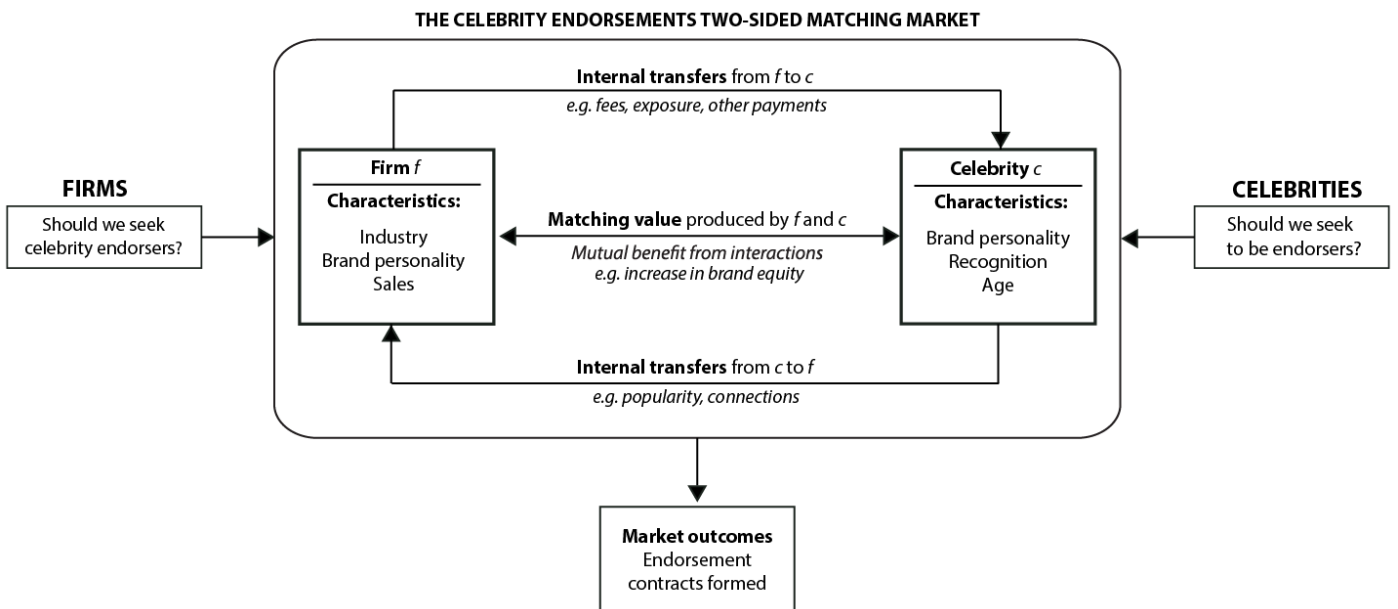
References

Aaker, Jennifer L. 1997. Dimensions of Brand Personality. *Journal of Marketing Research* **34**(3), 347-356.

Agrawal, Jagdish, Wagner A. Kamakura. 1995. The Economic Worth of Celebrity Endorsers: An Event Study Analysis. *Journal of Marketing* **59**(3), 56-62.

Bower, Amanda B., Stacy Landreth. 2001. Is Beauty Best? Highly Versus Normally Attractive Models in Advertising. *Journal of Advertising* **30**(1), 1-12.

Choi, Sejung M., Nora J. Rifon. 2012. It is a Match: The Impact of Congruence Between Celebrity Image and Consumer Ideal Self on Endorsement Effectiveness. *Psychology and Marketing* **29**(9), 639-650.

Chung, Kevin Y.C., Timothy P. Derdenger, Kannan Srinivasan. 2013. Economic Value of Celebrity Endorsements: Tiger Woods' Impact on Sales of Nike Golf Balls. *Marketing Science* **32**(2), 271-293.

Ding, Haina, Alexander E. Molchanov, Philip A. Stork. 2011. The Value of Celebrity Endorsements: A Stock Market Perspective. *Marketing Letters* **22**(2), 147-163.

Elberse, Anita, Jeroen Verleun. 2012. The Economic Value of Celebrity Endorsements. *Journal of Advertising Research* **52**(2), 149-165.

Erdogan, B. Zafer, Michael J. Baker, Stephen Tagg. 2001. Selecting Celebrity Endorsers: The Practitioner's Perspective. *Journal of Advertising Research* **41**(3), 39-48.

Erdogan, B. Zafer, Tanya Drollinger. 2008. Endorsement Practice: How Agencies Select Spokespeople. *Journal of Advertising Research* **48**(4), 573-582.

Forehand, Mark R., Andrew Perkins. 2005. Implicit Assimilation and Explicit Contrast: A Set/Reset Model of Response to Celebrity Voice-Overs. *Journal of Consumer Research* **32**(3), 435-441.

Forkan, J. 1980. Product Matchup Key to Effective Star Presentations. *Advertising Age* **51,** 42.

Fox, J.T. 2010. Estimating matching games with transfers. Unpublished. University of Michigan.

Gale, D., L.S. Shapley. 1962. College admissions and the stability of marriage. *The American Mathematical Monthly* **69**(1) 9–15.

Goodman, Abbey. 2011. The Man Behind the Marketing of Celebrities' Lifestyle. *CNN News*, Nov 9, 2011, Retrieved February 12, 2014, from http://www.cnn.com/2011/11/09/showbiz/mike-heller-profile/#

Herrera, Monica. 2009. Michael Jackson, Pepsi Made Marketing History. *Billboard,* July 03, 2009. Retrieved February 27, 2014, from http://www.billboard.com/articles/news/268213/michael-jackson-pepsi-made-marketing-history

Hitsch, G.J., A. Hortaçsu, D. Ariely. 2010b. What makes you click? Mate preferences in online dating. *Quantitative Marketing and Economics* **8**(4), 393-427.

Ilicic, Jasmina, Cynthia M. Webster. 2013. Celebrity Co-branding Partners as Irrelevant Brand Information in Advertisements. *Journal of Business Research* **66**(7), 941-947.

Kahle, Lynn R., Pamela M. Homer. 1985. Physical Attractiveness of the Celebrity Endorser: A Social Adaptation Perspective. *Journal of Consumer Research* **11**(4), 954-961.

Kamakura, Wagner A., Gary J. Russell. 1989. A Probabilistic Choice Model for Market Segmentation and Elasticity Structure. *Journal of Marketing Research* **26**(4), 379-390.

Kamins, Michael A. 1990. An Investigation Into the "Match-Up" Hypothesis in Celebrity Advertising: When Beauty May Be Only Skin Deep. *Journal of Advertising* **1**(), 4-13.

Kassarjian, Harold H. 1977. Content Analysis in Consumer Research. *Journal of Consumer Research* **4**(1), 8-18.

Lafferty, Barbara A., Ronald E. Goldsmith. 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.

Louie, Therese A., Carl Obermiller. 2002. Consumer Response to a Firm's Endorser (Dis)Association Decisions. *Journal of Advertising* **31**(4), 41-52.

Manski, C.F. 1975. Maximum score estimation of the stochastic utility model of choice. *Journal of Econometrics* **3**(3), 205-228.

Mathur, Lynette K., Mathur, Ike, Nanda Rangan. 1997. The Wealth Effects Associated with a Celebrity Endorser: The Michael Jordan Phenomenon. *Journal of Advertising Research* **37**(3), 67-73.

McCracken, Grant. 1989. Who is the Celebrity Endorser? Cultural Foundations of the Endorsement Process. *Journal of Consumer Research* **16**(3), 310-321.

Miciak, Alan R., William L. Shanklin. 1994. Choosing Celebrity Endorsers. *Marketing Management* **3**(3), 50-59.

Misra, Shekhar, Sharon E. Beatty. 1990. Celebrity Spokesperson and Brand Congruence: An Assessment of Recall and Affect. *Journal of Business Research* **21**(2), 159-173.

Parmentier MA, Fischer E, Reuber AR. 2013 Positioning person brands in established organizational fields. *Journal of the Academy of Marketing Science*, **41**(3):373-387.

Politis, D.N., J.P. Romano, M. Wolf. 1999. *Subsampling*. Springer-Verlag. New York.

Roth, Alvin E., Marilda A. Oliveira Sotomayor. 1990. *Two-Sided Matching: A Study in Game-Theoretic Modeling and Analysis.* Cambridge University Press.

Ryu, Gangseog, Jongchul Park, Lawrence Feick. 2006. The Role of Product Type and Country-of-Origin in Decisions About Choice of Endorser Ethnicity in Advertising. *Psychology & Marketing* **23**(6), 487-513.

Sisario, Ben. 2012. In Beyoncé Deal, Pepsi Focuses on Collaboration. *The New York Times*, Dec 9, 2012, Retrieved February 16, 2014, from http://www.nytimes.com/2012/12/10/business/media/in-beyonce-deal-pepsi-focuses-on-collaboration.html

Thomson, Matthew. 2006. Human Brands: Investigating Antecedents to Consumers' Strong Attachment to Brands. *Journal of Marketing* **70**(3), 104-119.

Till, Brian D., Michael Busler. 2000. The Match-Up Hypothesis: Physical Attractiveness, Expertise, and the Role of Fit on Brand Attitude, Purchase Intent and Brand Beliefs. *Journal of Advertising* **29**(3), 1-13.

Till, Brian D., Sarah M. Stanley, Randi Priluck. 2008. Classical Conditioning and Celebrity Endorsers: An Examination of Belongingnes and Resistance to Extinction. *Psychology & Marketing* **25**(2), 179-176.

Tripp, Carolyn, Thomas D. Jensen, Les Carlson. 1994. The Effects of Multiple Product Endorsements by Celebrities on Consumers' Attitudes and Intentions. *Journal of Consumer Research* **20**(4), 535-547.

Yang, Yupin, Mengze Shi, Avi Goldfarb. 2009. Estimating the Value of Brand Alliances in Professional Team Sports. *Marketing Science* **28**(6), 1095-1111.

Zamudio César, Yu Wang, Ernan Haruvy. 2013 Human Brands and Mutual Choices: An Investigation of the Marketing Assistant Professor Job Market. *Journal of the Academy of Marketing Science* **41**(6):722-736.

Zwilling, Moti, Gila E. Fruchter. 2013. Matching Product Attributes to Celebrities Who Reinforce The Brand: An Innovative Algorithmic Selection Model. *Journal of Advertising Research* **53**(4), 391-410.

FIGURE 1
A Two-Sided Matching Conceptualization of the Celebrity Endorsements Market

THE CELEBRITY ENDORSEMENTS TWO-SIDED MATCHING MARKET

Internal transfers from f to c
e.g. fees, exposure, other payments

FIRMS

Should we seek
celebrity endorsers?

Firm f

Characteristics:

Industry
Brand personality
Sales

Matching value produced by f and c

*Mutual benefit from interactions
e.g. increase in brand equity*

Celebrity c

Characteristics:

Brand personality
Recognition
Age

CELEBRITIES

Should we seek
to be endorsers?

Internal transfers from c to f
e.g. popularity, connections

Market outcomes
Endorsement
contracts formed

Appendix: Classifying Firms and Celebrities by Brand Personality

I used the procedure shown in Figure A1 to classify each celebrity and firm in the data as belonging to one of four of Aaker's (1997) brand personalities.

FIGURE A1
Algorithm for classifying firms and celebrities by brand personality
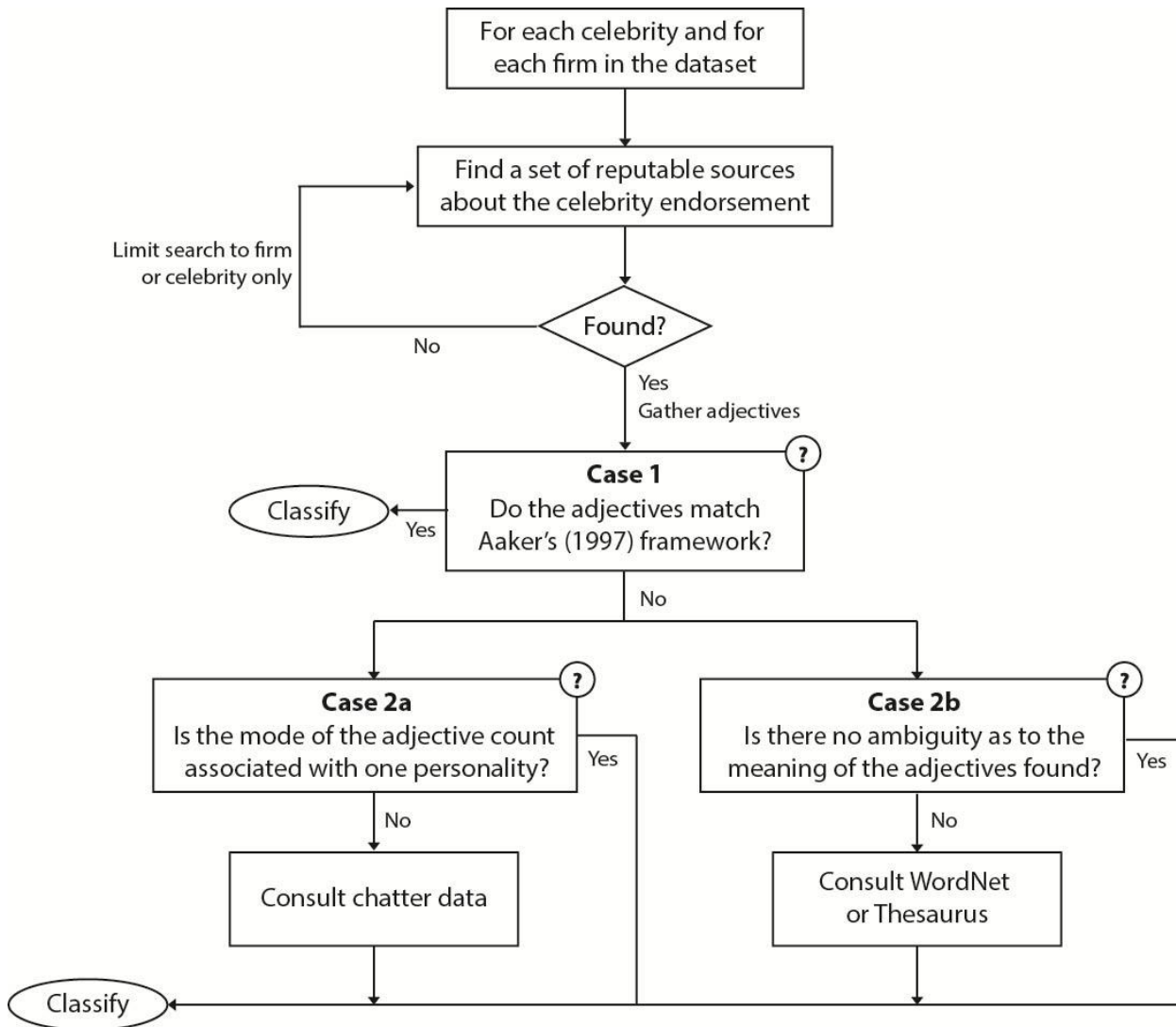
As shown in Figure A1, the algorithm starts by gathering information about firms' and celebrities' endorsement contracts as reported in the trade press. When this information was not

available, trade press articles that described the firms or the celebrities were sought instead. Once these trade press articles were identified, every adjective found in each article was recorded. After these adjectives were obtained, three cases to relate these objectives to Aaker's (1997) framework emerged.

Case 1. Aaker (1997) presents four brand personality dimensions used in this study. When any of the adjectives found for a firm or celebrity matched Aaker's (1997) personality names, that firm or celebrity was classified accordingly. For example, Figure A2 shows a New York Times article where the contract between Uma Thurman and Louis Vuitton is discussed. In that picture, Uma Thurman and Louis Vuitton are described as sophisticated, which matches Aaker's (1997) "sophisticated" personality type.

FIGURE A2
Case 1 in brand personality content analysis

Case 2a. In certain cases there was not a perfect adjective match to Aaker's (1997) brand

personality names. In these cases, all adjectives were matched to Aaker's (1997) *traits* of those

adjectives, shown in Table A1 below.

TABLE A1
Dimensions from Aaker's (1997) personality framework

Brand personality dimension	Associated traits
Sincerity	Domestic, honest, genuine, cheerful
Excitement	Daring, spirited, imaginative, up-to-date
Competence	Reliable, responsible, dependable, efficient
Sophistication	Glamorous, pretentious, charming, romantic
Ruggedness (not in this study)	Tough, strong, outdoorsy

Assuming the adjectives found and the traits in Aaker's (1997) framework matched, a

potential issue was that a celebrity could have two or more personalities, i.e. the distribution of

the adjectives associated with Aaker's (1997) traits could be bimodal, trimodal, etc. In this case,

Internet chatter data was consulted to extract a distribution of words most associated with the

firm or celebrity from blogs, web articles, social media, etc. using NetBase (www.netbase.com).

This word distribution was used to judge which of the multiple personalities found in the initial

search was most likely. For example, in the case of Beyoncé Knowles, two adjectives that related

to prestige were found: "prestigious" and "magnificent beauty". However, two adjectives that

described her as "a success" and "a talented actress" were found as well. Consequently, there is a

bimodal personality distribution, with the modes being sophisticated and competent. By

consulting internet chatter on NetBase, the most incident term associated with Beyoncé Knowles

was "Grammy-winning singer", which denotes competence. Therefore, Beyoncé was classified

as a celebrity with a competent brand personality. In the case of Carmen Electra, using the same

method, she was classified as Exciting, because the term with the highest incidence was "sexy",

which is associated with the Exciting brand personality. Figure A3 shows the distribution of chatter terms for Carmen Electra.

FIGURE A3
Distribution of most used chatter terms to describe Carmen Electra
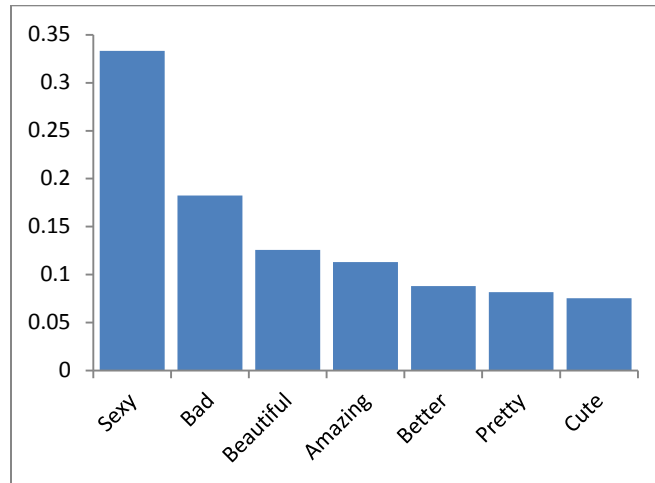
Case 2b. Alternatively, a firm or celebrity's brand personality distribution, based on the initial adjective search, may have been unimodal, but some adjectives may have been somewhat ambiguous. For example, Elizabeth Hurley was described, among other adjectives, as "glamorous". Whether glamorous represents, for example, the exciting personality vs. the sophisticated personality can be assessed empirically. First, searches in Thesaurus.com were conducted to determine whether any of the adjectives in Aaker's (1997) adjective list was a synonym for the adjectives found. If no synonym existed, we resorted to searches in WordNet (wordnet.princeton.edu). WordNet is a database that lists words and their semantic relationships to other words. Therefore whether, semantically, these adjectives match Aaker's (1997) can be assessed, even though they may not be direct synonyms. When searching for "glamorous" in WordNet, this word was found to be related to excitement. Therefore, that particular adjective counted as belonging to the Exciting personality for Elizabeth Hurley.

After solving any ambiguities deriving from cases 2a and 2b, the firm or celebrity in question was classified as belonging to any of Aaker's (1997) five brand personality dimensions, excluding the "Rugged" dimension, as firms and celebrities in the beauty industry were not described using adjectives associated with this brand personality dimension.