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Red Giants or Black Holes? The Antecedent Conditions and Multi-Level Impacts of Star Performers

ABSTRACT

High-achieving employees, the “stars” of an organization, are widely credited with producing indispensable, irreplaceable, value-enhancing contributions. From the recruitment of celebrity CEOs to the fierce competition for star scientists, and from lucrative contracts for sports icons to out-sized bonuses for top salespeople, human capital strategies have long promoted the importance of star performers. Sixty years of research on stars has witnessed a wide array of contexts, levels of analysis, and sub-dimensions, much of which is focused on the accomplishments of these alpha-tail individuals. More recently, however, scholars have begun to draw varied conclusions regarding both the favorable and unfavorable impacts of star performers, leading to a balkanization of the perspectives comprising the stream. Our review of the multi-disciplinary work on stars synthesizes disparate studies, settles definitional problems, and integrates complementary factors into a coherent formative construct. Through this, we foster the development of a research agenda concerning the manner in which star performers are, by their very nature, simultaneously red giants and black holes, the precise balance of which is fertile soil for future inquiry.

Keywords: Stars, Star Performers, Human Capital, Talent Management, Celebrity

*Ya either got it, or ya ain't.
Some people got it, and make it pay.
Some people can't even give it away.
You either have it, or you've had it!*
- Styne, Sondheim, & Laurents,
Gypsy: A Musical Fable

There is no shortage of fault to be found amid our stars.
- John Green, *The Fault in Our Stars*

INTRODUCTION

Observed from earth, equipped with nothing more than the naked eye, most stars appear more or less the same; yet, stars' celestial sparkle has inspired countless songs and stories for millennia, while becoming an indelible descriptor of high praise for uncommon human achievement. In organizational contexts, “stars” are widely, and often justly, credited with generating the majority of value-adding contributions in organizations (Fuller & Rothaermel, 2012; Furukawa & Goto, 2006; Zucker, Darby, & Brewer, 1994). According to O'Boyle and Aguinis (2012), stars are so

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3 rare that their impact on organizational outcomes is best understood as a power law distribution,
4 suggesting that a few alpha-tail individuals outperform the other 99.9%.
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8 Management scholarship examining stars and non-stars extends back to Whyte's (1956)
9 comparative study of outstanding and average performers, a time when massive, globally operating
10 firms dominated a manufacturing-intensive economy and human capital focused more on fitting
11 in than on standing out (McGregor, 1960). Stars, while not an after-thought, did not figure
12 prominently in research on value creation and value capture (McAdam & McClelland, 2002).
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14 Through the rise of the service economy and knowledge workers, scholarly focus shifted towards
15 a conception of stars as rare, high-performing individuals, who are afforded significant
16 organizational resources, high external status, wide visibility, who substantial social capital, and
17 who contribute tangibly and forcefully to the competitiveness of firms (Call, Nyberg, & Thatcher,
18 2015; Porter, 1980). Fueled by real world insights regarding the escalating demand for star-level
19 human capital, McKinsey Consulting's report, *The War for Talent* (Chambers, Foulon, Handfield-
20 Jones, Hankin, & Michaels, 1998), captured the *zeitgeist* of organizations panic-stricken over an
21 incapacity to attract and retain star performers. In response, strategic human resource management
22 (SHRM) programs made star recruitment and retention a focal point of efforts to drive superior
23 financial performance (Damanpour, 1991; Furukawa & Goto, 2006; Sahay, 2018).
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42 Mirroring this evolving tilt in management research and practice towards star performers,
43 organizational scholars emphasized for decades the positive impacts of stars based on the premise
44 that star performers are indispensable to successful firm performance – a premise that has, until
45 recently, remained largely undisputed (Boynton & Fischer, 2005; Wright, Coff, & Moliterno,
46 2014), particularly in high-tech industries where stars are thought to exert a significant impact on
47 innovation (Aguinis & O'Boyle, 2014; Corolleur, Carrere, & Mangematin, 2004; Hess &
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3 Rothaermel, 2011; Higgins, Stephan, & Thursby, 2011; Zucker, Darby, & Torero, 2002). For
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5 example, Bell Labs developed the largest, most productive private-sector concentration of
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7 technical stars ever assembled, producing nine Nobel Prize winners, leading the global race to
8
9 develop transistors, lasers, Unix, C++, radio astronomy, and photovoltaic cells (Gertner, 2012).
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11 But is the narrative on stars so straight-forward? “What if,” as Malcolm Gladwell (2002) asked,
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13 “smart people are overrated?” Enron and Theranos were also built by and populated with star
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15 performers, many of whom ultimately supported nefarious actions that resulted in felony
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17 convictions. Webvan, a start-up built by a star entrepreneur and financed by a star-studded line-up
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19 of venture capital firms, including Sequoia and Benchmark, quickly and ignominiously burned
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21 through \$1.2 billion of investment capital before abruptly shutting down. At a minimum, this
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23 suggests that context is a key determinant of a healthy star culture (Dries, 2013).
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29 Recently, management scholars have begun to examine whether there are circumstances in
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31 which stars may exert negative impacts on organizational performance. As new studies excavate
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33 and describe undesirable aspects of stars and star systems (e.g. Asgari & Hunt 2015; Groysberg &
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35 Lee, 2009; Groysberg, Polzer, & Elfenbein, 2011; Kehoe & Tzabbar, 2015) – such as sub-optimal
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37 resource allocations, unwanted disruptions to team chemistry, and the crowding out of non-stars -
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39 - this research suggests that boundary conditions and greater nuance are warranted. More than
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41 anything else, this counterpunctual vantage point on stars has laid bare definitional inadequacies
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43 and inconsistencies. While recent studies have begun to formalize an approach to stars research
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45 (e.g. Call et al., 2015; Groysberg et al., 2011; Li, Li, Li, & Li, 2020), progress is hindered by under-
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47 theorization and a lingering tendency for scholars to line up either for or against the efficacy of
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49 star performers. Consequently, the scholarly notion of “stars” still lacks the coherence of what can
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51 be reasonably regarded as a rigorous construct (Suddaby, 2010).
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3 As scholars come to the realization that star performers are neither all favorable nor all
4 unfavorable, important questions have arisen, such as: *What is an appropriate and useful*
5 *framework to describe the conditions that help or hinder a star's ability to elevate organizational*
6 *outcomes?* And, even more basic: *Can stars be studied fruitfully, and if so, how?*
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12 The purpose of this review is to address these questions by seeking to achieve four central
13 aims. First, we review the existing literature on stars by tracing its definitional heritage and
14 exploring the causes and consequences of its nascent theoretical foundation. Doing so provides
15 much-needed separation from related constructs, while offering a definition of stars that is more
16 relevant and applicable to organizational and management theory. Second, we explore the manner
17 in which stars research has become a “construct-less” stream, and then propose a path forward by
18 calling for a conceptualization of stars as a formative construct. Third, we delve into the specific
19 substance of positive and negative star impacts through a research framework that organizes and
20 integrates the existing literature, while offering a contingency approach to assess the multi-level
21 impacts of star performers. Fourth, we articulate a more nuanced perspective of star impacts, one
22 that embodies the conception that star performers are simultaneously “red giants” *and* “black
23 holes.” Our review concludes with the challenges and opportunities of formalizing the star concept
24 in management research.
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43 THE LITERATURE ON STARS

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46 Scholarly work on star performers has its roots in the post-World War II era of large-scale
47 manufacturing giants (Whyte, 1956). Whyte's central finding was that in static industries average
48 workers are preferable, while stars are often desirable in dynamic environments. Since that early
49 work, scholars began to identify other attributes of stars such as creativity (MacKinnon, 1966) and
50 prestige (Merton, 1968). Through the subsequent decades, a narrative emerged, conceptualizing
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3 stars as rarefied contributors to firm success. According to Rosen (1981), stars' productivity is so
4 exceptional that their output cannot be substituted through the work of other employees. Hunter,
5 Schmidt, and Judiesch (1990) showed the importance of stars in jobs with high-complexity in
6 which their productivity was found to be twice that of average workers. Wide acceptance of the
7 'War for Talent' perspective heightened the focus on star power (Michaels, Handfield-Jones, &
8 Axelrod, 2001), and the corresponding belief that stars constitute a material differentiator of
9 organizational success or failure (Bedeian & Armenakis, 1998; O'Boyle & Kroska, 2017).
10 Scholars argued that if value creation hinges on individual contributions, the difference in output
11 between stars and non-stars is a key determinant of firm-level outcomes (Groysberg, Lee, &
12 Nanda, 2008). And yet, the precise impact of stars on both peers and organizations remains
13 equivocal. An increasingly wide range of positive and negative star impacts (Dries, 2013) have
14 emerged in recent years, suggesting that reflection upon the sprawling stars literature is warranted.

30 **Systematic Search for Stars**

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33 To select a sample for our review, we used the following procedure, which is summarized
34 in Table 1. First, we searched for articles with the term "star" in the title, keywords, or abstract via
35 the EBSCO Business Source Complete (BSC) database. Although BSC publications are relatively
36 free of references to stars in the astronomical sense, this is not uniformly the case. To address this
37 concern, we removed IEEE and similar outlets, containing exclusively astronomical and scientific
38 usage, after which our list contained 952 articles. Second, we made certain that each article's scope
39 was aligned with the subject of our study, since "stars" is used in many other contexts; for example,
40 "five-star hotels" and "star-shaped networks." This correction resulted in a set of 466 articles.
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42 Third, we excluded works that are not listed in Institute for Science Information's Web of
43 Knowledge Journal Citation Report, further reducing the number of articles to 308. Fourth, we
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3 removed papers that do not have organizational or managerial implications, such as papers that are
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5 biographies of stars. This reduced the pool to 226 articles. Finally, we took an additive step by
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7 including articles from parallel fields that were well-cited and highly consistent with our objective
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9 of reviewing star performers in an organizational management context. Through this, 4 pieces were
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11 added, bringing the total set of articles to 230. The complete list of journals included in our search
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13 is enumerated in Table 2 and the pool of reviewed articles is listed in Table 3.
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17 **INSERT TABLES 1, 2 and 3 ABOUT HERE**
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19 Our search reveals a number of interesting trends that influenced the structure and
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21 substance of our review. First, the volume of articles on stars has risen markedly in recent years.
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23 Use of the term “star” in an organizational management context is eight times higher between 2000
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25 – 2019 than it was in the preceding twenty-year period (Figure 1), indicating expanding scholarly
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27 interest in star performers and across an increasing number of journals, particularly since 2009.
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31 **INSERT FIGURE 1 ABOUT HERE**
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33 Second, reflecting scholarly efforts to better define the stars concept in management, there is
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35 evidence of increased work to separate the star construct from related terms, such as celebrity and
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37 talent (e.g. Aguinis & O’Boyle, 2014; Call et al., 2015; Tzabbar & Kehoe, 2014), upon which we
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39 elaborate in the following section. Third, there is an increased effort to dispel the *atheoretic*
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41 foundations of star research by seeking to situate the stars literature in more useful and effective
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43 conceptual framing – an issue that we take up in our discussion below of the stars construct. Fourth,
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45 research on stars continues to move simultaneously in radically disparate directions. Although
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47 escalating interest has spawned a proliferation of research, the stream reflects a lack of integration.
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49 A review of the literature on star performers highlights this continuing balkanization.
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Literature on the Dimensions of Stardom

Through our review of the existing literature on stars, we identified four recurrent dimensions of stars that have been the primary focus of prior research: (i.) exceptional, long-term, high performance, (ii.) broad external status, (iii.) visibility in the labor market, and (iv.) substantial social capital. To date, studies have typically focused on select subsets of these four dimensions, rather than treating all four elements in holistic fashion. For example, Call and colleagues (2015) focus on three of the four dimensions – choosing to omit external status – but do so while treating stars as a reflective rather than a formative construct, an important topic upon which we elaborate later. Call and colleagues succeed in developing an insightful motivational framework and fostering improved understanding and application of the star construct among social psychologists. However, their omission of external status and their use of a reflective approach to the star construct are emblematic of the difficulties scholars have faced in their varied attempts to maintain logical coherence and avoid tautological reasoning in conceptualizing stars (Suddaby, 2010). Building on the need for a less-balkanized framework, Figure 2 offers a conceptual integration of these key dimensions, which we detail in the sections that follow.

INSERT FIGURES 2 AND 3 ABOUT HERE

Performance. The primary focus of the literature on stars involves their out-sized productivity. This central preoccupation is evident in Figure 3. While all of the articles in our review materially incorporated the performance dimension, each of the other three dimensions were included less than half the time. Nearly one-third of the articles described stars solely in terms of the performance dimension. This inconsistency underscores the extent to which high performance is a necessary, but insufficient condition of stardom.

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3 Aguinis and O'Boyle (2014: 313) define stars as "a few individuals who contribute a
4 disproportionate amount of output." Stars sit atop the performance pyramid (O'Boyle & Aguinis,
5 2012; Kehoe, Lepak, & Bentley, 2018) as high-achieving individuals who generate tremendous
6 innovative value (Kehoe & Tzabbar, 2015; Liu, Mihm, & Sosa, 2018). The emphasis on stars'
7 performance is rooted in three seminal theories governing the value of human capital: resource-
8 based view (Barney, 1991), knowledge-based view (Grant, 1996), and knowledge externalities and
9 spillovers (Griliches, 1979; Jaffe, 1986). In a service-sector-driven, knowledge-based economy,
10 the value of stars' rare and valuable knowledge, capabilities, skills, and insights is made manifest
11 through an out-sized ability to identify and engage new knowledge domains, while directing
12 organizations towards the achievement of superior performance (Hitt, Biermant, Shimizu, &
13 Kochhar, 2001; Kehoe et al., 2018).

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15 The centerpiece of stars' unique ability to create value, and that which distinguishes them
16 from average performers, is the direct impact that stars can have on organizational performance.
17 For example, in innovative pursuits (Liu et al., 2018), stars often possess the capacity to develop
18 transformative approaches and profitable solutions, often independent of organizational support
19 structures. There is also an emphasis in star research on time. Star performance is partially
20 characterized by its longevity in that stars are those who maintain a high level of performance over
21 a sustained period of time, thereby differentiating them from "flash-in-the-pan" performers and
22 "one-hit wonders" (Call et al., 2015). The emphasis on duration minimizes the likelihood that
23 stardom is strictly serendipitous. Although it is conceivable that some stars emerge purely as the
24 consequence of chance (e.g. Fitza, 2014), the requirement that stars exhibit sustained exceptional
25 performance makes this less likely (Aguinis & O'Boyle, 2014).
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3 **Status.** As society plays an important role in how stars are defined, status is an inescapable
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5 dimension of stardom and stars are found to heavily populate higher levels of social hierarchies
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7 (Kehoe et al., 2018). Status is principally, though not exclusively, a function of a star's actual
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9 performance as well as the attributes of that performance as they are perceived by others, which
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11 underscores the sense that stardom is at least partially in "the eye of the beholder." According to
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13 social comparison theory (Festinger, 1954), stars are likely to activate socially driven arrangements
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15 and to exert influence on the social fabric of firms. According to Sauder, Lynn, and Podolny (2012:
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17 268), "Status, for organizations as well as individuals, is broadly understood as the position in a
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19 social hierarchy that results from accumulated acts of deference." Status is best defined as the level
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21 of respect and admiration that an individual receives (Magee & Galinsky, 2008). Scholars have
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23 distinguished between exceptional internal and external status, noting that internal status involves
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25 high levels of status among teams and organizations, while external status refers to broad
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27 exceptional status across an industry (Kehoe et al., 2018). Here, too, there are time-related effects
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29 associated with the durability of status and stars tend to enjoy high levels of external status over
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31 an extended period of time.
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37 **Visibility.** History is rich in its accounts of brilliant individuals who passed undiscovered
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39 in their lifetimes. Vincent van Gogh, who sold only a single painting while alive, has had his works
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41 gaveled at more than \$80 million in recent years, highlighting the extent to which stardom is not
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43 only temporally dependent, but also socially situated, such that visibility is highly relevant. By
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45 implication, then, stars are those who garner disproportionately high levels of attention and enjoy
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47 high levels of visibility in the labor market (Groysberg et al., 2008). Visibility has deep roots in
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49 the literature on celebrities, where scholars have studied stars' disproportionate media attention
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51 and the popularized impact of celebrities' emotional resonance (Hubbard et al., 2018). Call et al.
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3 (2015: 626) defined visibility as “the extent to which an employee’s job performance and
4 reputation are observable.” Management scholars have studied the visibility of high-achievers
5 sparingly, but with some important insights that suggests fertile soil for additional research. For
6 instance, Connelly and colleagues (2011) found that a star’s visibility serves as a key source of
7 information signaling the quality of firms with which she or he is affiliated. Others (e.g. Oldroyd
8 & Morris, 2012) have concluded that visibility can lead to more resources, opportunities, and peer
9 effects. As with status, visibility can arise within organizations or societally. Groysberg and
10 colleagues (2008) show that stars are likely to enjoy high levels of visibility in the external labor
11 market, extending over long periods of time. However, the same socially-driven temporal effects
12 that have enabled the works of van Gogh to age well, can work against a fading star, as visibility
13 can wane if individuals fail to continue delivering superior performance (Call et al., 2015).
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28 ***Social Capital.*** The final dimension of stars that is well-represented in existing literature
29 consists of social capital, which functions to the benefit of both stars and their respective
30 organizations (e.g. Oldroyd & Morris, 2012). Over and above their exceptional performance, the
31 social capital of stars is manifested in valuable external connections and enviable access to tangible
32 and intangible resources (Hess & Rothaermel, 2011; Kehoe et al., 2018), which together enable
33 them to favorably impact organizational performance. Network research suggests that the content
34 of social network resources impacts the speed of use and the value harvested from a star’s
35 knowledge (Lee, 2007). Based on social network theory (Burt, 1992; Granovetter, 1973), stars’
36 social capital enables them to remain well-versed in cutting-edge knowledge, which is vital to
37 identifying new opportunities and discarding obsolete conceptions (Dane, 2010). Studies have also
38 shown that stars’ ability to recombine knowledge can be instrumental in tangibly enhancing firm
39 performance (Grigoriou & Rothaermel, 2014). The social capital dimension of stardom suggests
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3 the need to examine star impacts more expansively than simply relying upon performance
4 measures. Given the importance of social mechanisms in generating new knowledge, there have
5 been attempts to shift scholarly focus from stars' unique generative capacities to their networking
6 abilities (Grigoriou & Rothaermel, 2014). Studies have investigated stars' connectivity to
7 universities (Hess & Rothaermel, 2011), the impact of social capital on firm outcomes (Oldroyd
8 & Morris, 2012), and the favorable outcomes spawned from collaborative insights and inter-
9 personal helpfulness (Kehoe & Tzabbar, 2015; Liu, 2014; Liu et al., 2018; Oettl, 2012).

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19 In sum, the literature on star performers consists of parallel conversations across a
20 multiplicity of fields. Each conversation seems to recognize that the ascendance to stardom
21 involves more than simply exceptional performance, but there is not clear agreement on how to
22 understand and operationalize its dimensionality across diverse organizational contexts. This is, as
23 we discuss next, a function of growing pains in the development of the stars construct, thereby
24 raising an important question about whether the stars construct is something that can be effectively
25 formulated as a reflective construct (MacKenzie, Podsakoff, & Jarvis, 2005).
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37 **STARS: A DEFINITIONAL QUAGMIRE**

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40 As much, or more so than other terminology used in the study of management and
41 organizations, the term "stars" is heavily influenced by the popular origins and use of the word.
42 Ordinarily, scholarly terms migrate into the popular consciousness, albeit with some considerable
43 modification. In the case of "stars," the term had a long, media-tinged existence prior to use in
44 research and much of that popular figment has infused itself into scholarship in unfiltered fashion.
45 Since the star concept has only recently been subject to serious definitional rigor, it presents
46 scholars with a quagmire that is in equal measures a challenge and an opportunity. Unlike streams
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3 such as talent management (e.g. Dries, 2013; Lewis & Heckman, 2006; O'Boyle & Kroska, 2017)
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5 that have engaged in bottom-up construct development through the explicit lens of human capital
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7 and organizational performance, the development of "stars" as an "unanchored" concept in
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9 organizational research continues to be hampered by a lack of semantic precision (Suddaby, 2010).
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11 A pervasive mismatch exists between conceptual work that tends to treat stars as a formative
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13 construct (MacKenzie et al., 2005) and empirical work that treats stars as a reflective construct
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15 (Edwards & Bagozzi, 2000). We elaborate on these issues below.
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18 19 **Unclear, Divergent, and Tautological Definitions**

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21 "Stars" have been defined, conceptualized and measured in various ways, many of which
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23 are inconsistent with one another (Kehoe et al., 2018). This has resulted in difficulties in
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25 identifying and interpreting the character and substance of stars as well as their impact on peers,
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27 teams, and organizations. As noted above, while the primary focus of stars research focuses on
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29 their out-sized productivity, other studies have investigated their visibility in the market or high
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31 status, neither of which is necessarily a result of performance (e.g. Adler, 1985; Groysberg, et al.,
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33 2008; Kehoe et al., 2018), nor is either predictive of stars' potential output in the future (e.g.
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35 Feldman & Goldsmith, 1986; O'Boyle & Kroska, 2017). Recent scholarly work has tried to inject
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37 greater nuance by examining the type of knowledge stars possess (Baba, Shichijo, & Sedita, 2009;
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39 Subramanian, Lim, & Soh, 2013); the portability of their knowledge (i.e. general or firm-specific)
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41 across varying organizational contexts (Groysberg et al., 2008), the basis of their perceived
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43 performance (Kim & King, 2014); the impact exerted across the employment life cycle (Morris,
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45 Alvarez, & Barney, 2018); and, the role of gender differences in shaping how stars are identified,
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47 rewarded, or even promoted (Aguinis, Ji, & Joo, 2018). However, as Table 4 indicates, a majority
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49 of studies define stars not based on their essential attributes or characteristics, but rather on the
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3 achievements or outcomes the star produces. This definitional heritage has led to the stars construct
4 becoming a product of accretion; that is, a growing list of largely atheoretic facets that offer a
5 functional definition of stars rather than a generalizable theory-based definition.
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10 **INSERT TABLE 4 ABOUT HERE**
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12 Thus, definitions of stars tend to suffer from tautological premises, wherein stars are
13 defined based on the outcomes they supposedly produce. Many of these are highly idiosyncratic
14 to specific contexts. For example, Higgins and colleagues (2011: 607) defined a star “as a
15 university-affiliated scientist who is also the recipient of a Nobel Prize”. However, winning a
16 Nobel Prize is a consequence of world-class research and is not an essential attribute of a star
17 performer. Other examples include instances in which stardom is defined as circumstances
18 “wherein relatively small numbers of people earn enormous amounts of money and dominate the
19 activities in which they engage” (Rosen, 1981: 845), or in which the performance of stars is
20 “disproportionately” higher than that of their peers (Call et al., 2015; Collings et al., 2017). In each
21 of these cases, if firm-level achievement relies upon a nexus of both definable and undefinable
22 dimensions, the specific role and impact of a star performer is, at a minimum, contingent upon
23 individual and organizational factors that may defy identification, much less measurement.
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40 **Unclear Construct Boundaries**
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42 Problems also arise in the stars literature stemming from the lack of clear boundary
43 conditions between star performance and other related constructs such as “celebrity”, “high
44 performers”, or “top talent”. Celebrity mainly refers to someone who is the recipient of significant
45 public attention (Rindova, Pollock, & Hayward, 2006; Rojek, 2001). Celebrities have unique
46 attributes due to their emotional resonance and visibility with external audiences (Rindova et al.,
47 2006), however, celebrity status does not always favorably enhance firm performance (Cho et al.,
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3 2016). As Call and colleagues (2015) argue, celebrities can have positive or negative recognition
4 that results in high visibility. “High Performers” mainly refers to individuals who exhibit an
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6 unusually high output, judged against firm-level and industry-level norms. According to Gallardo-
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8 Gallardo et al. (2013), exceptional performers are those achieving at the 90th percentile. However,
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10 top performers do not invariably benefit from high visibility or social capital.
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15 The conflation between star performers and other related constructs has emerged
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17 concomitantly with the widespread implementation of corporate talent management programs
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19 (Axelrod, Handfield-Jones, & Welsh, 2001; Chambers et al., 1998). Recent scholarly work defines
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21 talent management as “activities and processes that involve the systematic identification of key
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23 positions which differentially contribute to the organization’s sustainable competitive advantage,
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25 the development of a talent pool of high-potential and high-performing incumbents to fill these
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27 roles, and the development of a differentiated human resource architecture to facilitate filling these
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29 positions” (Collings & Mellahi, 2009: 305). As this definition indicates, talent management
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31 deploys “high potential” and “high performing” individuals to fill “key roles” in organizations.
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33 Yet, unlike the concept of star performers, top talent does not necessarily refer to visibility, status,
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35 or social capital. Top talent is different from high performers, as it focuses on strategic roles in
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37 organizations and tends to be future oriented as a senior-level planning activity.
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43 A common thread running throughout these varied definitions and contexts is an
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45 increasingly pervasive assumption that the performance differentials between star employees and
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47 those of their peers are best characterized as power law distributions (O’Boyle & Aguinis, 2012)
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49 where very few alpha-tail individuals outperform the other 99%. However, power law distributions
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51 are difficult to describe in a non-tautological fashion (Dries, 2013): stars are extraordinary because
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3 the extraordinary ones are stars. To address these definitional issues, it is essential to explore
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5 alternative, non-tautological approaches to defining the stars construct.
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7 **Formative or Reflective Construct?**

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10 Central to the confusing definitional pluralism of stars is the lack of consensus about how
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12 to address the causal nature of the construct, particularly the issue of whether “stars” is a formative
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14 or reflective construct (MacKenzie et al., 2005); an issue that has potent implications for how stars
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16 are defined, theorized, and operationalized by scholars. The distinction is critical (Edwards &
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18 Bagozzi, 2000), because as MacKenzie and colleagues (2005: 713) note, the use of formative
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20 constructs is appropriate when the sub-dimensions “capture unique aspects of the conceptual
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22 domain.” A formative approach to stars rests in the premise that one or more of the underlying
23
24 sub-dimensions “create” the basis for and give meaning to the star construct. For example, scholars
25
26 might argue that an individual’s high performance and social capital “form” the basis of her or his
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28 stardom. Conceived as a formative construct, the core dimensions of stardom together form a star.
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31 The formative components may or may not be highly correlated, since each represents a unique
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33 aspect of the construct. Conversely, a reflective approach is one in which stardom is “reflected”
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35 through the causal outcomes of being a star. The difference between formative and reflective
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37 constructs can be summarized as follows: X, Y, and/or Z together *form* (create, cause) a star;
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39 versus, a star is *reflected* by (causing) X, Y, and Z. According to a reflective approach, an
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41 individual can be identified as a star when each of the reflective components that constitute
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43 stardom can be observed and measured; and, even when that is the case, tautological issues remain
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45 if it is theorized that stardom is reflected by, and itself causes, exceptional performance. The
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47 differences between formative and reflective approaches are presented in Figure 4.
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54 **INSERT FIGURE 4 ABOUT HERE**
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3 As the left side diagram in Figure 4 indicates, if stars were considered to be a reflective
4 construct, then all direct effects flow from the construct to the various measures of the construct.
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6 Consistent with Edwards and Bagozzi (2000), factor loadings (λ_i) express the magnitude of the
7
8 construct's effect and δ_i capture the random measurement error for each dimension, such that
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10 covariance among the dimensions is explained by a single common cause. Although this represents
11
12 the approach depicted in Call and colleagues' (2015: 625) important work on the motivational
13
14 underpinnings of star performers, it is difficult to apply their approach in a non-tautological
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16 fashion. For example, high performance is largely within the control of an employee, but visibility
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18 requires the activation of and recognition by external stakeholders. Somewhat problematically, a
19
20 reflective conceptualization of the stars construct posits that stardom is the underlying cause of
21
22 high achievement, when actually high achievement is a precondition to achieving star status. A
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24 reflective approach to the star construct also envisions each of the dimensions reflecting
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26 directionally similar measurements for each of the dimensions. However, it is entirely conceivable
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28 that high-performance may diminish even while a star retains some measure of visibility, in which
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30 case the covariance among the dimensions cannot be explained by a common cause (i.e. the star
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32 construct). In these respects, it is difficult to conceive of stars as a reflective construct in a logically
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34 coherent fashion.
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42 Alternatively, the right side of Figure 4 depicts stars as a formative construct, wherein the
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44 dimensions are correlated causes of star status and the construct itself does not explain the
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46 covariance among the dimensions. Rather, each of the dimensions potentially exert influence upon
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48 one another (as depicted through each dimension's arrow), but are each what Edwards and Bagozzi
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50 (2000: 162) call "error-free causes" of the construct since the causality flows from the dimensions
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52 to the construct, each with magnitude λ_i , expressed as factor loadings. ζ is measurement error,
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3 representing the portion of the star construct that is not captured by the dimensions. This, too,
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5 represents a departure from the reflective approach in that a reflective construct has a one-to-one
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7 mapping with its dimensions. Given the highly heterogeneous array of contexts for which use of
8
9 the stars construct routinely arises – ranging from athletics, artists and academics to inventors,
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11 investors, and engineers – the development of a generalizable theory of star performers points to
12
13 the need for and development of a formative construct, wherein measures can be validated using
14
15 reliable scales that allow for flexible inter-relationships between the dimensions (MacKenzie et
16
17 al., 2005). In this fashion, the definitions and theories governing star performers is sufficiently
18
19 specific to differentiate stars from related constructs (e.g. talent or celebrity), but sufficiently
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21 general so that new theories need not be developed for each and every idiosyncratic human capital
22
23 context. This, in turn, mitigates methodological concerns arising through the study of stars, while
24
25 positioning the star construct as a more intelligible, veridical, and useful tool for the study and
26
27 management of organizations – opportunities that we examine in concluding section.
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32 33 **Measures and Methods in Stars Research**

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35 Our review of the multi-disciplinary literature on stars illuminates the importance of
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37 moving towards a definitional construct for stars that is more conducive to theory-building and
38
39 theory-testing (Suddaby, 2010). However, since the organizational and sectoral circumstances
40
41 involving star performers vary quite dramatically from context to context, the methods and
42
43 measurements used by scholars to operationalize stars as a reflective construct are stymied by the
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45 circular reasoning that accompanies the reflective approach, yielding incomplete explanatory
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47 models. The lack of agreement regarding what actually constitutes a star renders meaningful
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49 comparisons across empirical studies practically unachievable.
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From Quagmire to Clarity: An Alternative Definition

Existing treatments of stars (e.g. Call et al., 2015; Li et al., 2020; O’Boyle & Aguinis, 2012) have aptly underscored the importance of positioning stars as a coherent construct. As we have argued above, in order to achieve this a shift is needed to re-conceptualize stars as a formative construct. Such a shift addresses several fundamental issues regarding the causal direction of stardom’s relationship to its various dimensions as well as the manner in which scholars should address the conceptual and empirical linkages between stars, organizations, and managers.

There is precedence for adopting a formative approach to construct development in organizational and management theory. For example, entrepreneurial orientation is a robust, widely used, multi-dimensional construct, for which scholars vary the number of dimensions based on how the construct is being employed for a given line of inquiry (George, 2011; George & Marino, 2011). This is preferable to engaging in an unending process of accretion, whereby new stipulations are appended to a construct over time; a process that limits the generalizability and intelligibility of the focal construct. Recognizing the need for a definition that supports the aims of developing a formative construct that does not suffer from tautological premises, we propose the following general definition of star performers:

“Stars are individuals who are widely and enduringly perceived as possessing rare, desirable qualities through which they can produce exceptional outcomes.”

Applying this alternative definition, the dimension of uncommon performance is established as a necessary condition for star formation, but other formative dimensions of stardom arise and are justified as a function of the relevant context. Rather than pinning the definition of stars to an ever-expanding list of attributes, our alternative definition demarcates the vital attributes of stars without burdening the construct with dimensions that may vary by context. For example, as

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3 displayed earlier in Figure 4, Call et al. (2015) depicts a reflective construct and one that does not
4 include external status. However, for the study of management and organizations, external status
5 is critical to numerous contexts and management challenges and organizational dynamics – as is
6 the formative approach.
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16 **STAR ANTECEDENTS: THE DRIVERS OF STAR FORMATION**

17 **Literature on the Antecedents of Stardom**

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20 As the foregoing discussion makes clear, most conceptual and empirical work on stars has
21 focused on their performance-related impacts, while, the antecedents to stardom have been
22 accorded limited attention, primarily on the part of economists and talent management scholars
23 (Adler, 1985; Collings et al., 2017; MacDonald, 1988; Rosen, 1981). Among economists, Rosen's
24 (1981) study of stars revealed the role of market changes in developing stars. He also found that
25 the window for stars' impact is fleeting since, at equilibrium, the costs for the aggregated output
26 of average workers is indifferentiable from the costs for star-quality performance. Conversely,
27 Adler (1985) discovered, counter-intuitively, that instances arise in which the absence of any
28 discernible talents still leads to heightened earnings and stardom. In other words, not only are there
29 conditions in which there is no economic benefit to organizations from stars (e.g. Rosen, 1981),
30 sometimes those who are accorded star status perform no better than average (e.g. Adler, 1985).
31 These findings marked a watershed in the development of the stars concept because the studies
32 demonstrated that stardom is more multi-faceted than mere giftedness. Other scholars followed
33 this line of analysis, such as MacDonald (1988), who identified the importance of early entry into
34 an occupation.
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3 Aside from economists, scholars of organizational design and development have developed
4 multiple, competing perspectives on the sources and the curation of talent as a key driver of
5 stardom. According to Dries (2013), six theoretical perspectives have emerged in the literature on
6 talent management, representing varied assessments of star antecedents: talent as capital, talent as
7 giftedness, talent as individual differences, talent as strengths, talent as identity, and talent as social
8 perception. Scholars have also studied the degree to which talent is, or is not, dependent on specific
9 contextual circumstances and whether or not it is transferable (e.g. Bullock et al., 2009). Cognizant
10 of the notion that not all talent leads to stardom and not all stars are the most talented, scholars in
11 strategic human resource management (SHRM) have studied the inter-connected roles of ability
12 and motivation (e.g. Hough & Oswald, 2000; Vallerand et al., 2003). More recently, research has
13 begun to explore talent management as an integrated organizational process. For example, Collings
14 et al. (2017) focused on the emergence and development of talent as a three-part "matching"
15 process: the right person to the right set of tools to the right set of firm-level needs.
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33 Perspectives from economics and SHRM are both informative regarding individual sources
34 and market-based needs for talented individuals who are capable of prodigious accomplishments.
35 However, neither perspective is equipped to support investigations of how and why star performers
36 emerge and persist, nor does either view comprehensively explain the varied impacts of stars on
37 their respective organizations. Having drawn together key dimensions of what constitutes a star, it
38 is next necessary to ascertain specific pathways to the four essential dimensions of stars --
39 performance, status, visibility, and social capital -- to understand how one becomes a star.
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49 **Pathways to Performance**

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51 Economists, focusing on the productivity of stars, have pointed to market changes as the
52 main reason that one becomes a star. For instance, in a seminal work by Rosen (1981), stars are
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3 defined as “relatively small numbers of people who earn enormous amounts of money and
4 dominate the activities in which they engage” (Rosen, 1981: 845). According to Rosen (1981),
5 high quality output can be the result of the work of a few individuals who are highly talented. Early
6 entry into a profession (MacDonald, 1988), consistency in performance (Hilary & Hsu, 2013),
7 prior related-industry experience (Bradley, Gokkaya, & Liu, 2017), and political skills (Cullen,
8 Gerbasi, & Chrobot-Mason, 2018) have been cited as important preconditions of stardom. Call
9 and colleagues (2015: 628), focusing on an individuals’ motivation and abilities, noted the role of
10 deliberate practice, defined as “a rigorous prolonged engagement in those activities that have been
11 found most effective in improving performance” in developing expertise in a field. Duckworth and
12 colleagues (2007: 1087) identify “grit” -- defined as “perseverance and passion for long-term
13 goals” – as a key attribute of stars, proving the necessary motive for long-term commitment by an
14 individual to increase her or his human capital.

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31 One of the important debates regarding talent is whether it is the substance of giftedness or
32 hard work (Day & O’Connor, 2017; Dries, 2013; Ericsson, Krampe, & Tesch-Römer, 1993;
33 Holding, 2011). The widely accepted definition of talent – as formulated by Simonton (1999: 436)
34 – involves “any innate capacity that enables an individual to display exceptionally high
35 performance in a domain that requires special skills and training.” Day and O’Connor (2017) argue
36 that talent can be understood as both a gift and effort-based state. Another important question
37 regarding talent is whether it is context-specific or can be transferred to new domains (Dries,
38 2013). The context-dependent perspective emphasizes the interaction between personal and
39 situational factors, the importance of fit between the individual and environment, and the
40 significance of firm-specific knowledge (Dominick & Gabriel, 2009; Groysberg et al., 2008).
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Pathways to Status

The arena of public opinion may suffice in defining star status for CEOs, athletes, and film stars, but this is insubstantial for organizational and management theory. The role of society is central in defining high-status individuals. As Hubbard et al. (2018: 1978) put it, “The socio-cognitive content of status draws attention to relationships and relative social standing, emphasizing that high-status actors’ merits have been vetted by others.” Although status can be, and often is, self-reinforcing (Bunderson, 2003), it can be attained through multiple mechanisms. According to Kehoe and colleagues (2018), previous high performance, extraordinary networking abilities, social relations among celebrities, and prominent affiliations with elite individuals or institutions are each potential sources of high status. Status can be attained directly through an individual’s exceptional performance or, in some instances, indirectly through the exceptional performance by others; for instance, when a star is serving in a coaching, mentoring, or supervisory capacity (Magee & Galinsky, 2008). Status is not always permanent, but it tends to be durable. Even though stars rarely maintain the same level of exceptional performance across the entire arc of a professional career (e.g. Groysberg et al., 2008), the status derived from outstanding achievements typically enjoys long-lived organizational perceptions and a stable position in the upper-echelons of evaluative hierarchies. Status-by-association also plays an important role, wherein the close association with other stars can provide a source of greater status (Allen et al., 2004), such as affiliations with celebrities and elite institutions (Merton, 1968).

Pathways to Visibility

Unlike status, which is manifested as both tangible and intangible acknowledgement of superlative performance, visibility explicitly involves garnering attention (Hubbard et al., 2018); most pronouncedly, attention in the marketplace for labor. Kehoe and colleagues (2018) found that

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3 star-performer visibility is achieved first and foremost through superlative performance, typically
4 measured against widely accepted industry standards. This puts a premium on comparative
5 performance rankings that are generated and publicized by third-party personalities and entities.
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7 However, high performance does not necessarily lead to high visibility. For instance, as individuals
8 are promoted to higher levels in organizations and their role becomes more strategic, the chances
9 of becoming more visible tends to increase. Uniqueness of individuals, idiosyncratic attributes,
10 marketing abilities, and the quality of performance in strategic roles often lead to greater visibility
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12 (Dries, 2013; Ehrmann, Meiseberg, & Ritz, 2009).
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21 As Oldroyd and Morris (2012) point out, more visible individuals are more likely to be
22 accessible to others and are more often sought out for interviews and other highly visible
23 interactions. Thus, performance is a critical ingredient for a star's visibility, but visibility can also
24 enhance the social perception of a star's performance. In this vein, Call and colleagues (2015)
25 emphasized individual attributes, such as political skills and one's acumen in social "navigation,"
26 both of which influence the ability of individuals to attract attention and heightened perceived
27 value (Ferris et al., 2007). Scholars have also taken note of organization-specific and industry-
28 specific reporting practices that contribute to visibility-driven pathways to stardom. The
29 performing arts, particularly television and movies, are renown for awards, as are sports. Similarly,
30 star analyst rankings on Wall Street and a host of media-driven, C-suite comparisons, figure
31 prominently in business milieus. While such visibility may enhance status as well as perceptions
32 of performance, visibility is tenuous in that it often fluctuates with the vagaries of celebrity status
33 (McDonald, 2000). Still, the effects of visibility on labor market dynamics can be extraordinarily
34 important in some industries, where industry-specific media spawn and promulgate stardom
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3 through expert knowledge of their constituent audiences (Hubbard et al., 2018), thereby playing a
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5 vital role in determining how individuals become visible in their respective markets.
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8 **Pathways to Social Capital**

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10 Social capital is a complex resource which is built over a long period of time. Because of
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12 stars' unique and varied types of knowledge, they are likely to be successful in connecting different
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14 knowledge sources. Thus, they are also able to assume the roles of boundary spanner, gatekeeper,
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16 connector (Conyon, He, & Zhou, 2015), and creative synthesizer (Liu et al., 2018). Plus, because
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18 of the recognition stars receive, more people are likely to seek ties with them. According to
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20 Oldroyd and Morris (2012), stars' high performance and exceptional visibility are important
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22 contributors to the stars' relatively high social capital, again underscoring the highly interactive
23
24 nature of the formative dimensions comprising the stars construct. Oldroyd & Morris (2012: 399)
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26 asserted that through "the nature of affiliatory tie formation, stars are likely to be connected to
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28 many more individuals than average employees." Since the quantity and quality of these ties are
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30 also subject to a power-law distribution, stars are likely to have "exponentially more associations
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32 and the concomitant social capital than average employees." Research also suggests that stars are
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34 more likely to position themselves in value-enhancing networks (Lin, Ensel, & Vaughn, 1981). In
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36 this regard, the role of political skills can be pivotal in identifying beneficial relationships (Call et
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38 al., 2015). Over and above individual effects, organizations also play a demonstrable role in
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40 providing opportunities to develop social capital through mentoring programs with formal
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42 executive-level sponsorship (Hezlett & Gibson, 2007).
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STAR IMPACTS: A MULTI-LEVEL CONTINGENCY PERSPECTIVE

Literature on Star Impacts

While extant literature concerning the antecedents of stardom has been largely limited to scholars in economics and SHRM, a broader range of scholars have shown interest in studying the impact of stars in organizational and managerial settings, including the launch and sale of new products under uncertain conditions (Liu, Liu, & Mazumdar, 2014), the success or failure of movies (Elberse, 2007), the ability to navigate among stakeholder groups within organizations (Hoegel, Schmidt, & Torgler, 2014), and the moderating role of stars on critics' review and box office performance (Basuroy, Chatterjee, & Ravid, 2003). Scholars have also studied the role of sports stars in attracting TV audiences, promoting brand equity, and furthering the marketing efforts of firms, even though most empirical research suggests that stars exert nominal influence on the purchasing decisions of most consumers (Goran, Hair, & Krupka, 2017; Pifer, Mak, Bae, & Zhang, 2015; Scelles, 2017). Table 6 summarizes the most important findings on the antecedents and outcomes of stars in varied contexts and fields of study.

INSERT TABLE 6 ABOUT HERE

As Table 6 reveals, star performers have also piqued the interest of strategy scholars, who have mainly focused on how stars impact peers' and firms' performance as well as the influence they exert on knowledge generation and innovative outcomes (e.g. Grigoriou & Rothaermel, 2014; Kehoe & Tzabbar, 2015; Tzabbar & Kehoe, 2014). In this vein, recent research examines the relative scarcity of stars' knowledge, stars' unique capacity to create and capture value, and the boundary conditions of stars' impact (Aguinis & O'Boyle, 2014). Similarly, entrepreneurship – where the outsized impact of stellar individuals is best modeled as a power law distribution (Crawford, Aguinis, Lichtenstein, Davidsson, & McKelvey, 2015) – has also attracted scholarly

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3 interest; specifically, studies have investigated the role of stars in forming new ventures, attracting
4 investors, mobilizing human capital, engaging in corporate venturing decisions, and launching new
5 product introductions (Corolleur et al., 2004; de Bettignies & Chemla, 2008; Fuller & Rothaermel,
6 2012). Zucker et al. (2002), examining biotechnology industry, emphasized the importance of star
7 scientists at the time of market entry and in the performance of initial public offerings. This line
8 of inquiry has also engaged the important role played by star faculty entrepreneurs in the success
9 of new technology ventures (Fuller & Rothaermel, 2012) and the relative success of immigrant
10 entrepreneurs in developing science-based ventures (Kahn, La Mattina, & MacGarvie, 2017). An
11 increasingly large literature suggests that nascent firms, sectors, and industries -- those
12 characterized by the novel introduction of innovative technologies, business models, and
13 organizational forms (Hunt, 2018) – are often dominated by stars (Rindova et al., 2006; Zucker et
14 al., 2002), such as Elon Musk, Richard Branson, or Steve Jobs.

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31 The ability of scholars to assess the net impact of stars is heavily dependent upon construct
32 validity and measurement. While we have shown that the indispensability of stars is not a foregone
33 conclusion, neither is it true that stars are no more valuable than an average achiever. Instead, the
34 impact of star performers is contingent upon a wide array of factors that require adopting a multi-
35 level perspective, including peers and organizations.

36 37 38 39 40 41 42 **The Contingent Impact of Stars**

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45 Stars not only exist and operate in a social context, but are also defined by the social
46 contexts that create, nurture, and reward them. Although there have been multiple attempts to
47 examine stars' impact on peers, teams, and firm-level outcomes, few scholarly works have sought
48 to examine the impacts holistically, in multi-level fashion. While these studies have unearthed
49 varied mechanisms related to an assortment of outcomes, the overall substance of the work has
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3 been limited by a lack of integration, thereby impeding the development and growth of a more
4 substantive research agenda on stars. In the following sections, we will discuss multi-level impact
5 of stars in more detail. A summary of the theoretical foundations and mechanisms of how stars
6 impact their peers and firms is presented in Table 7.
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INSERT TABLE 7 ABOUT HERE

Peer-Level Impacts of Stars

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17 One of the primary mechanisms through which stars impact their colleagues is via
18 knowledge spillovers and externalities (Griliches, 1979; Jaffe, 1986). Stars are likely to positively
19 impact non-stars' performance, especially if they have formal collaborations and as far as stars are
20 willing to share their knowledge (Azoulay et al., 2010; Kehoe & Tzabbar, 2015) and facilitate
21 creative synthesis with non-stars (Liu et al., 2018). Groysberg and Lee (2010) found that stars can
22 increase retention of non-stars since they provide additional, high-value knowledge to fellow
23 employees as well as new perspectives to solve problems. Stars are also known to directly and
24 indirectly enhance the capabilities of their colleagues (Kehoe et al., 2018; Liu et al., 2018), by
25 giving advice, providing technical assistance, and helping others develop and manage their
26 respective networks (Azoulay et al., 2000; Higgins, 2001; Higgins et al., 2007). Evidence also
27 suggests that stars are likely to set influential norms and practices in organizations, potentially
28 making tasks easier for non-stars (Lacetera et al., 2004; Liu et al., 2018).
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44 Stars' status can also be a source of benefits to non-stars since stars are likely to positively
45 impact their peers' performance by serving as a social referent through their elevated status
46 (Festinger, 1954). Intentionally or unintentionally, stars may serve as role models to other
47 employees (Huckman & Pisano, 2006), motivating non-stars to emulate their performance
48 (Lockwood & Kunda, 1997). Flynn and Amanatullah (2012) showed that high-status co-actors can
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3 positively impact the performance of others by setting stars as referents. Stars can also positively
4 impact the legitimacy of teams (Luo, Koput, & Powell, 2009). For instance, having a star inventor
5 on a team improves the likelihood of successful patent renewals (Liu, 2014). Stars' visibility also
6 sends positive signals regarding organizational quality to outside entities (Connelly et al., 2011).
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8 Research suggests that stars can positively impact colleagues' performance by providing access to
9 highly visible network connections and sources of external, market-based recognition.
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17 However, these favorable impacts are not the entire story. Negative impacts arise when
18 stars are unable or unwilling to share the knowledge underlying their unique results. Through their
19 exceptional performance, stars are likely to occupy central roles (Zucker et al., 2002), which may
20 limit the emergence of new leaders in an organization (Kehoe & Tzabbar, 2015). Non-stars are,
21 therefore, unduly dependent on stars' expertise and support (Brass, 1984). According to resource
22 dependence theory (Casciaro & Piskorski, 2005; Emerson, 1962), imbalance in mutual dependence
23 can negatively impact innovative outcomes (Kehoe & Tzabbar, 2015). Power imbalances can
24 prevent teams from harnessing beneficial skills and sharing high-value information (Tzabbar &
25 Vestal, 2015). Additionally, if the performance level of stars seems utterly unachievable to others,
26 non-stars may choose to put little or no effort into closing the performance gap (Brown, 2011).
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40 Due to their high, broad status, stars are likely to attract substantial organizational
41 resources, since that is often a central rationale in hiring stars (Prato & Ferraro, 2018). By attracting
42 and controlling key organizational resources (Kehoe & Tzabbar, 2015; Zucker et al., 2002), stars
43 and their respective organizations may discount innovative contributions by other individuals
44 (Asgari & Hunt, 2015). This effect is especially toxic if there is a gap between status and quality
45 of the performance (Kim & Kang, 2014; Merton, 1968), since high status actors enjoy access to
46 higher budgets, better resources, and more opportunities for recognition (Asgari & Hunt, 2015;
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3 Merton, 1968). Prato and Ferraro (2018) showed that new hires actually have a negative impact
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5 on incumbents' performance due to limited knowledge spillovers and a significant drain on
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7 incumbent resources. Similarly, Agrawal, McHale, and Oettl (2017) showed that hiring stars
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9 negatively impacts the performance of incumbents in unrelated fields.
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12 The pronounced level of stars' visibility can also become a matter of contention (Kim &
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14 Glomb, 2014; Lam et al., 2011). Since stars are far more likely to be promoted, and since they
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16 enjoy higher compensation (Trevor, Reilly, & Gerhart, 2012), the rewards and recognition build
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18 greater visibility for the stars, which ironically makes the stars even more of a target to be hired
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20 away by competitors (Chambers et al., 1998). Although higher pay can increase retention among
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22 top performers (Trevor et al., 2012), this can lead to perceptions of injustice among non-stars
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24 (Rousseau, Ho, & Greenberg, 2006), especially if the organization does not justify the pay
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26 disparity. This can result in higher turnover rate by non-stars, disrupting organizational routines.
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30 31 **Firm-Level Impacts of Stars**

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33 Stars' impact has been studied through the lens of various firm-level outcomes, including
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35 the value stars create and capture (e.g. Groysberg et al., 2008; Kehoe et al., 2018), the innovation
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37 they generate (e.g. Tzabbar & Kehoe, 2014), and the impact they have on financial performance,
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39 product quality (e.g. Ertug & Castellucci, 2013), or alliance outcomes (e.g. Baba et al., 2009;
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41 Subramanian et al., 2013).
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45 One of the most important reasons firms invest in attracting and retaining stars is because
46
47 of stars' knowledge-based resources and their potential contribution to knowledge generation
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49 (Grant, 1996). Stars possess tacit knowledge that helps them achieve extraordinarily high task
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51 performance. Tacit knowledge helps individuals who need to engage in the complex processes of
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53 identifying, integrating, and transforming new knowledge (Cohen & Levinthal, 1990; Hitt et al.,
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3 2001). Stars can also increase firms' absorptive capacity and intellectual capital through their
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5 knowledge resources (Song et al., 2018). As such, stars are likely to lead the search for new sources
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7 of knowledge and innovation (Kehoe & Tzabbar, 2015) since their unique knowledge not only
8
9 helps them establish value-enhancing routines (Kehoe et al., 2018; Nelson & Winter, 1982), but
10
11 also assists with the optimization of existing knowledge (Tzabbar & Kehoe, 2014).
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15 The visibility of stars in the labor market can also help firms in a number of ways. Stars'
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17 presence works as a signal of quality especially in emerging industries (Acharya & Pollock, 2013;
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19 Higgins et al., 2011). Higgins and colleagues (2011) showed that affiliation with a Nobel Prize
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21 winner has a positive impact on initial public offerings. Stars are also likely to impact the quality
22
23 of recruits by signaling high organizational quality. Agrawal et al. (2017) showed that hiring stars
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25 increases the quality of new recruits, especially in institutions that are not highly ranked.
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29 Stars' social capital and their networking abilities are important sources of value creation,
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31 as well, by helping firms to access rare and valuable knowledge resources and to enter new markets
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33 by developing networks with strategic partners (Cross & Thomas, 2008). This is especially
34
35 important in knowledge-based organizations where communication and knowledge flows need to
36
37 be maintained and leveraged to achieve novel outputs (Oldroyd & Morris, 2012). Stars are more
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39 likely to work as boundary-spanners in organizations due to their social connections, which can
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41 facilitate the flow of information (Tushman & Scanlan, 1981). They also tend to be gatekeepers,
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43 which increases the firms' ability to innovate, as stars are capable of understanding varied schemas
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45 (Allen & Cohen, 1969). Through this, stars transfer and assimilate knowledge from external
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47 sources, transform it, and disseminate it among organizational members (Cohen & Levinthal,
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49 1990; Rothaermel & Hess, 2007).
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There are, however, potential maladies as well. The negative impact of stars is most often a consequence of performance issues, though researchers have also identified problems arising from status asymmetries and the excessive social capital of stars. The high performance of stars is rarely sustained across all contexts. Groysberg and colleagues (2008) emphasized the role of firm-specific knowledge in stars' performance, demonstrating that as investment analysts move to new firms, they show a decline in their performance due to the lack of firm-specific knowledge. Since firms pay significant sums in order to attract and hire stars from outside, crises are sometimes precipitated when stars fail to live up to the high expectations, as shown in instances of over-paying star scientists (Groysberg et al., 2008) and star athletes (Lewis, 2004). There is also an issue with excessive reliance on stars. Since stars occupy central roles and since non-stars heavily rely on them to generate new approaches, this dynamic can be harmful to firms if stars create myopia through the establishment of star-centric routines and processes (Chen & Garg, 2018). Studies also demonstrate that stars' social capital can become excessive and, if left unchecked, exert a negative impact on firm performance. Oldroyd and Morris (2012) showed that stars' disproportionate levels of information overload can stifle productivity. And, since stars have abundant social capital, they need to send and receive more information to maintain their respective networks. Given these high information processing requirements, stars may actually begin to display lower levels of performance, especially early in one's tenure at a new firm (Oldroyd & Morris, 2012).

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Stars are likely to increase status asymmetry and disrupt knowledge-sharing routines (Tzabbar & Vestal, 2015). For instance, Tzabbar and Vestal (2015) showed that stars tend to increase the negative impact of geographic dispersion on novel innovation generation within teams. They might also prioritize their personal goals over organizational goals (Kehoe & Tzabbar, 2015). Given greater access to resources, stars have less need to cooperate and are likely to be less

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3 cooperative in team activities due to ego issues (Hambrick, 1994), revealing self-interested
4 behaviors aimed at maintaining their perceived value. Each of these challenges has the potential
5 to disrupt the collective outcomes of the group (Groysberg et al., 2011) since stars consume and
6 control key resources (Zucker et al., 2002) that often crowd out the contributions and learning
7 opportunities of others (Asgari & Hunt, 2015; Li et al., 2020).
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12 Another issue regarding stars' organizational impact is the manner in which they create
13 and capture value. Kehoe et al. (2018) theorized that high performance and broad status of stars
14 uniquely impacts the way stars create or capture value. One context in which this has been proven
15 true is the movie industry. On the one hand, movie stars are known to create value and increase
16 the predictability of box office outcomes, thereby serving as an instrument of risk mitigation,
17 especially in the efforts to generate international revenues from foreign audiences, which reduces
18 much of the uncertainty accompanying big-budget movie production (Basuroy et al., 2003; De
19 Vany & Walls, 1999; Liu et al., 2014). On the other hand, the role played by stars in determining
20 box office results is not without controversy since stars garner enormous financial rewards. Thus,
21 while some studies have found a positive impact on financial outcomes (Sochay, 1994), others
22 have found that stars are not always worth the added cost (De Vany & Walls 1999; Elberse, 2007;
23 Liu, Mazumdar, & Li, 2015), suggesting that stars sometimes capture more value than they create.
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42 In sum, stars' multi-level impacts are highly contingent upon an array of individual and
43 organizational factors that determine the extent to which the relevant dimensions of stardom
44 generate net-favorable or net-unfavorable outcomes. Contingencies drawn from existing literature,
45 as presented in Table 8, point to further issues and opportunities in studying stars.
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52 **INSERT TABLE 8 ABOUT HERE**
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ISSUES AND OPPORTUNITIES IN THE STUDY OF STARS

As the foregoing exploration suggests, the calculus of determining the impact of star performers is both fascinating and vexing. Our multi-level, contingency framework suggests that stars can be both a key to the future and an impediment to its realization. Firms can and should be mindful of the intricate interplay between varied forces affecting star impacts. The calculus underlying this can be complex. As Alex Mayyasi (2013) discussed the matter in his piece, *What's So Special About Star Engineers?* the solution is not one-size-fits-all.

“In many industries where the contributions of star performers have not been adequately recognized and rewarded, firms need to do more to recruit, empower, and hold onto their star performers. In places like Silicon Valley, however, people need to restrain themselves from blindly joining the cult of A players.”

Red Giants, Black Holes, or Both?

Competing Conceptions. Empirically and conceptually, the supporting case for seeking star performers seems strong, particularly in the context of a knowledge-based economy and alarming shortages of knowledge workers or leaders (Pobst, 2014). As our review reveals, the overwhelming focus of the stars literature is primarily on high performance (e.g. Aguinis & O’Boyle, 2014) and a broad consensus supports the assertion that the stars’ exceptional performance (e.g. Groysberg et al., 2008; Zucker et al., 2002), heightened status, enviable visibility, and substantial social capital (e.g. Oldroyd & Morris, 2002) are not only net positive, but a vital source of sustainable competitive advantage.

The challenge, and scholarly opportunity, is that star performers do not always produce starry results. Emerging research begun to reveal counterproductive, counterintuitive aspects of star systems (e.g. Asgari & Hunt, 2015; Kehoe & Tzabbar, 2015). A number of select studies have investigated potential short-comings of star systems, testing the premise that instances exist in

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3 which stars may adversely impact their respective organizations. For instance, Li and colleagues
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5 (2020) noted the negative indirect impact of stars on non-stars' development. Chen and Garg
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7 (2018), studying National Basketball Association teams, showed that the temporary absence of
8
9 star players positively impacts performance as non-stars assume new roles and the team develops
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11 new capabilities and routines. Kehoe and Tzabbar (2015), argue that stars are likely to hinder the
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13 emergence of leaders in firms, while Asgari and Hunt (2015) showed that star systems crowd out
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15 the valuable contributions of non-stars.
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19 In addition to work on star employees and scientists, strategy and entrepreneurship
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21 researchers have also studied star founders and CEOs. Counterproductive impacts of star founders
22
23 are evident in what entrepreneurship scholars have termed the “founder problem,” in which
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25 brilliant individuals are often forced to leave the firms they founded in order for businesses to
26
27 effectively scale and mature (e.g. Wasserman, 2003). Research also shows that star CEOs, despite
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29 exceptional remuneration, do not necessarily act in the best interest of their organizations. As
30
31 Lovelace and colleagues (2018) note, studies (e.g. Malmendier & Tate, 2009; Wade, Porac,
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33 Pollock, & Graffin, 2006) show that as CEOs attract social acclaim, their firms experience a
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35 decline in performance. As with much of the stars literature, these disparate results suggest that a
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37 much more nuanced approach is warranted.
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42 As we argued above, the moderated impacts of stars can best be treated by taking a
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44 contingency-based approach (Mone, McKinley, & Barker, 1998), based on the notion that there is
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46 not a singular, unique, or best approach to find a fit among the variety of organizational factors
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48 that determine superior star performance (e.g., Donaldson, 2001).
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51 ***Assessing Costs and Benefits – An Integrated Approach.*** One way to simultaneously
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53 account for both the benefits and costs of star performers is to conceptualize both the positives and
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3 negatives as necessarily and inevitably co-occurring. The truest measure of whether a star
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5 performer constitutes a net asset in meeting individual and organizational aims is to simultaneously
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7 assess the net impacts. From the stand-point of star research and ongoing work to develop stars as
8
9 a viable construct, an integrated approach to conditions and impacts is essential (Dries, 2013).
10
11 Towards this end, scholars can employ models that support a simultaneous, integrated evaluation
12
13 of both the “Red Giant” and “Black Hole” facets of star performance, as illustrated in Figure 5.
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17 **INSERT FIGURE 5 ABOUT HERE**
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20 As the multi-level, contingency framework reveals, star performers embody, to varying
21
22 degrees the attributes of both red giants and black holes. The confluence of contingent factors that
23
24 ultimately determine a star’s impact varies by context, by time, and by idiosyncrasies related not
25
26 only to a star’s performance but also a star’s interactions with others. The purpose of Figure 5 is
27
28 to demonstrate the future research opportunities in better defining and further parsing these
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30 interactions. For example, Figure 5a illustrates a desirable arrangement, whereby the productive
31
32 powers of a star are broadly harnessed and favorably impactful as a nexus with other firm-level
33
34 and peer-level aims. In addition to the stellar individual output, other positive effects outweigh
35
36 unavoidable, but somewhat limited, downsides. Figure 5b illustrates what can be considered a
37
38 black hole; the star’s individual contribution is substantively eclipsed by significant downside
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40 impacts, such as excessive resource consumption and negative social or even economic impacts
41
42 on peers and the firm. Figure 5c illustrates an isolated star, where there are limited positive or
43
44 negative effects beyond the star’s individual contribution. Figure 5d illustrates a star context
45
46 characterized by ambivalent circumstances, wherein the favorable impacts of a star are realized,
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48 but so too are the unfavorable impacts, each to a relatively similar degree. In all the figures,
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50 comparing the relative shaded area above versus below the horizontal line illustrates net effects.
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3 As a framing device for future study, an investigation of co-occurring impacts enables scholars to
4
5 apply the star concept in a more useful, veridical, and authoritative fashion.
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8 **Opportunities for Future Research**

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10 To facilitate and enrich future research we have identified three central challenges for the
11
12 stream. First, the definition of stars cannot be subsumed by a never-ending accretion of factors that
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14 appear to produce exceptional performances. For the sake of coherence and intelligibility across
15
16 the varied contexts comprising the stars literature, an evolving grocery list definition is not viable.
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18 Second, to move past its tautological roots, stars must be developed as a formative construct. Third,
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20 scholars must develop and validate scales that can be shown to support sub-dimensions used in the
21
22 empirical studies of stars.
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26 As we have asserted throughout, the shift to stars as a formative construct not only alters
27
28 the trajectory of future research on star performers, it also fortifies its legitimacy as a meaningful
29
30 facet of managerial and organizational scholarship. A formative approach to stars is inherently
31
32 forward-looking, making the construct useful to scholars of organizations and management as well
33
34 as actionable by practitioners. As such, the correlated causes comprising the sub-dimensions of
35
36 stars are applicable to a highly heterogeneous array of contexts and the development of a
37
38 generalizable theory of star performers. A clearer definition, multi-level impacts, and an integrated
39
40 command of the co-occurring impacts of star performers opens a pathway to a multitude of
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42 provocative research questions for the future study of stars. For example, equipped with our
43
44 formalization of a stars construct, scholars can hypothesize more aptly and effectively about
45
46 heterogenous organizational outcomes arising as a consequence of hiring or developing star
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48 performers. Qualitative and quantitative empirical work can be performed addressing when, how,
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50 and why some sub-dimensions of a formative star construct are more or less instrumental to
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3 organizational performance than others – notably, a critical analysis that cannot be performed if
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5 treating stars as a reflective construct. Concurrently, our contingency approach enables scholars to
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7 simultaneously account for stars’ positive and negative multi-level impacts across a wide range of
8
9 idiosyncratic contexts.
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12 As for scale development of stardom’s dimensions, our review opens lines of inquiry for
13
14 future scholarship that better connect the literature’s conceptual and empirical foundations.
15
16 Meanwhile, practitioners can apply our formative approach to stars through the lens of SHRM by
17
18 assessing the potential impact of star performers as a strategic investment decision, optimizing a
19
20 firm’s human capital portfolio by deploying star performers in a fashion that generates benefits
21
22 while minimizing the detriments. Other key areas constituting particularly fertile ground for
23
24 scholars and practitioners include the following.
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28 ***Stars and Organizational Excellence.*** The question of whether stars make the organization
29
30 or organizations make the stars is far from clear. Given the increasingly mobile workforce, this
31
32 “chicken-or-egg?” dilemma raises a host of important questions. Is stardom migratory? Are its
33
34 impacts transferrable from organization to organization? With respect to status and visibility,
35
36 stardom generates social benefits for the star, but can these be translated into organizational value?
37
38 Blockbuster sports trades (Glenn, McGarrity, & Weller, 2001; Lewis, 2004), high-profile CEO
39
40 hires (Kiefer, Miller, & Hunt, 2020; Wade et al., 2006), renown directors of films and Broadway
41
42 plays (Barbas, 2016) – each of these has led to famous flops as often as they have led to success
43
44 stories. What generalizable confluence of factors result in the ability or inability of a star’s impact
45
46 to deliver fruitful results? McKinsey’s report argued that the war for talent called for extraordinary
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48 measures in order to attract and retain stars:
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54 “You need to do everything you can to keep them engaged and satisfied—even
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56 delighted. Find out what they would most like to be doing, and shape their career
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3 and responsibilities in that direction. Solve any issues that might be pushing them
4 out the door, such as a boss that frustrates them or travel demands that burden
5 them,” (Michaels et al., 2001: 131)
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8 But, is it clear that this actually leads to organizational excellence? Arthur (1994) asserts
9
10 that while the traditional career literature is grounded in the perspective that organizations exert
11 influence over individuals’ careers, it is increasingly apparent that individual careers exert
12 influence on organizations, especially in the context of star performers. As scholars of talent
13 management (Cappelli, 2008; Dominick & Gabriel, 2009; Dries, 2013) have asked, what tensions
14 exist between transferable and context-specific stardom? Given the simultaneity of red giant
15 effects and black hole effects, what is the most fruitful way to consider the careers of star
16 performers? To what extent are the impacts of transitory or lasting benefit? How does the coming
17 and going of stars influence a firm’s ability to build and then leverage tacit knowledge for
18 sustainable competitive advantage? In the face of a market increasingly characterized by a
19 contingent workforce (Cappelli, 2008), what is the role of stars for any given firm?
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33 ***Crowding Out Effects and Non-Occurrence.*** Studies have also found that star systems
34 unwittingly crowd out valuable contributions from non-stars (Asgari & Hunt, 2015). The rationale
35 undergirding star-focused corporate innovation is that firms will realize the highest achievable
36 “bang for the buck” by investing heavily in a small population of talented individuals (Aguinis &
37 O’Boyle, 2014), but the asymmetric commitment of resources may also create an undesirable
38 power imbalance in the organization, particularly when stars believe that sharing resources is at
39 odds with their unique status in the firm (Overbeck & Park, 2006). Star systems tend to reinforce
40 the notion that high-achieving innovators are “made” not “born” (Chen & Garg 2018); but, in
41 actuality, the asymmetric allocation of resources in favor of star performers simply makes the
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3 superior performance of stars a self-fulfilling cycle; that is, stars receive more resources and
4 attention, which allows them to perform better, which invites still more resources.
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8 As Asgari and Hunt (2015) noted, stars do in fact objectively perform at a higher level than
9 peers. To do otherwise would invalidate their designation as a star performer. However, they also
10 argue that the focus on measuring and rewarding star performance often ignores the non-
11 occurrence of output that might have otherwise been generated by non-stars, if resources and
12 attention had been allocated more equitably. The comparative lack of attention paid to the issue of
13 non-occurrence is not unique to the study of stars, but the star context makes the exclusion of non-
14 occurrence particularly evident. Chen and Garg (2018) do immense justice to this point in their
15 empirical investigation of NBA teams that must cope with the temporary absence of a star player.
16 They find that non-stars can, and often do, step into new roles in effective fashion. Asgari and
17 Hunt (2015) similarly found, quite counter-intuitively, that the departure of non-star supervisors
18 hurt firms more so than did the departure of stars. Initial work in this area suggests that star impacts
19 are both complex and convoluted, and that resources and attention afforded star performers may
20 be more of a self-fulfilling prophecy than a formula for firm excellence. Scholars may therefore
21 ask when and how are the aims of organizational teams promoted or subverted by a focus on stars?
22 When does unwanted crowding out occur? And, how can non-occurrence be better understood and
23 captured in management research?
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44 ***Gender, Age, Race and Other Demographic Impediments to Stardom.*** A corollary to the
45 crowding out effects involves the marginalization of employees not designated as stars, which can
46 arise from measurement criteria that are incomplete, biased, or poorly understood (Dries, 2013).
47 If existing conceptions of stars function merely as a socially constructed mirror of the values and
48 priorities of those who administer star systems (Lewis & Heckman, 2006), then the supporting
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3 systems of measurement are at risk of homophily and other forces emblematic of those who
4 possess power and who exercise key organizational judgments (Pfeffer, 2001). For example,
5 research has demonstrated that white males are given more fertile, higher-potential sales accounts
6 than are women and minorities (Comer, Nicholls, & Vermillion, 1998; Russ & McNeilly, 1988).
7 In *Glengarry, Glen Ross* fashion, the rationalization is that good leads are best given to top
8 performers, but if top performers are those with the good leads, then their perch at the top of the
9 leaderboard is generally secure. Organizations may, therefore, intentionally or unintentionally
10 reinforce the tableau of discrimination that accompanies the differential allocation of precious firm
11 resources. Scholars may wish to investigate the extent to which star systems work in concert with
12 or at cross-purposes against the aims of inclusiveness, diversity, and organizational equity. Are
13 firms better off in a more holistic fashion as a consequence of star impacts? Do star-driven policies
14 of reward and recognition foster some organizational aims at the expense of others? Are power
15 law distributions of human capital relevant, given a multiplicity of organizational aims, each of
16 which is an essential facet of creating and capturing value? What are the wider stakeholder
17 implications of approaches to human capital built upon power law assumptions? How do critical
18 theory perspectives of management inform the positive and negative aspects of elevating the
19 contributions of a small group of employees above the contributions of others?
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42 ***Strategic Implications.*** Scholars in fields such as strategic management, entrepreneurship,
43 industrial economics, and technical innovation, each have a vested stake in the study of star
44 performers. Recent work on employee mobility (e.g. Marx, Strumsky, & Fleming, 2007), VC
45 influence (Fitza, Matusik, & Mosakowski, 2009), CEO influence (Fitza, 2014), highly visible
46 boards (Coles, Daniel, & Naveen, 2008), and technological change agents (Antonelli, 2002), are
47 just a few of the streams that must take into account the contingent impacts of star performers. For
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3 these scholars, conceptual and empirical opportunities exist to investigate the manner in which star
4 employees play a role in value creation and value capture under a variety of contextual
5 circumstances, across industries and under varying levels of environmental dynamism. As the
6 definitional boundaries of stars are more clearly demarcated, and as scales are more thoroughly
7 developed and validated for the formative dimensions of stardom, scholars can ask: how does star
8 formation occur that leads to value-creating processes and outputs that enhance firm
9 competitiveness? How do stars influence the velocity and vector of industrial change, especially
10 with regard to innovative technologies, business models, and organizational forms? Are there
11 industries for which stars are ideally suited? Are there others for which stars are anathema to
12 success? Executives at Proctor and Gamble have for decades famously eschewed the notion of a
13 star-centric culture as being unwanted, even counter-productive at a consumer brand company that
14 is focused on execution of its core values (Gladwell, 2002). Is this exactly the opposite in other
15 firms and other industries? And, for entrepreneurship research, do stars bolster or hinder the
16 prospects for successful business venturers? Is the notion of stars the fulfillment of entrepreneurial
17 action, or is stardom contrary to entrepreneurial aims, particularly given the emphasis on founding
18 teams? Are all founding teams better off with at least one star? How many stars is too many for
19 any one team, any one company, or any one industry?
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42 *Life-Cycle, Team, and Time Considerations of Stars.* Some stars are recruited externally
43 while others are identified and developed internally; however, little is known about the relative
44 merits and demerits of each approach in any comparative fashion. In each case, an employee
45 engages the firm at a different point in his or her career and each brings to bear a different level of
46 organizational embeddedness (Mitchell, Holtom, Lee, Sablinski, & Erez, 2001), including the
47 presence or absence of peer effects. As such, organizational scholars can investigate the employee
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3 lifecycle and other temporal considerations attendant to star status and the systems that foster the
4 added attention and expectations of stardom. For external recruits, how does stardom play out at
5 the time of hiring, during a sustained, embedded presence, and at the time of departure? How are
6 existing teams favorably and unfavorably influenced by the recruitment of a star? How is the
7 calculus of these impacts moderated by tenure, level in the organization, reward structures, and
8 intangible forms of recognition? For individuals who are identified and developed internally, does
9 the escalation in status and visibility impact output by the star as well as his or her peers? How
10 does an escalation in status impact the effectiveness of teams? At another level of micro-inquiry,
11 are stars more or less resilient than non-stars? Research has suggested that star employees struggle
12 with failure more so than less talented, less visible employees (Groysberg et al., 2008). According
13 to Hambrick (1994), stars may be less willing to cooperate, share information, make joint
14 decisions, and behave in a way that supports interdependent tasks. Additionally, when stars believe
15 that sharing resources with other scientists is inconsistent with the goals of driving their own
16 research idea, they may become less willing to nurture collaborations with non-stars (Overbeck &
17 Park, 2006), partially as a function of ego (Hambrick, 1994), and partially as function of efforts to
18 protect stars' privileged status (Hogan & Hogan, 1991). If so, does this create healthy competition
19 or an unwanted dynamic among stars and non-stars? Unhealthy firms run the risk of being "star
20 struck," resulting in a failure to generate operational and financial gains. Examples of these effects
21 include famously unexploited developments, such as Xerox's Palo Alto Research Center in the
22 1980's (Weiser, 1991), which developed but did not capitalize on numerous personal computing
23 breakthroughs, underscoring the organizational and cultural challenges of star systems (e.g.,
24 Overbeck, Correll, & Park, 2005). Central to this is the effective collaboration of stars with others.
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3 Given the conflicting perspectives regarding the potential value of high-performing
4 individuals, we expect that the direct and indirect impact of stars will vary as a consequence of
5 differing levels of social and structural fit with the organization, aspects that we believe vary by
6 phase and tenure. Accounting for this set of conditions shifts away from sole preoccupation with
7 individual performance to one that incorporates the social context, including a star's impact on
8 others. Incorporating social-contextual factors is consistent with recent research on stars and talent
9 management (e.g., Minbaeva & Collings, 2013; Somaya & Williamson, 2011) that has begun to
10 shift from a singular focus on the exceptional capacity to generate innovation to a model that also
11 incorporates the ability to handle knowledge flows and social interactions (e.g., Grigoriou &
12 Rothaermel, 2014); thereby taking into account emotional and social intelligence, as well.

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14
15 Also, as scholars increasingly explore vital facets of status and social capital stars,
16 including what are sometimes called "relational stars," (Grigoriou & Rothaermel, 2014), what
17 findings are revealed concerning firm level outcomes for creativity, innovation, customer service,
18 product or service quality, and various profitability measures? How much does a star impact
19 depend upon the work that needs to be accomplished? Finally, as aging stars exhibit a decline in
20 performance, what happens to their status, visibility, and social capital? What is the most effective
21 means by which to handle changes in a star's stardom?

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24 ***Conjectural Assumptions and Scholarly Complicity.*** As noted from the outset, to a far
25 greater degree than many other facets of management research, the star concept emanates from
26 and is deeply rooted in popularized conceptions and uses of the term. This heritage, while offering
27 color and enthrall, has been a hinderance to the development of a useful star performer construct.
28 Ordinarily, it is left to scholars to titrate the constituent ingredients of organizational and
29 managerial studies, but in this regard, scholars are handicapped in servicing that aim by virtue of
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3 our own involvement in an industry that promulgates and celebrates star performers. Like all other
4 industries, academia benefits from the novel breakthroughs and splendid achievements of
5 individuals. Much more so than other industries, scholarly research supports an established set of
6 formalized – though often imperfect – measures to determine and reward star performance. There
7 are few star systems more extravagantly maintained than that evidenced by scholarly research. For
8 those who achieve scholarly stardom, the financial remuneration, status, visibility, and social
9 capital are substantial. It is difficult to think of a working population less-well-equipped and facing
10 more potential bias on the matter of star performance than scholars themselves.
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22 And yet, despite these vested interests, management scholars are unusually well-situated
23 to objectively scrutinize and critique the conjectural assumptions attendant to stars and to play a
24 central role in the development of measurement scales for its constituent dimensions. Inspired by
25 recent work in the talent management literature to address the foundational assumptions of that
26 stream (e.g. Dries, 2013), management scholars can tangibly advance the organizational and
27 managerial understanding of star impacts by assessing the underlying assumptions: that stars are
28 more important to firm outcomes than other members of an organization; that stars create more
29 value than other members of an organization; that stars deserve more rewards; that stars will leave
30 if they do not receive more money; that stars inevitably burn out; and, perhaps most interestingly,
31 that stars are rare. Conceptually and empirically, each of these conjectural assumptions has
32 implications for every Division of the Academy. Moreover, the practical benefits of gaining clarity
33 through a vigorous investigation of stars is germane to organizations of all sizes, ages, and
34 purposes.
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Conclusion

For scholars of management and organizations, the multi-level impacts of stars are at once non-uniform and non-ignorable. In some sense, the field is just beginning to make sense of the star concept, which is the first step towards a veridical, intelligible, and useful formative construct for stars. The rise of cinema stars in the early 1900s dramatizes this point. Few people today would recognize the name Gabriel-Maximilien Leuvielle, but in 1909, the man known by the stage name “Max Linder” was the first film actor to be formally credited for his role in a movie, thereby becoming the first international film star. Prior to Leuvielle, men and women had appeared in thousands of films as unnamed, uncredited participants, primarily due to the fact that film producers worried that if actors’ names were known, then they would be able to demand more money for being in films (Dyer, 1979). On this point, the producers could not have been more prescient. With scant regard to the economics of film production, adoring fans of the movie-going public demanded to know not only the names, but greedily consumed every available detail – more often fabrication than fact -- of their screen favorites. Following Leuvielle’s lead, in very short order, all actors were fully credited and, true to the prediction of film producers, the salaries of newly minted stars grew exponentially and the concept of “star” was permanently ensconced in the public psyche. It has taken far longer for the prominent role and innovative influence of individuals to become fully manifested in the world of business (Cappelli, 2008). In some sense, it is a story that is still unfolding. For management scholars, it is a story that will at least partially define the constellation of issues that define the future of the field.

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Table 1: Article Search Procedures

Step	Literature Search Procedure	Beginning # of Articles	Change	Ending # of Articles
1	Searched for papers in EBSCO Business Source Complete with the term "star" in the title, abstract, or keywords			952
2	Identified and excluded articles outside the domain of our study (e.g. five-star hotels, star-shaped networks)	952	-486	466
3	Identified and excluded articles not listed in Institute for Science Information's Web of Knowledge Journal Citation Report	466	-158	308
4	Identified and excluded papers that did not have organizational or managerial implications (e.g. biographies of stars)	308	-82	226
5	Searched for papers in parallel fields that were well-cited	226	4	230

Table 2: Journals Included in Star Literature Review

A	Human Resource Management Review	Journal of Urban Economics
Academy of Management Journal	I	J
Academy of Management Review	Industrial & Corporate Change	Journal of Vocational Behavior
Accounting Review	Industrial Marketing Management	K
Administrative Science Quarterly	Industry & Innovation	Kyklos
American Behavioral Scientist	Information Economics & Policy	L
American Economic Review	Information Systems Journal	Labour Economics
American Journal of Economics & Sociology	International Journal of Contemporary Hospitality Management	M
American Sociological Review	International Journal of Research in Marketing	Management Science
Applied Economics	International Review of Financial Analysis	Managing Service Quality
Applied Economics Letters	J	Marketing Letters
Asia Pacific Journal of Human Resources	Journal of Accounting & Economics	Marketing Science
Asia Pacific Journal of Management	Journal of Accounting Research	O
Australian Economic Papers	Journal of Applied Psychology	Organization
B	Journal of Banking & Finance	Organization Science
Basic & Applied Social Psychology	Journal of Business & Psychology	Organizational Dynamics
British Journal of Management	Journal of Business Finance & Accounting	P
Business History Review	Journal of Business Research	Papers in Regional Science
Business Horizons	Journal of Consumer Behaviour	Personnel Psychology
C	Journal of Corporate Finance	Psychology & Marketing
California Management Review	Journal of Economic Behavior & Organization	Public Relations Review
Cambridge Journal of Economics	Journal of Economic Geography	Q
Contemporary Accounting Research	Journal of Economics	Quarterly Journal of Economics
Contemporary Economic Policy	Journal of Economics & Management Strategy	R
D	Journal of Empirical Finance	RAND Journal of Economics
Decision Sciences	Journal of Finance	Regional Studies
E	Journal of Financial & Quantitative Analysis	Research in Organizational Behavior
Economic Geography	Journal of Financial Economics	Research Policy
Economic Inquiry	Journal of Financial Services Research	Review of Accounting Studies
Economic Journal	Journal of International Management	Review of Economics & Statistics
Economica	Journal of Labor Economics	Review of Financial Studies
Economics Letters	Journal of Labor Research	Review of Industrial Organization
Emerging Markets Finance & Trade	Journal of Law, Economics & Organization	Review of International Political Economy
Empirical Economics	Journal of Management	Review of Network Economics
Enterprise & Society	Journal of Management Inquiry	S
European Journal of Communication	Journal of Management Studies	Small Business Economics
European Journal of Marketing	Journal of Managerial Psychology	Small Group Research
European Management Journal	Journal of Marketing	Social Forces
European Planning Studies	Journal of Marketing Research (JMR)	Southern Economic Journal
F	Journal of Media Economics	Strategic Entrepreneurship Journal
Financial Analysts Journal	Journal of Personality & Social Psychology	Strategic Management Journal
Financial Management	Journal of Small Business Management	T
H	Journal of Sport Management	Technovation
Human Resource Management	Journal of the Academy of Marketing Science	

Table 3: Articles Included in Star Literature Review

A	Caliendo et al. 2015	Frederiksen 2013	Hofmann & Opitz 2019	Mathys et al. 2016	Suárez-Vázquez 2015
Acharya et al. 2013	Call et al. 2015	Fuller & Rothaermel 2012	Hohberger 2016	Mause 2009	Suárez-Vázquez & Quevedo 2015
Addis et al. 2010	Canterbery & Marvasti 2001	G	Holbrook & Shultz 1996	Maxcy & Mondello 2006	Sussman & Finnegan 1998
Adler 1985	Carrilat et al. 2018	Gaenssle et al. 2018	Hua & Huang 2017	McKenzie 2013	Swardlow 1984
Agrawal et al. 2017	Chan & Fearing 2019	Gallo & Plunket 2020	J	Meng et al. 2017	T
Aguinis & Kyle 2015	Cheah et al. 2019	Ganco et al. 2015	Jones et al. 2012	Meyer 2006	Tartari et al. 2014
Aguinis & O'Boyle 2014	Chen et al. 2014	Gazley et al. 2011	Joshi 2015	Miller & Shamsie 1996	Thwaites et al. 2012
Aguinis et al. 2016	Chen & Garg 2018	Giorgi & Weber 2015	Jung & Kim, 2010	Morehouse & Saffer 2020	Tran & Stratton 2014
Aguinis et al. 2018	Clark 2016	Gladden & Funk 2002	K	Moretti & Wilson 2014	Treme 2010
Allen & Cohen 1969	Clarke et al. 2007	Gleason & Lee 2003	Kahn et al. 2017	Morrison et al. 2013	Treme et al. 2019
Altschuler et al. 2015	Cliff & Denis 2004	Goetze, 2010	Kang et al. 2018	Mukherjee & Vasconcelos 2012	Treme & Craig 2013
Andersson et al. 2009	Conyon et al. 2015	Gould & Kaplan 2011	Karniouchina, 2011	N	Trippi 2013
Argyris 1980	Cooke 2006	Graffin et al. 2008	Kehoe et al. 2018	Nathan 2015	Trippi 2013
Åstebro et al. 2011	Cooke 2006	Graffin et al. 2013	Kehoe & Tzabbar 2015	Neelamegham & Chintagunta 1999	Tushman & Romanelli 1983
Azoulay et al. 2010	Corolleur et al. 2004	Green et al. 2009	Kerr 1990	Ngan et al. 2011	Tushman & Scanlan 1981
Azoulay et al. 2019	Cross et al. 2009	Griffeth et al. 1999	Keskek et al. 2017	Niosi & Banik 2005	Tzabbar 2009
B	Cross & Thomas 2008	Grigoriou & Rothaermel 2014	Kets & Manfred 2012	Nohel et al. 2010	Tzabbar & Baburaj 2020
Baba et al. 2009	Cullen et al. 2018	Grikscheit & Crissy 1976	Kim & King 2014	O	Tzabbar & Kehoe 2014
Bakker 2001	D	Gorysberg et al. 2011	Korzynski & Paniagua 2016	Oettl 2012	Tzabbar & Vestal 2015
Balazs 2001	Daniels et al. 2019	Groysberg & Lee 2010	Krautmann 2009	Oldroyd & Morris 2012	V
Bar-Isaac & Ganuza 2008	Darby & Zucker 2003	Groysberg, Lee, & Li 2009	Krautmann & Gustafson 2000	P	Ventura et al. 2015
Baron 2013	Davis-Blake 2010	Groysberg et al. 2008	Krolikowski et al. 2016	Park & Shin 2015	Volmer & Sonntag 2011
Basuroy et al. 2003	de Bettignies & Chemla 2008	Groysberg et al. 2011	Kucheev et al. 2017	Pepall & Richards 2001	Volz 2013
Beaudry & Schifflauerova 2011	De Pater et al. 2014	Gu et al. 2019	L	Perkmann et al. 2011	W
Beechler & Woodward 2009	Denner et al. 2018	Guan et al. 2019	Lacetera & Zirulia 2011	Prato & Ferraro 2018	Wade et al. 2008
Bhattacharya & Smyth 2003	Desai et al. 2000	Guerrero et al. 2014	Lahiri et al. 2019	R	Waldinger 2016
Bish & Kabanoff 2014	Desai & Basuroy 2005	H	Leaver 2010	Ranft et al. 2006	Walls 2009
Boddy et al. 2015	Do & Zhang 2020	Hamilton 1997	Li et al. 2020	Rawlings et al. 2015	Whelan et al. 2013
Bolinger et al. 2018	Dobbins et al. 1990	Hamilton & Davison 2018	Liu et al. 2014	Rogoff et al. 1998	Wu & Zang 2009
Borghesi 2017	E	Hamilton & Sodemman 2020	Liu et al. 2015	Rosen 1983	X
Bowers & Prato 2018	Ehrmann et al. 2009	Han & Ravid 2020	Liu et al. 2018	Rossman et al. 2010	Xu et al. 2013
Bowers & Prato 2019	Ejerme & Schubert 2018	Han & Niosi 2016	Liu & Riyanto 2009	S	Y
Bradley et al. 2012	Elberse 2007	Harrison et al. 2018	Liu 2014	Sabherwal & Uddin 2019	Yang 2018
Bradley et al. 2017	Elliott et al. 2018	He 2018	Liu & Ritter 2011	Sapsalis et al. 2006	Yang & Shi 2011
Brady et al. 2008	Emery & Xi 2009	Hennig-Thurau et al. 2009	Lockwood & Kunda 1997	Sarker et al. 2011	Yoon & Shin 2017
Brown et al. 2005	F	Hess & Rothaermel 2011	Loh & Stulz 2011	Scelles 2017	Z
Bryan 2019	Fang & Yasuda 2014	Higgins et al. 2011	Long et al. 2015	Schiller & Diez 2010	Zamudio 2016
Burke et al. 2007	Field 1989	Hilary & Hsu 2013	Lovelace et al. 2018	Schiller & Diez 2012	Zhou et al. 2017
Burke et al. 2009	Fonti & Maoret 2016	Hill et al. 2017	Luo et al. 2010	Schmidt-Stölting et al. 2011	Zhou & Wu 2016
C	Franck & Nuesch 2007	Hoegel et al. 2014	M	Singell 1991	Zhuang et al. 2014
Cabral & Natividad 2016	Franck & Nuesch 2012	Hofmann-Stölting et al. 2017	MacDonald 1988	Singh et al. 2009	Zucke & Darby 1997
Calderini et al. 2007	Frascatore 1997	Hofmann et al. 2017	Mangham 1990	Skilton 2009	Zucker et al. 2002
					Zucker et al. 2002

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Table 4 - Prominent Definitions of Stars

Star Definition	Focal Dimension	Essential Attribute	Reference
Stardom refers to a situation "wherein relatively small numbers of people earn enormous amounts of money and dominate the activities in which they engage".	Outcome-driven	Achieves superior wealth, Achieves superior performance	Rosen (1981: 845)
"We understand a star scientist to be someone who is, by an order of magnitude, both more productive in and more influential on a specific research field than the average (nonstar) scientist active in this field."	Outcome-driven	Achieves superior performance	Rothaermel & Hess (2007: 900)
Star manager is someone "who has an idea and a unique skill to run a new venture."	Attribute-driven	Possesses unique skills	de Bettignies & Chemla (2008: 505)
Stars are disproportionately productive and highly visible in the external labor market.	Outcome-driven	Achieves superior performance, Achieves superior visibility	Groysberg et al. (2008)
Star scientists are those whose publications are above the average, but they show a patenting record below the average.	Outcome-driven	Achieves superior productivity	Baba et al. (2009)
Star scientists are those who create connectivity to upstream knowledge sources such as universities.	Attribute-driven	Possesses superior social ties	Hess & Rothaermel (2011)
"we define a star as a university- affiliated scientist who is also the recipient of a Nobel Prize."	Outcome-driven	Achieves superior performance	Higgins et al. (2011: 607)
"CEOs are labeled stars when their firms have enjoyed sustained levels of high performance."	Outcome-driven	Achieves superior performance	Graffin et al. (2013: 387)
Stars are "a few individuals who contribute a disproportionate amount of output".	Outcome-driven	Achieves superior productivity	Aguinis & O'Boyle (2014: 313)
They introduced relational stars (i.e. integrators and connectors) where integrators are "outliers in centrality" and connectors are "outliers in bridging behavior".	Outcome-driven	Achieves superior social ties	Grigoriou & Rothaermel (2014: 586)
Star scientists are "highly prolific individuals"	Outcome-driven	Achieves superior productivity	Tzabbar & Kehoe (2014: 450)
Stars show prolonged and relatively disproportionate high performance, external visibility and social capital.	Attribute-driven & Outcome-driven	Achieves superior performance, Achieves superior visibility	Call et al. (2015)
Star CEOs are "members of the National People's Congress (NPC) or the National Committee of the Chinese People's Political Consultative Conference (CPPCC)".	Attribute-driven	Possesses superior social status	Conyon et al. (2015: 412)
Stars are "top performers who are "on the fast track" in the organization".	Outcome-driven	Achieves superior performance	Long et al. (2015: 463)
"Stars are identified based on the cumulative influence of their ideas, which is measured by the number of prior cumulative patent forward citations per inventor"	Outcome-driven	Achieves superior performance	Hohberger (2016: 686)
Stars "make disproportionate individual contributions to their organizations" and they follow the 80-20 rule.	Outcome-driven	Achieves superior performance	Chen & Garg (2018: 1240)
They conceptualized status, performance, and universal stars. Status stars are performers who have high external status because of previous exceptional task performance or affiliation with elite individuals or institutions. Performance stars are individuals who show outstanding performance. Universal stars are performers who both show outstanding performance and have extensive external status.	Outcome-driven	Achieves superior performance, Achieves superior social status	Kehoe et al. (2018)
They defined creative stars as those who show high levels of creativity relative to other employees and also have a reputation of creativity.	Attribute-driven	Possesses superior creativity	Li et al. (2020)

Table 5: Measures and Methods in the Empirical Investigation of Stars – Representative Studies

Illustrative Study	Stars Measurement	Core Findings	Methodological Concerns
Graffin et al. (2008)	Two measures of CEO star status: (i.) if a CEO was recognized in Financial World contest in the current year, and (ii.) the number of total recognitions in the past five years.	Star CEOs financially benefit from their stardom. However, top management team members are also paid more when they work with a star CEO. Working with star CEOs helps TMT members become CEOs themselves.	Reflective measure, using only external, third-party evaluations. Interaction effects between status and performance not incorporated.
Baba et al. (2009)	Star scientists are those who have above average publication records.	In collaborations between firms and universities, firms with star scientists have little impact on innovation.	Reflective measure. No measures for social capital, which would be germane to the focal phenomenon.
Higgins et al. (2011)	A scientist is considered to be a star if he/she has been awarded a Nobel prize.	The presence of a star in a firm undertaking an IPO creates a signal of high quality to investors.	Reflective measure and one that does not solely capture individual achievement. Peer and organizational impacts loosely inferred.
Hess & Rothaermel (2011: 901)	Stars are "researchers who had both published and been cited at a rate of three standard deviations above the mean."	Star scientists and upstream alliances create redundancy in firms' knowledge sources and thereby decreases firms' innovation. However, star scientists and downstream alliances provide complementary knowledge in firms' innovation.	Reflective measure. No measures for social capital, which would be germane to the focal phenomenon.
Oettl (2012)	Helpful star scientists are high both in productivity and helpfulness. High-productivity scientists are those who have ever been in the top 5% of the yearly citation and yearly impact factor-weighted publications. Helpful scientists are those who have ever been in the top 20% of the yearly distribution of acknowledgments in a year.	If a helpful scientist dies, their coauthors show a decline in the quality of their performance but not in the quantity of their output. If a non-helpful star scientist dies, their death does not impact their coauthors' output.	Generally a balanced study. Combination of reflective measure of performance with formative measure of social capital. Status and visibility not included, despite being germane to citation rates and perceived assistance to others.
Grigoriou & Rothaermel (2014: 598)	Stars are "the inventors with patents that are three standard deviations above the mean number of patents of every other inventor in the same 5-year time window."	Stars positively impact innovation and knowledge generation through their superior ability in knowledge recombination, but also by making their peers more productive.	Reflective measures despite strong formative theorization.
Tartari et al. (2014)	Star scientists are academics who are in the top 1% of the citations distribution in their area of expertise, and also in the top 25% of the EPSRC grants distribution.	Industry engagements of academics are impacted by their peers' behavior. The effect of peers is weaker for star scientists.	Reflective measures despite strong formative theorization.
Tzabbar & Kehoe (2014)	Innovation performance score was calculated using the number of patents, tenure, forward citations, and years since patent was awarded. If the innovation performance score of a scientist is one standard deviation above the average of the industry, the person is considered to be a star.	Innovative involvement of a star who leaves the organization heightens the negative impacts on exploitation and decreases the positive impacts of stars' departure on exploration.	Reflective measure, focusing exclusively on high performance, even though social capital is a relevant dimension of peer and organizational impacts.
Kehoe & Tzabbar (2015)	Stardom calculated using the number of patents and forward citations, normalized by the tenure of the scientist. If productivity scores are 2 standard deviations above the average of all scientists, they are considered to be a star.	Stars are likely to positively impact firms' productivity. However, they constrain the emergence of other stars in the organization.	Reflective measure, focusing exclusively on high performance, even though social capital is a relevant dimension of peer and organizational impacts.

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Illustrative Study	Stars Measurement	Core Findings	Methodological Concerns
Hohberger (2016)	Stardom was calculated using the number of citations considering the one percent cut-off point.	Stars are not better than non-stars at developing the ideas of earlier star inventions. If stars try to build on their own inventions, their future inventions will be negatively impacted.	Reflective measure, focusing exclusively on high performance, even though social capital is a relevant formative dimension of idea development.
Agrawal, McHale, & Oetl (2017: 859)	Star is a scientist whose "citation weighted papers published up until year $t - 1$ is above the 90th percentile".	Hiring a star does not enhance existing scientist productivity, but does improve the quality of new hires.	Reflective measure, focusing exclusively on high performance, even though social capital, visibility, and status are relevant formative dimensions of incumbent impacts and new employee recruitment. Assumes all reflective dimensions are independently identical.
Aguinis et al. (2018: 1289)	Stars are scientists "who have published at least one article in one of the 10 most influential mathematics journals from January 2006 to December 2015."	There is a gender productivity gap between males and females -- where males are more productive than females-- and this gap is more significant in more elite ranges of performance.	Reflective measure, focusing exclusively on high performance, even though social capital, visibility, and status are relevant formative dimensions of gender-based phenomena.
Chen & Garg (2018: 1250)	They used value over replacement player (VORP) to identify stars. A player is considered to be a star "if in the previous season, he was above the 90th percentile of league-wide performance per the VORP statistic, and played in a majority of games for his team."	They showed that a star's short-term absence makes others search for new routines and positively impacts organizational performance.	Reflective empirical orientation despite theorizing formative effects. Assumes all reflective dimensions are independently identical.
Prato & Ferraro (2018)	Using the All-America Research Team ranking, they identified stars as those who were ranked in the top three industry performers when they were hired.	Hiring stars negatively impacts incumbents' performance. This impact is less detrimental for star incumbents.	Reflective measure, using only external, third-party evaluations. Interaction effects between status and performance not incorporated.
Li et al. (2020: 620)	In R&D teams, stars were identified as team members achieving the highest creativity scores based on a survey completed by the team leader. In sales teams, leaders nominated stars based on the following definition: "Creative stars are employees who display superior creativity relative to others and have a reputation of being creative."	Stars who have central positions in teams have a direct positive impact on team creativity. However, they have an indirect negative impact on team creativity by negatively impacting non-stars' learning in explorative and exploitative activities.	Generally a good design. Focal measure is consistent with a formative conceptualization. However, the operationalization of stardom excludes relevant dimensions: social capital, visibility, and status.

Table 6: Antecedents and Impacts of Stardom – Representative Studies Across Varied Contexts and Fields

Illustrative Study	Field of the Study	Context of the Study	Focus of the Study	Core Findings
Rosen (1981)	Economics	NA	Emergence of stars	They showed the role of market changes in developing stars and emphasized that the quality of the stars' work cannot be reached by the aggregation of the output of a number of average workers.
Adler (1985)	Economics	NA	Emergence of stars	They discovered that instances arise in which no discernible, special talents can still lead to heightened earnings and stardom. In other words, emergence of stars can be due to different levels of prior knowledge of consumers about the star.
McDonald (1988)	Economics	NA	Emergence of stars	They explained the importance of early entry into an occupation in becoming a star.
Zucker, Darby, and Torero (2002)	Strategic management/Entrepreneurship	High technology industry	Impact of stars on firm Innovation	They showed that stars are the main drivers of innovation and emergence of industries.
Grigoriou & Rothaermel (2014)	Strategic management	High technology industry	Impact of stars on firm Innovation	Drawing on knowledge-based view of the firm and social networks, they showed that stars who are outliers in centrality and bridging behavior have high knowledge recombination abilities and help other scientists develop higher abilities as well.
Tzabbar & Kehoe (2014)	Strategic management	High technology industry	Impact of stars on firm Innovation	Drawing on knowledge-based view of the firm and routines and processes, they showed that stars' departure increases firms' exploration and decreases firms' exploitation.
Kehoe & Tzabbar (2015)	Strategic management	High technology industry	Impact of stars on firm Innovation	Drawing on resource dependence theory, they showed that stars enhance firm productivity, but limit the emergence of other leaders in organizations.
Liu, Mazumdar, & Li (2015)	Strategic management	Creative contexts	Impact of stars on firm performance (revenue)	They examined the controversy regarding the impact of stars in the movie industry. Since stars gain high financial rewards and large payments, the true impact of stars on firm outcomes has not been without controversy. They showed that a star has an indirect impact on revenue through their impact on theater allocations.
Corolleur, Carrere & Mangematin (2004)	Entrepreneurship	High technology industry	Impact of stars on firm Innovation	Drawing on knowledge-based view of the firm, they showed that star scientists create riskier and more valuable firms.
de Bettignies & Chemla (2008)	Entrepreneurship	High technology industry	Impact of stars on firm performance	They showed that competition for stars can lead to mobilizing human capital and engaging in corporate venturing decisions.
Fuller & Rothaermel (2012)	Entrepreneurship	High technology industry	Impact of stars on firm performance	They showed the important role played by star faculty entrepreneurs in the success of new technology ventures and attracting funds.
Kahn, La Mattina, & MacGarvie (2017)	Entrepreneurship	High technology industry	Impact of stars on firm performance	They showed that immigrant entrepreneurs enjoy a premium in developing new science-based ventures.
Basuroy, Chatterjee, & Ravid (2003)	Marketing	Creative contexts	Impact of stars on firm performance (revenue)	They studied the moderating role of stars on critics' review and box office performance. They showed that stars can mitigate the negative impact of critics' review on box office revenues.
Elberse (2007)	Marketing	Creative contexts	Impact of stars on firm performance (revenue)	They examined the role of stars in the success or failure of movies. They showed that stars increase the revenues of theatres. They also found insufficient evidence to show that stars add more value to movie companies than the value stars capture.
Hoegel, Schmidt, & Torgler (2014)	Marketing	Creative contexts	Impact of stars on organizational identification	They studied the role of stars in navigating among stakeholder groups within organizations. They found that stars impact the level of fans' identification with teams.
Liu, Liu, & Mazumdar, (2014)	Marketing	Creative contexts	Impact of stars on firm performance (revenue)	They showed the importance of the role of stars in the success of movies especially under uncertain conditions -- i.e. in the early stages and riskier stages of movie production.

Table 7 – Theoretical Foundations of Stars' Multi-level Impact

Stars' Impact on Peers			
Valence of Impact	Focal Dimension	Theoretical Perspective	Examples
Positive	Performance	Knowledge externalities and spillover (Griliches, 1979; Jaffe, 1986)	• Impact on incumbent scientist performance in related fields (Agrawal et al., 2017)
			• Impact on peer performance through their collaborations (Oettl, 2012)
			• Impact on non-star productivity through formal collaborations (Azoulay et al., 2010)
			• Impact on capability development among others (Kehoe et al., 2018)
Positive	Status	Social Comparison Theory (Festinger, 1954)	• Impact as social referents and role models (Flynn & Amanatullah 2012; Huckman & Pisano, 2006)
	Visibility	Signaling theory (Connelly et al., 2011)	• Increase legitimacy of inventor team and patent renewal (Luo et al., 2009)
Positive	Social Capital	Social network theory (Burt, 1992; Granovetter, 1973)	• Provide network connections and recognition (Graffin et al., 2008)
			• Sponsor individuals through networks (Allen et al., 2004)
Negative	Performance	Resource dependence theory (Casciaro & Piskorski, 2005; Emerson, 1962)	• Hinder teams from enhancing skills and information of peers because of power imbalance (Kehoe & Tzabbar, 2015)
			• Negative impact on innovative outcomes because of imbalance in mutual dependence (Kehoe & Tzabbar, 2015)
Negative	Status	Routines and processes (Nelson & Winter, 1982)	• Hinder non-stars knowledge sharing because of high perceived value of stars' knowledge and low perceived value of non-stars' knowledge (Van der Vegt et al., 2010)
			• Cause disruptions on knowledge sharing routines because of status asymmetry (Tzabbar & Vestal, 2015)
			• Limited knowledge spillover of new hires to incumbent employees (Prato & Ferraro, 2018)
Stars' Impact on Firms			
Valence of Impact	Focal Dimension	Theoretical Perspective	Examples
Positive	Performance	Knowledge based view and knowledge integration (Grant, 1996)	• Innovatively lead knowledge search (Kehoe & Tzabbar, 2015)
		Resource based view (Barney, 1991)	• Enhance firms' absorptive capacity and intellectual capital with unique and valuable knowledge (Song et al., 2018)
		Routines and processes (Nelson & Winter, 1982)	• Develop norms and practices (Kehoe et al., 2018)
	Positive	Visibility	Signaling theory (Connelly et al., 2011)
• Impact quality of new recruits of firms by signaling organizational quality through association with stars (Agrawal et al., 2017)			
Positive	Social Capital	Social network theory (Burt, 1992; Granovetter, 1973)	• Signal quality in initial public offerings (Higgins et al., 2011)
			• Bring value-enhancing information and perspectives (Oldroyd & Morris, 2012)
Negative	Performance	Routines and processes (Nelson & Winter, 1982)	• Facilitate varied schemas and work as boundary spanners and gatekeepers (Allen & Cohen, 1969; Tushman & Scanlan, 1981)
			Knowledge based view (Grant, 1996)
	Status	Routines and processes (Nelson & Winter, 1982)	
			Knowledge based view and knowledge integration (Grant, 1996)
	Status	Knowledge based view and knowledge integration (Grant, 1996)	
			• Control resources (Zucker et al., 2002)
Negative	Social Capital	Social network theory (Burt, 1992; Granovetter, 1973)	• Crowd out contributions and learning of others (Asgari & Hunt, 2015; Li et al., 2020)
			• Show self-interested behavior to maintain high status (Groysberg et al., 2011)
			• Negatively impact performance because of information overload and information processing limitations (Oldroyd & Morris, 2012)

Table 8: Contingencies related to Star Impacts – Representative Studies

Contingency	Illustrative Study	Core Findings
Stars' Attributes	Gender	Green et al. (2009) Studying star analysts, they showed that women are more likely to become star analysts than men. However, mens' earning estimates are likely to be more accurate than women's. This is because women are likely to outperform men in other aspects of performance.
	Gender	Aguinis et al. (2018) Stars' productivity can be shown as a power law distribution. In the range of more elite performers, there is more underrepresentation of women.
	Star's helpfulness	Oettl (2012) Stars' helpfulness in terms of giving advice and feedback is more useful for peers than stars' helpfulness in terms of technical access to material.
	Star's innovative involvement	Tzabbar & Kehoe (2014) Stars' innovative involvement positively impacts their negative effects after their departure on exploitation. Stars' innovative involvement negatively impacts their positive effects after their departure on exploration.
	Star's collaborative involvement	Tzabbar & Kehoe (2014) Stars' collaborative strength positively impacts the negative effect of the stars' turnover on firms' exploitative activities. Stars' collaborative strength positively impacts the positive effect of the stars' departure on firms' explorative activities.
	Age	De Pater et al. (2014) The earnings of female movie stars surge until the age of 34. However, their earnings decline as they get older. However, male stars' earnings increase until age 51 and then their earnings become stable.
	Breadth of knowledge	Kehoe & Tzabbar (2015) Breadth of the knowledge of stars diminishes the negative impact of stars on non-stars' leadership.
	Collaborative strength	Kehoe & Tzabbar (2015) Collaborative strength of stars diminishes the negative impact of stars on non-stars' leadership.
Contextal Factors	Environmental dynamism	Miller & Shamsie (1996) Drawing on the resource-based view of the firm, they studied the contingencies of the stars' impact in the movie industry such as environmental dynamics. Long-term contracts with stars helped financial performance in less dynamic environments.
	Organizational dynamics	Wade et al. (2008) Star CEOs and their respective firms benefit in the short-term. However, stars presence creates a burden of celebrity for the future of the CEO and the firm.
	Firm pursuit	Groysberg & Lee (2009) Stars who were hired to explore new activities experienced a long-term drop in their performance. However, stars who joined firms to exploit current activities showed a short-term decline in their performance.
	Team coordination	Li et al. (2020) Team coordination can decrease the negative impacts of a star's centrality on non-stars' learning and team creativity.

Figure 1: Publications Contributing to the Literature on Stars

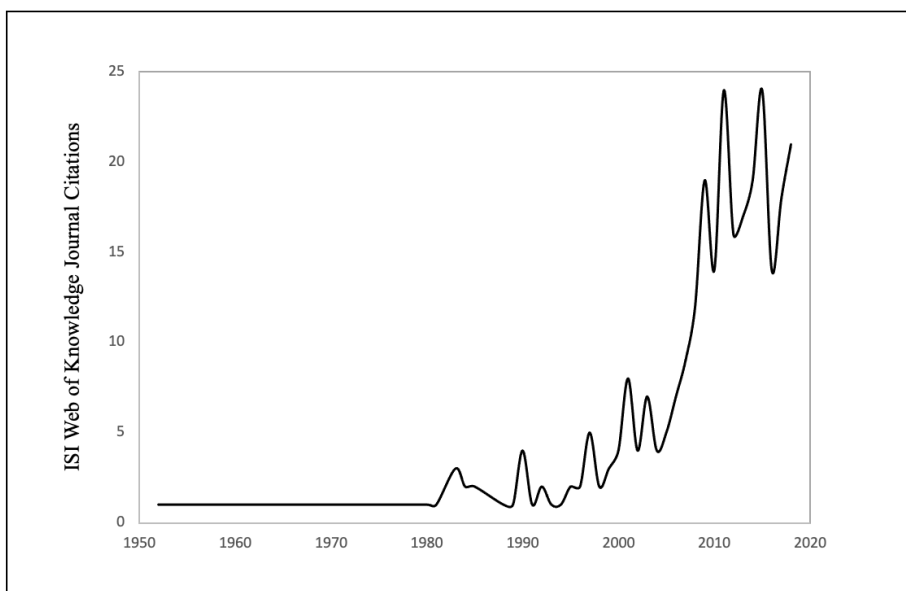


Figure 2: Dimensions of Stardom

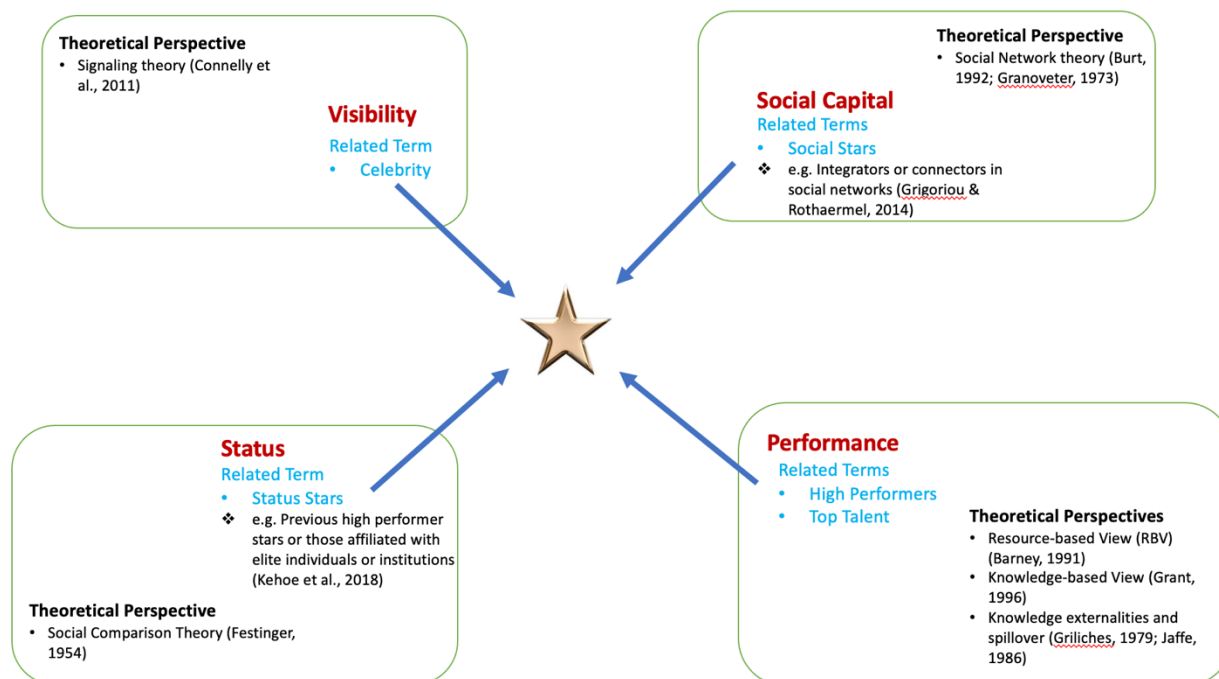


Figure 3: Star Dimensions: Frequency of Use in Scholarly Research

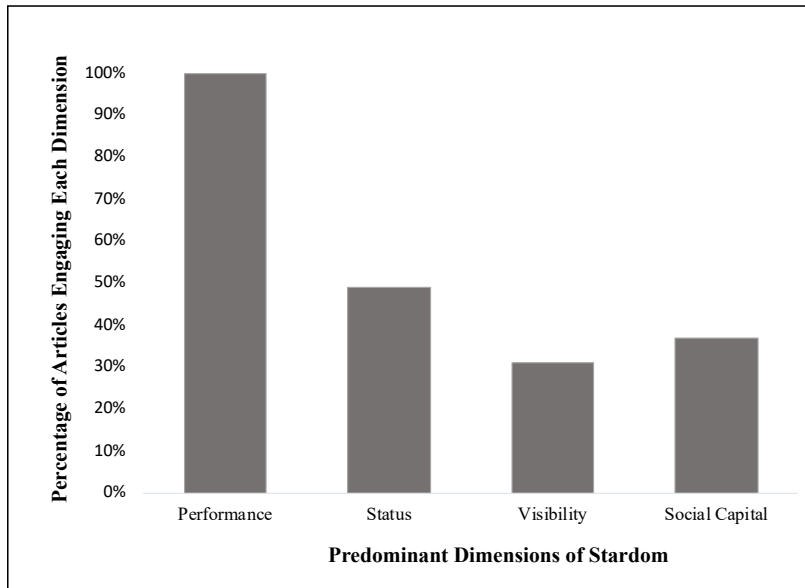
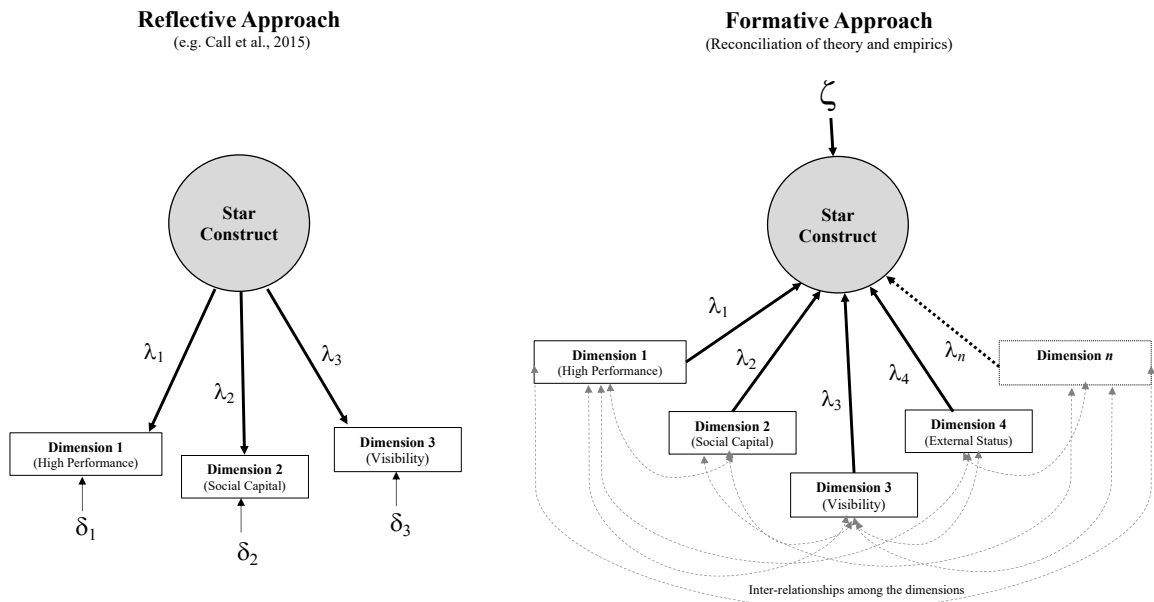
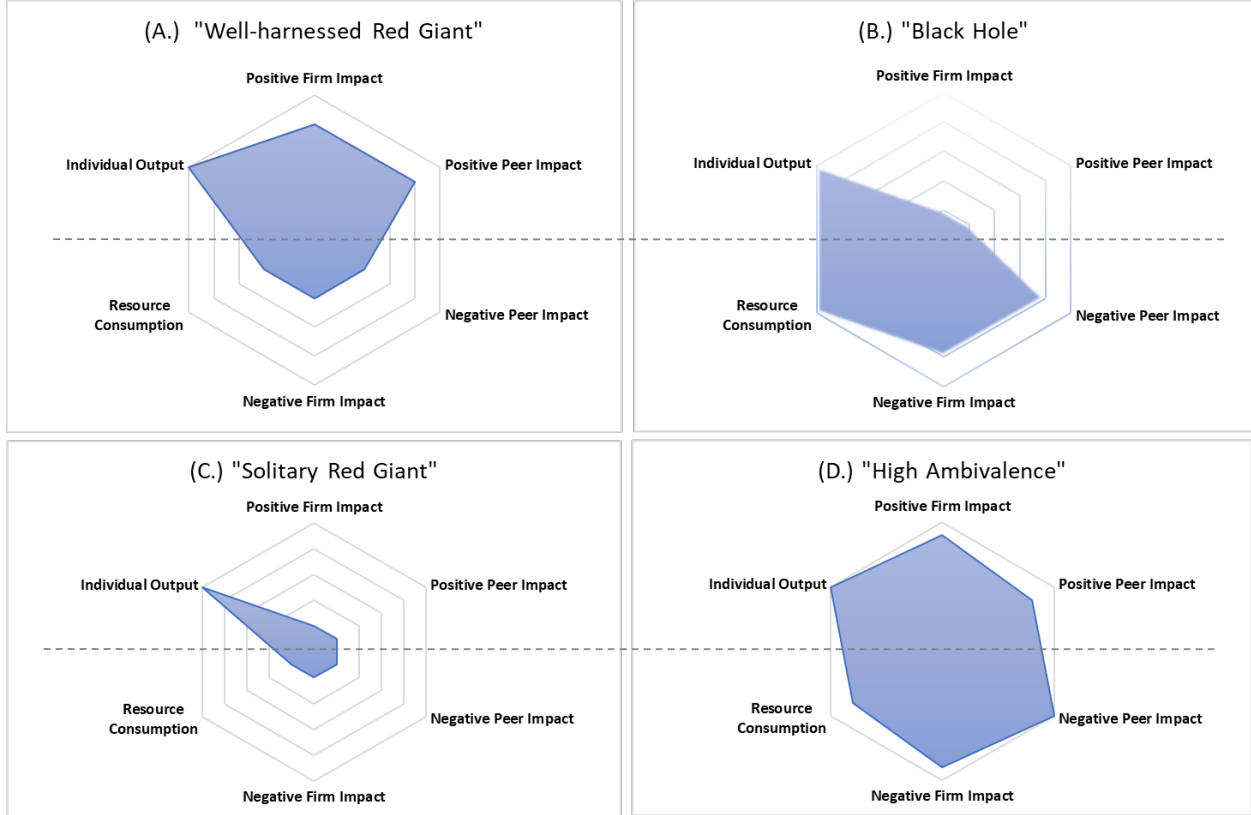


Figure 4: Reflective versus Formative Star Construct



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Figure 5: Illustration of Integrated Consideration of Concurrent Star Effects



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Short Bios for Annals

Elham Asgari (Ph.D., Virginia Tech) is an Assistant Professor of Management and Entrepreneurship at Michigan Tech's College of Business. Her research primarily focuses on strategy, innovation and entrepreneurship; and, investigates the impact of upper echelons, star employees, and varied knowledge types on technological innovations.

Richard "Rick" Hunt (Ph.D., University of Colorado) is an Assistant Professor of Strategy and Entrepreneurship at Virginia Tech's Pamplin College of Business as well as Research Director at the Apex Center for Entrepreneurs. His research investigates how individuals, organizations, markets, and populations successfully or unsuccessfully identify and address knowledge problems.

Daniel Lerner (Ph.D., University of Colorado) is an Assistant Professor at IE Business School. His current research interests, involving the factors shaping entrepreneurial action and outcomes, bridge organizational behavior and strategy. Dan's scholarly work, informed by industry and personal experience, has been published in top-tier management and entrepreneurship outlets.

David Townsend (Ph.D., University of Oklahoma) is the Union Junior Faculty Fellow in Entrepreneurship and Associate Professor in the Department of Management at the Pamplin College of Business at Virginia Tech. His research focuses on knowledge problems and decision-making, entrepreneurial action theory, and the implications of artificial intelligence for organizational research.

Mathew Hayward (Ph.D., Columbia University) is Professor of Management at Monash University. His research focuses on applications of behavioral decision theory to strategy and entrepreneurship, including organizational stars.

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