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The evaluation of university inventions: Judging a book by its cover? ☆

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ABSTRACT

This study examines the influence of inventor appearance on how technology licensing officers perceive the commercial potential of new university inventions. An experiment with technology licensing officers at Carnegie I research universities in the United States serves to manipulate inventor appearance in otherwise identical invention disclosures. The experiment reveals that licensing officers perceive inventions by more attractive inventors (inventors with a professional appearance) to have more commercial potential. These findings have several critical implications for university technology commercialization.

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1. Introduction

The commercialization of new technologies, originating from universities and research institutes, is an important driver of economic development and growth (Lockett, Siegel, Wright, & Ensley, 2005; Shane, 2004; Siegel, Waldman, Atwater, & Link, 2003). Technology licensing officers play a key role by managing the technology commercialization activities within universities. As the intellectual property rights to university inventions typically belong to the universities that developed these inventions, technology licensing officers make decisions about which inventions to commercialize by evaluating their commercial potential (Clarysse, Wright, Lockett, Van de Velde, & Vohora, 2005; Owen-Smith & Powell, 2003; Thursby & Thursby, 2002). Judging the commercial potential of uncertain new technologies is often very difficult because, at this stage, evaluators lack the necessary information necessary to determine this potential.

An important factor affecting the perception and evaluation of individuals and their work is *physical appearance* (Hosoda, Stone-Romero, &

Coats, 2003; Jackson, Hunter, & Hodge, 1995; Langlois et al., 2000). Even though common sense dictates that one should not judge a book by its cover, physical appearance does generate performance expectations, regardless of whether appearance is relevant to the situation at hand (Webster & Driskell, 1983). Furthermore, the effects of individuals' physical appearance transfers onto business ideas or technologies that these individuals have developed (Baron, Markman, & Bollinger, 2006), implying that the perceived value of new ideas or technologies is contingent on an inventor's appearance. Such effects can have important implications for university technology commercialization if inventor appearance influences (or potentially biases) technology licensing officers when they evaluate new university inventions. To date, no studies have investigated the influence of inventor appearance in the context of university technology commercialization. Therefore, this study addresses the question whether technology licensing officers judge university inventions by their cover.

To examine the effect of inventor appearance on the evaluation of new university inventions, this study draws on a random experiment with 119 active technology licensing officers at Carnegie I research universities in the United States. In this experiment, technology licensing officers evaluate a real life university invention disclosure form including a manipulation of inventor appearance. The treatment group receives an invention disclosure form including a picture of a male inventor with an attractive (professional, well-groomed) appearance whereas the control group receives the exact same disclosure with a picture of a less attractive inventor (less professional and less-groomed appearance). The experiment reveals that licensing officers perceive the inventions of inventors with a more attractive appearance to be significantly more valuable to industry.

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This article proceeds as follows. The next section addresses the relevant theoretical background on the influence of physical appearance and how such influence may enter the context of university technology commercialization. The third section covers the experimental research design, and the fourth section reports the results. The concluding section covers the main implications and conclusions of this study.

2. Theoretical background

Studies on physical appearance demonstrate, in various settings, the impact that appearance can have by differentiating between physically more and less attractive individuals, depending on the research context. Appearance is capable of activating specific performance expectations and can function as a status characteristic (Berger, Rosenholtz, & Zelditch, 1980; Webster & Driskell, 1983). Two main theoretical perspectives explain such performance expectations of physical appearance: (social) expectancy theories and fitness-related evolutionary theories (Langlois et al., 2000). Expectancy theories posit that, based on cultural norms and experiences, an individual's appearance (attractiveness) influences a perceiver's expectations of that individual's traits or behavior (Jackson et al., 1995; Langlois et al., 2000). Every human being holds a cognitive network of assumptions, composed of personal attributes in inferential relations, which explain how appearance can induce stereotype-based expectations – leading to the evaluation of individuals on the basis of these expectations (Ashmore & Boca, 1979; Eagly, Ashmore, Makhijani, & Longo, 1991; Hosoda et al., 2003; Jackson et al., 1995). Alternatively, fitness-related evolutionary theories explain similar effects by arguing that morphological characteristics, like physical appearance, are true indicators of quality across cultures – again resulting in distinct performance expectations (Langlois et al., 2000).

Despite building on varying theoretical foundations, numerous studies and meta-analyses confirm the effects of physical appearance by demonstrating differences in the evaluation of more and less attractive individuals. Several meta-analyses show that people perceive, evaluate and treat attractive individuals more favorably than less attractive individuals in a wide variety of settings (Eagly et al., 1991; Hosoda et al., 2003; Jackson et al., 1995; Langlois et al., 2000). The results of these studies indicate that people perceive attractive individuals as more intellectually and socially competent than their less attractive peers (Eagly et al., 1991; Jackson et al., 1995) and that they judge and treat attractive individuals more positively (Langlois et al., 2000).

Attractiveness influences various job-related outcomes, including selection, hiring and promotion decisions and performance evaluations (Hochschild & Borch, 2011; Hosoda et al., 2003; Mobius & Rosenblat, 2006; Ruffle & Shtudiner, 2014; Tews, Stafford, & Zhu, 2009) as well as long-term socioeconomic outcomes such as employment status and income (Benzeval, Green, & Macintyre, 2013; Hamermesh, 2011; Scholz & Sicsinski, 2014). In a sales setting, studies show that attractive sellers have a higher sales performance (Ahearne, Gruen, & Jarvis, 1999) and buyers respond more readily to requests of attractive sellers (Reingen & Kernan, 1993).

More importantly, positive attitudes generated by attractive individuals spill over to the ideas or inventions of these individuals – making these ideas relatively more valuable in the eyes of evaluators. Landy and Sigall (1974) show that readers evaluate essays including a picture of an attractive writer significantly better than essays with a picture of an unattractive writer, or essays without a picture. The same authors also demonstrate that the positive effect of attractiveness has a greater impact on essays of poor quality. In a randomized experiment, Baron et al. (2006) find that evaluators rate ideas for new technological products more favorably (i.e. having a greater potential for success) when these ideas come from an attractive rather than an unattractive entrepreneur. An independent evaluation confirms that the product ideas in the experiment are of very high quality; therefore, Baron and co-authors argue that attractiveness can influence ratings of ideas known

to be of high quality, even in situations where many people believe that physical appearance has little or no impact.

Overall, the literature on the effects of physical appearance suggests that the appearance of inventors is likely to influence licensing officers when they evaluate invention disclosures. As the effect of appearance typically involves a distinction between more and less attractive individuals, this study focuses on the following hypothesis:

H1. Technology licensing officers perceive the inventions of attractive faculty members to have more commercial potential relative to the inventions of less attractive faculty members.

3. Method

A randomized experiment (2×1 between-subjects design) serves to investigate a potential causal relationship between inventor appearance (attractiveness) and the evaluation of university inventions by technology licensing officers. The experimental design aims to: (1) control the quality of the university invention and (2) isolate the effect of inventor appearance. The experiment involves a manipulation of inventor appearance, by attaching 2 different pictures to an otherwise similar invention disclosure. During the experiment, technology licensing officers, active at US universities, evaluate the invention disclosure and rate its value to industry.

The invention disclosure in this experiment is a modification from an actual university invention disclosure submitted at a Carnegie I research university in the United States. Together with the director of the technology licensing office at that university, the research team modified this invention disclosure to ensure that the disclosure is realistic and representative of the disclosures that university technology licensing officers typically consider. (This licensing office did not participate in the experiment.) The invention disclosure in this study includes information on the new invention, accompanied by background information on the inventor, such as current academic position and educational background. All information in the disclosures is exactly the same, except for the appearance (picture) of the inventor.

3.1. Sample

To obtain subjects for the experiments, the authors contacted technology licensing office directors at Carnegie I research universities in the United States and asked their offices (i.e. licensing officers) to participate in the study. At those licensing offices willing to participate, licensing officers received an invitation to the online experiment. Each licensing officer received an email including a password-protected link to the online experiment, with a unique (anonymous) login code and password combination to gain access. The unique login information ensures confidentiality of both the invention disclosures and the licensing officers' responses. The experimental protocol implies a random assignment of licensing officers to the treatment or control group (except for the inventor picture, both groups evaluate identical disclosures). The protocol also requires all participants to complete the entire experiment in a single session. In addition, the participating licensing officers provide the following information: gender, age, experience (number of years working as a licensing officer), highest academic degree and the technical field in which they obtained their highest degree. Table 1 provides descriptive information on the sample of licensing officers participating in this experiment.

3.2. Treatment

During the experiment, each licensing officer evaluates an invention disclosure including a picture of the inventor in the upper right corner of the disclosure form. Except for the inventor picture, both the treatment and control group assess an identical invention disclosure. As

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