

**Decision Making in the Pre-Deal Stage of Acquisitions:
Toward an Improved Cognitive Perspective**

DISSERTATION
of the University of St.Gallen,
School of Management,
Economics, Law, Social Sciences,
International Affairs and Computer Science,
to obtain the title of
Doctor of Philosophy in Management

submitted by

Di Bian

from

China

Approved on the application of

Prof. Dr. Dr. Tomi Laamanen

and

Prof. Dr. Johannes Luger

Dissertation no. 5211
Difo-Druck GmbH, Bamberg, Germany

The University of St.Gallen, School of Management, Economics, Law, Social Sciences, International Affairs and Computer Science, hereby consents to the printing of the present dissertation, without hereby expressing any opinion on the views herein expressed.

St.Gallen, May 24, 2022

The President:

Prof. Dr. Bernhard Ehrenzeller

Acknowledgements

I would like to express my deep gratitude to my dissertation supervisor, Professor Tomi Laamanen, for his invaluable guidance, constructive feedback, and always encouragement during the entire stage of my doctoral studies. I am also truly grateful for the consistent support and insightful feedback from my dissertation co-supervisor, Professor Johannes Luger. Further, I would like to thank Professors Henrich Greve and Vibha Gaba for hosting my visiting at the INSEAD Asia Campus and for their continuous feedback on my research. I also hope to acknowledge the scholarship of the Swiss National Science Foundation to support my stay abroad. Lastly, I would like to thank all my family, friends and colleagues who have helped me during my doctoral studies in countless ways.

Di Bian

22.September. 2021 Zürich

ABSTRACT

This dissertation examines the influence of cognitive bias on decision-making in the pre-deal stage of acquisitions and consists of three empirical essays. The first essay investigates whether and how managers establish their synergy aspirations for their acquisitions. The findings in this essay indicate that managers tend to imitate their peers' synergy targets to simplify their own decision-making and to particularly and strategically downward imitate peer aspirations to drive their stakeholders' expectations downward. The second essay examines managerial biases that emerge from a high load of parallel acquisitions. Specifically, it analyses the effect of parallel acquisitions on forecasting errors in integration cost planning. The findings in this second essay indicate that parallel acquisitions result in managerial cognitive overload, which leads to a higher likelihood of cost underestimation. Finally, shifting focus from managerial bias to investor bias in acquisitions, the third essay explores whether investors may oversimplify their acquisition evaluations due to stereotypes. This essay focuses on gender bias against female CEOs and stereotypes regarding female facial attractiveness. The findings in this third essay indicate that investors tend to discriminate against more attractive female CEOs during their acquisition activities. Taken together, the findings in this dissertation contribute to the acquisition literature by underscoring the importance of managers' and investors' cognitive biases in decision-making in the pre-deal stage of acquisitions.

ZUSAMMENFASSUNG

Die Dissertation untersucht den Einfluss der kognitiven Verzerrungen auf die Entscheidungsfindung in der Pre-Deal Phase von Akquisitionen und besteht aus drei empirischen Essays. Der erste Essay untersucht, ob und wie die Manager Synergieziele für ihre Übernahmen festlegen. Die Ergebnisse des Essays zeigen an, dass Manager darauf abzielen, die Synergieziele von Peers zu imitieren, um ihre eigene Entscheidungsfindung zu vereinfachen, und dass die Manager vor allem strategisch nach unten gerichtete Peer-Aspirationen imitieren, um die Erwartungen der Stakeholder nach unten zu lenken. Der zweite Essay untersucht die Bias, die sich aus einer hohen Belastung durch Parallelakquisitionen ergeben. Das Essay analysiert insbesondere die Auswirkungen von Parallelakquisitionen auf die Prognosefehler bei der Integrationskostenplanung. Die Ergebnisse des zweiten Essays zeigen an, dass Parallelakquisitionen zu einer Informationsüberlastung führen, die eine Unterschätzung der Kosten wahrscheinlicher macht. Im dritten Essay wird untersucht, ob Investoren ihre Bewertung von Übernahmen aufgrund von Stereotypen zu stark vereinfachen. Das Essay konzentriert sich auf geschlechtsspezifisches Bias gegenüber weiblichen CEOs und auf Stereotypen über die Attraktivität des Gesichts der weiblichen CEOs. Die Ergebnisse des dritten Essays zeigen an, dass Investoren dazu neigen, bei den Akquisitionsaktivitäten, die von attraktiveren weiblichen CEOs gemacht wurden, zu diskriminieren. Zusammengefasst beleuchten die ersten beiden Essays die Voreingenommenheit von Managern und die Entscheidungsfindung bei den Übernahmen, während das dritte Essay die Voreingenommenheit von Investoren bei der Bewertung von Übernahmen aufzeigt. Insgesamt kann die Dissertation einen Beitrag zur Akquisitionsliteratur leisten, indem sie die Bedeutung der kognitiven Voreingenommenheit sowohl von Managern als auch von Investoren bei der Entscheidungsfindung bei Akquisitionen hervorhebt.

Table of Contents

CHAPTER 1	7
INTRODUCTION	7
ORGANIZATION OF THIS DISSERTATION	11
CONTRIBUTIONS	15
CHAPTER 2	34
INTRODUCTION	35
THEORY AND HYPOTHESES	38
METHODS	46
RESULTS	51
DISCUSSION	53
CONCLUSION.....	57
CHAPTER 3	71
INTRODUCTION	72
THEORY AND HYPOTHESES	74
METHODS	80
RESULTS	83
DISCUSSION	85
CHAPTER 4	98
INTRODUCTION	99
THEORY AND HYPOTHESES	101
METHODS	111
RESULTS	117
DISCUSSION	122
CONCLUSION.....	125
CURRICULUM VITAE.....	137

CHAPTER 1

INTRODUCTION

Acquisitions are significant and influential strategic decisions that have attracted much scholarly and practical attention. Extensive research has investigated the antecedents of acquisitions, the performance implications of acquisitions, and the moderating conditions between these processes. However, despite substantial efforts toward improving the understanding of acquisition behaviors, the results of discussions on why certain acquisitions outperform others remain inconclusive (Devers, Wuorinen, McNamara, Haleblian, Gee, & Kim, 2020; Haleblian, Devers, McNamara, Carpenter, & Davison, 2009). Thus, to advance the understanding of the nuances in acquisitions, two research streams have recently emerged in the acquisition literature.

First, from a cognitive perspective, scholars have investigated the cognitive abilities and constraints of both managers and investors in their acquisition decisions. The idea that managerial cognition guides strategic decision-making has been well established in strategy and management studies (Eggers & Kaplan, 2013; Gavetti & Levinthal, 2000; Powell, Lovallo, & Fox, 2011; Walsh, 1995). Acquisition research has also long recognized that acquisition decisions “involve complexity, ambiguity, and lack of structure” and that “decision-makers cannot simultaneously consider or process all the variables and data involved in a decision as complex as acquisition” (Duhaime & Schwenk, 1985: 287). Recent acquisition research has further explored the cognitive foundations of acquisition decision-making. For instance, CEO regulatory focus has been shown to affect the likelihood of acquisitions (Gamache, McNamara, & Johnson, 2013). Moreover, managers tend to anchor their own premium decision on the premium that a peer firm has announced immediately before the focal acquisition, which results in a biased premium decision (Malhotra, Zhu, & Reus, 2015). Executives’ construal level (i.e., abstract and distant [high-level] versus concrete and near [low-level] mental representations) affects their information interpretation and acquisition decisions (Steinbach, Gamache, & Johnson, 2019), while investors base their decision-making on available and accessible information to infer managers’ decision quality and to base their response to acquisition announcements on this simplified information processing (Schijven & Hitt, 2012). Across these studies, a consistent argument is that while cognition plays a key role in acquisition decision-making, managers and investors – due to their cognitive limitations – rely on a set of “simplified knowledge structures or cognitive

representations” to process information and find solutions (Gary & Wood, 2011: 569; March & Simon, 1958; Simon, 1947).

Second, from a process perspective, acquisition research has increasingly focused on the pre-deal stage instead of treating each acquisition as a single unit or merely considering the post-merger integration stage. This is because “many of the challenges that surface later in the postmerger integration (PMI) process can be traced back to mistakes that occurred during the pre-deal phase” (Haspeslagh & Jemison, 1991: 2; Welch, Pavicevic, Keil, & Laamanen, 2020). Similar to a famous quote – “a good beginning is a half-success” – recent research has begun to empirically examine the key decisions made during the pre-deal stage. For instance, concerning deal initiation, CEOs can become less prone to conduct acquisitions after an independent director’s death due to these CEOs’ increased mortality awareness and change in goals (Shi, Hoskisson, & Zhang, 2017a). In terms of their target selection, CEOs exhibit a hometown bias in acquisitions and are significantly more likely to acquire targets near their childhood homes than similar targets located elsewhere (Jiang, Qian, & Yonker, 2019). Regarding premium decisions, CEO overconfidence leads to a higher premium that is paid in acquisitions, while a longer pre-deal stage helps increase rationality via due diligence and negotiation decisions (Pavićević & Keil, 2021). With respect to investors’ reactions, managers may strategically release positive but unrelated information surrounding an acquisition announcement to manage investors’ impressions and offset potential negative reactions to a transaction (Graffin, Halebian, & Kiley, 2016). Across these studies, a consistent theme is that while the pre-deal stage has a profound influence on acquisition decision-making and its qualities, managers may remain constrained by bounded rationality and thus seek simplification in their decision-making.

This dissertation is therefore located at the intersection of the cognitive perspective and the pre-deal focus of acquisition research. Specifically, I aim to advance such understanding in regard to three existing limitations in the research. First, since the research stream on cognition bias in acquisition is nascent, there is still much that remains unknown regarding how cognitive simplification affects specific acquisition decisions across different stages (Welch et al., 2020). Managers may use simplifying practices to arrive at their decisions, but “much less is understood about the information-filtering process” by which managerial cognition manifests in acquisition decisions (Malhotra et al., 2015: 871; Steinbach et al., 2019). This is an important gap – a widely held assumption is that acquisition decisions involve a fair amount of subjectivity and that these processes are “not nearly analytical and segmented” (Haspeslagh & Jemison, 1991: 41). Unsurprisingly, then,

recent reviews have called for research that further illuminates the role of cognition in acquisition decision-making processes (Graebner, Heimeriks, Huy, & Vaara, 2017; Welch et al., 2020).

Second, important decisions, namely, how synergy aspirations are established and how integration costs are planned, have been neglected in existing studies of the pre-deal acquisition stage, perhaps due to difficulties in data collection. Although prior works on the pre-deal stage have explored decisions such as target selection (e.g., Capron & Shen, 2007), due diligence (Reuer & Sakhartov, 2021), negotiation (Fich, Cai, & Tran, 2011), and legal advisor selection (Westbrock, Muehlfeld, & Weitzel, 2019), little is known about how managers plan for their acquisitions in terms of their synergy expectations and integration budgets. Synergies are one of the most central constructs in acquisition value creation (Chatterjee, 1986; Larsson & Finkelstein, 1999; Moatti, Ren, Anand, & Dussauge, 2015; Rabier, 2017a; Seth, 1990b, 1990a; Zollo & Meier, 2008). However, despite Houston, James and Ryngaert's (2001) investigation of the consequences of publicly announced synergy targets via 41 observations, to our knowledge, no study has explored the determinants of synergy aspirations. Similarly, although "PMI (post-merger integration) planning already occurs early in the pre-deal phase" (Welch et al., 2020: 25), direct examinations of integration planning have been rare. In sum, the planning theme of the pre-deal stage of acquisitions has been largely overlooked, even though its importance to acquisition success has been clearly recognized.

Third, the acquisition literature tends to paint investors as fully rational decision-makers and is replete with the use of investor reactions to evaluate acquisition performance and qualities. For example, in their review of the acquisition research in recent decades, Devers et al. (2020: 871) note that "the performance of acquisitions, most often, although not always, are operationalized as CAR¹s." Furthermore, despite the widely held assumptions concerning rational investors, "we know surprisingly little about how investors actually go about making these investment decisions" (Schijven & Hitt, 2012: 1247). Recently, researcher have begun to discern investor cognitive procedures in their acquisition evaluation by analyzing their information processing (Schijven & Hitt, 2012), their attention to firm reputation (Blagoeva, Kavusan, & Jansen, 2020), and their consideration of political affinity (Fieberg, Lopatta, Tammen, & Tideman, 2021). While such studies mainly build on an

¹ CAR refers to cumulative abnormal returns and is often used to measure short-term investor reactions to acquisition announcements.

economic view of information asymmetry, the psychological perspective on judgment formation may also help explain investor decision-making. However, we still know little about it.

Accordingly, to advance the research on cognitive influences in the pre-deal stage of acquisitions, this dissertation addresses the following research questions:

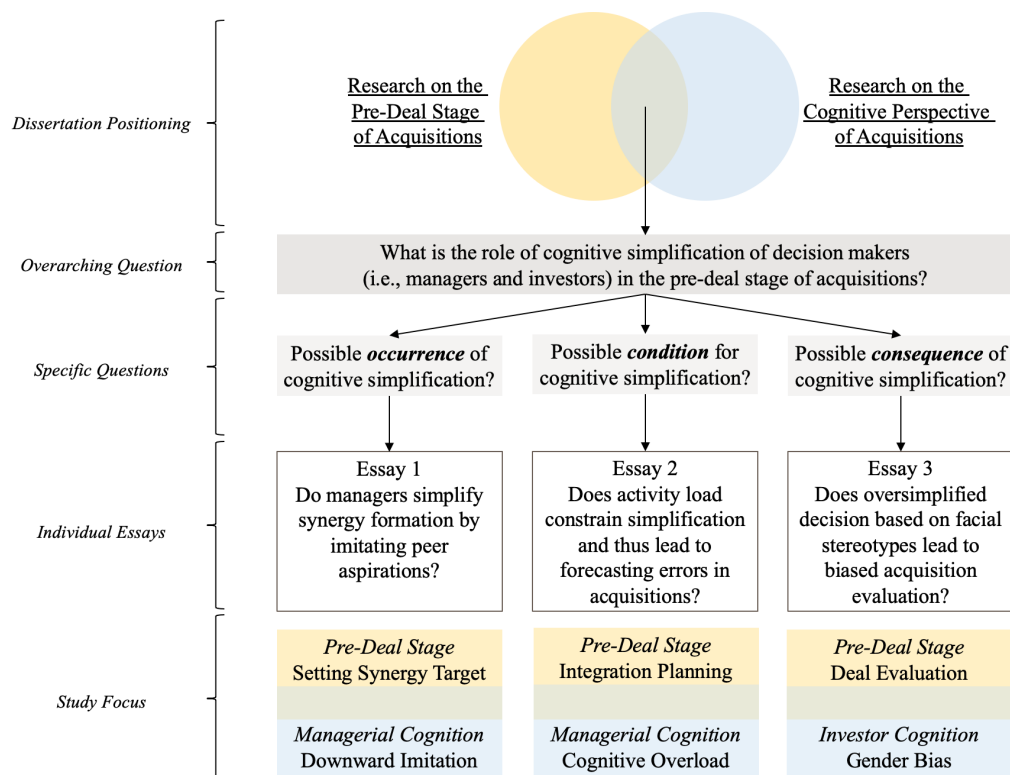
Overarching question	What is the role of cognitive simplification by both managers and investors in their decision-making during the pre-deal stage of acquisitions?
<i>Sub-question 1</i>	Do managers simplify their decisions of synergy aspirations in acquisitions? If so, how?
<i>Sub-question 2</i>	Under what conditions do managers reach their cognitive limits? Can information overload lead to decision errors in acquisitions?
<i>Sub-question 3</i>	What are the possible consequences of (over)simplified decision-making for investors' acquisition evaluation?

While a cognitive perspective is relevant to analyzing acquisition decision-making, acquisition is also a suitable context for investigating managers' and investors' cognitive biases. First, executives tend to be highly involved in acquisition decisions. A study based on surveys of over 1,000 CEOs and CFOs has shown that executives are the least likely to delegate their acquisition decision authority to their subordinates (Graham, Harvey, & Puri, 2015). Research also shows that CEO attributes are the most influential factors in acquisition performance (Meyer-Doyle, Lee, & Helfat, 2019). Therefore, acquisition decisions, compared to other strategic decisions, provide a clearer context for observing managerial cognition. Second, acquisition decisions are cognitively challenging and complex, i.e., they are "strategic" (Csaszar, 2018; Duhaime & Schwenk, 1985; Haspeslagh & Jemison, 1991; Hitt & Tyler, 1991). Therefore, decision-makers may use simplified models to reduce such complexity in acquisition decision-making (Bingham & Eisenhardt, 2011; Gigerenzer & Gaissmaier, 2011). Third, acquisitions are highly visible strategic actions; investors have been shown to scrutinize CEO-, firm-, and industry-level attributes when evaluating potential acquisition performance (Devers et al., 2020). Therefore, we can reasonably evaluate investor decision-making based on their reactions to acquisition announcements, which is consistent with existing findings in the literature (Schijven & Hitt, 2012).

ORGANIZATION OF THIS DISSERTATION

The dissertation consists of three essays. As shown in Figure 1, Essay 1 addresses the question on the occurrence of cognitive simplification in pre-deal-stage decision-making. Essay 2 responds to the question on the conditions for cognitive simplification in the pre-deal stage. Essay 3 investigates a possible consequence of cognitive (over)simplification. Essays 1 and 2 focus on managerial cognition, whereas Essay 3 sheds light on investor cognitive bias.

FIGURE 1: Conceptual Framework of the Dissertation



Specifically, Essay 1 (Chapter 2) examines whether, when, and how managers establish their own aspirations by imitating their peers' aspirations. We argue that establishing aspirations is not easy and involves high uncertainty. In particular, managers face a twin challenge, i.e., a tension between their need to satisfy immediate stakeholder expectations and their concerns for the potential consequences of missing targets. Thus, drawing on interorganizational imitation research, we suggest that managers will simplify their aspiration decisions by closely heeding their peers' aspiration levels. Moreover, consistent with such research, we find that this tendency to imitate peer aspirations is weakened when uncertainty is reduced. As such, firms pay less attention to peer aspirations when they have more acquisition experience and more positive performance feedback. Finally, and interestingly, we find that as an effort to strategically manage stakeholder

expectations, managers tend to systematically downward imitate their peers' announced synergy targets. Based on a novel dataset on acquisition synergy targets announced by acquirers, we find support for our theory.

Essay 2 (Chapter 3) investigates the effect of parallel acquisitions on forecasting errors in integration costs. Drawing from information processing theory and the attention-based view, we propose that a high load of simultaneous parallel acquisitions results in information overload. Managers, due to their bounded rationality and limited attention span, are typically short of the cognitive capacity needed to process the amount, characteristics, and flow of information that is associated with parallel acquisitions. Therefore, they are more likely to ignore or neglect important cost factors that emerge from the complex interdependencies within a particular deal, among its parallel deals, and with other ongoing businesses. Based on a manually collected sample of expected and actual integration costs, we demonstrate that the higher the volume of parallel acquisitions is, the higher the likelihood that managers will underestimate the integration costs of an acquisition. These findings thus highlight information overload as another important source of cognitive bias in acquisition decision-making.

Essay 3 (Chapter 4) explores how investors (over)simplify their acquisition evaluations by basing their decisions, at times unconsciously, on stereotypes. Specifically, drawing on psychological research on gender bias and role congruity theory, we investigate whether more attractive female CEOs encounter more biased evaluations in acquisitions than less attractive female CEOs. We propose that acquisitions are stereotypically deemed a "male-typed" strategic action that requires qualities that are stereotypically associated with men, such as being competitive, aggressive, or dominant. Therefore, since more attractive females are considered more communal, they are perceived to be less able to manage acquisitions. Based on a sample of female CEOs of public firms in China, we hypothesize and demonstrate that investors react more negatively to acquisitions that are conducted by more attractive female CEOs. Moreover, we find that this within-group bias is limited under conditions where role incongruity perceptions are reduced. Such conditions include the observations of a female CEO's acquisition experience and the presence of positive media reports about this female CEO. Finally, drawing on a comparison sample, we also analyze male CEO facial attractiveness, but we find that it has no effect on investors' reactions to acquisition announcements. These findings indicate that investors tend to evaluate acquisitions that are conducted by female CEOs, in particular, more attractive female CEOs, in a biased fashion.

TABLE 1: Summary of the Individual Essays in the Dissertation

Dissertation	Essay 1	Essay 2	Essay 3
Overarching Theme	A Cognitive Perspective on Decision-Making in the Pre-Deal Stage of Acquisitions		
Research Focus	Existence of cognitive simplification	Conditions for cognitive processing	Consequences of cognitive (over)simplification
Title	Aim for Peers' Aim (but Not Their Moonshots): Interorganizational Imitation in Aspiration Formation	Too Many Moving Pieces: Parallel Acquisitions and Forecasting Bias in Acquisition Integration	When Beauty is Beastly: Facial Attractiveness of Female CEOs and Investor Reactions to Acquisition Announcements
Authorship	Di Bian & Tomi Laamanen	Di Bian	Di Bian, Wei Chi, John Halebian, & Tomi Laamanen
Focal Decisions	Managers: Establishing synergy aspirations in acquisitions	Managers: Estimating integration costs in acquisitions	Investors: Evaluating the future performance of acquisitions
Research Question(s)	Do managers simplify their aspiration formation by imitating their peers' aspirations?	Can acquisition load lead to underestimation bias in cost estimation?	Do investors simplify their acquisition evaluations by basing their decisions on stereotypes?
Theoretical Lens	- Behavioral theory - Social comparison - Interorganizational imitation theory	- Attention-based view - Information overload - Strategic foresight	- Cognitive simplification and bias - Gender bias - Facial attributions
Method(s)	Quantitative study - Content analysis - Regression	Quantitative study - Content analysis - Regression	Quantitative study - Survey - Regression
Sample(s)	- 319 synergy targets in the global banking industry - Over 200 synergy targets in multiple industries	- Over 300 estimations of integration costs in the U.S. banking industry	- Over 600 acquisitions conducted by 210 female CEOs in China
Data Source(s)	- SNL Financial - SEC filings - Thomson Reuter Eikon - Compustat - BoardEx	- SNL Financial - SEC filings - Thomson Reuter Eikon - Compustat	- CSMAR database - Survey data

Theoretical Contributions	- To enhance the understanding of the determinants of aspiration levels - To introduce peer aspirations as an important factor in the formation of a firm's aspirations - To advance the knowledge on M&A aspiration levels	- To advance the understanding of the consequences of activity load - To theorize cognitive overload as an important determinant of strategic foresight - To explore integration underestimation error, an important yet neglected acquisition decision	- To complement and extend the between-gender focus of management gender bias research by emphasizing within-group variability in gender bias - To highlight how facial traits are an important basis for investors' social attribution when evaluating CEO competence - To develop a bias mitigation strategy by leveraging individuating information
Practical Implications	- Managers may consider the effectiveness and applicability of imitating their peers' aspirations - Downward imitation may help reduce potential underdelivery	- Managers should be cautious about conducting too many activities simultaneously - Forecasting errors can be highly consequential for organizational performance and survival	- Investors should be mindful of any potential bias that emerges from stereotypical thinking - Firms may leverage information distribution to offset any bias against their female CEO
Recent Progress	- Presented at the AOM and the SMS - Under review at Organization Science	- Presented at the AOM - To be submitted to the Strategic Management Journal	- Presented at the AOM and the SMS - Under review at Organization Science

Although these three essays apply different theoretical lenses and investigate varying decisions during acquisitions, they share a common overarching theme – the role of the cognitive simplification of both managers and investors in the pre-deal stage of acquisitions. Essays 1 and 2 focus on managerial cognition, whereas Essay 3 explores investor bias. The findings from Essay 1 indicate that managers simplify their decision-making and intentionally reduce any uncertainty involved in their decisions about synergy aspiration levels. Our findings in Essay 2 indicate that cognitive simplification is not always possible; under a high acquisition load, managers face cognitive limitations and are thus more likely to make decision errors in their estimation of integration costs. The findings in Essay 3, on the other hand, suggest that investor reactions to acquisition announcements are not always fully rational in economic terms. Instead, investors may use stereotypes – oversimplified cognitive heuristics – in their acquisition evaluations, generating bias.

CONTRIBUTIONS

Overall, this dissertation offers three major contributions to the acquisition literature. First, it contributes to an improved cognitive understanding of decision-making in the pre-deal stage of acquisitions. Essays 1 and 2 reveal two novel cognitive tendencies in acquisition decision-making; Essay 3 sheds light on an unexpected source of bias in investor evaluation of acquisitions. Specifically, in Essay 1 we theorize and determine that managers tend to imitate their peers' aspirations to reduce uncertainty in their own decisions by strategically imitating their peer's bottom-level aspirations. Although recent research has focused on peer effect on acquisition decisions such as premium (Malhotra et al., 2015) or target selection (Ozmel, Reuer, & Wu, 2017), Essay 1 emphasizes managers' downward imitation tendency when they seek satisficing, instead of maximizing, in their goal setting. Essay 2 contributes to the literature by demonstrating how cognitive overload is another important source of bias in acquisition decisions: cognitive (over)load directly captures managers' cognitive limitations and affects their forecasting capabilities. Furthermore, Essay 3 discloses how female facial attractiveness is a surprising and unfortunate source of bias in investors' evaluations. While prior acquisition research has focused on how female executives make acquisition decisions that differ from those of their male counterparts (Chen, Crossland, & Huang, 2016; Huang & Kisgen, 2013), in Essay 3, takes a different angle and advances understanding of the investor side of bias against female leaders.

Second, this dissertation extends the research scope regarding acquisition decisions in the pre-deal stage and improves the understanding of key, yet neglected, decisions. The findings in Essay 1 indicate that synergy estimation is a central decision in the pre-deal stage, as both managers and stakeholders tend to pay great attention to it. Hence, we highlight the uncertainty involved in selecting the right synergy levels and theorize that peer aspirations are an important antecedent to a firm's synergy formation. Our findings in Essay 2 indicate that an underestimation of integration costs can be consequential and that managers under high cognitive load tend to overlook important cost factors, resulting in decision errors. Collectively, the first two essays therefore provide, to our knowledge, the first investigation of the determinants of synergy aspirations and integration cost estimation. Furthermore, the findings in Essay 3 resonate with pioneering research on the role of investor bias in acquisition evaluation (Schijven & Hitt, 2012) and demonstrate that investors can be biased by their stereotypes and evaluate acquisitions in a bounded rationale manner.

Third, this dissertation points to new directions for measuring acquisition decision quality. Prior acquisition research has mainly operationalized acquisition performance and decision qualities via accounting-based measures (e.g., ROA), stock-based measures (e.g., abnormal returns), management self-evaluations (e.g., survey-based measures), or other operational related measures (e.g., innovation) (see the Appendix for a detailed review of the recent acquisition performance measures). Although these operationalizations have advanced the knowledge on acquisition decision qualities, they have often involved confounding effects at the organization level and have typically aimed at measuring the quality of an entire acquisition stage. In contrast, this dissertation, especially Essay 2, introduces the role of underestimation errors in integration planning, measured as the discrepancy between expected and actual integration costs. Such a measure is better able to capture acquisition-level decision qualities. Moreover, we argue that this measure of acquisition decision quality is not only methodologically relevant but also theoretically important. It promotes a process view of acquisitions that focuses on the quality of each individual decision during the prolonged stages of acquisitions.

In addition to its contributions to the acquisition literature, this dissertation has implications for behavioral theory of the firm and behavioral strategy research in general. Behavioral research has long recognized the importance of cognition in decision-making, emphasizing that “research on capabilities needs microfoundations that capture more fully what we know about cognition and action within organizations” (Gavetti, 2005: 599). Hence, Essay 1 defines peer aspiration levels as an important, novel antecedent to aspiration formation. The essay thus extends the original aspiration formal model (Cyert & March, 1963) and contributes to an improved understanding of social comparison in goal-setting by highlighting a tendency for downward imitation. We therefore move beyond the existing aspiration research that “paints managers as passively accepting performance targets” (Keum & Eggers, 2018: 1) and that assumes “a high degree of automaticity in managerial decision-making, with a limited role for cognition” (Posen, Keil, Kim, & Meissner, 2018: 209). Rather, we highlight how managers tend to simplify their aspiration decisions via imitation. Continuing the use of this cognitive viewpoint, in Essay 2, we theorize the effect of parallel acquisitions on strategic foresight in integration planning. Information “overload has been subject to much speculation and conceptual attention for decades, yet empirical research on overload, particularly in organizational theory... is surprisingly sparse” (Sutcliffe & Weick, 2008: 60). Essay 2 therefore demonstrates how parallel acquisitions result in the cognitive overload of managers, eliding important cost factors from the limited attention span of

managers. The essay also increases the understanding of strategic foresight by theoretically linking the information overload view with managerial forecasting capabilities. Further enhancing the cognitive perspective, Essay 3 also contributes to behavioral strategy research by showing how the facial attractiveness of female CEOs – a seemingly irrelevant criterion for judgment – affects investor reactions to acquisitions. The essay demonstrates that investors may rely on oversimplified stereotypes about an entire group – here, female CEOs – to judge an individual's competence in conducting strategic actions.

Accordingly, this dissertation contributes to an improved cognitive understanding of central and novel decisions during the pre-deal stage of acquisitions.

REFERENCES

- Bingham, C. B. & Eisenhardt, K. M. 2011. Rational Heuristics: The 'Simple Rules' That Strategists Learn from Process Experience. *Strategic Management Journal*, 32(13): 1437-1464.
- Blagoeva, R. R., Kavusan, K., & Jansen, J. J. P. 2020. Who violates expectations when? How firms' growth and dividend reputations affect investors' reactions to acquisitions. *Strategic Management Journal*, 41(9): 1712-1742.
- Capron, L. & Shen, J. C. 2007. Acquisitions of private vs. public firms: Private information, target selection, and acquirer returns. *Strategic Management Journal*, 28(9): 891-911.
- Chatterjee, S. 1986. Types of Synergy and Economic Value - the Impact of Acquisitions on Merging and Rival Firms. *Strategic Management Journal*, 7(2): 119-139.
- Chen, G., Crossland, C., & Huang, S. 2016. Female board representation and corporate acquisition intensity. *Strategic Management Journal*, 37(2): 303-313.
- Csaszar, F. A. 2018. What Makes a Decision Strategic? Strategic Representations. *Strategy Science*, 3(4): 606-619.
- Cyert, R. M. & March, J. G. 1963. *A behavioral theory of the firm*.
- Devers, C. E., Wuorinen, S., McNamara, G., Halebian, J., Gee, I. H., & Kim, J. 2020. An Integrative Review of the Emerging Behavioral Acquisition Literature: Charting the Next Decade of Research. *Academy of Management Annals*, 14(2): 869-907.
- Duhaime, I. M. & Schwenk, C. R. 1985. Conjectures on Cognitive Simplification in Acquisition and Divestment Decision-Making. *Academy of Management Review*, 10(2): 287-295.
- Eggers, J. P. & Kaplan, S. 2013. Cognition and Capabilities: A Multi-Level Perspective. *The Academy of Management Annals*, 7(1): 295-340.
- Fich, E. M., Cai, J., & Tran, A. L. 2011. Stock option grants to target CEOs during private merger negotiations. *Journal of Financial Economics*, 101(2): 413-430.
- Fieberg, C., Lopatta, K., Tammen, T., & Tideman, S. A. 2021. Political affinity and investors' response to the acquisition premium in cross-border M&A transactions - A moderation analysis. *Strategic Management Journal*.
- Gamache, D., McNamara, G., & Johnson, R. E. 2013. CEO Regulatory Focus: The Impact on Firm Acquisitions. *Academy of Management Proceedings*, 2013(1).
- Gary, M. S. & Wood, R. E. 2011. Mental Models, Decision Rules, and Performance Heterogeneity. *Strategic Management Journal*, 32(6): 569-594.
- Gavetti, G. & Levinthal, D. 2000. Looking forward and looking backward: Cognitive and experiential search. *Administrative Science Quarterly*, 45(1): 113-137.
- Gavetti, G. 2005. Cognition and hierarchy: Rethinking the microfoundations of capabilities' development. *Organization Science*, 16(6): 599-617.
- Gigerenzer, G. & Gaissmaier, W. 2011. Heuristic Decision Making. *Annual Review of Psychology*, Vol 62, 62: 451-482.
- Graebner, M. E., Heimeriks, K. H., Huy, Q. N., & Vaara, E. 2017. The Process of Postmerger Integration: A Review and Agenda for Future Research. *Academy of Management Annals*, 11(1): 1-32.
- Graffin, S. A., Halebian, J., & Kiley, J. T. 2016. Ready, Aim, Acquire: Impression Offsetting and Acquisitions. *Academy of Management Journal*, 59(1): 232-252.
- Graham, J. R., Harvey, C. R., & Puri, M. 2015. Capital allocation and delegation of decision-making authority within firms. *Journal of Financial Economics*, 115(3): 449-470.
- Halebian, J., Devers, C. E., McNamara, G., Carpenter, M. A., & Davison, R. B. 2009. Taking Stock of What We Know About Mergers and Acquisitions: A Review and Research Agenda. *Journal of Management*, 35(3): 469-502.

- Haspeslagh, P. & Jemison, D. 1991. *Managing Acquisitions: Creating Value through Corporate Renewal*. New York: The Free Press.
- Hitt, M. A. & Tyler, B. B. 1991. Strategic Decision-Models - Integrating Different Perspectives. *Strategic Management Journal*, 12(5): 327-351.
- Houston, J. F., James, C. M., & Ryngaert, M. D. 2001. Where do merger gains come from? Bank mergers from the perspective of insiders and outsiders. *Journal of financial economics*, 60(2-3): 285-331.
- Huang, J. & Kisgen, D. J. 2013. Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics*, 108(3): 822-839.
- Jiang, F., Qian, Y. M., & Yonker, S. E. 2019. Hometown Biased Acquisitions. *Journal of Financial and Quantitative Analysis*, 54(5): 2017-2051.
- Keum, D. D. & Eggers, J. P. 2018. Setting the Bar: The Evaluative and Allocative Roles of Organizational Aspirations. *Organization Science*, 29(6): 1170-1186.
- Larsson, R. & Finkelstein, S. 1999. Integrating strategic, organizational, and human resource perspectives on mergers and acquisitions: A case survey of synergy realization. *Organization Science*, 10(1): 1-26.
- Malhotra, S., Zhu, P., & Reus, T. H. 2015. Anchoring on the acquisition premium decisions of others. *Strategic Management Journal*, 36(12): 1866-1876.
- March, J. & Simon, H. 1958. *Organizations*. New York: Wiley.
- Meyer-Doyle, P., Lee, S., & Helfat, C. E. 2019. Disentangling the microfoundations of acquisition behavior and performance. *Strategic Management Journal*, 40(11): 1733-1756.
- Moatti, V., Ren, C. R., Anand, J., & Dussauge, P. 2015. Disentangling the performance effects of efficiency and bargaining power in horizontal growth strategies: An empirical investigation in the global retail industry. *Strategic Management Journal*, 36(5): 745-757.
- Ozmel, U., Reuer, J. J., & Wu, C.-W. 2017. Interorganizational Imitation and Acquisitions of High-tech Ventures. *Strategic Management Journal*, 38(13): 2647-2665.
- Pavićević, S. & Keil, T. 2021. The role of procedural rationality in debiasing acquisition decisions of overconfident CEOs. *Strategic Management Journal*, 42(9): 1696-1715.
- Posen, H. E., Keil, T., Kim, S., & Meissner, F. D. 2018. Renewing Research on Problemistic Search—A Review and Research Agenda. *Academy of Management Annals*, 12(1): 208-251.
- Powell, T. C., Lovallo, D., & Fox, C. R. 2011. Behavioral Strategy. *Strategic Management Journal*, 32(13): 1369-1386.
- Rabier, M. R. 2017a. Acquisition Motives and the Distribution of Acquisition Performance. *Strategic Management Journal*, 38(13): 2666-2681.
- Reuer, J. J. & Sakhartov, A. V. 2021. Economies of Scope and Optimal Due Diligence in Corporate Acquisitions. *Organization Science*, 32(4): 1100-1119.
- Schijven, M. & Hitt, M. A. 2012. The vicarious wisdom of crowds: toward a behavioral perspective on investor reactions to acquisition announcements. *Strategic Management Journal*, 33(11): 1247-1268.
- Seth, A. 1990a. Value Creation in Acquisitions - a Reexamination of Performance Issues. *Strategic Management Journal*, 11(2): 99-115.
- Seth, A. 1990b. Sources of Value Creation in Acquisitions - an Empirical-Investigation. *Strategic Management Journal*, 11(6): 431-446.
- Shi, W., Hoskisson, R. E., & Zhang, Y. A. 2017a. Independent Director Death and Ceo Acquisitiveness: Build an Empire or Pursue a Quiet Life? *Strategic Management Journal*, 38(3): 780-792.

- Simon, H. 1947. *Administrative Behavior: A Study of Decision Making Processes in Administrative Organization*. New York: Macmillan.
- Steinbach, A. L., Gamache, D. L., & Johnson, R. E. 2019. Don't Get It Misconstrued: Executive Construal-Level Shifts and Flexibility in the Upper Echelons. *Academy of Management Review*, 44(4): 871-895.
- Sutcliffe, K. & Weick, K. 2008. Information overload revisited. In H. GP & S. WH (Eds.), *The Oxford Handbook of Organizational Decision Making*: 56–75. Oxford, UK: Oxford University Press.
- Walsh, J. P. 1995. Managerial and Organizational Cognition - Notes from a Trip down Memory Lane. *Organization Science*, 6(3): 280-321.
- Welch, X., Pavicevic, S., Keil, T., & Laamanen, T. 2020. The Pre-Deal Phase of Mergers and Acquisitions: A Review and Research Agenda. *Journal of Management*, 46(6): 843-878.
- Westbrock, B., Muehlfeld, K., & Weitzel, U. 2019. Selecting Legal Advisors in M&As: Organizational Learning and the Role of Multiplicity of Mental Models. *Journal of Management*, 45(5): 2193-2224.
- Zollo, M. & Meier, D. 2008. What Is M&A Performance? *Academy of Management Perspectives*, 22(3): 55-77.

Appendix: Acquisition Performance Measures – (1) Stock Market Based Measures

Stock Market Based Measures							
Study	Key Research Question	Research Methods	Sample	Key IV(s)	Key DV(s) on Performance		
					Term(s)	Category	Specific Measure(s)
Arikan and Capron (2010)	Whether pre-IPO affiliations affect post-IPO corporate events, namely acquisitions	Quantitative methods, archival data	4,029 acquisitions made by 717 newly public firms	• Lead underwriter reputation • VC backing	Expected returns / Market reaction	CAR of announcement	Around the announcement date: event window: -5,...+5; -10,...+10; -1,...+1. The estimation window: -60,...-20
Beckman and Haunschild (2002)	The effect of diversity of network partners' experience on acquisition decisions and performance	Quantitative methods, archival data	182 acquisitions of listed targets in the U.S. from 1986 to 1997	• Premium experience of network partners • Network diversity	Acquisition performance/ Stock market performance	1-year CAR	Around the announcement date: the event window: -30,...+331. The estimation period: -255,...-45
Bettinazzi and Zollo (2017)	How a firm's stakeholder orientation affects the performance of its corporate acquisitions	Quantitative methods, archival data	1884 acquisitions undertaken by listed US firms between 2002 and 2010	Aggregate stakeholder orientation based on orientation towards employee, customers, suppliers, and local communities	Long-term acquisition performance	3-year CAR	The acquiring firm's Cumulative Abnormal Returns (CAR) over the 36 months following the acquisition
Busenbark, Lange & Certo, 2017	Whether foreshadowing an acquisition by managers influences analyst impressions	Quantitative methods, archival data	490 acquisitions across 332 firms from 2000 to 2012. Of these deals, 245 issued a seasoned equity offerings	Foreshadowing an acquisition	Security analyst assessment	Analysts downgrades after acquisition announcements	The number of analysts downgrades of the firm within the 1-month period following an acquisition announcement

			(SEOs) and 104 of the SEO-issuing firms foreshadowed an acquisition				
Cuypers, Cuypers & Martin, 2017	How the differential in previous M&A experience between the target and the acquirer affects the value they, respectively, obtain when the acquirer takes over the target	Quantitative methods, archival data	1,241 M&As between pairs of firms that were both listed on either NYSE or NASDAQ between 1980 and 2009	• M&A experience difference • Target product-market scope • Friendly deal attitude	Value creation	Absolute dollar returns based on CAR	By multiplying the acquirer or target's pre-announcement market value by the CARs to the acquirer or targets, respectively, during the event window CAR estimation window: -250; event window: 21-day
Gaur, Malhotra & Zhu, 2013	The impact of acquisition announcements on the stock market returns of rivals of the acquiring firms	Quantitative methods, archival data	616 acquiring firms in China and 1,076 non-acquiring firms from 1993 to 2008, including 70,734 CAR values	• Focal firms' acquisition performance • Degree of industry concentration • Industry relatedness	Stock market valuations / Acquisition performance	Rivals' CARs to the focal firm's acquisition announcement	The rival firms' portfolio CARs: the event window: -2, +2 and -1, +1; The estimation window: -130, -30
Goranova, Dharwadkar & Brandes, 2010	How does the overlapping ownership affect the value-creating potential of M&A	Quantitative methods, archival data	2,688 M&A deals from 1998 to 2004 in the U.S., carried out by 1566 / 1122 acquirers without/ with overlapping ownership	• Number of overlapping owners • Overlapping owners' percentage	Acquirer gains / Acquirer returns / M&A outcomes	CAR of announcement	The CAR of acquirers surrounding the announcement. The event window: -1, +1. The estimation window: -240, -40

Goranova, Priem, Ndofor & Trahms, 2017	The effects of monitoring by boards of directors and institutional shareholders on M&A performance extremeness	Quantitative methods, archival data	1451 M&A deals by listed U.S. firms from 1997 to 2006	• Board characteristics • Institutional ownership concentration	Acquisition performance / The impact on shareholder wealth	Absolute dollar returns based on CAR	By weighting the percentage CARs with the firm's market value CAR: the event window: -1, +1. The estimation window: -240, -40
Haleblian & Finkelstein, 1999	The effect of prior organizational acquisition experience on acquisition performance	Quantitative methods, archival data	449 large completed majority acquisitions from 1980 to 1992	Organizational acquisition experience	Acquisition performance	CAR of announcement	CAR: the event window: -2, +2; -3, +3; -4, +4; -5, +5; -6, +6. The estimation window: -300, -61
Huang, Zhu & Brass, 2017	The asymmetric effect of power distance value differences on long-term post-acquisition performance	Quantitative methods, archival data	2,115 cross-border acquisitions in the global information technology industry from 1995 to 2004	The difference of power distance value between acquirer and target	Long-term post-acquisition performance	Tobin's q	Tobin's q three years after a given acquisition, which is approximated by calculating the ratio of a firm's market value and long-term debt to total book assets
Humphery-Jenner, 2014	Whether antitakeover provisions can ameliorate managerial myopia in hard-to-value (HTV) firms by examining the impact of entrenchment on the investments that HTV firms make	Quantitative methods, archival data	3,935 acquisitions from 1990 to 2005 by U.S. listed firms	Proxies for hard-to-value companies	• Short-run market returns • Long-term value creation	• CAR of announcement • Industry-adjusted Tobin's Q	• CAR: the event window: -2, +2. The estimation window: -210, -11. • Long-term value creation: the industry-adjusted Tobin's Q estimated 1 year after the announcement
Kacperczyk, 2009	Examining the relation between takeover protection and corporate attention to	Quantitative methods, archival data	an unbalanced panel of 878 firms, including a treatment group of	The joint effect of takeover protection and corporate	• Long-term stock market value	• Market-to-book ratio	• Long-term stock market value: The market-to-book ratio at year 1, 2,

	stakeholders and their joint effects on shareholder value		221 firms and a control group of 657 companies	attention to stakeholders			and 3 after a given acquisition.
Kumar, Dixit & Francis, 2015	The relationship between the stock market's reaction to a prior acquisition and the risk associated with a subsequent acquisition	Quantitative methods, archival data	823 acquisitions between U.S. listed acquirers and listed targets from 1990 to 2006	Abnormal dollar gains based on CAR: The event window: -5, +5; the estimation window: -250, -50.	Likelihood of M&A of volatile targets	-	-
Laamanen, Brauer & Junna, 2014	A comparative analysis of acquirer returns in acquisitions of public firms, private firms, and divested assets	Quantitative methods, archival data	5,079 acquisitions by U.S. software Industry companies during 1988–2008	• Acquisition of divested assets • Public target acquisition • Private target acquisition	Acquisition performance: • Acquirer returns • Longer-term acquirer performance	• CAR of announcement • Average change in market value	CAR: the event window: -2, +2. The estimation window: -295, -45 3-year longer-term: the average change in market value for the acquirer with adjustments
Li, Brodbeck, Shenkar, Ponzi & Fisch, 2017	The role of cultural attractiveness in foreign direct investment (FDI) and its impact on cross-border acquisitions (CBA)	Quantitative methods, archival data	FDI data for 41 nations from 1985 to 2012 and performance data for 8,519 CBAs for 40 nations from 1990 to 2009	Target nation's cultural attractiveness	Cross-border acquisition performance	CAR of announcement	CAR: the event window: -2, +2. The estimation window: -210, -11
Sears & Hoetker (2014)	The different effects of acquirer technological overlap and target technological overlap on the value created from each firm's	Quantitative methods, archival data	97 technological acquisitions from 1995 to 2004, involving 73 different acquirers	• Acquirer technological overlap • Target technological overlap	Value creation	CAR of announcement	CAR of the acquirer: the event window: -1, +1. The estimation window: -300, -51

	technological capabilities						
Shi, Zhang & Hoskisson, 2017	How superstar CEOs' competitors react to not winning CEO awards in the acquisition context	Quantitative methods, archival data	U.S. S&P 1,500 firms CEOs from 1996 to 2010	Competitor CEOs' post award period	Announcement returns / Stock market reactions	CAR of announcement	CAR: the event window: -1, +1; -2, +2; 0, +1.
Sleptsov, Anand & Vasudeva, 2013	How the characteristics of acquiring firms' relationships with information brokers or investment banks affect firms' expected acquisition performance	Quantitative methods, archival data	3,115 acquisitions made by publicly-traded U.S. firms during 1991–2006	Relationships with investment banking	Expected acquisition performance	CAR of announcement	CAR: the event window: -1, +1; -3, +3; -5, +5; -14, +14
Steinbach, Holcomb, Holmes, Devers, Cannella, 2017	The effects of TMT incentive and TMT within-team incentive heterogeneity on acquisition investment and performance	Quantitative methods, archival data	17,833 firm-year observations, representing 2,392 unique S&P 1,500 companies between 1997 and 2013	• Average proportion of TMT incentive-based pay • Within-TMT incentive heterogeneity	Investor responses	CAR of announcement	CAR: the event window: -1, +1; -3, +3; -5, +5

Appendix: Acquisition Performance Measures – (2) Accounting Based Measures

Accounting-based Measures							
Study	Key Research Question	Research Methods	Sample	Key IV(s)	Key DV(s) on Performance		
					Term(s)	Category	Specific Measure(s)
Humphery-Jenner, Sautner & Suchard, 2017	The signal effects of private equity ownership of the acquirer on cross-border M&A deal quality	Quantitative methods, archival data	4,452 cross-border M&A deals between 1996 and 2008 with acquirers from 37 countries	Private-equity backing	Deal quality: • Announcement returns • Operating performance	• CAR of announcement • Changes in earnings before interest and tax (EBIT)	• CAR: the event window: -5, +5. • The acquirer's changes in operating performance: Changes in EBIT from year 0 to year 1; changes in EBIT from year 0 to year 3.
Moatti, Ren, Anand & Dussauge, 2015	How opting for M&A rather than for organic growth influences firms' bargaining power and operating efficiency	Quantitative methods, archival data	83 firms from the global retail sector from 1984 to 2003, resulting unbalanced sample consists of 1,283 firm-year observations	M&A & Organic Growth	• Bargaining power • Operating efficiency	• Bargaining power • Operating efficiency • Overall firm profitability	• Bargaining power: gross margin • Operating efficiency: operating cost as a percentage of sales • Overall firm profitability: ROA & operating profits as a percentage of sales
Rabier, 2017	How acquisition motives relate to the distribution of post-acquisition performance	Quantitative methods, archival data & content analysis	1,222 domestic acquisitions from 2000 to 2010, covering 55 two-digit SIC industries	• Operating synergy acquisitions • Financial synergy acquisitions	Post-acquisition outcomes	• Buy-and-hold abnormal returns (BHAR) • Goodwill impairments	• BHAR is generated by compounding 24 and 36 monthly returns post acquisition • Goodwill impairments are measured by the

							likelihood and the magnitude
Wan & Yiu, 2009	examining the performance implications of corporate acquisitions	Quantitative methods, archival data	A balanced panel consisting of 78 firms from 1994 to 2002	• The number of acquisitions • The size of acquisitions	Firm performance	ROA, ROE	Return on assets (ROA) and return on equity (ROE)

Appendix: Acquisition Performance Measures – (3) Survey, Interview & Experiments Based Measures

Survey, Interview & Experiments Based Measures							
Study	Key Research Question	Research Methods	Sample	Key IV(s)	Key DV(s) on Performance		
					Term(s)	Category	Specific Measure(s)
Agarwal, Anand, Bercovitz & Croson, 2012	How does pre-acquisition resource allocation and communication in alliances impact post-acquisition performance?	Experiments	213 MBA students as participants	• Prior resource allocation • Prior communication	Post-acquisition performance / Coordination outcomes	Experiments	Binary variable: Success in coded as '1' if the total resource allocations by all divisions meets the required synergistic profits and '0' otherwise
Briscoe & Tsai, 2011	How organizational members overcome relational inertia and how client sharing creates value for the combined organization	Quantitative methods, the firm's internal records, interviews	212 partners in either the acquiring firm or one of the two acquired	• Interunit client sharing • Intraunit client sharing	Value creation	• Revenue generation over 3 years post deal • Human capital development over 3 years post deal	• Revenue generation: the total number of billable hours charged to clients of a partner • Human capital development: the upward-feedback evaluations of partners and the subordinate retention
Capron, 1999	The impact of post-acquisition asset divestiture and resource redeployment on the long-term performance of horizontal acquisitions	Quantitative methods, survey data	253 survey responses from 190 acquirers, covering 253 horizontal acquisitions in manufacturing industry from 1988 to 1992	• Target or acquirer asset divestiture • Resource redeployment to target or acquirer • Cost-based synergies	Long-term acquisition performance / Value creation	Survey methods / Management self-evaluation	Acquirer self-reported measures of changes in market shares, sales, intrinsic profitability, and relative profitability compared to industry average since the acquisition

				• Revenue-based synergies			
Capron & Hulland, 1999	The extent to which firms redeploy marketing resources following horizontal acquisitions and its impact on firm performance	Quantitative methods, survey data	253 survey responses from 190 acquirers, covering 253 acquisitions in manufacturing from 1988 to 1992	Redeployment of marketing resources: brands, sales forces, and general marketing expertise	Firm performance	Survey methods / Management self-evaluation	Managers' evaluation of market share and profitability relative to industry average of the consolidated business performance on a five-point Likert scale
Study	Key Research Question	Research Methods	Sample	Key IV(s)	Key DV(s) on Performance		
					Term(s)	Category	Specific Measure(s)
Reus, Lamont & Ellis (2016)	The impact of non–location-specific knowledge transfer (from an acquirer to a foreign acquired firm) on the acquired firm's performance	Quantitative methods, survey data	121 survey respondents and 99 acquisitions of foreign firms from 1998 to 2000 with data availability	Knowledge transfer from and to acquired firms	Acquired firm's performance	Survey methods / Management self-evaluation	Measured using the sum of four items gauging profitability, market share, sales volume, and new product development.
Trichterborn, Knyphausen-Aufseß & Schweizer, 2016	The relationship between a M&A function, M&A capability and M&A performance	Quantitative methods, survey data	205 survey responses, representing 124 German firms with a M&A function that had acquired at least one German firm between 2003 and 2006.	The existence of a dedicated M&A function	Acquisition performance	Survey methods / Management self-evaluation	Respondents were asked to assess the development of sales, market shares, operating margin, synergy realization, and overall satisfaction relative to the primary expectations on a five-point Likert scale

Appendix: Acquisition Performance Measures – (4) Operation-based Measures

Study	Key Research Question	Research Methods	Sample	Key IV(s)	Operation-based Measures		
					Key DV(s) on Performance		
					Term(s)	Category	Specific Measure(s)
Bahadir, Bharadwaj & Srivastava, 2008	The effects of target and acquirer firm characteristics on the value of a target firm's brands in M&As	Quantitative methods, archival data & secondary sources & interviews	133 M&A transactions between U.S. listed acquirers and listed targets from 2001 to 2005	• Acquirer and target marketing capability • Acquirer and target brand portfolio diversity	The financial value of brands / Target firm brand portfolio value	The dollar value of brand	Audited measures of acquired brand value in dollars from SEC filings along with data collected from divers secondary sources
Berchicci, Dowell & King, 2017	The effect of asset sales on stakeholders with the transfer of environmental capabilities	Quantitative methods, archival data	3,130 facilities acquisitions in the U.S. based on the U.S. LRD database	• Less / more wasteful acquirer compared to target	Environmental Performance / Environmental capabilities	Change in waste generation	The log changes in waste for a given chemical c for a given facility i from the current year t to the subsequent year $t+1$
Bertrand & Capron, 2014	The effect of access to foreign markets through acquisitions on the acquiring firm's domestic productivity and the underlying mechanisms	Quantitative methods, archival data	132 French firms that had acquired foreign targets and other French firms that had not from 1993-2001	• Foreign acquisition • The relative competitiveness between acquirer and	Labor Productivity / Internal efficiency	Productivity	Value added of a focal firm divided by the number of employees, where "value added" is defined as the firm's total revenue minus its costs of nonlabor inputs

				target countries			
Castellaneta , Conti & Kacperczyk , 2017	The impact of trade secret legal protection on firm market value in the context of acquisitions	Quantitative methods, archival data based on a quasi- natural experiment	1,890 U.S. firms managed by 132 PE firms in 46 U.S. states between 1975 and 2008	The enactment of statutes based on the Uniform Trade Secret Act (UTSA)	Target firm market value	Change in IRR	The target firm's percentage change in internal rate of return in any year during the holding period
Makri, Hitt & Lane, 2010	The distinct effects of science and technology similarities and complementarities between acquirer and target on the innovation outcomes for the merged firm	Quantitative methods, archival data	95 high-tech M&As in 1996 with deal size between \$10 million to \$500 million	• Technology relatedness • Science relatedness	Post-merger invention performance / Invention outcomes	Long-term invention quantity, quality, and novelty	Difference% between 3- year window before acquisitions and 3-5 year window after acquisitions: • Invention quantity: change of patent counts • Invention quality: change of patent citations • Invention novelty: change of technological diversification
Muehlfeld, Sahib & Witteloo- stuijn, 2012	Do firms learn from success and failure experiences in different acquisition contexts how to complete the final stages of acquisition preparation of an announced deal?	Quantitative methods, archival data	4,973 M&A attempts that were announced during 1981–2008 in the newspaper industry	M&A experience prior to the focal transaction	An organizational goal in acquisition	M&A completion	By creating a dummy variable, which took on the value of 1 if an announced M&A was completed, and 0 otherwise

Nadolska & Barkema, 2014	How a firm's top management team learns from acquisition experience, why, in consequence, the composition of the team is crucial, and how this affects acquisition frequency and success.	Quantitative methods, archival data	2,036 acquisitions by 25 Dutch companies from 1966 to 2006	• Past TMT acquisition experience • TMT tenure diversity • TMT educational diversity	Success of acquisitions	Subsequent divestiture / Acquisition dissolution rate	Acquisition success is defined by whether the acquisition was subsequently retained, i.e., successful (coded as '0'), or divested, i.e., unsuccessful (coded as '1')
Rogan & Sorenson (2014)	The effects of indirect ties (common clients) on acquirers' choices of partners for mergers and acquisitions and on the performance of the combined organizations	Quantitative methods, archival data	67 acquisitions from the global advertising industry between 1995 and 2003 as the case group	Common clients	• Post-merger performance of the combined organization • The probability that an acquiring firm acquires a particular target	• Target selection • Operational measures of performance	Binary variable on the probability of acquisition of a particular target Performance measure: • Client retention: the number of client relationships by accounts and by relationships of the acquired target 3 years after the acquisition • Billings per client
Shen, Tang, & Chen, 2014	How the status differential between two firms affects the interfirm transaction processes and outcomes	Quantitative methods, archival data	3,644 acquisitions by U.S. acquirers from 1990 to 2008, out of which 2,948 were completed and 696 were unsuccessful	Firm status	• Market response • The probability of deal completion	• CAR of announcement • Deal completion • ROA	• Announcement CAR of both acquirer and target: the event window: -1, +1; -5, +5; -10, +10. • A dummy variable measuring deal completion.

					• Acquirer long term performance	• Market to book ratio	• ROA • Market to book ratio
Siegel & Simons, 2010	The effects of M&A on individual employees, plant productivity and firm overall performance	Quantitative methods, archival data	Annual longitudinal employer-employee data on Swedish workers and plants and firms that employ them, during 1985–1998. Approximately 2.6 million workers, 16,000 plants, and 9,400 firms are observed each year.	• Workers employed at plants that are destined to be sold • Plants that are sold • Employees changing jobs • Partial acquisitions	The effects of M&A	Operational measures of performance: • Employee earnings • Plant productivity • Net profit per employee • Market share	• Workers earnings: annual earnings per individual (-5 years, +5 years; -1 year, +1 year) • Plant productivity: Total factor productivity (-5 years, +5 years) • Firm performance at +4 years and at +5 years: 1) net profit per employee; 2) market share

CHAPTER 2

Aim for Peers' Aim (but not their Moonshots): Interorganizational Imitation in Aspiration Formation

Abstract

While recent behavioral research has advanced understanding of whether, when, and with whom a focal firm compares when setting their own aspirations, the literature has largely remained silent about the question of *what* the object of comparison is. Specifically, prior work has tended to focus exclusively on peer performance as the main social reference point for goal setting and to neglect the potential influence of peer aspirations. In this paper, we develop theory about social comparison with peer aspirations in aspiration formation. We argue that aspiration formation involves great uncertainties and must incorporate stakeholder expectations. Therefore, managers pay attention to peer aspirations to understand what goals are feasible and acceptable. Furthermore, to avoid potential underdelivery, managers tend to downward imitate the bottom-level peer aspirations to strategically manage stakeholder expectations. Based on a unique dataset of synergy aspirations announced by acquiring firms in acquisitions, we find support for our argumentation. In doing so, our paper contributes to an improved understanding of social comparisons to set aspirations and highlights the role of managerial motivations in aspiration formation.

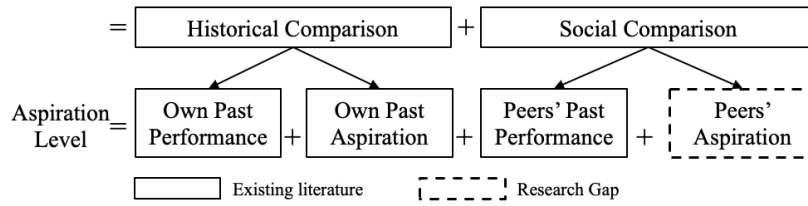
Key words: *organizational aspirations, social comparison, acquisitions, interorganizational imitation*

INTRODUCTION

Organizational aspirations play a central role in guiding strategic actions and organizational changes (Cyert & March, 1963; Greve, 2003a; Greve & Gaba, 2017; Shinkle, 2012). According to the behavioral theory of the firm, aspirations are formed based on three benchmarks: the firm's own past aspirations [historical comparison], its own past performance [historical comparison], and peers' performance [social comparison] (Cyert & March, 1963). While historical comparisons to one's own past aspirations and past performance are relatively well understood, the theoretical frameworks underlying social comparison "are less well developed", which also challenges the empirical specification of socially derived aspirations (Moliterno, Beck, Beckman, & Meyer, 2014; Posen et al., 2018: 217).

Although recent research has made theoretical advances toward understanding whether, when, and with whom a focal firm compares when setting their own aspirations, the literature has largely remained silent about the question of *what* the object of comparison is. Specifically, prior work has tended to focus exclusively on *peer performance* as the main social reference point for goal-setting and to neglect the potential influence of *peer aspirations* (see Figure 1). We argue that this oversight is problematic because aspirations often cannot be clearly predicted by peer past performance. In particular, in cases of high uncertainty, forward-looking peer aspirations are likely to provide a better basis for social comparison than backward-looking past peer performance. For example, when making decisions regarding the reopening of universities during the COVID pandemic, past peer performance provides a less useful social comparison than present, forward-looking peer aspirations. Hence, universities pay greater attention to what other universities aspire to do than to what they did in the past. Furthermore, in situations of high stakeholder scrutiny, managers cannot choose their aspirations freely and must also consider the levels of aspiration that are deemed reasonable and acceptable by a broader audience. For example, when ABB announced its growth targets for 2022, the CEO was asked by stock analysts to explain the extent to which the firm's growth targets differed from those of key competitors and to clarify the reasons for those differences.

FIGURE 1: Theoretical Gap



Despite the potential importance of peer aspirations to a focal firm's aspiration formation, to our knowledge, no prior study has theoretically conceptualized or empirically specified the effect of peer aspirations on a focal firm's aspiration formation. We draw on insights from social comparison and interorganizational imitation research to propose that managers imitate peer aspirations as a means of reducing the uncertainty associated with aspiration formation and gaining stakeholder approval. Choosing an aspiration level is a highly consequential decision due to increasing stakeholder pressure (Keum & Eggers, 2018). Aspiration levels must not only satisfy immediate stakeholder expectations (i.e., goal attractiveness) but also avoid potential underdelivery and disappointment (i.e., goal achievability) (Garud, Schildt, & Lant, 2014). To deal with this twofold challenge, managers can use peer aspirations as benchmarks to infer and ensure the appropriateness and acceptableness of their own estimations.

While firms can imitate peer aspirations to address concerns associated with both goal attractiveness and goal achievability, this practice naturally raises the following question: Which of these two concerns is greater and, accordingly, how would managers choose which aspiration level of peers to imitate? Despite the importance of this question, existing work has provided equivocal answers to the question of whether social aspirations are based on the middle, top, or bottom reference points (Beckman & Lee, 2017; Lounsbury & Beckman, 2015). Whereas most prior research has assumed that firms compare themselves with middle-level performers (e.g., Greve, 1998), other scholars have argued for the salience of upward comparison to stretch the firm's goals and motivate its efforts (Boyle & Shapira, 2012; Labianca, Fairbank, Andreovski, & Parzen, 2009; Lant, 1992).

In this paper, we align with scholars who have discussed the possibility of downward comparison with bottom-level social reference points (March & Shapira, 1992; Massini, Lewin, & Greve, 2005; Moliterno et al., 2014). Since firms' aspirations must face the strict scrutiny of stakeholders and because failing to achieve a promised performance targets is highly consequential for managers and is often associated with negative press and stock market decline, we propose that concerns regarding future goal achievability outweigh the

need to impress the market with an aggressive, yet potentially unachievable target. Therefore, managers have an incentive to avoid overpromising and strategically choose to imitate lower-level peer aspirations instead of emulating peers' moonshots. While the bottom level of peer aspiration minimizes the possibility of underdelivery, this level can still be regarded as acceptable by stakeholders when it is based on social comparison with the aspiration levels of peers.

We examine our predictions empirically in the context of corporate acquisitions by using an innovative measure of aspiration levels: the synergy targets established by acquiring firms in acquisition announcements. This context is appropriate for testing our theory since it allows for direct observations of actual, publicly announced aspiration levels. Very few prior studies on aspirations have referenced real, as opposed to inferred, aspiration levels – a surprising omission, although notable exceptions also exist (Keum & Eggers, 2018; Mezias, Chen, & Murphy, 2002; Washburn & Bromiley, 2012). Synergy targets are explicitly quantified expectations regarding value generation from a focal acquisition. For example, BNY Mellon announced in its acquisition of PNC's Global Investment Servicing (GIS) business a "potential for significant revenue synergies of \$200-\$300 million, and \$120 million pre-tax expense synergies (~20% of GIS' expense base)". In addition, synergy targets are often publicly available and widely used by stakeholders – such as stock analysts – to evaluate the potentials of acquisitions.

Based on a unique sample of manually coded synergy targets, we found strong support for our baseline prediction that peer aspirations affect a focal firm's aspiration formation. Regarding the choice of aspiration level, we found that the bottom level of peer aspirations impacts a focal firm's aspiration level more strongly than do the middle or top levels. In the Supplementary Analysis section, we further examined the mechanism underlying uncertainty-driven imitation and found that when firms have less acquisition experience or when firms' performance is worse than their own past performance or worse than that of their peers, firms are more sensitive to peer aspirations. Overall, our findings indicate that managers imitate peer aspirations to set goals to navigate through the uncertainty. In such processes, managers choose to imitate lower-level peer aspirations to strategically guide stakeholder expectations toward a minimum acceptable level.

Our paper contributes to behavioral theory on aspiration formation based on social comparisons in two ways. First, we introduce peer aspiration levels as an important and novel antecedent to aspiration formation. Greve (2003a: 49) noted that "we know little about direct learning of aspiration levels" from peers. While most prior work has implicitly assumed that

social comparison only includes comparison with past peer performance, we extend and enrich this theory of social comparison by demonstrating that managers can directly imitate forward-looking peer aspirations to reduce uncertainty and gain stakeholder approval.

Second, we theorize and empirically demonstrate a tendency for downward comparison when firms compare their own aspirations to peer aspirations. Our results highlight managers' risk-averse motivation to "play it safe" when selecting peer aspiration levels to imitate as a way of managing stakeholder expectations. Our paper thus contributes to the debate concerning the choice of an appropriate performance benchmark in aspiration formation (Keum & Eggers, 2018; Labianca et al., 2009; Massini et al., 2005; Moliterno et al., 2014). Overall, our paper offers theoretical advances for the use of social comparisons to set aspirations and highlights the role of managerial motivations in aspiration formation.

THEORY AND HYPOTHESES

Social Comparison in Aspiration Formation

The behavioral theory of the firm has highlighted the use of historical comparisons with one's own experience and social comparison with peer experiences in the selection of aspiration levels (Cyert & March, 1963; Shinkle, 2012). Whereas comparisons with one's own history are relatively straightforward, comparisons to peers are much more complex and ambiguous (Greve, 2003a; Moliterno et al., 2014). Instead of focusing on the closest peers, most prior work in the behavioral theory has focused on industry boundaries as the defining feature of social reference groups and has taken middle-level performance within the entire industry as the social benchmark for aspiration formation. This relatively coarse-grained approach, however, has produced mixed findings regarding whether and how firms compare themselves to their peers when setting their own aspiration levels. While certain studies have found that firms having a lower performance than their peers triggers changes and risk-taking behaviors (Baum, Rowley, Shipilov, & Chuang, 2005; Gaba & Joseph, 2013; Greve, 1998), other studies have found an opposite or a null effect (Audia & Greve, 2006; Iyer & Miller, 2008). Such mixed findings not only highlight the challenges of empirically specifying the appropriate social comparison when setting aspirations, but also reflect a lack of theorization regarding how exactly firms compare themselves with their peers in practice (Greve & Gaba, 2017; Kotiloglu, Chen, & Lechler, 2021; Posen et al., 2018).

To advance theory development with respect to social comparisons, recent behavioral research has studied the ways in which firms construct their social reference groups (i.e., *with whom to compare*) for aspiration formation. Scholars have argued that managers have both

the motivation and the opportunity to select peer groups that are favorable to their own interests. In an experimental setting, it was demonstrated that when performance is low, managers select organizations that are less similar and have weaker performance for comparison to display themselves in a more favorable light. Furthermore, Smith and Chae (2017) found that organizational atypicality is positively associated with the use of nonconforming peer groups for comparison. Additionally, when CEOs exercise greater power, they are more likely to choose a peer group that conforms less to external expectations to justify their own compensation levels (Audia, Rousseau, & Brion, 2021). Finally, in addition to social comparison with external peers, managers may also perform internal social comparisons with sister business units within the firm (Gaba & Joseph, 2013; Hu, He, Blettner, & Bettis, 2017; Kacperczyk, Beckman, & Moliterno, 2015).

Significant progress in social comparison research has also been made with respect to understanding the factors and conditions that direct firms' attention to peer performance when setting aspirations (i.e., *when to compare*). Research has demonstrated that performance relative to peers (Harris & Bromiley, 2007), organizational form (Vissa, Greve, & Chen, 2010), environmental volatility (Berchicci & Tarakci, 2022), and organizations' age and life cycle (Aranda, Arellano, & Davila, 2017; Blettner, He, Hu, & Bettis, 2015) all affect firms' sensitivity to peer performance. Researchers have debated the level of interdependence between historical and social comparisons in aspiration formation (Bromiley & Harris, 2014). While certain studies have aggregated both forms of comparison to a single dimension (Greve, 2003b), other studies have argued that historical and social comparisons can have different effects (Baum & Dahlin, 2007; Kim, Finkelstein, & Haleblan, 2015). Still other studies have argued that attention to historical and social comparisons occurs in a sequential manner (Gaba & Greve, 2019). Overall, there is no consensus regarding the relative weight that managers assign to social comparisons when selecting aspiration levels.

As a whole, recent aspiration research has acknowledged the complexity of the social comparison dynamic. First, the processes of social comparison used for aspiration formation are highly ambiguous and uncertain. It is not realistic to assume social comparison in aspiration formation to be a simple, straightforward, or automatic process (Posen et al., 2018). Second, managers have both the motivation and the ability to influence the use of social comparison in setting goals proactively (Keum & Eggers, 2018). Instead of passively accepting the average performance in the industry as goals, managers actively take a broader view and carefully select their benchmarks when choosing their firms' aspiration levels.

Despite recent progress toward developing an understanding of the targets with whom and the occasions when firms employ comparisons to set their aspirations, little continues to be known regarding how managers choose what peers' object to compare with (i.e., *what to compare*) (Posen et al., 2018). Although the behavioral theory about aspirations was originally formulated to focus on social comparisons made with "peer experience" in a broader sense, its formal model of aspiration determinants and subsequent aspiration research have focused exclusively on "peer performance" as the sole basis for comparison. Accordingly, most studies have focused on performance measures, such as return on assets (Greve, 2003b; Greve, 2011), assuming that managers pay exclusive attention to peer profitability when setting their own aspirations. A few studies have employed alternative performance metrics or gone down from the firm level to the group level, but even these studies have continued to focus on financial performance measures, such as unit sales (Joseph, Klingebiel, & Wilson, 2016), market share (Joseph & Gaba, 2015), firm size, or growth (Greve, 2008b). In addition, although a handful of studies have also explored nonfinancial goals, these studies too have focused on performance metrics, such as team rankings or scores in sports (Moliterno et al., 2014), governance practice ratings (Rowley, Shipilov, & Greve, 2017), or corporate social responsibility performance (Wang, Jia, Xiang, & Lan, 2021). While insightful, extant aspiration research has left unaddressed an important research opportunity with respect to understanding whether social comparisons are also made in light of aspects other than peer past performance.

We seek to address this gap in aspiration research and extend the existing theory by arguing that firms make comparisons not only to peer past performance but also to the aspirations of peers. Peer aspirations are the expected future performance levels announced by peers. Such aspirations have at least two important implications for our understanding of aspiration formation. First, there has been surprisingly little consideration of the use of forward-looking references in aspiration formation, despite the importance of such information for reducing uncertainty regarding the future. The existing research on the behavioral theory of the firm has long held that setting aspirations involves great uncertainty and ambiguity and that forward-looking references are critical for goal selection (Ansoff, 1987; Gavetti & Levinthal, 2000; Greve, 2003a; Wolf & Floyd, 2017). Despite this fact, however, extant research on aspirations has implicitly assumed that managers mostly rely on backward-looking comparisons and has thus overlooked the potential incorporation of peers' forward-looking aspirations when studying a focal firm's aspiration formation.

Second, while prior work has mainly assumed that aspirations are defined and oriented internally, much less attention has been devoted to the question of the extent to which managers form their aspirations to satisfy external pressures, for example, to gain stakeholder approval. Recent aspiration research has highlighted the “external nature” of aspirations by demonstrating the influences of organizational legitimacy (Desai, 2008), external ratings (Rowley et al., 2017), and institutional ownership (Keum & Eggers, 2018) on aspiration formation. In practice, stakeholders – such as stock analysts – often use the aspirations of comparable firms to evaluate and to challenge managers’ choice of aspiration levels. However, it is not clear whether and to what extent managers use peer aspirations as a benchmark to meet external expectations and, if so, what approaches managers use to accomplish that task.

Considering the fact that aspirations may be formed based on forward-looking (in addition to backward-looking) references and with an external (as opposed to an internal) orientation, we seek to develop a theory regarding the effect of peer aspirations on a focal firm’s aspiration formation.

The Effect of Peer Aspirations on a Focal Firm’s Aspiration

Peer aspirations are future performance targets communicated by peer firms. While such aspirations are often rooted in past performance, they also often indicate other information. Peer aspirations reflect the performance targets that peers desire to achieve in the future, thus revealing peers’ forward-looking focus and managerial attention (Ocasio, 1997). For instance, in 2006, Axel Springer, a leading German publisher, announced its aspiration to increase digital revenues from 1% to 50% of group revenue before 2016. This aspiration was indicative of a shift of managerial attention and changes in the strategic direction of the firm. Although such aspirations are “unrealized performances” instead of “realized” past performances, they signal the firm’s potential abilities and expectations for the future (Vanacker, Forbes, Knockaert, & Manigart, 2019). In addition, venturing beyond the scope of a single firm, peers’ aspiration levels can collectively shape the sensemaking of what is desirable at the industry level. Peer aspirations as an aggregate indicate general industry-level expectations of future trends and the ways in which external stakeholders expect the focal firm to perform. Hence, while peer past performance can be viewed as a reflection of how a firm *should have* performed (Kim et al., 2015), peer aspirations indicate how a firm *should* perform in the future.

Despite the potential importance of peer aspiration levels, their effect is dependent on their visibility. Over recent decades, an increasing number of firms have explicitly communicated their aspirations to the public. As Greve (2003a: 49) noted, peers' aspiration levels are not "purely cognitive constructs that only exist inside a given decision maker's head". Instead, they "tend to become tangible figures that are printed in internal documents... and that leak to the outside". Indeed, the proportion of large public firms that disclose their financial targets increased from 28% in 1997 to 61% in 2007 (Chuk, Matsumoto, & Miller, 2013). More than 8,600 company press releases referred to "financial goals" or related terms in 2019, compared to less than 3,000 such press releases in 2000.² Over the years, a wide range of quantified financial goals have been explicitly announced, such as profitability guidance, growth targets, and synergy targets for acquisitions (e.g., Houston et al., 2001; Keum & Eggers, 2018). Research has shown that, compared with other types of disclosures and analyst reporting, management forecasts are "the single most important determinant of the quarterly return variance" (Beyer, Cohen, Lys, & Walther, 2010: 313).

Given the valuable information conveyed by peers' aspirations and this increasing accessibility, we expect peer aspirations to play a significant role in a focal firm's aspiration formation. Setting aspirations is a highly consequential decision that involves a high degree of uncertainty (Greve, 2008a). On the one hand, managers need to secure immediate support from stakeholders by setting a convincing and attractive goal. On the other hand, they must consider the potential consequences of underdelivery, which may cause future disappointment and erode credibility or even lead to CEO dismissal (Garud et al., 2014; Keum & Eggers, 2018). Specifically, "the very expectations that are set through projective stories... can also serve as the source of future disappointments" (Garud et al., 2014: 1479). When firms face intense pressures from external stakeholders (Keum & Eggers, 2018), it is crucial for management to navigate this trade-off correctly.

We argue that given the tension between goal attractiveness and goal achievability, an appropriate aspiration level is bounded within an "aspiration corridor". The aspiration corridor has an upper limit with respect to "what aims a firm can achieve" and a lower limit with respect to "what aims a firm must achieve". However, neither the upper nor the lower limits of this corridor are clearly known, nor are the criteria for selecting a proper aspiration

² Following prior studies (e.g., Chuk et al., 2013; Chen et al., 2019), we used a set of keywords to search PR Newswire and the Business Wire via Factiva: "financial guidance," "financial targets," "financial outlook," "financial forecast," "financial expectation," "financial goals," and other related terms, such that we replaced "financial" with "growth," "revenue," "sales," "income," "loss," "EBITDA," "profit," "profitability," and "cash flow."

level within that corridor. Given an increasingly volatile and fast-changing business environment, developing a reliable forecast that can be used to determine the appropriate aspiration level is even more difficult. Hence, peer aspirations can serve as a natural source of additional information that can assist managers in navigating the aspiration corridor. For managers seeking to reduce uncertainties and minimize search costs (Cyert & March, 1963; Haunschild, 1993, 1994; Haveman, 1993), matching peer aspirations can be a safe choice. While no prior research has been conducted to investigate whether organizations behave in this way, individuals have been found to adapt their own aspirations to peer aspiration levels (Hertzman & Festinger, 1940; Lewin, Dembo, Festinger, & Sears, 1944).

In the context of acquisitions, the expected synergies are often particularly difficult to estimate *ex ante* due to significant uncertainties relating to different performance outcomes (Rabier, 2017a). Based on our reasoning above, we argue that managers focus on synergy targets announced by peers with respect to comparable deals to determine appropriate synergy targets. As managers often note explicitly in their acquisition announcement calls with investors, “we do benchmark that (synergy target) versus other precedent situations that are potentially similar...to make sure that what we estimate makes sense” (Miles White, CEO of Abbott Laboratories, 2016). Stock analysts also often use industry standards as a benchmark for firms’ synergy targets: “Is there any reason why we should believe that they (synergy targets) will be lower than *typical* deals?” (CenturyLink acquisition call, 2010, emphasis added). Accordingly, peer synergy targets may serve as an important basis for social comparison since they function as indicators of common aspiration levels in similar acquisitions.

Taken together, given the momentous character and the uncertainties associated with setting synergy targets for major acquisitions, we argue that companies are influenced by the aspiration levels of their peers when deciding on their own synergy targets.

Hypothesis 1: A focal firm’s aspiration level is positively related to the aspiration levels of its peers.

Downward Comparison in Imitating Peer Aspirations

To address the tension between goal attractiveness and goal achievability, managers can make such decisions by using the aspiration levels of their peers as benchmarks. Given that managers are often faced with *a range of* peer aspirations, the following questions naturally arise: Which of these two competing forces is stronger, and accordingly, how do managers choose which peer aspiration level to imitate? If managers emphasize the

attractiveness of the deal to the stakeholders, they should stretch upward and imitate top-level peer aspirations. However, if managers are more concerned about their ability to deliver and the potentially grave consequences of failing to achieve their targets, they are incentivized to conform downward to bottom-level peer aspirations.

Prior behavioral research has identified three competing strategies, namely, the practices of comparing one's own firm with top-, middle-, or bottom-level peer performance. Most behavioral studies of aspirations have assumed that individuals tend to select similar peers as referents (Festinger 1954) and take the average performance of these peers as their benchmark (e.g., Baum & Dahlin, 2007; Greve, 1998). More recent work in this area, however, has challenged this idea and emphasized upward striving toward the top level of the reference group. This line of research has argued that managers tend to compare themselves with superior peers and set goals that allow them to stretch to their upper limits as a form of motivation (Labianca et al. 2009, Boyle and Shapira 2012). For example, in the context of a multi-round tournament (Boyle and Shapira, 2012), research has shown that aspirations are raised toward the performance of leaders in that round of game. In the context of a German soccer league, organizations were found to focus on both the top and bottom performance thresholds within the peer group, with the relative attention given to each of these two thresholds depending on the team's past performance (Molitero et al., 2014). Other studies, however, have found no evidence of such upward striving in aspiration formation (Mezias et al. 2002, Massini et al. 2005) and have instead underlined a "survival aspiration level" below which a firm faces existential challenges (Audia and Greve, 2006; Chen and Miller, 2007; March and Shapira, 1987, 1992). This line of research has attributed a central role to managerial incentives and affirmed that the core behavioral tendency of managers toward satisficing implies a focus on lower, but still satisfactory, performance levels rather than an attempt to match peers with the highest performance.

We argue that when managers are faced with an uncertain but highly consequential decision, they do not have an incentive to stretch upward toward the aspirations of best-in-class peers but rather tend to focus on bottom-level peer aspirations. First, while an upward-stretched goal may motivate risk-taking behaviors and encourage an extensive search (Gary et al., 2017), failing to meet aspirations can raise deep concerns about managerial capability and organizational prospects, damage credibility, deplete financial resources, and even cause management dismissal (e.g., Zhang & Gimeno, 2016). Accordingly, managers tend to strategically guide stakeholder expectations downward when setting earning targets to increase the chances of a positive performance surprise (e.g., Cotter, Tuna, and Wysocki,

2006; Versano and Trueman, 2017) following the principle of “underpromise and overdeliver”. Although a few studies have shown support for upward comparison in setting aspirations among individuals in a tournament setting (Boyle and Shapira, 2012) and in the context of educational institutions (Labianca et al., 2016), such findings cannot be directly applied to corporate managers, who face much stricter stakeholder scrutiny and must suffer the consequences of missing their targets.

Second, one of the core premises of behavioral theory is that managers only seek for satisficing rather than to maximize and thus lack motivation to stretch aspirations any higher than necessary (March & Simon, 1958). Research has provided evidence that managers may manipulate their choice of peer groups in their own interests to avoid giving a negative impression, especially when they have the power to do so (Audia et al., 2015; Audia et al., 2020). It has also been argued that “once managerial experience and incentives come into play, frontier (i.e., top-level) aspiration levels vanish” (Massini et al., 2005: 1554). Such a “satisficing” rule in setting aspiration corresponds to the original definition of aspirations as “the smallest outcome that would be deemed satisfactory by the decision maker” (Schneider, 1992: 1053). Unlike the colloquial meaning of “aspiration” as an upwardly striving target, aspiration levels are “a set of constraints” that represent “minimally satisfactory alternatives” (Audia & Greve, 2021; March & Simon, 1958; March, 1962). Especially because upward-stretched goals increase performance variance (but not performance itself) (Gary et al., 2017) and do not necessarily lead to better innovation from employees (Ahmadi, Jansen, & Eggers, 2021), the benefits of conforming to best-in-class peer aspirations for managers are even less apparent. Hence, instead of stretching goals to *impress* stakeholders, managers are incentivized to imitate lower-level peer aspirations to *avoid disappointing* stakeholders.

Third, bottom-level peer aspirations serve as a “survival aspiration point” or a baseline that can still be deemed acceptable. Behavioral research posits that managers pay particular attention to a baseline survival level, beneath which firms face existential threats or lose membership in their reference group (Audia & Greve, 2006; Chen & Miller, 2007; March & Shapira, 1992; Moliterno et al., 2014). If aspiration levels are set too far below the minimal targets established by peers, managers face questioning from key stakeholders (e.g., stock analysts and board members). On the other hand, although the bottom level of peer aspirations is no higher than necessary, it is still “high enough” for managers to gain approval from stakeholders. For example, in the merger between American Airlines and US Airways, managers conformed in a downward direction to the synergy targets established by peer firms

and illustrated that even with the most conservative aspirations, the deal would still generate significant value.

In the context of acquisitions, realizing synergy targets involves a great deal of uncertainty (Graebner et al., 2017). While stakeholders might initially view high synergy targets positively, such aspirations also make integration more demanding due to higher pressure with respect to layoffs and synergy realization. This situation may lead to distrust and further increase the likelihood of integration failure. Failing to deliver on the established targets may erode management's credibility and promote skepticism among stakeholders regarding future acquisition activities (Laamanen & Keil, 2008). As some managers have explicitly noted in investor calls, "our goal is to make certain that everything we said here gets achieved... And overdelivery would be a good thing" (James J. Owens, CEO of H.B. Fuller, 2017). On a similar theme, one manager remarked that "we've never been disappointed, and we've always overachieved our synergy number" (Richard A. Dierker, CFO of Church & Dwight, 2017). Driven by concerns about potential underdelivery and looking bad, managers tend to base synergy targets strategically and base them most closely on bottom-level peer aspirations. While such aspirations can still be expected to allow for the deal to be approved based on peer comparison, they guide stakeholder expectations downward toward a more achievable and satisfactory target level.

In consequence, we argue that the potential negative results of failing to achieve targets outweigh managers' eagerness to impress the market with moonshot-like goals. Accordingly, we propose the following hypothesis:

Hypothesis 2: A focal firm's aspiration level is more closely related to the bottom level of peer aspirations than to the top or middle levels of peer aspirations.

METHODS

Empirical Setting and Sample

We examine the impact of peer aspiration levels on a focal firm's aspiration level by drawing from acquirers' announcements of their synergy targets for major acquisitions. This context has several advantages for testing our theory. First, synergy targets represent real aspiration levels instead of inferred aspiration levels based on the focal firm's historical performance or past peer performance. While the inability to observe aspirations directly has been a common limitation in prior aspiration research, manually coding synergy targets from management's acquisition announcements allows us to address this issue. Second, the context of acquisitions is well suited to the task of examining managers' motive of seeking

stakeholder approval. Acquisitions are major strategic actions with significant external visibility. While they attract considerable stakeholder attention, they also frequently fail to create value for the acquiring firms. Third, this context offers a reasonably large number of observations of synergy targets by both acquiring firms and their peers. Publishing synergy targets has become an increasingly common practice in acquisition announcements, especially in cases of larger deals. Finally, acquisitions, as a well-defined context, enable us to perform a cross-firm comparison of aspiration levels (Kim et al., 2015).

While synergy targets have distinct advantages for testing our theory, a commonly raised concern is that such targets are simply isolated strategic releases that are used purely to manage investor reactions to acquisition announcements. To address this concern and to better understand the process of decision-making of synergy targets, we interviewed corporate M&A decision makers during the preparatory phase of this study. Over 40 semi-structured interviews pertaining to synergy estimation of acquisitions were conducted with corporate M&A professionals, chief financial officers, and board members from over 30 firms that frequently engaged in acquisition. These interviews indicated that synergy estimation is not merely one-time impression management but also plays a key role in acquisition decision-making processes (i.e., target selection and valuation). Our interviewees reported that synergy targets are highly important, both for go-ahead acquisition decisions and for guiding post-merger integration. To establish synergy targets, firms usually employ a comprehensive process. They collect information from multiple sources, including bottom-up evaluation, top-down guidance, and external benchmarking that is often conducted with the help of strategy consultants and financial advisors.

Our interview findings correspond to observations drawn from the announcements of synergy targets. As a rule, synergy targets are announced with considerable specificity. In our sample, more than 90% of announced synergy targets were accompanied by a detailed breakdown into sub-level targets (e.g., cost or revenue synergy targets). Moreover, more than 60% of synergy targets also included an expected timeline for target realization (see Appendices A and B for examples). Furthermore, transcripts of acquisition calls also show that stock analysts rely on these figures as an important source of information when calculating the expected future profitability of the combined firm. Finally, management also often provides systematic updates on synergy realization in subsequent earnings conference calls.

To collect data on synergy aspirations, we leveraged the SNL Mergers and Acquisitions database and focused on the banking industry, which is the most active industry

in terms of systematically announcing synergy targets. We collected acquisitions that had been completed from 2000 to 2019, had acquired over 50% of total shares, had featured a deal size of more than 100 million USD, and had announced synergy targets. To validate the data quality and to improve the accuracy of synergy targets, we manually coded synergy targets by consulting more than 1,400 acquisition announcement materials, including press releases, presentations, and conference call transcripts. This approach enabled us to crosscheck a total of 379 synergy targets. We excluded acquisitions if industry peers had announced less than five synergy targets prior to the focal deal to limit the influence of a single reference point (Blagoeva, Mom, Jansen, & George, 2019; Chen, 2008). Due to additional missing variables, our final sample included 319 synergy observations. In the robustness checks, we constructed a complementary multi-industry sample (detailed in the Supplementary Analysis section) and found results that were consistent with those reported here.

We collected the financial data and other control variables for both the acquiring and the target firms from COMPUSTAT and Thomson Reuter Eikon. When target firms were not publicly listed, we manually coded their financial information from acquisition materials disclosed by management.

Measures

Dependent variable. The dependent variable of our analysis is the *Aspiration Level of a Focal Firm*, which in our context is the synergy target of a focal acquisition announced by a focal firm. The absolute values of synergy targets were not comparable across deals due to different deal sizes. Therefore, we measured the level of synergy targets relative to the operating costs of the target firm. While prior literature has offered little guidance in this respect,³ our content analysis of acquisition documents points to a frequent proxy: the absolute value of the synergy target divided by the operating costs of the target firm. We refer to this value as the synergy target ratio.

We focused on synergy in relation to target operating costs (instead of, e.g., total deal value) for two reasons. First, since cost synergies play an important role in synergy estimations, the ratio intuitively shows the extent to which (expressed as a percent) the target

³ A unique exception in prior literature is the study by Houston, James and Ryngaert (2001), who manually calculated the net present value of 41 synergy targets in bank mergers to examine the performance implications of synergy targets. Our content analysis, however, shows that bank acquisitions favor the synergy target ratio in acquisition-related disclosures much more strongly, since over half of the bank acquisitions in our sample directly announced the ratio rather than the net present value.

firm's operating costs would have to be reduced. This information enables managers and stakeholders to judge the level of difficulty and potentials in achieving the synergy goal. Second, synergy information relative to target operating costs is also the most widespread measure of synergy in acquisition announcements. Therefore, we followed the common practice of acquisition announcements and adopted the synergy target ratio as our dependent variable.

Independent variables. We measure *Middle-Level*, *Top-Level*, and *Bottom-Level Peer Aspirations* via temporal proximity and deal size similarity. Prior research on social comparisons (Beckman & Lee, 2017) and competitor identification (Gur & Greckhamer, 2019) has suggested that industry boundaries are the most common basis for determining reference groups. Unsurprisingly, prior studies on performance feedback dynamics in the context of acquisitions have mainly relied on industry boundaries to define reference groups (e.g., Iyer & Miller, 2008; Kim et al., 2015; Man Zhang & Greve, 2019). Within an industry, size similarity is one of the most important criteria for categorization (Kuusela, Keil, & Maula, 2017). In the context of acquisition, deal size similarity thus would serve as a relevant categorization basis. Furthermore, temporal proximity is also an important factor. Firms do not pay the same amount of attention to all previous synergy targets and are more likely to rely on synergy targets that have been announced in the recent past (Malhotra et al., 2015). Based on these considerations, we first constructed the peer group based on deal size similarity and deal recency. We then took the median, the 75th percentile, and the 25th percentile in the peer group to measure *Middle-Level*, the *Top-Level*, and the *Bottom-Level Peer Aspirations*, respectively.

Control variables. We controlled for the determinants of aspiration level that have been identified in prior literature on aspiration. Specifically, we measured *Better Acquisition Performance than Peers* as the cumulative abnormal return (CAR) of the firm's last acquisition announcements minus the average CAR of peer acquisitions announced during the three years prior to the focal deal (see Kim et al., 2015 for a discussion on the use of CAR as a measure of performance feedback). *Better Acquisition Performance than Own History* is measured as the CAR of the firm's last acquisition announcement minus the weighted CAR of all of the firm's previous acquisition announcements. In the robustness checks, we also operationalized historical and social performance feedback by using splined measures and integrated historical and social performances into one single performance measure. These analyses produced results that are consistent with our reported results.

In addition, we controlled for a set of firm-level factors that may influence synergy aspirations. We accounted for *Firm Acquisition Experience*, which was measured as the number of acquisitions announced by a focal firm during the three years before the focal acquisition. We included *Firm Size*, which was measured as the natural log of the number of the firm's employees (Shi, Zhang, & Hoskisson, 2017b). To account for the degree to which firms rely on acquisitions for growth, we controlled for *Firm Growth Rate*. To further control for the general performance level of the firm, we included *Firm Performance (ROE) in the Prior Year*. We also controlled for *Firm Cost of Funds* to capture banks' financial pressures.

In terms of acquisition-level variables, we included *Deal Value*, which was measured as the natural log of the transaction value of the proposed acquisition, and *Cash Consideration*, which was measured as a binary variable that was equal to one if a merger was financed with 100% cash and zero otherwise. Since acquisitions of target firms that share an overlapping market with the acquiring firms have more redundant costs, we controlled for *Market Expansion Acquisitions*, which was equal to one if the acquisition involved two firms located in different states and zero otherwise. Finally, we controlled for *Industry Acquisition Intensity* and *Financial Crisis* (Rabier, 2017a).

Analysis

Given that not all acquisitions involve synergy target announcements, potential sample-induced endogeneity may bias our analysis (Certo, Busenbark, Woo, & Semadeni, 2016). To account for this possibility, we followed established practice and adopted Heckman's two-stage selection model (Heckman, 1979). In line with prior research on publicly issued management forecasts (Keum & Eggers, 2018), we used prior disclosure behavior as a predictor of the likelihood of aspiration disclosure by the focal firm. According to the Heckman procedure, a valid instrument must satisfy "the exclusion restriction", which means that "a variable affects the selection but not the outcome equation" (Wolffs & Siegel, 2019: 436). We found that the experience of synergy target announcements could strongly predict the likelihood of a firm announcing a synergy aspiration again, but this factor was not correlated with the magnitude of the focal aspiration. Using prior synergy disclosure in the first-stage model, we calculated the non-selection hazard (also referred to as the inverse Mills ratio) and included it in the second-stage regression. In the second stage, we employed firm fixed-effects models and clustered standard errors at the firm level.

RESULTS

Hypotheses Testing

Table 1 displays the pairwise correlations of variables used in this study. Table 2 presents the main regression results based on firm fixed-effects models with clustered firm-level standard errors. Model 1 is used to test Hypothesis 1 and includes the middle-level peer aspirations as the independent variable. Models 2, 3 and 4, are used to test Hypothesis 2. Models 2 and 3 include the top- and the bottom-level peer aspirations respectively, while Model 4 includes all three levels of peer aspirations.

Insert Tables 1 and 2 about here

In Hypothesis 1, we predicted a positive baseline relationship between peers' aspiration levels and a focal firm's aspiration level. As displayed in Table 2, Model 1 shows that the coefficient for peers' aspiration levels (the middle-level) is positive and significant ($\beta = .403$; $p < .01$), which supports Hypothesis 1. Model 5 includes three levels of peers' aspirations (the middle-, top-, and bottom-level) in which the impact of middle-level peer aspirations on firm aspirations continues to be positive and significant ($\beta = .249$; $p < .1$) and the impact of bottom-level peer aspirations on firm aspirations is positive and significant as well ($\beta = .359$; $p < .05$). Across these models, we found consistent support for Hypothesis 1 in which a focal firm's aspiration level is positively related to its peers' aspiration levels.

In Hypothesis 2, we predicted that a focal firm's aspiration level is more closely related to bottom-level peer aspirations than to top- or middle-level peer aspirations. We inserted middle-, top-, and bottom-level peer aspirations in Models 1, 2, and 3, respectively. The coefficients indicated that bottom level peer aspirations had the strongest impact on a focal firm's aspiration level. In Model 4, we included the three levels of peer aspirations simultaneously and similarly found additional evidence of the salience of bottom-level peer aspirations. Therefore, we found support for Hypothesis 2.

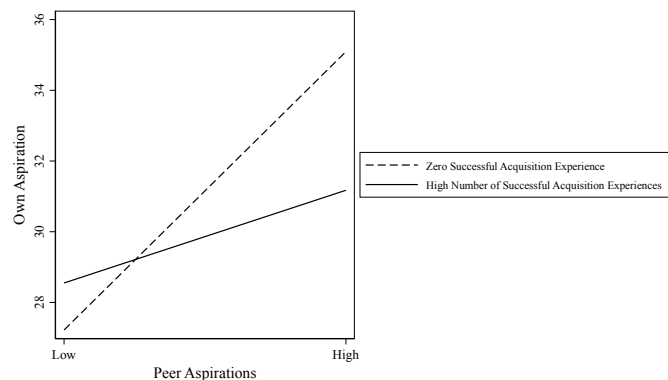
Supplementary Analyses

Moderating Effects on Attention to Peer Aspirations. To further understand the mechanism and boundary conditions that drive managerial attention to peer aspirations, we

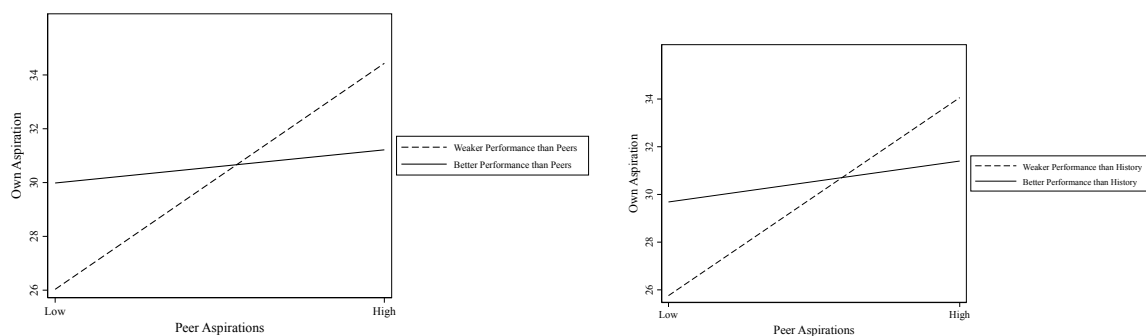
examined factors that could increase or decrease firms' imitation of peer aspirations. Social comparison and interorganizational imitation research contend that imitation is intensified when uncertainty is higher or when problems trigger search (Cyert & March, 1963; Lieberman & Asaba, 2006). Accordingly, we propose that firm task experience (as an uncertainty indicator) and firm performance feedback (as a trigger for search) influences managerial attention to and imitation of peer aspirations. Specifically, when managers have more experience in the task context, they should pay less attention to peer aspirations. When firms perform better than its own history or than its peers, the tendency for imitating peer targets will be reduced as well.

Models 5, 6, and 7 of Table 2 include three moderators – firm acquisition experience, better performance than peers, and better performance than its own history – respectively. The results indicate that a focal firm's attention to peer aspirations is weakened by firm acquisition experience ($\beta = -.098$; $p < .05$), better acquisition performance than peers ($\beta = -.114$; $p < .05$), and better acquisition performance than a focal firm's own history ($\beta = -.155$; $p < .05$). Figures 2, 3, and 4 provide plots of the moderating effects shown by Models 5, 6, and 7, respectively.

FIGURE 2: Moderating Effect of Firm Acquisition Experience



**FIGURE 3 & 4: Moderating Effects of Better Acquisition Performance than Peers
& Better Acquisition Performance than Own History**



Historical Aspirations. To examine the effect of peer aspirations on a focal firm's aspirations in the presence of one's own historical aspirations, we examined in a subsample of firms that announced multiple synergy targets. After including the prior aspiration levels of the focal firm in our models, we continued to find a consistently significant and positive effect of peer aspirations on a focal firm's aspiration level. This provides robust support for Hypothesis 1.

Acquisition Premium. It has been argued that managers may be pressured to announce higher synergy targets to justify high acquisition premiums. Hence, the size of the acquisition premium may drive the focal firm's synergy target instead of peers' synergy targets. To examine the potential effect of the acquisition premium on synergy targets, we studied a subsample in which firms acquired publicly listed targets and thus the premium data is available. We found consistent evidence that peer aspirations have a positive and significant impact on a focal firm's aspirations.

Multi-industry analysis. Since our main analysis is based on a single industry, the extent to which our findings can be generalized to other industries remains unclear. To that end, based on the Thomson Reuters Eikon database, we screened a group of acquisitions by using consistent sampling criteria as our main sample, that is, acquisitions with announcements of synergy targets, with over 50 percent of shares acquired, and with a deal size of over 100 million USD. We thus identified 1,069 acquisitions from 1998 to 2018 in 64 industries, based on the 2-digit Standard Industrial Classification (SIC) codes. Because testing our theory requires sufficient observations of synergy targets announced by peers, we focused on three industries in which over 70 acquisitions involving disclosed synergy targets were conducted: chemicals and allied products (2-digit SIC code 28), business services (2-digit SIC code 73), and communications (2-digit SIC code 48). Following the same procedure as in our main analysis, we manually coded 201 additional synergy targets based on acquirers' disclosure materials. Based on this broader sample, we found consistent results supporting the claim that firms tend to imitate peer aspirations and, in particular, bottom-level peer aspirations. The results of this additional, nonreported analysis are available from the authors upon request.

DISCUSSION

We highlight peer aspiration levels as a theoretically neglected yet highly important antecedent to a focal firm's aspiration formation. Based on a unique dataset of synergy targets announced by managers in the context of major acquisition announcements, we found

that peer aspirations matter. We found support for our prediction that managers imitate peer aspiration levels to reduce the uncertainty associated with their synergy targets for acquisitions. Moreover, we found that acquiring firms seem to pay more attention to bottom-level peer aspirations, which function as a minimum aspiration threshold, than to top- and middle-level peer aspirations. Finally, consistent with our theorized mechanism of imitation, our supplementary analyses show that the propensity to imitate peer aspirations is contingent on a firm's prior acquisition experience and firm performance relative to peers.

Contributions

Our study contributes to the research on the formation of organizational aspirations in the behavioral theory of the firm. Despite the central role played by aspirations in behavioral theory, direct observation and analysis of real aspiration levels have been surprisingly limited (Keum & Eggers, 2018; Shinkle, 2012). Most prior work has inferred aspiration levels by using different forms of indirect operationalization, which has hindered progress in this research area (Bromiley & Harris, 2014; Washburn & Bromiley, 2012). In particular, our understanding of the role played by social comparisons in aspiration formation remains underdeveloped (Berchicci & Tarakci, 2022; Moliterno et al., 2014). While behavioral theory emphasizes the performance of peers as an antecedent of a focal firm's aspiration level, to our knowledge, no prior study has studied theoretically or examined empirically the questions of whether and how the aspiration levels of peers affect a focal firm's aspiration level. This gap has major relevance for the development of theories concerning the role of social comparisons in aspiration formation. Our paper addresses this gap and makes three specific contributions to the behavioral theory of the firm.

First, this paper advances our understanding of social comparisons in behavioral research on aspirations by advancing theory and conducting an empirical examination of the role played by peer aspirations in aspiration formation. Drawing on insights from social comparison theory and research concerning interorganizational imitation, we hypothesized and found that managers pay attention to and imitate the aspiration levels of peers when setting their own aspiration levels as a means of understanding what aspirations are viewed as feasible and acceptable by stakeholders. While most prior empirical work in this area has examined aspirations as a type of performance level that can be deduced in a relatively straightforward manner from one's own past performance levels and those of one's peers, our paper highlights the pressures associated with this task. On the one hand, managers must satisfy immediate stakeholder expectations with sufficiently attractive aspirations. On the

other hand, they must avoid potential future disappointments and legitimacy erosion if they fail to meet targets. Therefore, imitating peer aspirations is a convenient way of resolving such uncertainty. Such aspirations can provide managers with a benchmark for common target levels and for what stakeholders regard as legitimate targets. This key observation addresses recent calls for an improved understanding of the nature of publicly announced goals and managerial agency in goal formation (Gaba & Greve, 2019; Greve & Teh, 2018; Keum & Eggers, 2018; Posen et al., 2018; Shinkle, 2012).

Second, this paper contributes to social comparison research in the behavioral theory by illuminating the tendency toward downward comparisons in aspiration formation. Recent aspiration literature has debated “the appropriate aspiration level within the reference group”: Should this level be based on the middle, top, or bottom levels within the reference group (Beckman & Lee, 2017; Lounsbury & Beckman, 2015). This question is directly relevant to theories of peer aspirations, as it sheds light on managerial motivations and the nature of social comparison with peer aspirations in setting targets. While most prior work on aspirations has used the industry mean as a proxy for social reference points (e.g., Greve, 1998), a few studies have also examined alternative social reference points (e.g., Labianca, Fairbank, Thomas, Gioia, & Umphress, 2001; Moliterno et al., 2014). We compared the relative salience of middle-, top-, and bottom-level peer aspirations for a focal firm’s aspiration formation and found that the bottom level has the best explanatory power. In the context of synergy targets for large acquisitions, we found support for the view that managers generally lack incentives to strive for upward comparisons (Greve & Gaba, 2017; March & Simon, 1958). Managers also do not seem to use mean aspiration levels as an anchor. Instead, they target an aspiration level “that is satisfactory or ‘good enough’” (Simon, 1997: 119). An aspiration level is deemed to be “good enough” if it “meets or exceeds” a set of “minimally satisfactory alternatives”, so-called “constraints” (March & Simon, 1958: 161; March, 1962: 675). As such, bottom-level peer aspirations, as a minimally satisfactory aspiration level, guide social comparisons.

Furthermore, the results of our supplementary analyses illuminate the conditions that affect firms’ propensity to imitate peer aspirations. Behavioral research on aspirations has long been interested in the relative salience of different antecedents to aspiration levels and has explored this problem via different theoretical models (Bromiley & Harris, 2014). While certain studies have employed a weighted model of historical and social antecedents (e.g., Blettner et al., 2015; Mezias et al., 2002), other studies have argued that the salience of such antecedents is contingent upon firm performance (Moliterno et al., 2014; Washburn &

Bromiley, 2012). We support the latter group of scholars by finding empirical evidence that managers pay substantially less attention to peer aspirations when they have more experience and when they outperform key performance indicators. In so doing, we construct a theoretical bridge between the learning and performance feedback perspectives in developing this theory of peer aspirations.

Collectively, our three contributions to behavioral theory have important implications for understanding how aspirations are set and how management incentives influence aspiration formation. The extant research on aspiration formation has tended to portray “managers as passively accepting performance targets” (Keum & Eggers, 2018: 1) and assumed “a high degree of automation in managerial decision-making, with a limited role for cognition” (Posen et al., 2018: 209). Whereas prior behavioral research has largely viewed aspirations as an internal decision anchored on peer performance (Posen et al., 2018), our findings highlight the managerial incentive to focus on satisfying external stakeholders. Our theorization and analysis show that external stakeholders play a vital role when a firm is faced with the task of choosing the “appropriate” aspiration level. On the one hand, managers take stakeholder expectations into account when setting goals. On the other hand, managers actively and strategically try to guide stakeholder expectations downward. Recognizing stakeholder influence helps explain the observed tendency toward downward comparisons in aspiration formation. Fundamentally, our findings focus our attention on the theoretical premise of behavioral theory that managerial incentives aim at satisfaction rather than maximization (Cyert & March, 1963; Simon, 1964). Hence, we suggest that setting aspiration levels is “a *choice* situation” (Lewin et al., 1944: 356), in which managers select an appropriate aspiration level that satisfies their own needs but also gain approval from stakeholders.

In addition to our contribution to research on aspirations in the behavioral theory of the firm, our paper also contributes to the acquisition literature by providing new evidence concerning how firms determine synergy targets in the context of acquisitions. Despite the central role played by synergies in acquisition decision-making (Chatterjee, 1986; Rabier, 2017a; Seth, 1990b, 1990a), synergy estimation has received surprisingly limited attention in the literature. Most previous work on acquisition synergies has inferred the value of synergies from different forms of indirect operationalization. Based on manually coded synergy targets, we show that synergy targets not only result from an intrafirm estimation process but are also significantly shaped by industry-level social norms, by management incentives and by the constant pressure to meet or exceed publicly announced targets. We thus contribute to

research on acquisition decision-making (Haunschild, 1994; Malhotra et al., 2015; Pablo, Sitkin, & Jemison, 1996) and respond more generally to recent calls for further research on the pre-deal stage of the M&A process (Welch et al., 2020).

Limitations and Future Directions

Our paper faces several limitations, each of which indicates potential areas for future research. First, although we assessed the relative importance of different aspiration levels statistically, we were unable to observe the internal decision-making processes that led managers to choose bottom-level peer aspirations as their main reference point. Further qualitative, survey, or laboratory studies could shed more light on these decision-making processes. Second, following established practice in aspiration research (Greve, 2008a; Iyer & Miller, 2008), we used industry classification as a basis for constructing the reference group. However, our research design did not enable us to observe the underlying cognitive process through which managers formed their reference groups (Bogner & Thomas, 1993; Porac, Thomas, & Badenfuller, 1989). Future research could extend our analysis by considering additional factors beyond the industry, such as the credibility of other organizations' aspirations, similarity between markets (Gur & Greckhamer, 2019), ties and networks (Beckman & Haunschild, 2002), and rankings (Rowley et al., 2017). Third, although we believe that strategically guiding stakeholder expectations is an essential motive in setting aspirations, our empirical analysis is limited to a group of relatively large, publicly held firms that publicly communicated synergy targets for large acquisitions. Further research would also be needed to examine other contexts of aspiration-setting, such as that of entrepreneurial firms, to establish whether the tendency toward downward comparison is equally salient in these cases or whether entrepreneurial firms instead set their aspirations in accordance with the top level of their peers. Finally, the relative importance of internal and external stakeholders and their role in setting aspiration levels also remains an important yet unanswered question (Souitaris, Zerbinati, & Liu, 2012).

CONCLUSION

Our paper introduces the aspirations of peers into the behavioral theory of the firm as a neglected yet important antecedent of a focal firm's choice of aspiration level. Peers' aspirations provide managers with a practical way of assessing what constitutes a generally feasible and accepted minimum performance level for a given strategic move. When seeking to reduce the uncertainty associated with their strategic goals, managers often experience

concern for the potential consequences of being unable to meet publicly announced targets. They must be able to balance the need to target their strategic actions at an acceptable level with the need to avoid overpromising by establishing unachievable targets. When attempting to maintain this balance, managers tend to manage their stakeholder expectations strategically in a downward direction. They accomplish this task by imitating the bottom level of their peers' aspirations instead of the "moonshots" taken by their peers. Overall, our paper emphasizes the satisficing aspect of aspirations and the influence of management's incentives on aspiration formation.

REFERENCES:

- Ansoff, H. I. 1987. The Emerging Paradigm of Strategic Behavior. *Strategic Management Journal*, 8(6): 501-515.
- Aranda, C., Arellano, J., & Davila, A. 2017. Organizational Learning in Target Setting. *Academy of Management Journal*, 60(3): 1189-1211.
- Audia, P. G. & Greve, H. R. 2006. Less Likely to Fail: Low Performance, Firm Size, and Factory Expansion in the Shipbuilding Industry. *Management Science*, 52(1): 83-94.
- Audia, P. G. & Greve, H. R. 2021. *Organizational Learning from Performance Feedback: A Behavioral Perspective on Multiple Goals*.
- Audia, P. G., Rousseau, H. E., & Brion, S. 2021. CEO Power and Nonconforming Reference Group Selection. *Organization Science*.
- Baum, J. A. C., Rowley, T. J., Shipilov, A. V., & Chuang, Y. T. 2005. Dancing with strangers: aspiration performance and the search for underwriting syndicate partners. *Administrative Science Quarterly*, 50(4): 536-575.
- Baum, J. A. C. & Dahlin, K. B. 2007. Aspiration performance and railroads' patterns of learning from train wrecks and crashes. *Organization Science*, 18(3): 368-385.
- Beckman, C. M. & Haunschild, P. R. 2002. Network learning: The effects of partners' heterogeneity of experience on corporate acquisitions. *Administrative science quarterly*, 47(1): 92-124.
- Beckman, C. M. & Lee, H. J. 2017. Social Comparison and Learning from Others. In L. Argote & J. M. Levine (Eds.), *The Oxford Handbook of Group and Organizational Learning*.
- Berchicci, L. & Tarakci, M. 2022. Aspiration formation and attention rules. *Strategic Management Journal*.
- Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. 2010. The financial reporting environment: Review of the recent literature. *Journal of Accounting & Economics*, 50(2-3): 296-343.
- Blagoeva, R., Mom, T. J., Jansen, J. J., & George, G. 2019. Problem-Solving or Self-Enhancement? A Power Perspective on How CEOs Affect R&D Search in the Face of Inconsistent Feedback. *Academy of Management Journal*, Forthcoming.
- Blettner, D. P., He, Z.-L., Hu, S., & Bettis, R. A. 2015. Adaptive aspirations and performance heterogeneity: Attention allocation among multiple reference points. *Strategic Management Journal*, 36(7): 987-1005.
- Bogner, W. C. & Thomas, H. 1993. The Role of Competitive Groups in Strategy Formulation - a Dynamic Integration of 2 Competing Models. *Journal of Management Studies*, 30(1): 51-67.
- Boyle, E. & Shapira, Z. 2012. The Liability of Leading: Battling Aspiration and Survival Goals in the Jeopardy! Tournament of Champions. *Organization Science*, 23(4): 1100-1113.
- Bromiley, P. & Harris, J. D. 2014. A comparison of alternative measures of organizational aspirations. *Strategic Management Journal*, 35(3): 338-357.
- Certo, S. T., Busenbark, J. R., Woo, H. S., & Semadeni, M. 2016. Sample selection bias and Heckman models in strategic management research. *Strategic Management Journal*, 37(13): 2639-2657.
- Chatterjee, S. 1986. Types of Synergy and Economic Value - the Impact of Acquisitions on Merging and Rival Firms. *Strategic Management Journal*, 7(2): 119-139.
- Chen, W.-R. & Miller, K. D. 2007. Situational and institutional determinants of firms' R&D search intensity. *Strategic Management Journal*, 28(4): 369-381.
- Chen, W. R. 2008. Determinants of firms' backward- and forward-looking R&D search behavior. *Organization Science*, 19(4): 609-622.

- Chuk, E., Matsumoto, D., & Miller, G. S. 2013. Assessing methods of identifying management forecasts: CIG vs. researcher collected. *Journal of Accounting & Economics*, 55(1): 23-42.
- Cyert, R. M. & March, J. G. 1963. *A behavioral theory of the firm*.
- Desai, V. M. 2008. Constrained Growth: How Experience, Legitimacy, and Age Influence Risk Taking in Organizations. *Organization Science*, 19(4): 594-608.
- Gaba, V. & Joseph, J. 2013. Corporate Structure and Performance Feedback: Aspirations and Adaptation in M-Form Firms. *Organization Science*, 24(4): 1102-1119.
- Gaba, V. & Greve, H. R. 2019. Safe or Profitable? The Pursuit of Conflicting Goals. *Organization Science*, 30(4): 647-667.
- Garud, R., Schildt, H. A., & Lant, T. K. 2014. Entrepreneurial Storytelling, Future Expectations, and the Paradox of Legitimacy. *Organization Science*, 25(5): 1479-1492.
- Gavetti, G. & Levinthal, D. 2000. Looking forward and looking backward: Cognitive and experiential search. *Administrative Science Quarterly*, 45(1): 113-137.
- Graebner, M. E., Heimeriks, K. H., Huy, Q. N., & Vaara, E. 2017. The Process of Postmerger Integration: A Review and Agenda for Future Research. *Academy of Management Annals*, 11(1): 1-32.
- Greve, H. R. 1998. Performance, aspirations, and risky organizational change. *Administrative Science Quarterly*, 43(1): 58-86.
- Greve, H. R. 2003a. *Organizational learning from performance feedback : a behavioral perspective on innovation and change*.
- Greve, H. R. 2003b. Investment and the behavioral theory of the firm: evidence from shipbuilding. *Industrial and Corporate Change*, 12(5): 1051-1076.
- Greve, H. R. 2008a. Problemistic Search and (Inter-)Organizational Learning, *The Institutions of the Market*: 87-105.
- Greve, H. R. 2008b. A behavioral theory of firm growth: Sequential attention to size and performance goals. *Academy of Management Journal*, 51(3): 476-494.
- Greve, H. R. 2011. Positional rigidity: low performance and resource acquisition in large and small firms. *Strategic Management Journal*, 32(1): 103-114.
- Greve, H. R. & Gaba, V. 2017. Performance Feedback in Organizations and Groups: Common Themes. In I. L. A. a. J. Levine (Ed.), *Handbook of Group and Organizational Learning*: Oxford: Oxford University Press.
- Greve, H. R. & Teh, D. 2018. Goal Selection Internally and Externally: A Behavioral Theory of Institutionalization. *International Journal of Management Reviews*, 20: S19-S38.
- Gur, F. A. & Greckhamer, T. 2019. Know The Enemy: A Review and Agenda for Research on Competitor Identification. *Journal of Management*, 45(5): 2072-2100.
- Harris, J. & Bromiley, P. 2007. Incentives to cheat: The influence of executive compensation and firm performance on financial misrepresentation. *Organization Science*, 18(3): 350-367.
- Haunschild, P. R. 1993. Interorganizational Imitation - the Impact of Interlocks on Corporate Acquisition Activity. *Administrative Science Quarterly*, 38(4): 564-592.
- Haunschild, P. R. 1994. How Much Is That Company Worth - Interorganizational Relationships, Uncertainty, and Acquisition Premiums. *Administrative Science Quarterly*, 39(3): 391-411.
- Haveman, H. A. 1993. Organizational Size and Change - Diversification in the Savings and Loan Industry after Deregulation. *Administrative Science Quarterly*, 38(1): 20-50.
- Heckman, J. J. 1979. Sample Selection Bias as a Specification Error. *Econometrica*, 47(1): 153-161.

- Hertzman, M. & Festinger, L. 1940. Shifts in explicit goals in a level of aspiration experiment. *Journal of Experimental Psychology*, 27(4): 439-452. .
- Houston, J. F., James, C. M., & Ryngaert, M. D. 2001. Where do merger gains come from? Bank mergers from the perspective of insiders and outsiders. *Journal of financial economics*, 60(2-3): 285-331.
- Hu, S., He, Z.-L., Blettner, D. P., & Bettis, R. A. 2017. Conflict inside and outside: Social comparisons and attention shifts in multidivisional firms. *Strategic Management Journal*, 38(7): 1435-1454.
- Iyer, D. N. & Miller, K. D. 2008. Performance feedback, slack, and the timing of acquisitions. *Academy of Management Journal*, 51(4): 808-822.
- Joseph, J. & Gaba, V. 2015. The fog of feedback: Ambiguity and firm responses to multiple aspiration levels. *Strategic Management Journal*, 36(13): 1960-1978.
- Joseph, J., Klingebiel, R., & Wilson, A. J. 2016. Organizational Structure and Performance Feedback: Centralization, Aspirations, and Termination Decisions. *Organization Science*, 27(5): 1065-1083.
- Kacperczyk, A., Beckman, C. M., & Moliterno, T. P. 2015. Disentangling Risk and Change: Internal and External Social Comparison in the Mutual Fund Industry. *Administrative Science Quarterly*, 60(2): 228-262.
- Keum, D. D. & Eggers, J. P. 2018. Setting the Bar: The Evaluative and Allocative Roles of Organizational Aspirations. *Organization Science*, 29(6): 1170-1186.
- Kim, J.-Y., Finkelstein, S., & Halebian, J. 2015. All Aspirations are not Created Equal: The Differential Effects of Historical and Social Aspirations on Acquisition Behavior. *Academy of Management Journal*, 58(5): 1361-1388.
- Kotiloglu, S., Chen, Y., & Lechler, T. 2021. Organizational responses to performance feedback: A meta-analytic review. *Strategic Organization*, 19(2): 285-311.
- Kuusela, P., Keil, T., & Maula, M. 2017. Driven by aspirations, but in what direction? Performance shortfalls, slack resources, and resource-consuming vs. resource-freeing organizational change. *Strategic Management Journal*, 38(5): 1101-1120.
- Laamanen, T. & Keil, T. 2008. Performance of serial acquirers: toward an acquisition program perspective. *Strategic Management Journal*, 29(6): 663-672.
- Labianca, G., Fairbank, J. F., Thomas, J. B., Gioia, D. A., & Umphress, E. E. 2001. Emulation in Academia: Balancing Structure and Identity. *Organization Science*, 12(3): 312-330.
- Labianca, G., Fairbank, J. F., Andreovski, G., & Parzen, M. 2009. Striving toward the future: aspiration—performance discrepancies and planned organizational change. *Strategic Organization*, 7(4): 433-466.
- Lant, T. K. 1992. Aspiration Level Adaptation - an Empirical Exploration. *Management Science*, 38(5): 623-644.
- Lewin, K., Dembo, T., Festinger, L., & Sears, P. S. 1944. Level of aspiration In I. J. M. Hunt (Ed.), *Personality and the behavior disorders*: 333–378: Oxford, UK: Ronald Press.
- Lieberman, M. B. & Asaba, S. 2006. Why do firms imitate each other? *Academy of Management Review*, 31(2): 366-385.
- Lounsbury, M. & Beckman, C. M. 2015. Celebrating Organization Theory. *Journal of Management Studies*, 52(2): 288-308.
- Malhotra, S., Zhu, P., & Reus, T. H. 2015. Anchoring on the acquisition premium decisions of others. *Strategic Management Journal*, 36(12): 1866-1876.
- Man Zhang, C. & Greve, H. R. 2019. Dominant Coalitions Directing Acquisitions: Different Decision Makers, Different Decisions. *Academy of Management Journal*, 62(1): 44-65.
- March, J. & Simon, H. 1958. *Organizations*. New York: Wiley.

- March, J. G. 1962. The Business Firm as a Political Coalition. *Journal of Politics*, 24(4): 662-678.
- March, J. G. & Shapira, Z. 1992. Variable Risk Preferences and the Focus of Attention. *Psychological Review*, 99(1): 172-183.
- Massini, S., Lewin, A. Y., & Greve, H. R. 2005. Innovators and imitators: Organizational reference groups and adoption of organizational routines. *Research Policy*, 34(10): 1550-1569.
- Mezias, S. J., Chen, Y.-R., & Murphy, P. R. 2002. Aspiration-Level Adaptation in an American Financial Services Organization: A Field Study. *Management Science*, 48(10): 1285-1300.
- Moliterno, T. P., Beck, N., Beckman, C. M., & Meyer, M. 2014. Knowing Your Place: Social Performance Feedback in Good Times and Bad Times. *Organization Science*, 25(6): 1684-1702.
- Ocasio, W. 1997. Towards an attention-based view of the firm. *Strategic Management Journal*, 18: 187-206.
- Pablo, A. L., Sitkin, S. B., & Jemison, D. B. 1996. Acquisition decision-making processes: The central role of risk. *Journal of Management*, 22(5): 723-746.
- Porac, J. F., Thomas, H., & Badenfuller, C. 1989. Competitive Groups as Cognitive Communities - the Case of Scottish Knitwear Manufacturers. *Journal of Management Studies*, 26(4): 397-416.
- Posen, H. E., Keil, T., Kim, S., & Meissner, F. D. 2018. Renewing Research on Problemistic Search—A Review and Research Agenda. *Academy of Management Annals*, 12(1): 208-251.
- Rabier, M. R. 2017a. Acquisition Motives and the Distribution of Acquisition Performance. *Strategic Management Journal*, 38(13): 2666-2681.
- Rowley, T. J., Shipilov, A. V., & Greve, H. R. 2017. Board reform versus profits: The impact of ratings on the adoption of governance practices. *Strategic Management Journal*, 38(4): 815-833.
- Schneider, S. L. 1992. Framing and Conflict - Aspiration Level Contingency, the Status-Quo, and Current Theories of Risky Choice. *Journal of Experimental Psychology-Learning Memory and Cognition*, 18(5): 1040-1057.
- Seth, A. 1990a. Value Creation in Acquisitions - a Reexamination of Performance Issues. *Strategic Management Journal*, 11(2): 99-115.
- Seth, A. 1990b. Sources of Value Creation in Acquisitions - an Empirical-Investigation. *Strategic Management Journal*, 11(6): 431-446.
- Shi, W., Zhang, Y., & Hoskisson, R. E. 2017b. Ripple Effects of CEO Awards: Investigating the Acquisition Activities of Superstar CEOs' Competitors. *Strategic Management Journal*, 38(10): 2080-2102.
- Shinkle, G. A. 2012. Organizational Aspirations, Reference Points, and Goals: Building on the Past and Aiming for the Future. *Journal of Management*, 38(1): 415-455.
- Simon, H. A. 1964. On the Concept of Organizational Goal. *Administrative Science Quarterly*, 9: 1-22.
- Simon, H. A. 1997. *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations* (4th Edition ed.): The Free Press.
- Smith, E. B. & Chae, H. 2017. The Effect of Organizational Atypicality on Reference Group Selection and Performance Evaluation. *Organization Science*, 28(6): 1134-1149.
- Souitaris, V., Zerbinati, S., & Liu, G. 2012. Which Iron Cage? Endo- and Exoisomorphism in Corporate Venture Capital Programs. *Academy of Management Journal*, 55(2): 477-505.

- Vanacker, T. R., Forbes, D. P., Knockaert, M., & Manigart, S. 2019. Signal Strength, Media Attention, and Resource Mobilization: Evidence from New Private Equity Firms. . *Academy of Management Journal*.
- Vissa, B., Greve, H. R., & Chen, W.-R. 2010. Business Group Affiliation and Firm Search Behavior in India: Responsiveness and Focus of Attention. *Organization Science*, 21(3): 696-712.
- Wang, H. L., Jia, M., Xiang, Y., & Lan, Y. 2021. Social Performance Feedback and Firm Communication Strategy. *Journal of Management*.
- Washburn, M. & Bromiley, P. 2012. Comparing Aspiration Models: The Role of Selective Attention. *Journal of Management Studies*, 49(5): 896-917.
- Welch, X., Pavicevic, S., Keil, T., & Laamanen, T. 2020. The Pre-Deal Phase of Mergers and Acquisitions: A Review and Research Agenda. *Journal of Management*, 46(6): 843-878.
- Wolf, C. & Floyd, S. W. 2017. Strategic Planning Research: Toward a Theory-Driven Agenda. *Journal of Management*, 43(6): 1754-1788.
- Wolfs, S. E. & Siegel, J. 2019. Misaccounting for endogeneity: The peril of relying on the Heckman two-step method without a valid instrument. *Strategic Management Journal*, 40(3): 432-462.
- Zhang, Y. & Gimeno, J. 2016. Earnings Pressure and Long-Term Corporate Governance: Can Long-Term-Oriented Investors and Managers Reduce the Quarterly Earnings Obsession? *Organization Science*, 27(2): 354-372.

TABLE 1: Summary Statistics and Pairwise Correlations

Variables	Mean	Std. Dev.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Synergy Aspiration Level	29.71	10.46	1.00											
(2) Middle-level Peer Aspiration	28.49	5.64	0.29	1.00										
(3) Top-level Peer Aspiration	43.77	9.08	0.12	0.52	1.00									
(4) Bottom-level Peer Aspiration	16.3	6.22	0.19	0.57	0.19	1.00								
(5) Firm Acquisition Experience	2.26	2.5	-0.08	-0.05	-0.06	-0.15	1.00							
(6) Better Performance than Peers	-.1	2.8	0.05	0.04	0.01	0.12	0.04	1.00						
(7) Better Performance than History	.13	1.88	0.02	-0.14	-0.13	-0.04	-0.01	0.71	1.00					
(8) Firm Deposit Growth Rate	12.74	17.68	0.00	0.08	0.12	0.05	0.11	-0.07	-0.06	1.00				
(9) Cost of Funds	1.56	1.38	-0.29	-0.39	-0.35	-0.29	0.12	-0.05	0.01	0.00	1.00			
(10) Firm Size	8.08	1.74	-0.09	-0.28	-0.39	-0.05	0.29	0.02	0.04	-0.19	0.42	1.00		
(11) Firm Performance (ROE) Y-1	10.53	12.66	-0.22	-0.30	-0.25	-0.24	0.05	-0.09	-0.11	0.08	0.47	0.05	1.00	
(12) Deal Value Log	6.22	1.47	-0.07	-0.14	-0.37	0.18	0.01	0.00	0.07	-0.10	0.21	0.65	0.11	1.00
(13) Deal Termination Fee	.78	.41	0.07	0.03	0.03	-0.05	0.06	-0.12	-0.06	0.15	-0.14	-0.49	0.10	-0.42
(14) Cash Consideration	.08	.28	-0.10	-0.17	-0.13	-0.08	0.02	0.07	0.05	-0.07	0.16	0.29	0.05	0.12
(15) Market Expansion Acquisition	.31	.46	-0.31	-0.06	-0.07	-0.11	0.15	-0.06	-0.08	0.09	0.14	0.09	0.05	0.02
(16) Industry Acquisition Intensity	.06	.23	-0.11	0.00	0.02	0.00	-0.10	-0.05	0.02	0.01	-0.01	-0.09	-0.02	0.12
(17) Financial Crisis	.11	.31	-0.04	-0.20	-0.24	-0.21	0.01	-0.04	0.01	-0.02	0.46	0.17	0.10	0.12
(18) Inverse Mills Ratio	3.06	.68	0.04	0.00	-0.06	-0.02	0.02	-0.07	-0.06	-0.02	0.04	0.02	0.00	-0.03

Variables	Mean	Std. Dev.	(13)	(14)	(15)	(16)	(17)
(13) Deal Termination Fee	.78	.41	1.00				
(14) Cash Consideration	.08	.28	-0.34	1.00			
(15) Market Expansion Acquisition	.31	.46	0.07	0.03	1.00		
(16) Industry Acquisition Intensity	.06	.23	-0.03	-0.07	0.03	1.00	
(17) Financial Crisis	.11	.31	-0.02	0.00	0.18	-0.03	1.00
(18) Inverse Mills Ratio	3.06	.68	0.06	-0.07	0.04	-0.03	0.04

TABLE 2: Regression Results of Firm Fixed-effects Models with Standard Errors Clustered by Firms

A FOCAL FIRM'S SYNERGY ASPIRATION LEVEL	<i>Whether</i>	<i>What Level</i>			<i>When</i>		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>H1</i>	<i>H2</i>			<i>Supplementary Analysis</i>		
Middle-level Peer Aspiration	0.403** (0.139)			0.249.Ä† (0.143)	0.698*** (0.188)	0.416** (0.137)	0.464** (0.139)
Top-level Peer Aspiration		-0.012 (0.083)		-0.078 (0.082)			
Bottom-level Peer Aspiration			0.453** (0.141)	0.359* (0.155)			
Middle-level Peer Aspiration # Firm Acquisition Experience					-0.098* (0.049)		
Middle-level Peer Aspiration # Better Performance than Peers						-0.114* (0.054)	
Middle-level Peer Aspiration # Better Performance than Own History							-0.155* (0.068)
Firm Acquisition Experience	-0.219 (0.283)	-0.038 (0.285)	0.171 (0.279)	0.042 (0.272)	2.513.Ä† (1.308)	-0.185 (0.293)	-0.178 (0.298)
Better Performance than Peers	0.080 (0.501)	-0.078 (0.517)	-0.300 (0.472)	-0.186 (0.491)	0.084 (0.497)	3.300.Ä† (1.754)	0.113 (0.484)
Better Performance than Own History	0.306 (0.631)	0.317 (0.668)	0.651 (0.707)	0.558 (0.703)	0.312 (0.638)	0.251 (0.606)	4.590* (2.034)

Firm Deposit Growth Rate	-0.070 (0.053)	-0.052 (0.052)	-0.070 (0.048)	-0.074 (0.049)	-0.073 (0.052)	-0.077 (0.048)	-0.081 ^{ˆ†} (0.048)
Cost of Funds	-2.337 ^{ˆ†} (1.272)	-2.360 ^{ˆ†} (1.291)	-2.599* (1.103)	-2.550* (1.079)	-2.145 ^{ˆ†} (1.247)	-2.103 ^{ˆ†} (1.219)	-1.955 (1.201)
Firm Size	2.359 (3.114)	4.334 (2.945)	2.809 (3.116)	2.282 (3.078)	3.274 (2.890)	2.949 (3.076)	2.694 (3.082)
Firm Performance (ROE) Y-1	-0.214 (0.245)	-0.203 (0.249)	-0.153 (0.243)	-0.173 (0.241)	-0.215 (0.251)	-0.177 (0.246)	-0.242 (0.241)
Deal Value Log	-2.802*** (0.795)	-2.432** (0.769)	-3.517*** (0.849)	-3.647*** (0.826)	-2.742*** (0.779)	-3.086*** (0.798)	-3.198*** (0.781)
Deal Termination Fee	2.704 (4.661)	2.803 (4.310)	2.508 (4.502)	2.301 (4.489)	3.119 (4.424)	2.427 (4.611)	1.992 (4.361)
Cash Consideration	-4.907 (3.502)	-6.390 (4.264)	-5.136 (4.221)	-5.112 (4.127)	-3.357 (3.678)	-6.008 ^{ˆ†} (3.538)	-6.946* (3.509)
Market Expansion Acquisition	-7.490*** (1.326)	-7.202*** (1.376)	-7.301*** (1.339)	-7.330*** (1.310)	-7.244*** (1.320)	-7.037*** (1.339)	-7.124*** (1.322)
Industry Acquisition Intensity	-6.841** (2.152)	-4.158* (1.828)	-4.740* (1.836)	-6.921** (2.123)	-9.431*** (2.289)	-9.609*** (2.283)	-9.154*** (2.312)
Financial Crisis	7.450*** (2.098)	7.083** (2.171)	8.807*** (2.195)	8.375*** (2.082)	7.749*** (2.192)	7.177*** (2.029)	7.106*** (1.955)
Inverse Mills Ratio	-0.545 (0.819)	-1.221 (0.910)	-1.294 (0.837)	-1.128 (0.932)	-0.585 (0.832)	-0.737 (0.830)	-0.829 (0.808)
Constant	25.044 (27.215)	20.566 (26.696)	30.716 (26.968)	33.758 (27.702)	8.635 (26.442)	21.808 (26.923)	24.225 (27.143)
Observations	319	319	319	319	319	319	319

Standard errors in parentheses, ^{ˆ†} $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix A Coding Scheme for Synergy Targets

Table A1. Examples of Synergy Targets Announced by Management
in Acquisition Announcements and Coding Scheme

Industry	Deal	Announcement Date	Deal Value	Value of Synergy Targets	Expected Realization Timeline
Chemicals and Allied Products (SIC Code: 28)	Monsanto Co. to acquire Delta and Pine Land Company	Aug. 15, 2006	\$1576 million	The elimination of legal fees and a reduction in general and administrative costs are expected to yield annual synergies in excess of \$20 million	-
Business Services (SIC Code: 73)	Altran to acquire Aricent	Nov. 30, 2017	\$2000 million	The synergies will have an EBITDA run-rate impact of EUR 50 million and will be achieved in 3 years	Approximately half of the synergies are expected to derive from at least EUR 150 million in additional sales, which translates to a ca. EUR 25 million EBITDA run rate
Depository Institutions (SIC Code: 60)	BNY Mellon to acquire PNC's Global Investment Servicing business (GIS)	Feb. 02, 2010	\$2310 million	- Potential for significant revenue synergies of \$200-\$300 million \$120 million of pretax expense synergies (~20% of GIS' expense base)	Revenue synergies are expected in 3-4 years 60% of cost synergies will be realized in 2011, 92% in 2012 and 100% thereafter
Communications (SIC Code: 48)	Cable & Wireless Communications to acquire Columbus International Inc.	Mar. 31, 2015	\$3084 million	- Expected synergies of \$230 million, of which operating cost synergies are approx. \$85 million and run rate and Capex synergies are approx. \$145 million over 3 years - OpEx synergies represent 10% of combined OpEx and CapEx synergies represent 10% of combined CapEx	OpEx realization: 45% in year 1, 85% in year 2, 100% in year 3 CapEx: 35% in year 1, 40% in year 2, 25% in year 3

Appendix B Exemplary Synergy Target Disclosures

Cost synergies are the major source of synergy targets in acquisitions.

Example 1: M&T Bank and Hudson City Acquisition Announcement, 2012

Summary of Key Terms		
Consideration:	☐ Consideration per Share: Value fixed at 0.08403 M&T shares ☐ Consideration Mix: 60% stock, 40% cash ☐ Total Value at Announcement ⁽¹⁾ : \$7.22 per share, or \$3.7 billion 0.8x tangible book value	
Hudson City Balance Sheet Restructuring:	☐ \$15+ billion balance sheet reduction post-closing ☐ Long-term borrowings to be retired ☐ Investment securities portfolio to be sold	
Loan Loss Assumptions:	☐ \$433 million (1.5% of gross loans, 44% of NPLs)	
Due Diligence:	☐ Comprehensive review, including loans, securities, and borrowings	
Synergies and Expenses:	☐ 24% operating cost savings – driven by redundant outsourced operations ☐ No near-term revenue synergies assumed, but anticipated ☐ \$223 million in merger-related charges (pre-tax)	
Expected Closing:	☐ Second quarter of 2013	
Required Approvals:	☐ Approval of Hudson City and M&T shareholders ☐ Customary Regulatory approvals	
Board Representation:	☐ Ronald E. Hermance, Jr., Chairman and CEO of Hudson City to join M&T's Board of Directors	

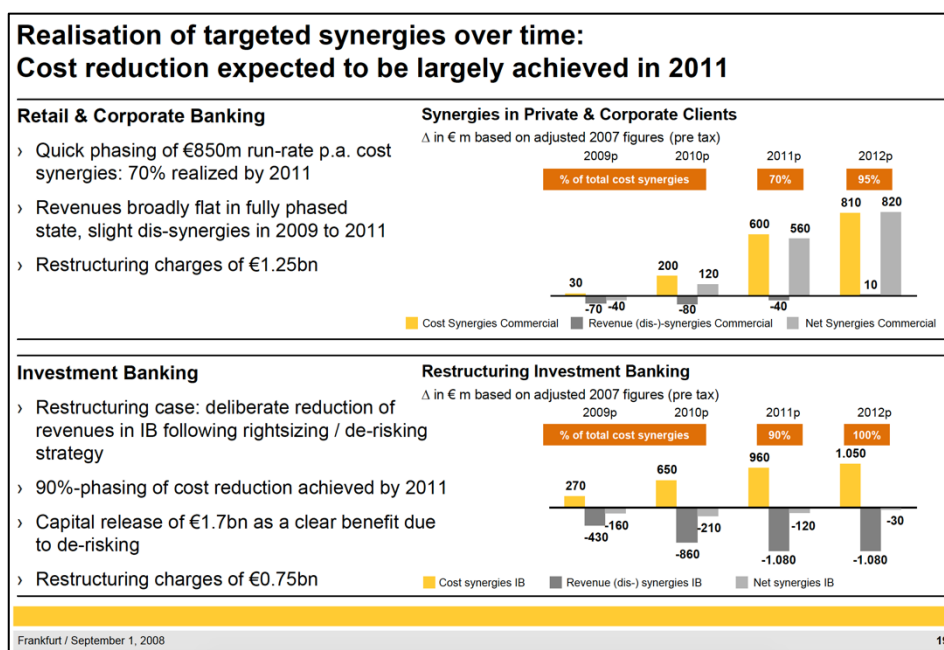
1. Based on M&T's closing price of \$85.87 on 8/24/2012

3

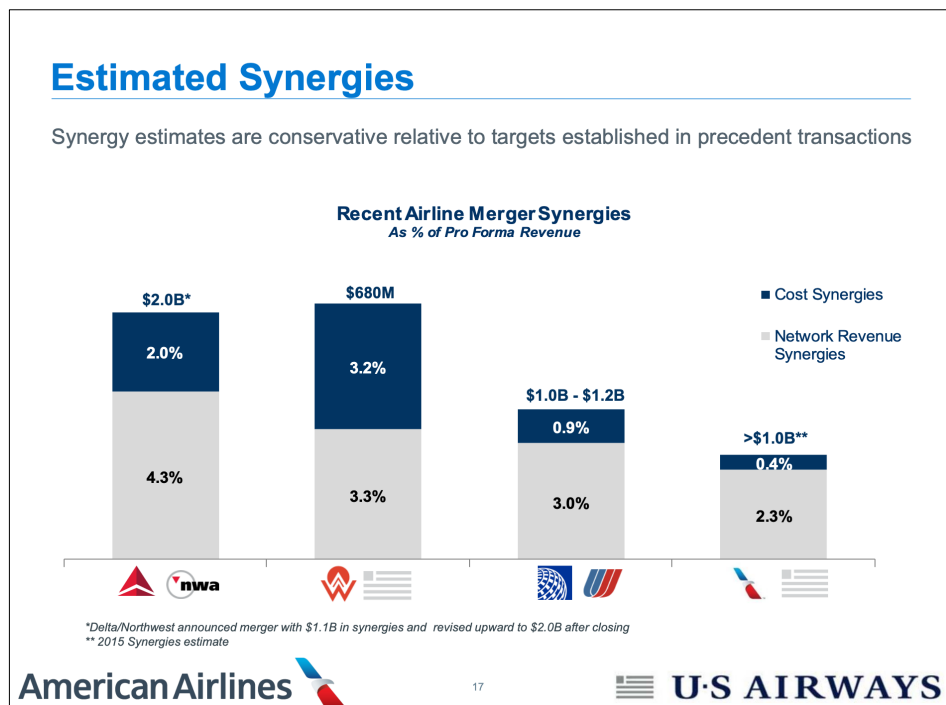
A clear expected timeline of synergy realization is often provided.

Example 2: M&T Bank and Hudson City Acquisition Announcement, 2008

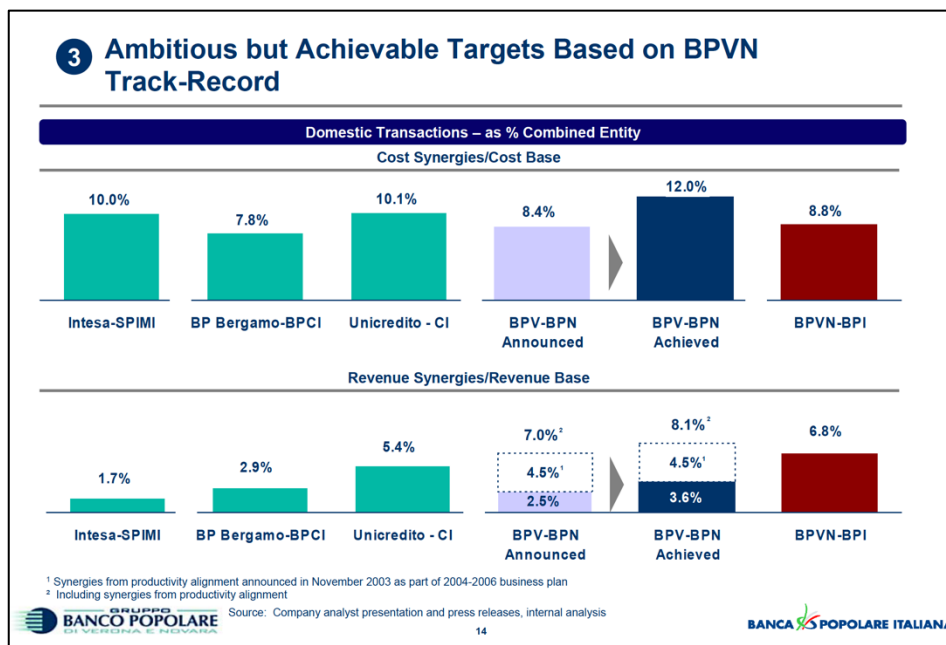


In connection with synergy target announcements, a track record of prior synergy realization is occasionally provided to convince stakeholders.

Example 3: Merger of American Airlines and U.S. Airways, 2013

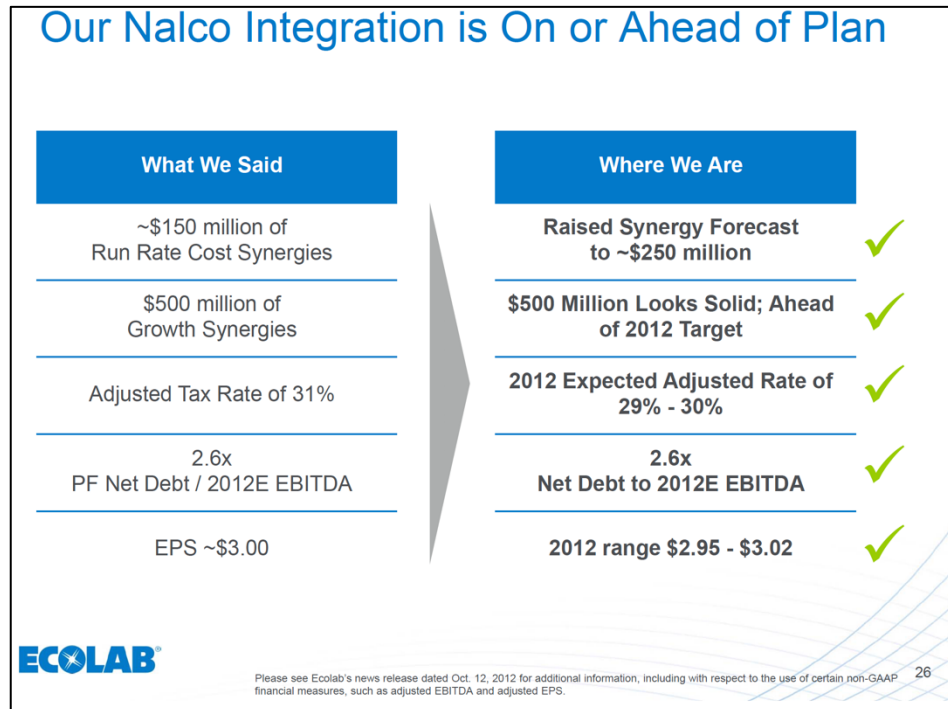


Example 4: Merger of Banco Popolare and Banca Popolare Italiana, 2006



Firms also commonly update their stakeholders regarding synergy realization progress.

Example 5: Ecolab Acquisition of Champion, 2012



CHAPTER 3

Too Many Moving Pieces: Parallel Acquisitions and Forecasting Bias in Acquisition Integration

Abstract

Although firms often conduct multiple acquisitions simultaneously with overlapping procedures running in parallel, little is known about the consequences of parallel acquisitions on the focal acquisition's integration planning. Drawing on information overload research and the attention-based view of the firm, we propose that parallel acquisitions may result in information overload in which managers with bounded rationality have a constrained capacity to proceed due to the amount, characteristics, and flow of information. Leveraging a novel measure of integration decision quality – the underestimation of integration costs – we find that parallel acquisitions are associated with a significantly higher likelihood of integration cost underestimation. Our paper advances acquisition research by introducing the effect of activity load on integration and by illuminating the cognitive challenges in managing parallel activities.

Key words: *acquisition load, information overload, strategic foresight, integration planning*

INTRODUCTION

Firms often conduct multiple independent acquisitions simultaneously (Castellaneta & Zollo, 2015). We refer to this practice of managing independent acquisitions at the same time with certain overlapping processes as handling *parallel acquisitions*. For instance, Microsoft completed 17, 13, and 8 acquisitions over the three-year period of 2018 to 2020, respectively; BB&T Bank made multiple acquisitions with a combined value of more than 4.6 billion USD over the two-year 2014-2015 period; and ABB, an industrial firm, also announced its plans in 2020 to make approximately 5 to 10 acquisitions per year to speed up growth. Parallel acquisitions are thus a common practice, in which managing a heavy load of simultaneous acquisitions inevitably involves parallel acquisition processes, such as integrating one acquisition while conducting due diligence for the next acquisition.

Despite the regularity of parallel acquisitions, existing work has not systematically considered the influence of such acquisitions on managers' cognitive load and decision-making outcomes. On the one hand, from a temporal perspective, prior acquisition research has only offered insights into other types of temporal dynamics, such as the overall acquisition rhythm (Laamanen & Keil, 2008; Shi & Prescott, 2012), the temporal distance of acquisition experience (Hayward, 2002; Meschi & Métais, 2011), and the timing of acquisitions (Barkema & Schijven, 2008; Haleblan, McNamara, Kolev, & Dykes, 2012; McNamara, Haleblan, & Dykes, 2008). On the other hand, from a cognitive view, whereas existing work has investigated certain types of cognitive bias, such as overconfidence (e.g., Pavićević & Keil, 2021), overcommitment (Haunschild, Davisblake, & Fichman, 1994), and anchoring (Malhotra et al., 2015) in acquisitions, the potential bias stemming from information overload is understudied. Although one exceptional work examines simultaneous buyouts and the associated activity load in the context of private equity firms, it does not allow for a closer examination of bias in acquisition integration because private equity firms do not usually integrate the targets (Castellaneta & Zollo, 2015). It is imperative to perform research to address this research gap, though, because acquisition decisions “involve complexity, ambiguity, and lack of structure”, and managers “cannot simultaneously consider or process all the variables and data involved in a decision as complex as acquisition” (Duhaime & Schwenk, 1985: 287). Parallel acquisitions may thus add even more to the information-processing load for managers in their integration decisions, but we know little about it.

To address this gap, we investigate the impact of parallel acquisitions on managers' foresight in their integration planning. We leverage expected integration costs publicly announced by acquiring managers at their acquisition announcements and the actual integration costs disclosed in the income statements to capture forecasting errors. Such forecasting errors are highly consequential for firm performance. For example, Takeda realized a significant operating loss due to the higher-than-expected integration costs in its acquisition of Shire (Financial Times, 2019). This novel measure of integration cost estimation is also theoretically important, as it directly signals the possible underestimation of the integration budget and sheds light on potential managerial bias derived from the activity load. It also allows us to assess the effect of parallel acquisitions on each single acquisition at the individual activity level and to disentangle the effect from confounding forces that are often involved in performance measures at the organizational level (Castellaneta & Zollo, 2015).

Drawing on insights from the attention-based view and information load research (Ocasio, 1997, 2011; Simon, 1947), we theorize that parallel acquisitions create challenges associated with the amount, characteristics, and flow of information. Managers, who have limited information-processing capacity and attention resources have difficulties in accounting for all important cost factors, and thus have a higher likelihood of underestimating the integration costs in their planning. Based on sample of manually coded expected and actual integration costs, we find support for our hypothesis.

In the supplementary analysis, we further verify the mechanism of the proposed negative effect of acquisition load on forecasting quality. By analyzing the spending temporality, we find that a heavy acquisition load reduces the investments in integration planning of a focal acquisition in the pre-deal stage, which in turn leads to a higher likelihood of cost underestimation. From a sequence perspective, an overloaded acquisition sequence (i.e., not taking a break of one year with no acquisitions before the focal deal), compared to a depreciated (i.e., no acquisitions for at least three years) or a rhythmic pattern (i.e., taking a break of one year with no acquisitions, after having performed acquisitions for three years before the focal deal), is much more likely to lead to cost underestimation. Collectively, our findings suggest that parallel acquisitions lead to the cognitive overload of managers, which directs managerial attention away from integration planning and results in integration cost underestimation.

Our paper potentially makes two important contributions to acquisition research. First, we theorize and find that information overload associated with parallel acquisitions

introduces forecasting errors in integration planning. Sutcliffe and Weick (2008: 60) note that information “overload has been subject to much speculation and conceptual attention for decades, yet empirical research on overload, particularly in organizational theory... is surprisingly sparse”. Our analysis of parallel acquisitions provides evidence of managers’ information-processing limitations and highlights cognitive overload as an important bias in managerial decision making in acquisitions. Our results also carry implications for important yet inconclusive findings about acquisition experience and post-acquisition performance (Devers et al., 2020; Halebian et al., 2009).

Second, our paper carries out what is to our knowledge the first investigation of errors in integration cost planning. Across multiple reviews of the acquisition literature, there is general agreement that there has been sparse direct examination of how acquisition experience and its timing affect integration outcomes (Graebner et al., 2017), and “we have only a limited understanding of the mechanisms that drive acquisition integration success and failure” (Devers et al., 2020: 895). In particular, significant gaps have been identified in the research of “PMI (post-merger integration) planning that already occur early in the pre-deal phase” (Welch et al., 2020: 25). Our study takes the initial step to fill in the gap by demonstrating that forecasting integration costs involves a high level of complexity and that such interdependencies among parallel acquisitions boost the chances for forecasting errors.

THEORY AND HYPOTHESES

Activity Load

The behavioral theory of the firm posits that decision makers are constrained by bounded rationality and only have limited capacity for information processing (Cyert & March, 1963; March & Simon, 1958; Simon, 1947). Specifically, “the capacity of the human mind for formulating and solving complex problems is very limited compared with the size of the problems whose solution is required for objectively rational behavior in the real world” (Simon, 1947: 198). Ocasio (1997) builds upon and expands this information processing perspective by emphasizing decision makers’ attention as a valuable and scarce resource that guides and constrains organizational activities. As a result, when managing a complex interdependent pattern of simultaneous activities, limited managerial attention may give rise to information-processing problems and decision-making errors (Castellaneta & Zollo, 2015; March & Simon, 1958). However, managing a high number of interdependent parallel activities is a common situation facing decision makers. As Mintzberg (1971: 105) noted,

“the manager may be likened to a juggler. At any one point, he (she) maintains a number of balls in the air.”

Managing parallel activities – like juggling multiple balls in the air – can saturate managers’ already limited attention and result in information overload (Ocasio, 2011). Information overload arising from activity load can be understood as a state in which managers’ information-processing capacity (i.e., the amount of information that decision makers can process within a time constraint) falls short of the information-processing requirements (i.e., the quantity of information that requires managers’ processing and analyses to complete multiple strategic tasks simultaneously) (Castellaneta & Zollo, 2015; Eppler & Mengis, 2004; Galbraith, 1974; Tushman & Nadler, 1978). However, despite the relevance of information quantity, what makes parallel activities problematic is “not necessarily a case of too much data, rather it is an inability to make sense of demands, capabilities, and context as well as data” (Sutcliffe & Weick, 2008: 62). Indeed, interpreting information from managing parallel activities can be highly uncertain because information tends to be ambiguous, novel, unstructured, and complex (Daft & Lengel, 1986; Schneider, 1987). In fact, the more “strategic” a decision is, the more complex the associated information (Csaszar, 2018). As such, managers – given their attention constraints – may experience cognitive “busyness” or cognitive overload when they intend to interpret simultaneous, ongoing strategic actions that consume their limited cognitive resources (Gilbert & Hixon, 1991; Sweller & Chandler, 1994; Sweller, van Merriënboer, & Paas, 2019).

In addition to the “amount” and “characteristics” of information, overload can also arise from the “flow” of information while conducting multiple parallel activities. Recent development in the attention-based view stresses that attention engagement, which is defined as a “process of intentional, sustained allocation of cognitive resources”, is critical for guiding strategic changes (Ocasio, 2011; Ocasio, Laamanen, & Vaara, 2018: 158). That is, it is not only the amount or the characteristics of information that determine information overload but also the way that information is communicated, exchanged, interacted, enacted, and competed. According to this view, when managing a portfolio of simultaneous activities, attention overload can result from more intense and complex social interactions with stakeholders and from the challenge of engaging with the different parties involved to address the focal issues. Therefore, in summary, parallel activities can be problematic due to attention issues and information overload associated with the amount, characteristics, and flow of information.

Despite the importance of activity load to attention issues, empirical analyses in this area have been sparse until only recently. In the context of private firms' buyouts, it was shown that managing a high number of investments simultaneously overwhelms managers' attention limitation and results in worse investment returns (Castellaneta & Zollo, 2015). Concerning strategic issue decisions, research has revealed that issue decision correctness is associated with three dimensions of cognitive load, including "intrinsic" cognitive load emerging from the complexity of a focal issue, "extraneous" cognitive load arising from unfavorable environmental conditions, and "germane" cognitive load related to the processing of strategic issues (Laamanen, Maula, Kajanto, & Kunnas, 2018). In the context of hospital emergency departments, evidence has been found that increasingly constrained capacity hinders learning, but a regular rhythm of consistently constrained capacity helps learning (Desai, 2020). Although this nascent research stream on activity load has provided valuable insights, little is still known about whether and in what way activity load affects a central capability in decision making – the strategic foresight – of the focal firm.

Strategic Foresight

Strategic foresight refers to the ability to predict future events accurately (Ahuja, Coff, & Lee, 2005; Gavetti & Menon, 2016) and is central to competitive advantages and firm performance (Barney, 1986; Makadok & Walker, 2000). Research suggests that information-processing capability is an important determinant of strategic foresight. Early work has shown that the amount of information sought and processed is positively related to the accuracy of managers' estimation of project duration (Adams & Swanson, 1976). McNamara and Bromiley (1999) reveal that top executives tend to pay attention to familiar but poor information sources, which results in mistakes in the risk-return relationship. Similarly, based on a survey of French manufacturing firms, research shows that both organizational attention to market information and focus on employee capability lead to reduced errors in the estimation of the growth rate (Durand, 2003).

Recent work has further investigated the micro and structural foundations for forecasting ability. Using a business simulation, Gary and Wood (2011) show that better strategic foresight is associated with the accuracy of individual mental representation. In an experimental setting, Csaszar and Laureiro-Martinez (2018) found that strategic foresight is greater among individuals whose mental representations are broader and more consistent with the consensus. At the organizational level, research has found that managers of mutual funds

with a decentralized structure tend to overlook fewer good opportunities, whereas managers of centralized mutual funds make fewer investments with bad returns (Csaszar, 2012).

In addition to information-processing capability, contextual complexity also affects the accuracy of strategic foresight. In the context of service offshoring, research indicates that managers are more likely to make errors in their cost estimation when the configuration of their outsourcing portfolio or the focal outsourcing task is more complex (Larsen, Manning, & Pedersen, 2012). Peterson and Wu (2021) study the relationship between entrepreneurs' project experience and their subsequent forecasting accuracy about the product delivery timeline. They found that as entrepreneurs become more experienced, project complexity increases rapidly. The increased complexity dominates their ability to learn from experience and leads to greater errors in the forecasting of delivery timeline and causes more serious delays.

Whereas information-processing constraints have been shown to affect strategic foresight, less is known about the impact of activity load on forecasting accuracy in the context of acquisitions. This is a surprising omission because the acquisition literature has long recognized the importance of forecasting capability for acquisition success (Goodman, Neamtiu, Shroff, & White, 2014). We thus develop hypotheses to advance our understanding of this topic.

Effect of Parallel Acquisitions on Integration Cost Forecast

To understand the effect of parallel acquisitions on managerial strategic foresight in a focal acquisition, we focus on estimation errors in integration planning due to hidden costs – the costs of integration that are unanticipated in the planning stage but realized in the execution stage (Larsen et al., 2012). Integration costs reflect acquirers' efforts to reconcile the target's business and often include expenses related to severance and retention payments, system conversions, contract terminations, marketing and communication integrations, and legal and accounting expenses. Two exceptional studies in the finance and accounting fields have investigated the expected integration costs to understand the acquirers' expectations about adaptation (Rabier, 2017b) and to capture the net value of expected synergies (Houston et al., 2001). However, expected integration costs are not always accurate and may result in a discrepancy with the actual, realized costs. Under certain conditions, decision makers may systematically overlook important costs in their integration planning. Drawing on insights from the attention-based view and information-processing research (Ocasio, 1997, 2011), we

propose that parallel acquisitions lead to a higher likelihood of underestimating integration costs for at least three reasons.

First, parallel acquisitions pose challenges to managers in their estimation of integration costs due to the high “amount” of information. Ocasio (1997: 204) points out that “the *focusing* of attention by organizational decision makers allows for enhanced accuracy, speed, and maintenance of information-processing activities” (emphasis added). When managing a high load of acquisitions simultaneously, managers are less likely to focus their attention on one information source (e.g., one focal acquisition), which may prevent them from noticing certain implementation costs. Indeed, higher acquisition rates have been found to result in poor acquisition performance (Barkema & Schijven, 2008; Laamanen & Keil, 2008). A slow pre-deal process helps to reduce managerial bias in premium decisions (Pavićević & Keil, 2021). Based on an eight-year observation of acquisition integration, research has also shown that the integration process absorbs a significant amount of managerial attention, and thus, it takes much longer for managers to address the original purpose of their acquisitions (Yu, Engleman, & Van de Ven, 2005). Similarly, acquisitions direct managerial attention away from core functions such R&D or innovation (Hitt, Hoskisson, & Ireland, 1990; Hitt, Hoskisson, Ireland, & Harrison, 1991) and increase the likelihood of civil lawsuits due to managerial oversight (Shaver & Mezas, 2009).

Accordingly, a high load of acquisitions dramatically increases the amount of information to be processed, which boosts the likelihood of neglecting integration costs. Importantly, information load not only arises from realized acquisitions but also comes from the evaluation of other potential acquisition targets (Durand & Vaara, 2009; Welch et al., 2020). For instance, while CVB Financial Corporation was planning the acquisition of Community Bank, CVB entered simultaneous strategic conversations with four other merger candidates (CVB’s SEC filing, 2018). First Merchants Corporation also signed confidentiality agreements with five different parties for further evaluations before it fixed the acquisition of MBT Financial (First Merchants’ SEC filing, 2018). Hence, managers must process a significant amount of information from potential acquisition candidates, the focal target, other ongoing acquisitions, and the firm’s ongoing business. Given the time constraints and information-processing limitations, managers are thus more likely to ignore or overlook important cost information in their integration planning.

Second, information stemming from parallel acquisitions is “characterized” by high ambiguity, uncertainty, and complexity (Duhaime & Schwenk, 1985), which creates challenges to interpretation and leads to a higher likelihood of cost underestimation. The

nature of cost underestimation in integration can be recognized as an unanticipated complexity (Larsen et al., 2012; Peterson & Wu, 2021). Complexity is defined as “a large number of parts that interact in a non-simple way” (Simon, 1962: 468). Thus, the level of complexity of a given situation is determined by the number of moving components and the interdependencies among the components. Accordingly, under the load of managing simultaneous acquisitions, managers must not only accurately estimate the integration costs associated with one single acquisition but also estimate the expenses associated with the interdependencies between the focal acquisition and other ongoing acquisitions.

However, correct estimation of the complex interdependence among multiple acquisitions is challenging. Research has shown that higher acquisition rates increase the anchoring bias in the pre-deal stage, as such managers rely on peer experience for their own decision making instead of relying on valid interpretation of idiosyncratic information about the focal deal (Malhotra et al., 2015). Similarly, acquisitions occur in quick succession, managers are less cautious in deal evaluations due to unfocused attention across several fronts (Haunschild et al., 1994). Moreover, it is also difficult to draw inferences from the ongoing integration of parallel acquisitions and to make sense and learn from these experiences (Graebner et al., 2017; Hayward, 2002; Vermeulen & Barkema, 2002; Zollo & Winter, 2002). Because integration is a prolonged, evolved procedure, managers may still be engaged in integrating previous acquisitions and have no available attention to interpret and predict the complexity in the focal acquisition’s integration.

Third, under a high acquisition load, managers face difficulties in “moving” the information throughout the organization and interacting with key stakeholders to engage their attention. The attention-based view emphasizes that “communication through social interactions ... allows for organizational participants to jointly attend to and co-orient themselves with changes ... throughout the organization” (Ocasio et al., 2018: 157). When managing a high load of acquisitions, managers face time pressures and attention constraints to interact with key stakeholders to come up with detailed integration costs. Internal employees within and across multiple functions and businesses may still be occupied with the other simultaneous acquisitions and ongoing businesses, while planning for the focal acquisition also demands immediate actions (Laamanen & Keil, 2008). In addition, although the board can help increase the deliberation of acquisition decisions through monitoring and guidance (Kolasinski & Li, 2013), a high acquisition load can limit such feedback and evaluations from the board about the focal deal. Similarly, parallel acquisitions intensify the pressures of interacting with acquisition advisors, whose opinions can help reduce risks in

planning failure (Kim, Halebian, & Finkelstein, 2011). Perhaps more importantly, discussion with employees and advisors at the target firms may be less thorough when dealing with multiple acquisitions. However, the accurate estimation of integration costs depends very much on triangulated evaluations and detailed communications with these key stakeholders.

One may wonder whether “parallel” acquisitions could actually perform as “coupled” acquisitions, in which synergies among these simultaneous deals outweigh the costs from information overload. However, even in acquisition programs that consist of a sequence of acquisitions by design, performance suffers due to high complexity and many interruptions (Laamanen, Brauer, & Junna, 2014). It is also emphasized that the rate of complexity grows faster than that of managers’ ability for learning from experience, which results in increasing forecasting errors (Peterson & Wu, 2021).

Therefore, in sum, parallel acquisitions give rise to challenges associated with the amount, characteristics, and flow of information. Managers, who are bounded rationally and have limited attention, thus have difficulties accounting for all important cost factors in integration planning. Accordingly, we hypothesize the following:

Main Hypothesis: The heavier the load from parallel acquisitions, the higher the likelihood of underestimating integration costs for a focal acquisition.

METHODS

Sample and Data

We examine our predictions in the context of acquisitions conducted by U.S. publicly listed banks from 2009 to 2018 for several reasons. First, since the Statement of Financial Accounting Standards (SFAS) 141R went into effect on 15th December 2008, estimated acquisition-related integration costs must be expensed after the effective date of the acquisition, instead of being included as a liability in the purchase price and accounted for in goodwill. This allows observations of actual integration costs, which are audited and included in income statements, of U.S. public firms. Second, the banking industry is under stricter regulations and monitoring and thus tends to report both expected and actual integration costs in more detail. This provides an important foundation for our study. Third, acquisitions of the U.S. banks are predominantly domestic, market-driven deals, and thus integration is key to value creation. Therefore, integration costs would be a relevant factor in the acquisition sequences of these banks.

We constructed our sample based on the following criteria: 1) acquisition completed between 2009 and 2018; 2) percentage of shares acquired from the transaction greater than

50%; 3) transaction value greater than USD 50 million, as executives tend to pay particular attention to larger acquisitions than smaller size deals; 4) expected integration costs announced on the acquisition announcement day (though notably, announcing expected integration costs has already become an adopted practice among U.S. banks, especially in larger deals). Based on the identified sample, we manually coded the actual integration costs in the 10-k files of the acquirers from one year before the announcement year to the year that the integration was completed. We coded 303 acquisitions with available data to calculate forecasting accuracy in integration costs. Due to missing values in other critical control variables, the final sample size may slightly vary.

To construct the data set, we integrated information from several databases. Acquisition-related data and bank-level variables were retrieved from the SNL Financial database. SNL Financial is one of the most comprehensive databases with a special focus on banks and has been used in prior studies on acquisitions (Kim *et al.*, 2015). CEO-related data were collected from Compustat ExecuComp. We also referred to the Open Sourced Database for CEO Dismissal 1992-2018 (Version 2021.02.03) to verify the reasons for CEO changes.

Measures

Dependent variable. We measure the dependent variable, *Underestimation of Integration Costs*, as a binary variable, which equals 1 when firms underestimate the integration costs in the focal deal and equals 0 when firms do not. The underestimation is defined based on the discrepancy between expected and actual integration costs. In the supplementary analysis, we used the continuous measure of the estimation discrepancy and found consistent results.

The expected integration costs were directly coded from acquisition announcement-related materials, while the actual integration costs were calculated as the sum of all integration costs explicitly assigned to the focal deal surrounding the acquisition year. In rare cases, the actual integration costs were presented in an aggregated form across multiple deals. Then, we checked the transcripts of conference calls and presentations for breakdown information. When unavailable, we assigned the costs according to the relative weights of deal value.

Independent variables. We measure the independent variable *Volume of Parallel Acquisitions* as the total transaction volume of other ongoing acquisitions that were completed in the year prior to the focal acquisition. We took the natural log of this variable to address a skewed distribution. This measure makes sense theoretically because parallel

acquisitions completed in the prior year have usually entered the integration process during the year of the focal deal, which creates load and pressures for the predeal stage. In the robustness checks, we measured parallel acquisitions based on the amount of ongoing integration costs spent in other deals and based on an alternative time window (e.g., by including acquisitions completed in the focal year). We found consistent results.

Control Variables. Following prior acquisition literature, we included a set of variables that may potentially affect the likelihood of integration cost underestimation. Specifically, we first included several deal-level controls. We controlled for *Cross Industry Deal*, measured as a binary variable that equals 1 when the target firm operates in a different industry than the acquirer and 0 otherwise. This is because cross-industry deals may be riskier and involve higher uncertainty, which may lead to a higher likelihood of decision errors. In addition, we accounted for *Cross State Deal*, measured as a binary variable that equals 1 when the target firm is domiciled in a different state than the acquirer and 0 otherwise. Integration can be realized more readily—with relatively fewer integration costs—when acquirers are familiar with the geographical and cultural situations of the target side and when acquirers and targets are geographically close. Furthermore, *Market Expansion Deal* was controlled because when the motive of acquisition is to expand the market, integration is more complex than efficiency-driven deals. We also controlled for *Public Target Firm* to account for differences in the complexity and nature of the deal from acquisitions of private targets. Because *Cash Consideration* reflects managerial confidence in dealing with future performance, we controlled for it. Furthermore, PE involvement in acquisitions may change the deal motives and at the same time provide external knowledge in integration management. Thus, we controlled for PE-backed deals, measured as a binary variable that equals 1 if a PE is involved and 0 otherwise. We also controlled for *Deal Value* because the higher the deal value, the more complex the integration, and thus the higher the chances of integration failure. In addition to deal-level control variables, we accounted for firm- and CEO-level differences. We included a control variable of Firm Size to account for the size effect in integration planning. We also accounted for *CEO Tenure* and *CEO Change during the Focal Deal* to control for CEOs' familiarity with the focal organization and their managerial expertise.

Analysis

Since our sample includes repeated observations of a few firms, we estimated a logit model with clustered standard errors by firms (in STATA xtlogit, vce cluster). Hausmann

tests indicate that random-effect models would be more suitable for the data than fixed-effect models. We thus adopt random-effect models in our main analysis. However, we found consistent results when adopting the fixed-effect models, although the number of observations significantly reduced. In the supplementary analyses, when we have a continuous variable as the dependent variable, we adopted a random-effect model with clustered standard errors (in STATA xtreg, vce cluster). Similarly, we found consistent results when adopting the fixed-effect models.

RESULTS

Table 1 presents the descriptive statistics and pairwise correlations of all variables used in this study. Table 2 presents the regression results of our main analyses and supplementary checks.

Insert Tables 1 & 2 about Here

Hypothesis Testing

Model 1 included only the control variables. Model 2 only included the independent variable of interest, Volume of Parallel Acquisitions, to show the basic relationship between acquisition load and integration cost underestimation. The model shows no overfitting and displays a significant positive impact of parallel acquisitions on the likelihood of cost underestimation ($\beta = 0.379$; $p < 0.01$). Model 3 included all the control variables and the independent variable and shows consistent results ($\beta = 0.397$; $p < .05$). In Model 4, we further checked the robustness of the results by including the level of expected integration costs, which was measured as expected integration costs divided by deal value. Again, we found a consistent positive relationship between the load of parallel acquisitions and the likelihood of integration cost underestimation ($\beta = 0.384$; $p < 0.05$). Based on these results, our main hypothesis is supported.

Supplementary Analysis

To further understand the nuances of the effect of parallel acquisitions on integration decision making and implementation, we conducted several supplementary analyses.

Spending temporality. We analyzed the implications of parallel acquisitions for the temporality of firms' integration cost spending. We found that the higher the load of parallel acquisitions, the lower the percentage of integration costs that was spent during the

completion year (Model 5, $\beta = -0.035$; $p < 0.01$). Our analysis reveals a significantly negative relationship between integration cost spending in the completion year and the likelihood of cost underestimation. This may indicate that firms that successfully plan their integration tend to spend their integration costs faster and have solved most problems by completion year. In addition, interestingly, we also found that the load of parallel acquisitions is significantly negatively related to the likelihood of spending integration-related costs (such as consulting and legal fees) in the year before completion (Model 6, $\beta = -0.779$; $p < 0.001$). Collectively, this may indicate that overloaded managers tend to devote less attention to the acquisition in the stage prior to its completion; however, less sophisticated planning results in a slower or less effective integration procedure.

Acquisition sequences. We further verified our theory concerning the influence of acquisition load on integration cost underestimation by taking a sequence view of acquisitions. Both the acquisition literature and learning theory suggest that acquisitions that are too frequent may cause difficulties in digesting all the information and thus result in worse performance, whereas acquisitions that are too infrequent would not generate learning either (e.g., Hayward, 2002). Accordingly, we categorized acquisition patterns that are related to the focal acquisition into three types: the loaded, depreciated, and rhythmic patterns (see Appendix A for more detailed categorization). Regression results show that the loaded acquisition pattern is significantly positively related to integration cost underestimation (Model 7, $\beta = 0.635$; $p < 0.05$), while the depreciated pattern has no significant influence completion (Model 7, $\beta = 0.173$; nonsignificant). As expected, the best performance pattern is the rhythmic pattern in which firms conduct acquisitions within a set amount of time and then have a break before they move into the focal acquisition year. The rhythmic pattern has a significantly lower likelihood of integration cost underestimation (Model 8, $\beta = -1.306$; $p < 0.05$).

CEO characteristics and integration cost estimation. We further analyzed whether CEO personalities drive the estimation of integration costs. We first focus on CEO overconfidence – an overexaggerated belief in one’s competence and status (Hayward & Hambrick, 1997). Following prior work (Pavićević & Keil, 2021), we captured CEO overconfidence based on their exercise of stock options. However, we found no statistically significant relationship between CEO overconfidence and integration cost underestimation. In addition, we captured CEO cognitive complexity based on their talks in earnings conference calls by following the operationalization in the prior literature (Graf-Vlachy, Bundy, & Hambrick, 2020). We found a significant impact of CEO cognitive complexity on

the expected integration cost level; however, no such relationship was found concerning the underestimation of integration costs. Finally, in our analysis, we also included CEO fixed effects as a robustness check. Although the sample size was significantly reduced, we found consistent results that support our hypothesis.

Performance implications of integration cost underestimation. We tested the performance consequences of underestimating integration costs in a focal acquisition. We calculated acquisition long-term performance by using the stock-based buy-and-hold returns in the three years after the focal acquisition. We found that integration cost underestimation is related to worse stock-based returns. In addition, we also observed a pattern in which banks that underestimate integration costs in a focal acquisition are more likely to face survival issues and are more likely to be acquired by other banks within two years after the focal acquisition. We do not seek to establish causality here, but we speculate that firms that underestimate integration costs may systematically suffer from high activity load or fall behind in capability development, which results in organizational discontinuity.

DISCUSSION

In modern societies, handling a high number of activities and stakeholders simultaneously has become the new norm among organizations (Desai, 2020). Can busy organizations still acquire new capabilities? Do busy organizations perform better? These are not only highly relevant practical questions, but also have important theoretical implications. As an initial step toward that end, this paper sets out to understand the consequence of parallel acquisitions. By evaluating the quality of a novel yet central decision in acquisitions – the estimation of integration costs, we found evidence that parallel acquisitions increase the likelihood of hidden costs in integration planning.

Our paper carries theoretical implications for understanding cognitive bias in integration planning in acquisitions. We highlight that managers – due to their bounded rationality and limited information-processing capacity – tend to overlook important cost factors when they manage a heavy load of simultaneous acquisitions. We provide rare evidence on the effect of activity load and theorize cognitive overload as an important source of bias in managerial decision-making in acquisitions. In addition, we contribute to the acquisition literature by advancing our understanding of the temporal embeddedness of acquisitions. While prior acquisition studies tend to focus on other types of temporal dynamics, we emphasize the negativity of parallel acquisitions. Furthermore, we provide a direct examination of decision quality in integration planning. Many existing measures of

acquisition performance tend to focus on overall acquisition, and thus, it is difficult to disentangle the effect of experience on integration (Graebner et al., 2017). By adopting a novel measure of integration cost estimation, we advance the understanding of decision bias in the planning stage of integration.

Furthermore, the findings from the supplementary analyses about the spending temporality also warrant attention. There has been a heated debate in acquisition research about whether the speed of integration enhances acquisition performance. Some argue for fast integration with the expectation that speedy integration can resolve uncertainty faster and reduce employee concerns (Bower, 2001), whereas research also shows that fast integration may give rise to perceived injustice and dissatisfaction (Birkinshaw, Bresman, & Hakanson, 2000; Haspeslagh & Jemison, 1991). Our findings take a distinct stand and suggest that the time period of integration can be considered to start in the pre-deal stage. Therefore, investments in pre-deal integration planning may lay the foundation for successful integration by having a faster and smoother integration in the year of completion.

More broadly, our results may inform the inconclusive findings about acquisition experience and acquisition performance (Devers et al., 2020). Acquisition research has long been interested in whether firms can learn from acquisition experience (Barkema & Schijven, 2008). While some studies have explored the performance implications of the content of acquisition experience (such as related acquisition experience and failure experience), we join with scholars who focus on the temporality of acquisition experience. However, our study differs from prior work by shedding light on acquisition experience that is simultaneous, ongoing, and running in parallel. Our results indicate that the timing of acquisition experience may have a fundamental influence on learning outcomes, which in turn leads to diverse performance implications.

The paper nevertheless has certain limitations, which offer potential research opportunities. First, although we triangulated our findings by using alternative measures and methods, we could not directly observe the cognitive processes of managers' integration planning. Future studies may adopt qualitative measures or experimental settings to further understand which specific types of acquisition load managers are particularly sensitive to and what cognitive styles or mental representations of managers are associated with a reduction in the negativity of acquisition load. Second, integration cost underestimation is by nature a complex decision issue. While our study highlights the effect of activity load, future studies may examine whether managers intentionally downplay the expected integration costs or whether they set certain cost levels to manage stakeholder expectations. Alternative

theoretical angles, such as the institutional, agency theory, and learning perspectives, may apply to the hidden cost phenomenon as well. Furthermore, it would be interesting to investigate the effect of parallel acquisitions on other acquisition decisions, such as premium and target selection.

Finally, the paper establishes certain implications for practice. Our results indicate that too many moving pieces create a high information load and thus prevent managers from paying attention to important cost factors. Thus, managers should be cautious about handling a heavy load of simultaneous activities. Even for experienced managers who have sufficient cognitive heuristics for their acquisition decision making, a severe information overload may restrict the use of simplified mental models and thus lead to poor decision quality. Furthermore, as our supplementary analysis shows, parallel activities not only create underestimation bias in cost forecasting but also may lead to performance decrease and even organizational failure.

REFERENCES:

- Adams, J. R. & Swanson, L. A. 1976. Information-Processing Behavior and Estimating Accuracy in Operations Management. *Academy of Management Journal*, 19(1): 98-110.
- Ahuja, G., Coff, R. W., & Lee, P. M. 2005. Managerial foresight and attempted rent appropriation: insider trading on knowledge of imminent breakthroughs. *Strategic Management Journal*, 26(9): 791-808.
- Barkema, H. G. & Schijven, M. 2008. How Do Firms Learn to Make Acquisitions? A Review of Past Research and an Agenda for the Future. *Journal of Management*, 34(3): 594-634.
- Barney, J. B. 1986. Strategic Factor Markets - Expectations, Luck, and Business Strategy. *Management Science*, 32(10): 1230-1241.
- Birkinshaw, J., Bresman, H., & Hakanson, L. 2000. Managing the post-acquisition integration process: How the human integration and task integration processes interact to foster value creation. *Journal of Management Studies*, 37(3): 395-425.
- Bower, J. L. 2001. Not all M&As are alike - and that matters. *Harvard Business Review*, 79(3): 92-+.
- Castellaneta, F. & Zollo, M. 2015. The Dimensions of Experiential Learning in the Management of Activity Load. *Organization Science*, 26(1): 140-157.
- Csaszar, F. A. 2012. Organizational structure as a determinant of performance: Evidence from mutual funds. *Strategic Management Journal*, 33(6): 611-632.
- Csaszar, F. A. 2018. What Makes a Decision Strategic? Strategic Representations. *Strategy Science*, 3(4): 606-619.
- Csaszar, F. A. & Laureiro-Martínez, D. 2018. Individual and Organizational Antecedents of Strategic Foresight: A Representational Approach. *Strategy Science*, 3(3): 513-532.
- Cyert, R. M. & March, J. G. 1963. *A behavioral theory of the firm*.
- Daft, R. L. & Lengel, R. H. 1986. Organizational Information Requirements, Media Richness and Structural Design. *Management Science*, 32(5): 554-571.
- Desai, V. M. 2020. Can Busy Organizations Learn to Get Better? Distinguishing Between the Competing Effects of Constrained Capacity on the Organizational Learning Process. *Organization Science*, 31(1): 67-84.
- Devers, C. E., Wuorinen, S., McNamara, G., Haleblian, J., Gee, I. H., & Kim, J. 2020. An Integrative Review of the Emerging Behavioral Acquisition Literature: Charting the Next Decade of Research. *Academy of Management Annals*, 14(2): 869-907.
- Duhaime, I. M. & Schwenk, C. R. 1985. Conjectures on Cognitive Simplification in Acquisition and Divestment Decision-Making. *Academy of Management Review*, 10(2): 287-295.
- Durand, R. 2003. Predicting a firm's forecasting ability: the roles of organizational illusion of control and organizational attention. *Strategic Management Journal*, 24(9): 821-838.
- Durand, R. & Vaara, E. 2009. Causation, Counterfactuals, and Competitive Advantage. *Strategic Management Journal*, 30(12): 1245-1264.
- Eppler, M. J. & Mengis, J. 2004. The Concept of Information Overload: A Review of Literature from Organization Science, Accounting, Marketing, MIS, and Related Disciplines. *The Information Society*, 20(5): 325-344.
- Galbraith, J. R. 1974. Organization Design - Information Processing View. *Interfaces*, 4(3): 28-36.
- Gary, M. S. & Wood, R. E. 2011. Mental Models, Decision Rules, and Performance Heterogeneity. *Strategic Management Journal*, 32(6): 569-594.
- Gavetti, G. & Menon, A. 2016. Evolution Cum Agency: Toward a Model of Strategic Foresight. *Strategy Science*, 1(3): 207-233.

- Gilbert, D. T. & Hixon, J. G. 1991. The Trouble of Thinking - Activation and Application of Stereotypic Beliefs. *Journal of Personality and Social Psychology*, 60(4): 509-517.
- Goodman, T. H., Neamtiu, M., Shroff, N., & White, H. D. 2014. Management Forecast Quality and Capital Investment Decisions. *The Accounting Review*, 89(1): 331-365.
- Graebner, M. E., Heimeriks, K. H., Huy, Q. N., & Vaara, E. 2017. The Process of Postmerger Integration: A Review and Agenda for Future Research. *Academy of Management Annals*, 11(1): 1-32.
- Graf-Vlachy, L., Bundy, J., & Hambrick, D. C. 2020. Effects of an Advancing Tenure on CEO Cognitive Complexity. *Organization Science*, 31(4): 936-959.
- Haleblian, J., Devers, C. E., McNamara, G., Carpenter, M. A., & Davison, R. B. 2009. Taking Stock of What We Know About Mergers and Acquisitions: A Review and Research Agenda. *Journal of Management*, 35(3): 469-502.
- Haleblian, J., McNamara, G., Kolev, K., & Dykes, B. J. 2012. Exploring firm characteristics that differentiate leaders from followers in industry merger waves: a competitive dynamics perspective. *Strategic Management Journal*, 33(9): 1037-1052.
- Haspeslagh, P. & Jemison, D. 1991. *Managing Acquisitions: Creating Value through Corporate Renewal*. New York: The Free Press.
- Haunschild, P. R., Davisblake, A., & Fichman, M. 1994. Managerial Overcommitment in Corporate Acquisition Processes. *Organization Science*, 5(4): 528-540.
- Hayward, M. L. & Hambrick, D. C. 1997. Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Administrative science quarterly*: 103-127.
- Hayward, M. L. A. 2002. When do firms learn from their acquisition experience? Evidence from 1990 to 1995. *Strategic Management Journal*, 23(1): 21-39.
- Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. 1990. Mergers and Acquisitions and Managerial Commitment to Innovation in M-Form Firms. *Strategic Management Journal*, 11: 29-47.
- Hitt, M. A., Hoskisson, R. E., Ireland, R. D., & Harrison, J. S. 1991. Effects of Acquisitions on Research-and-Development Inputs and Outputs. *Academy of Management Journal*, 34(3): 693-706.
- Houston, J. F., James, C. M., & Ryngaert, M. D. 2001. Where do merger gains come from? Bank mergers from the perspective of insiders and outsiders. *Journal of financial economics*, 60(2-3): 285-331.
- Kim, J. Y., Haleblian, J., & Finkelstein, S. 2011. When firms are desperate to grow via acquisition: The effect of growth patterns and acquisition experience on acquisition premiums. *Administrative science quarterly*, 56(1): 26-60.
- Kolasinski, A. C. & Li, X. 2013. Can Strong Boards and Trading Their Own Firm's Stock Help CEOs Make Better Decisions? Evidence from Acquisitions by Overconfident CEOs. *Journal of Financial and Quantitative Analysis*, 48(4): 1173-1206.
- Laamanen, T. & Keil, T. 2008. Performance of serial acquirers: toward an acquisition program perspective. *Strategic Management Journal*, 29(6): 663-672.
- Laamanen, T., Brauer, M., & Junna, O. 2014. Performance of acquirers of divested assets: Evidence from the U.S. software industry. *Strategic Management Journal*, 35(6): 914-925.
- Laamanen, T., Maula, M., Kajanto, M., & Kunnas, P. 2018. The role of cognitive load in effective strategic issue management. *Long Range Planning*, 51(4): 625-639.
- Larsen, M. M., Manning, S., & Pedersen, T. 2012. Uncovering the hidden costs of offshoring: The interplay of complexity, organizational design, and experience. *Strategic Management Journal*, 34(5): 533-552.
- Makadok, R. & Walker, G. 2000. Identifying a distinctive competence: Forecasting ability in the money fund industry. *Strategic Management Journal*, 21(8): 853-864.

- Malhotra, S., Zhu, P., & Reus, T. H. 2015. Anchoring on the acquisition premium decisions of others. *Strategic Management Journal*, 36(12): 1866-1876.
- March, J. & Simon, H. 1958. *Organizations*. New York: Wiley.
- McNamara, G. & Bromiley, P. 1999. Risk and return in organizational decision making. *Academy of Management Journal*, 42(3): 330-339.
- McNamara, G. M., Halebian, J., & Dykes, B. J. 2008. The performance implications of participating in an acquisition wave: Early mover advantages, bandwagon effects, and the moderating influence of industry characteristics and acquirer tactics. *Academy of Management Journal*, 51(1): 113-130.
- Meschi, P.-X. & Métais, E. 2011. Do Firms Forget About Their Past Acquisitions? Evidence From French Acquisitions in the United States (1988–2006). *Journal of Management*, 39(2): 469-495.
- Mintzberg, H. 1971. Managerial Work - Analysis from Observation. *Management Science Series B-Application*, 18(2): B97-B111.
- Ocasio, W. 1997. Towards an attention-based view of the firm. *Strategic Management Journal*, 18: 187-206.
- Ocasio, W. 2011. Attention to Attention. *Organization Science*, 22(5): 1286-1296.
- Ocasio, W., Laamanen, T., & Vaara, E. 2018. Communication and attention dynamics: An attention-based view of strategic change. *Strategic Management Journal*, 39(1): 155-167.
- Pavićević, S. & Keil, T. 2021. The role of procedural rationality in debiasing acquisition decisions of overconfident CEOs. *Strategic Management Journal*, 42(9): 1696-1715.
- Peterson, A. & Wu, A. 2021. Entrepreneurial learning and strategic foresight. *Strategic Management Journal*.
- Rabier, M. R. 2017b. Value is in the Eye of the Beholder: The Relative Valuation Roles of Earnings and Book Value in Merger Pricing. *The Accounting Review*, 93(1): 335-362.
- Schneider, S. C. 1987. Information Overload - Causes and Consequences. *Human Systems Management*, 7(2): 143-153.
- Shaver, J. M. & Mezas, J. M. 2009. Diseconomies of Managing in Acquisitions: Evidence from Civil Lawsuits. *Organization Science*, 20(1): 206-222.
- Shi, W. & Prescott, J. E. 2012. Rhythm and Entrainment of Acquisition and Alliance Initiatives and Firm Performance: A Temporal Perspective. *Organization Studies*, 33(10): 1281-1310.
- Simon, H. 1947. *Administrative Behavior: A Study of Decision Making Processes in Administrative Organization*. New York: Macmillan.
- Simon, H. A. 1962. The Architecture of Complexity. *Proceedings of the American Philosophical Society*, 106: 467-482.
- Sutcliffe, K. & Weick, K. 2008. Information overload revisited. In H. GP & S. WH (Eds.), *The Oxford Handbook of Organizational Decision Making*: 56–75. Oxford, UK: Oxford University Press.
- Sweller, J. & Chandler, P. 1994. Why Some Material Is Difficult to Learn. *Cognition and Instruction*, 12(3): 185-233.
- Sweller, J., van Merriënboer, J. J. G., & Paas, F. 2019. Cognitive Architecture and Instructional Design: 20 Years Later. *Educational Psychology Review*, 31(2): 261-292.
- Tushman, M. & Nadler, D. 1978. Information processing as an integrating concept in organizational design. *Academy of Management Review*: 613–625.

- Vermeulen, F. & Barkema, H. 2002. Pace, rhythm, and scope: Process dependence in building a profitable multinational corporation. *Strategic Management Journal*, 23(7): 637-653.
- Welch, X., Pavicevic, S., Keil, T., & Laamanen, T. 2020. The Pre-Deal Phase of Mergers and Acquisitions: A Review and Research Agenda. *Journal of Management*, 46(6): 843-878.
- Yu, J. S., Engleman, R. M., & Van de Ven, A. H. 2005. The integration journey: An attention-based view of the merger and acquisition integration process. *Organization Studies*, 26(10): 1501-1528.
- Zollo, M. & Winter, S. G. 2002. Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13(3): 339-351.

TABLE 1: Summary Statistics and Pairwise Correlations

Variables	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) Underestimation Integration Cost	.18	.39	1.00																
(2) Volume of Parallel Acquisitions	.9	1.09	0.15	1.00															
(3) Cross Industry Deal	.19	.39	-0.05	0.06	1.00														
(4) Cross State Deal	.47	.5	0.09	0.17	0.02	1.00													
(5) Market Expansion Deal	.3	.46	0.03	0.14	0.03	0.28	1.00												
(6) Public Target Firm	.66	.48	-0.06	-0.05	0.06	-0.01	-0.06	1.00											
(7) Deal Value - Log	2.32	.5	0.08	0.16	0.11	0.21	-0.01	0.13	1.00										
(8) Cash Consideration	.2	.27	0.02	-0.10	0.26	0.05	0.08	-0.30	0.02	1.00									
(9) PE Involvement	.24	.43	0.04	0.04	-0.15	-0.01	0.04	0.06	0.05	-0.11	1.00								
(10) Firm Size	3.03	.43	-0.04	0.12	0.07	0.34	-0.05	0.10	0.55	-0.01	-0.15	1.00							
(11) CEO Change During M&A	.05	.21	0.02	-0.08	0.01	0.05	-0.04	0.03	0.13	0.05	-0.01	0.08	1.00						
(12) CEO Tenure	9.98	7.29	-0.04	0.09	-0.09	0.11	0.00	-0.07	0.08	-0.08	0.10	0.07	0.11	1.00					
(13) Spending% in Completion Year 1	.89	.2	-0.13	-0.02	-0.09	-0.08	-0.03	0.10	-0.19	-0.22	0.15	-0.02	-0.12	0.10	1.00				
(14) Spending YN in the Year 0	.35	.48	0.02	-0.18	-0.08	-0.10	0.02	0.10	0.10	-0.22	-0.10	-0.10	0.00	0.03	0.21	1.00			
(15) Integration Costs Ratio	90.54	51.15	-0.14	-0.08	0.10	0.02	-0.04	0.08	-0.25	0.02	-0.11	0.18	-0.08	-0.15	-0.03	-0.12	1.00		
(16) Loaded Acquisition Sequence	.43	.5	0.11	0.95	0.04	0.13	0.13	-0.08	0.03	-0.09	0.06	0.03	-0.10	0.07	0.01	-0.20	-0.05	1.00	
(17) Depreciated Acquisition Sequence	.31	.46	0.01	-0.5	-0.05	-0.15	-0.10	0.04	-0.08	0.07	-0.06	-0.14	-0.08	-0.13	-0.05	0.12	-0.01	-0.59	1.00
(18) Rhythmic Acquisition Sequence	.26	.44	-0.14	-0.49	0.01	0.01	-0.04	0.04	0.04	0.02	-0.01	0.12	0.19	0.06	0.04	0.09	0.06	-0.51	-0.40

TABLE 2: Regression Results of Main and Supplementary Analyses

	Main Analysis				Supplementary Analyses				
					Spending Temporality		Acquisition Sequence		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Underestimation of Integration Costs			Spending in Year 1	Spending in Year 0		Underestimation of Integration Costs	
Volume of Parallel Acquisitions		0.379** (0.139)	0.397* (0.158)	0.384* (0.161)	-0.035** (0.013)	-0.779*** (0.208)			
Expected Integration Costs Ratio				-0.012* (0.006)					
Loaded Acquisition Sequence							0.635* (0.321)		
Depreciated Acquisition Sequence								0.173 (0.337)	
Rhythmic Acquisition Sequence									-1.306*
Cross Industry Deal	-0.824 (0.545)		-0.933 [†] (0.546)	-0.942 (0.599)	-0.028 (0.027)	-0.322 (0.460)	- 0.909 [†] (0.543)	-0.827 (0.545)	-0.823 (0.548)
Cross State Deal	0.712* (0.361)		0.664 [†] (0.352)	0.660 [†] (0.357)	0.025 (0.030)	-0.333 (0.413)	0.663 [†] (0.357)	0.715 [†] (0.367)	0.682 [†] (0.354)
Market Expansion Deal	-0.131 (0.353)		-0.248 (0.376)	-0.347 (0.382)	0.017 (0.023)	0.730 [†] (0.423)	-0.195 (0.366)	-0.105 (0.353)	-0.153 (0.363)
Public Target Firm	-0.331 (0.331)		-0.255 (0.351)	-0.085 (0.373)	0.011 (0.035)	-0.084 (0.368)	-0.259 (0.333)	-0.311 (0.317)	-0.290 (0.319)
Deal Value - Log	0.489 (0.520)		0.507 (0.484)	-0.106 (0.554)	-0.067 (0.047)	1.795** (0.554)	0.577 (0.472)	0.529 (0.501)	0.553 (0.469)
Cash Consideration	-0.261 (0.700)		0.048 (0.762)	-0.169 (0.780)	-0.007 (0.077)	-3.629*** (0.833)			
PE Involvement	0.104 (0.348)		0.018 (0.368)	0.020 (0.363)	0.063 [†] (0.037)	-1.334** (0.482)			
Firm Size	-0.633 (0.512)		-0.827 (0.530)	-0.435 (0.550)	0.149 (0.121)	-1.477* (0.616)	-0.739 (0.505)	-0.647 (0.505)	-0.594 (0.501)

(Continued)									
CEO Change During M&A	-0.985		-0.776	-0.875	-0.066	0.048	-0.825	-0.956	-0.547
	(1.206)		(1.133)	(1.163)	(0.052)	(0.847)	(1.151)	(1.195)	(1.152)
CEO Tenure	-0.021		-0.026	-0.034 [†]	-0.001	0.013	-0.023	-0.018	-0.018
	(0.024)		(0.022)	(0.018)	(0.003)	(0.030)	(0.022)	(0.024)	(0.022)
									(0.540)
Constant	-0.536	-	2.009**	-0.334	0.974	0.612 [†]	0.874	-0.686	-0.700
	(1.227)	*	(0.286)	(1.246)	(1.570)	(0.334)	(1.343)	(1.219)	(1.213)
/									
Insig2u	-2.068		-0.737	-3.074	-11.287		0.398	-2.743	-2.184
	(2.749)		(1.248)	(7.032)	(42394.629)		(0.583)	(5.045)	(3.081)
									(82.022)
Observations	289	303	289	289	289	289	289	289	289

Standard errors in parentheses, [†] $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix A: Illustration of Acquisition Temporal Patterns

Acquisition patterns are identified in relation to a focal acquisition.

Each cell indicates the acquisition volume in a focal year.

Type 1: Depreciated Acquisition Pattern

Criterion: No acquisitions during at least three years before the focal acquisition year, assuming that acquisition experience before three years is prone to depreciation.

In total, 96 acquisitions are categorized as this type.

Deal ID	Acquisition Pattern						Overspend	Deal ID	Acquisition Pattern						Overspend	Deal ID	Acquisition Pattern						Overspend	Deal ID	Acquisition Pattern						Overspend	
1	0	0	0	0	0	0	64	0	26	0	0	0	0	0	140	1	51	0	0	0	0	0	541	1	76	0	93	0	0	0	928	0
2	0	0	0	0	0	0	826	0	27	0	0	0	0	0	90	1	52	0	0	0	0	0	65	0	77	0	550	0	0	0	801	1
3	0	0	0	0	0	0	3608	0	28	0	0	0	0	0	825	0	53	0	0	0	0	0	151	0	78	0	200	0	0	0	170	0
4	0	0	0	0	0	0	79	0	29	0	0	0	0	0	135	0	54	0	0	0	0	0	54	0	79	0	36	0	0	0	136	0
5	0	0	0	0	0	0	65	1	30	0	0	0	0	0	825	0	55	0	0	0	0	0	156	0	80	0	168	0	0	0	208	0
6	0	0	0	0	0	0	93	1	31	0	0	0	0	0	158	0	56	0	0	0	0	0	88	0	81	0	207	0	0	0	181	1
7	0	0	0	0	0	0	179	1	32	0	0	0	0	0	51	0	57	0	0	0	0	0	500	0	82	0	84	0	0	0	121	0
8	0	0	0	0	0	0	56	0	33	0	0	0	0	0	309	0	58	0	0	0	0	0	803	0	83	0	102	0	0	0	159	0
9	0	0	0	0	0	0	582	0	34	0	0	0	0	0	309	0	59	0	0	0	0	0	293	0	84	0	406	0	0	0	5203	0
10	0	0	0	0	0	0	61	0	35	0	0	0	0	0	198	1	60	0	0	0	0	0	1308	0	85	0	24	0	0	0	84	0
11	0	0	0	0	0	0	447	0	36	0	0	0	0	0	277	1	61	0	0	0	0	0	84	0	86	0	142	0	0	0	153	0
12	0	0	0	0	0	0	1843	0	37	0	0	0	0	0	68	1	62	192	0	0	0	0	70	0	87	0	136	0	0	0	550	0
13	0	0	0	0	0	0	236	1	38	0	0	0	0	0	77	0	63	243	0	0	0	0	56	1	88	100	382	0	0	0	1127	0
14	0	0	0	0	0	0	171	0	39	0	0	0	0	0	243	0	64	78	0	0	0	0	140	0	89	100	382	0	0	0	1127	0
15	0	0	0	0	0	0	86	0	40	0	0	0	0	0	624	0	65	28	0	0	0	0	110	0	90	55	18	0	0	0	102	0
16	0	0	0	0	0	0	286	0	41	0	0	0	0	0	62	0	66	31	0	0	0	0	105	0	91	172	860	0	0	0	146	0
17	0	0	0	0	0	0	327	0	42	0	0	0	0	0	173	0	67	116	0	0	0	0	59	0	92	6399	6665	0	0	0	3470	0
18	0	0	0	0	0	0	327	0	43	0	0	0	0	0	74	0	68	34	0	0	0	0	100	0	93	46	269	0	0	0	228	0
19	0	0	0	0	0	0	152	1	44	0	0	0	0	0	199	0	69	116	0	0	0	0	59	0	94	46	269	0	0	0	228	0
20	0	0	0	0	0	0	3992	1	45	0	0	0	0	0	241	0	70	47	0	0	0	0	299	0	95	29	83	0	0	0	87	1
21	0	0	0	0	0	0	118	0	46	0	0	0	0	0	57	0	71	260	0	0	0	0	180	0	96	124	550	0	0	0	485	0
22	0	0	0	0	0	0	142	0	47	0	0	0	0	0	277	0	72	293	0	0	0	0	856	0								
23	0	0	0	0	0	0	88	0	48	0	0	0	0	0	112	0	73	0	35	0	0	0	53	0								
24	0	0	0	0	0	0	142	1	49	0	0	0	0	0	151	0	74	0	151	0	0	0	291	0								
25	0	0	0	0	0	0	171	1	50	0	0	0	0	0	136	0	75	0	74	0	0	0	338	0								

In total, 130 acquisitions are categorized as this type.

Deal ID	Acquisition Pattern					Overspend Deal IC					Acquisition Pattern					Overspend Deal IC					Acquisition Pattern					Overspend Deal IC					Acquisition Pattern					Overspend Deal IC						
1	0	0	0	0	0	34	193	0	31	0	0	0	34	193	371	0	61	0	54	67	510	76	1056	0	91	0	0	15	0	132	59	0	121	27	55	0	177	84	244	0		
2	0	0	0	0	0	11	79	0	32	0	0	0	15	84	127	0	62	0	88	17	80	120	733	0	92	0	0	12	0	52	106	0	122	41	458	0	591	112	2190	0		
3	0	0	0	0	0	13	261	0	33	0	0	0	309	204	1854	0	63	0	54	67	510	76	1056	0	93	0	26	0	0	35	75	0	123	40	0	142	42	29	56	1		
4	0	0	0	0	0	31	299	0	34	0	0	0	121	215	1700	1	64	0	338	82	460	333	406	0	94	0	9	0	0	53	67	0	124	88	0	338	82	460	333	1		
5	0	0	0	0	0	30	51	1	35	0	0	0	110	458	3600	1	65	0	28	69	234	304	1176	1	95	0	570	0	0	3000	2065	1	125	156	0	287	59	218	474	0		
6	0	0	0	0	0	31	170	1	36	0	0	0	13	261	222	0	66	0	28	69	234	304	1176	1	96	0	67	0	0	177	173	1	126	55	0	177	84	244	265	0		
7	0	0	0	0	0	25	89	0	37	0	0	0	11	79	243	0	67	0	50	12	103	109	240	0	97	0	70	0	0	339	220	0	127	20	0	19	78	121	130	0		
8	0	0	0	0	0	15	84	1	38	0	0	0	25	89	90	0	68	0	50	12	103	109	240	0	98	0	477	0	0	76	138	0	128	48653	0	35000	24300	4200	19400	1		
9	0	0	0	0	0	16	237	0	39	0	0	0	77	19	78	0	69	0	70	32	54	14	64	277	0	99	0	90	88	0	338	92	0	129	74	0	34	534	169	176	1	
10	0	0	0	0	0	29	83	0	40	0	0	0	54	67	510	0	70	0	88	17	80	120	733	629	0	100	0	215	534	0	1020	220	1	130	277	0	84	277	1021	737	1	
11	0	0	0	0	0	22	55	0	41	0	0	0	17	70	109	0	71	0	70	32	54	14	64	277	0	101	0	181	42	0	215	534	0									
12	0	0	0	0	0	111	243	0	42	0	0	0	34	193	371	0	72	0	55	0	0	0	41	143	1	102	0	181	42	0	215	534	0									
13	0	0	0	0	0	46	269	0	43	0	0	0	54	67	510	76	73	0	550	0	0	0	801	500	0	103	0	12	376	0	475	77	1									
14	0	0	0	0	0	100	382	1	44	0	0	0	25	37	50	96	74	0	84	0	0	0	121	215	0	104	0	196	214	0	0	173	161	0								
15	0	0	0	0	0	541	134	1	45	0	0	0	88	17	80	120	75	0	28	0	0	0	43	218	0	105	0	37	50	96	0	626	877	1								
16	0	0	0	0	0	54	67	1	46	0	0	0	50	12	103	109	76	0	78	0	0	0	90	88	0	106	0	138	167	167	0	403	1783	0								
17	0	0	0	0	0	31	299	0	47	0	0	0	111	243	3077	815	77	0	860	0	0	0	146	389	0	107	0	174	5600	17177	0	388	1990	0								
18	0	0	0	0	0	23	67	0	48	0	0	0	28	69	234	304	78	0	37	0	0	0	102	85	0	108	0	277	0	84	277	1021	0									
19	0	0	0	0	0	31	170	0	49	0	0	0	28	69	234	304	79	0	0	0	208	0	291	230	0	109	0	277	0	84	277	1021	1									
20	0	0	0	0	0	309	204	0	50	0	0	0	76	138	167	167	80	0	0	0	151	0	302	1530	0	110	0	277	0	84	277	1021	1									
21	0	0	0	0	0	17	40	51	0	51	0	0	76	138	167	167	81	0	0	0	20	0	119	78	0	111	0	156	0	287	59	218	0									
22	0	0	0	0	0	31	170	168	0	52	0	0	12	76	705	524	82	0	0	0	156	0	287	59	0	112	0	74	0	34	534	169	0									
23	0	0	0	0	0	50	12	103	1	53	0	0	77	19	78	175	83	0	0	0	13	0	40	67	0	113	0	57	0	42	61	903	0									
24	0	0	0	0	0	21	158	2182	1	54	0	0	56	17	70	580	84	0	0	0	476	0	1378	71645	0	114	0	20	0	19	78	121	0									
25	0	0	0	0	0	111	243	3077	0	55	0	0	25	89	90	198	85	0	0	0	476	0	1378	71645	0	115	0	214	0	0	173	161	229	0								
26	0	0	0	0	0	28	69	234	0	56	0	0	12	76	705	524	1108	86	0	0	277	0	84	277	0	116	0	19	0	0	80	43	91	0								
27	0	0	0	0	0	54	67	510	0	57	0	0	56	17	70	580	83	87	0	0	74	0	34	534	0	117	0	477	0	0	76	138	167	0								
28	0	0	0	0	0	140	49	85	0	58	0	0	142	42	29	56	867	88	0	0	552	0	265	975	0	118	0	4764	0	0	3181	124	550	1								
29	0	0	0	0	0	88	17	80	0	59	0	0	88	17	80	120	733	89	0	0	35	0	103	59	1	119	0	90	88	0	338	92	460	0								
30	0	0	0	0	0	12	76	705	0	60	0	0	54	67	510	76	1056	90	0	0	277	0	84	277	0	120	0	240	74	0	570	188	802	1								

Type 3: Rhythmic Acquisition Pattern

Criteria: (1) At least one rest year right before the focal acquisition year; (2) at least one acquisition experience within the three years before the focal acquisition.

In total, 78 acquisitions are categorized as this type.

Deal IC	Acquisition Pattern						Overspend	Deal IC	Acquisition Pattern						Overspend	Deal IC	Acquisition Pattern						Overspend	Deal IC	Acquisition Pattern						Overspend
1	0	0	43	0	0	172	0	26	75	0	477	0	0	76	0	51	12	0	0	12	0	52	0	76	76	138	167	167	0	403	0
2	0	0	74	0	0	57	0	27	35	0	52	0	0	359	0	52	11	0	0	125	0	139	0	77	111	243	3077	815	0	681	0
3	0	0	30	0	0	1626	0	28	0	0	0	277	0	84	0	53	14	0	0	87	0	101	0	78	67	510	76	1056	0	582	1
4	0	0	825	0	0	172	0	29	0	0	0	555	0	274	0	54	42	0	215	534	0	1020	0								
5	0	0	48	0	0	62	0	30	0	0	0	59	0	640	0	55	49	85	0	321	0	230	1								
6	0	0	10	0	0	174	0	31	0	0	0	208	0	291	0	56	0	0	41	458	0	591	0								
7	0	0	17	0	0	117	1	32	0	0	0	171	0	209	0	57	0	0	27	55	0	177	0								
8	0	0	56	0	0	504	0	33	0	0	0	88	0	139	0	58	0	0	181	42	0	215	0								
9	0	0	10	0	0	146	0	34	0	0	0	88	0	139	0	59	0	0	90	88	0	338	0								
10	0	0	11	0	0	199	0	35	0	0	0	22	0	257	0	60	0	0	90	88	0	338	0								
11	0	0	67	0	0	177	0	36	0	0	0	22	0	257	0	61	0	0	90	88	0	338	0								
12	0	0	19	0	0	80	1	37	0	0	0	159	0	491	0	62	0	0	339	220	0	536	0								
13	0	0	570	0	0	3000	0	38	0	0	0	15	0	132	0	63	0	0	339	220	0	536	0								
14	0	0	70	0	0	339	0	39	0	0	0	95	0	2346	0	64	0	0	52	40	0	142	0								
15	0	0	170	0	0	552	0	40	0	0	0	140	0	352	0	65	0	0	31	299	0	197	0								
16	0	0	4764	0	0	3181	1	41	0	0	0	485	0	2600	1	66	0	0	59	58	0	468	0								
17	0	196	214	0	0	173	0	42	0	0	0	299	0	431	1	67	0	0	35	75	0	83	0								
18	0	102	85	0	0	52	0	43	0	0	0	35	0	103	0	68	0	13	261	222	0	306	0								
19	0	5383	####	0	0	476	0	44	0	0	0	13	0	103	0	69	0	140	49	85	0	321	0								
20	0	541	134	0	0	645	0	45	0	0	0	156	0	287	0	70	0	140	49	85	0	321	0								
21	0	95	110	0	0	1000	0	46	0	13	0	103	0	972	0	71	0	34	193	371	0	264	0								
22	0	291	230	0	0	737	0	47	0	555	0	274	0	406	0	72	0	173	161	229	0	176	0								
23	0	196	214	0	0	173	0	48	0	22	0	257	0	644	0	73	19	78	121	130	0	127	0								
24	20	25	13	0	0	67	0	49	0	59	0	640	0	485	0	74	25	37	50	96	0	626	0								
25	31	18	11	0	0	125	0	50	170	0	0	552	0	265	0	75	25	37	50	96	0	626	0								

CHAPTER 4

When Beauty is Beastly: Facial Attractiveness of Female CEOs and Investor Reactions to Acquisition Announcements

Abstract

Research on gender bias in the top management team literature has focused on *between-group* gender bias in which female top executives are compared to their male counterparts. Drawing on role congruity theory, we move beyond prior research to examine *within-group* variability of gender bias in which some female executives encounter greater levels of gender bias than others do. Specifically, we investigate one form of gender bias variation among women: the “beauty-is-beastly effect”, in which more attractive females are viewed as more communal and thus are perceived as less able to manage stereotypically “male-typed” actions such as acquisitions. Consistent with a within group bias, we hypothesize and find in a sample of public firms in China that more attractive female CEOs face greater negative investor reactions to their acquisition announcements. Moreover, we find this within-group bias against more attractive female CEOs may be limited under conditions in which role incongruity perceptions are reduced. These conditions include the observation of successful acquisition experience of a focal female CEO and the presence of positive media reports about the focal female CEO. Finally, drawing on a comparison sample, we analyze the facial attractiveness of male CEOs, and find that it has no effect on investor reactions to acquisition announcements.

Key words: *female leadership, gender bias, gender stereotype, face perceptions, acquisitions*

INTRODUCTION

As an increasing number of women are attaining the CEO position in major firms, research on perceptions about female CEOs has attracted growing recent attention (e.g., Dixon-Fowler, Ellstrand, & Johnson, 2013; Dwivedi, Joshi, & Misangyi, 2018; Jeong & Harrison, 2017; McDonald, Keesee, & Westphal, 2018; Zhang & Qu, 2016). Role congruity theory in psychology suggests that female leaders often face biased perceptions due to a perceived incongruity, or “lack of fit”, between female stereotypes and the normative expectations associated with leadership roles (Eagly & Karau, 2002; Heilman, 1983). Drawing on this logic, management research has investigated whether key stakeholders perceive female CEOs – as compared to male CEOs – in a biased manner. Although a significant amount of research has been conducted in this area, the empirical findings have been inconclusive. Some studies have found evidence of gender bias against female CEOs (Jeong & Harrison, 2017; Lee & James, 2007), while others have not (e.g., Brinkhuis & Scholtens, 2018; Smith, Chown, & Gaughan, 2021).

A weakness of this line of research is that it focuses on categorical comparison between women and men, and thus implicitly assumes all female CEOs are perceived as similar to each other. Yet, research has shown that perceptions of females are not uniform, but instead vary depending on individual female characteristics (Eagly & Karau, 2002; Heilman, 1983, 2012). Role congruity theory emphasizes that prejudice toward female leaders is a “*variable phenomenon*” and that the variance among characteristics of individual female leader should be recognized (Eagly & Karau, 2002: 589). Accordingly, management scholars have begun to call for more nuanced work that would go beyond *between-group* male-female comparisons (e.g., sex differences) to consider *within-group* differences among female CEOs (Dwivedi et al., 2018; Hoobler, Masterson, Nkomo, & Michel, 2018).

Psychology research has highlighted female facial attractiveness as an important gender-related feature that contributes to perceived within-group differences among women. Specifically, a group level *beauty-is-beastly* effect, an offshoot of role congruity theory, has shown that more attractive women are perceived as particularly prototypical members of the female group, and thus are less associated with agentic qualities that are stereotypically more associated with their male counterparts (e.g., dominance, competitiveness, aggressiveness). Therefore, more attractive women, relative to less attractive women, are perceived as less fit for and thus less likely to succeed in “male-typed” tasks associated with agentic characteristics (Heilman & Saruwatari, 1979; Heilman & Stopeck, 1985).

To our knowledge, no prior study has considered the effect of facial attractiveness on the occurrence of gender bias against female CEOs. Women in CEO positions have commonly been forced to overcome gender barriers in their career development in which they have often established effective records of performance. Accordingly, facial cues of female CEOs should be irrelevant to performance expectations about their corporate activities and thus have no organization-level consequences. Yet, prior research has shown that attractiveness is a salient cue for forming perceptions, particularly about women (Eagly, Makhijani, Ashmore, & Longo, 1991). Consistent with this observation, media reporting has devoted considerable attention to female leader appearance (e.g., Thomas, Harell, Rijkhoff, & Gosselin, 2020). Although women are often judged by their appearance, prior studies on CEO facial cues have focused on male CEOs. Hence, little is known about whether investors perceive the more attractive female CEOs differently in managing “male-typed” strategic actions than the less attractive female CEOs.

We examine potential bias against female CEOs in the context of acquisitions. Investors pay attention to this highly visible strategic action (Devers et al., 2020), and attend to CEO attributes to evaluate acquisition performance (Meyer-Doyle et al., 2019). Acquisitions are *stereotypically perceived* to require agentic attributes, such as decisive target selection, competitive bidding, and aggressive negotiation (Koenig, Eagly, Mitchell, & Ristikari, 2011).⁴ Based on the “lack of fit” logic, we hypothesize and find that investors view more, as opposed to less, attractive female CEOs as less competent to conduct “male-typed” corporate activities. In addition, and arguably more importantly, we examine the conditions that limit within-group bias against attractive female CEOs. Role congruity theory holds that stereotypes about women are less salient for judgment formation under conditions in which job-related information about an individual is available (Koch, D'Mello, & Sackett, 2015). We examine two forms of such individuating information and hypothesize that information of female CEOs from both direct observation (CEO’s acquisition experience) and indirect observation (positive CEO media reports) may diminish the “lack of fit” perceptions common to gender role incongruity encountered by more attractive female CEOs.

Our paper contributes to the research and theory development on top management teams, and, in particular on the biases associated with female CEOs in multiple ways. First, drawing on recent research on role congruity theory in psychology, we advance hypotheses

⁴ To assess whether acquisitions are stereotypically perceived as “male-typed” strategic actions, we surveyed MBA students and found acquisitions were rated as requiring more agentic and less communal qualities than other strategic actions (e.g., alliances). We elaborate on this study in our supplementary analysis section.

on the existence of the within-group variability against more attractive female CEOs in “male-typed” strategic actions. While most of the prior work on female executives has focused on between-group gender bias by comparing female and male CEO groups, we seek greater nuance to this categorical view in which we emphasize the varying nature of gender bias within the female CEO group.

Second, we highlight the beauty-is-beastly bias as an important, previously unexplored form of perceived role incongruity against female CEOs in stereotypically “male-type” strategic actions. Although female leaders often encounter public media scrutiny of their appearance, surprisingly little is known about the consequences of female CEOs’ facial attractiveness. Our findings indicate that female CEO’s facial attractiveness has a negative effect on market response to acquisition announcements—a stereotypically “male-typed” strategic contexts.

Third, we find that individuating information can decrease “lack-of-fit” perceptions and mitigate the beauty-is-beastly within group bias against female CEOs. Despite extensive prior research of gender bias towards female leaders, mitigation of gender bias has received relatively limited attention (Abraham, 2019; Parker, Mui, & Titus, 2019). In particular, we highlight the importance of individual-level job-related background information, specifically CEO task experience and the positive media reporting, to limit biased “lack of fit” perceptions of female CEOs.

THEORY AND HYPOTHESES

Gender Bias Against Female CEOs: Perceived Role Incongruity

The research on the occurrence of gender bias against female CEOs has predominantly examined how key stakeholders compare female CEOs to their male counterparts. This line of research often draws on a role congruity perspective in psychology that suggests females may face biased perceptions due to a perceived mismatch between gender stereotypes about women and the positions they hold. Gender stereotypes are often categorized into two types: communion and agency (Bakan, 1966; Eagly, 1987).

Communion, generally ascribed to women, denotes concerns for others (e.g., caring, warm with others), affiliative tendencies (e.g., supportive, collaborative), and emotional sensitivity (e.g., affectionate) (Eagly & Steffen, 1984; Heilman, 2012). *Agency*, largely attributed to men, describes the motivation to master (e.g., dominant, apt to lead), achievement orientation (e.g., aggressive, competitive), and rationality (e.g., logical, analytical) (Broverman, Vogel, Broverman, Clarkson, & Rosenkrantz, 1972). Leadership

roles are often perceived associated with agentic qualities such as aggressiveness, dominance, competitiveness, and emotional stability – which have been stereotypically ascribed to men (Eagly & Steffen, 1984; Heilman, 2012). As such, a perceived mismatch ensues between communal qualities, typically ascribed to women, and the agentic expectations associated with leadership, which creates biased evaluations about female competence as leaders (Eagly & Karau, 2002; Heilman, 1983).

A significant amount of research on the potential bias against female CEOs has focused on perceptions about female CEOs at their appointment and after their promotion. Specifically, researchers have focused on investor reactions to the nomination of female CEOs. The seminal work by Lee and James (2007) showed that investors react significantly more negatively to the nomination of female CEOs than to male CEOs. Along similar lines, recent meta-analysis work (Jeong & Harrison, 2017) found evidence that women continue to face negative investor reactions after attaining the CEO position as compared to men. Yet, such negative reactions do not exist regarding female appointments to other top management team positions. Although some studies have shown the existence of gender bias against female CEOs, other studies have found no evidence of such bias. For instance, a recent study (Smith et al., 2021) investigated investor reactions to CEO nominations of US public firms between 2000 and 2016. The study included observations of 94 female CEO nominations significantly extending the sample size from the 17 female CEOs in the Lee and James (2007) study. The study showed no evidence of gender bias in investor reactions when compared the nomination of female and male CEOs. Similarly, a recent replication of Lee and James (2007) in the context of public firms in the United States from 2000 to 2018 found no evidence of investor gender bias against women in CEO nomination CEOs (Kolev, Mah, & McNamara, 2021). Further, in the analysis of the nomination of female CEOs and CFOs in a global setting, no investor bias against female leaders was found as compared to male leaders (Brinkhuis & Scholtens, 2018).

Alongside with investor reactions to CEO nominations, researchers have also examined potential biases of the board regarding female CEOs by investigating gender pay equality. Similar to the research on investor reactions to female CEO appointments, findings in this area have also been inconclusive. In the context of Chinese female CEOs, Wang et al. (2018) showed the existence of a negative gap between female and male CEO compensation. The authors contended that gender pay differences resulted from the perceived gender-role incongruity (Abraham, 2017). On the other hand, there are also other studies that show that female and ethnic minority CEOs may benefit from their status and receive a higher

compensation than white male CEOs (Hill, Upadhyay, & Beekun, 2015), while other studies show no significant difference in compensation paid to male and female CEOs (Gupta, Mortal, & Guo, 2018).

Overall, to summarize the prior work on perceptions of stakeholders, evidence for gender bias against female CEOs – as compared to male CEOs – has remained inconclusive. One possible explanation for mixed prior findings may be the focus on categorical comparison between female and male executives (i.e., *between-group comparison*). Nearly all work in this domain has conceptualized gender bias as the relative perceptions of female and male CEOs and has operationalized gender bias as a binary variable of CEO gender. While this between-group approach offers important insights on gender bias against female CEOs, it implicitly assumes all female CEOs are perceived as similar and that biological sex is the single trigger of gender bias.

Yet, the role congruity perspective in psychology has shown important within-group, individual differences regarding how women are treated (i.e., *within-group comparison*) (Eagly & Karau, 2002; Heilman, 2001; Heilman, Manzi, & Braun, 2015). Psychology research on gender biases has also increasingly encouraged researchers to go beyond the over-simplified, binary views of biological sex and instead explore within-gender variation in the female group (Butler, 1990; Eagly & Wood, 2013; Morgenroth & Ryan, 2018). In addition, management scholars have called for more nuanced work that would extend and complement the existing focus on the “sex differences” (i.e., male vs. female) and give variation among female CEOs more serious consideration (Dwivedi et al., 2018). A within-gender perspective shifts the focus from an “essentialist” belief about gender in which all women are viewed as similar due to a fixed category determined by their biological sex (Hoobler et al., 2018; Roberts, Ho, Rhodes, & Gelman, 2017) to a more nuanced understanding in which the degree of bias each focal female experiences varies depending on how strongly the gender stereotype is activated (Eagly & Karau, 2002; Heilman, 2001).

From a within groups perspective, in contexts associated with more agentic qualities, attributes associated with females, “heighten the degree to which a woman is stereotypically characterized and can be expected to produce more negative performance expectations and detrimental evaluative outcomes” (Heilman, 2012: 118). Thus, certain attributes make a woman’s gender particularly “distinctive and noticeable” and “increase the weight given to the female gender role” in impression formation and thus increase the bias against her as compared to other women (Eagly & Karau, 2002: 589; Heilman, 1997: 10). For example, research has shown that portraying a female job candidate as pregnant – a cue that

unquestionably makes female gender more salient – results in more negative performance evaluations and lower likelihood of employment (Heilman & Okimoto, 2008; Little, Major, Hinojosa, & Nelson, 2015; Morgan, Walker, Hebl, & King, 2013). As such, although women’s biological sex is often a salient general trigger of gender stereotypes, the specific perceived “lack of fit” with agentic jobs varies according to individual female attributes.

Within Group Gender Bias Against Female CEOs: Facial Attractiveness and Acquisitions

Psychological research has highlighted female facial attractiveness as a characteristic that increases the salience of gender. The tendency to make attributions from facial features is deeply rooted in human behavior (see Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2015 for a review). In only milliseconds, individuals attribute personal traits from facial appearance (Willis & Todorov, 2006). Facial cues are readily seen and can activate stereotypes effortlessly, automatically, and even unintentionally. Research has shown that attributions from faces can have profound social consequences, such as, in the election of political candidates (Lenz & Lawson, 2011), judgment of guilt (Porter, ten Brinke, & Gustaw, 2010), military rank (Mueller & Mazur, 1996), entrepreneurship funding (Patel & Wolfe, 2019), and employee selection and compensation (Nault, Pitesa, & Thau, 2020).

Female facial attractiveness is a gender-typed, feminine feature that can activate female gender stereotypes (e.g., being warm with others, caring, and supportive) (Heilman, 2012). Consistent with a link between facial attractiveness and female stereotype activation, Heilman and her colleagues (Heilman & Saruwatari, 1979; Heilman & Stopeck, 1985) coined the *beauty-is-beastly* effect. As an offshoot of the role congruity perspective, the *beauty-is-beastly* effect has shown that more attractive women encounter greater gender bias in “male-typed” jobs than less attractive women. Specifically, attractive women are perceived by audiences to be more prototypical members of the female group, and hence even more communal and less agentic than less attractive women. Accordingly, compared to less attractive women, more attractive women face increased incongruity with the expected agentic qualities of “male-typed” occupations, which amplifies negative performance expectations.

Empirical research in psychology has provided some support for the existence of the *beauty-is-beastly* effect. Accordingly, more attractive women are less likely to be employed in “male-typed” jobs, such as prison guards or construction workers (Cash, Gillen, & Burns, 1977; Heilman & Saruwatari, 1979; Heilman & Stopeck, 1985; Jackson, 1983; Johnson,

Podratz, Dipboye, & Gibbons, 2010; Johnson, Sitzmann, & Nguyen, 2014). Although some prior studies have found attractiveness to benefit women in career advancement and to have no effect on self-employed women (Brooks, Huang, Kearney, & Murray, 2014; Judge, Hurst, & Simon, 2009; Patel & Wolfe, 2019), these studies were not designed to examine “male-typed” setting in which a perceived role incongruity could be seen to emerge. In their comprehensive review, Nault et al. (2020) emphasized the role congruity logic in beauty perceptions: “decision makers are relying on perceptions related to how *well-suited* attractive individuals are expected to be for specific work positions and favor the attractive only when these perceived qualities *fit* the requirements of such positions” (emphasis added).

To our knowledge, no prior study has investigated whether attractiveness—a within group form of variation of gender—influences bias perceptions among female CEOs. Although female leaders are often judged based on their appearance, somewhat surprisingly most prior work on CEO facial cues has focused on male CEOs. These studies have established that male CEO appearance (e.g., the appearance of competence, dominance, trustworthiness) is associated with public attitudes toward their companies (Gorn, Jiang, & Johar, 2008), media tone and stock analysts’ recommendations (Gomulya, Wong, Ormiston, & Boeker, 2017), likelihood of firm misreporting (Jia, Lent, & Zeng, 2014), and even firm performance (Wong, Ormiston, & Haselhuhn, 2011). By contrast, the impact of female CEO facial attractiveness in corporate contexts remains understudied. Although two studies have investigated the link between female CEO attractiveness and long term financial performance (Pillemer, Graham, & Burke, 2014; Rule & Ambady, 2009), these studies were not designed to assess external bias against female CEOs. Prior studies also commonly suffer from a relatively limited number of observations of female CEOs ($n < 30$), due to the scarcity of females in CEO positions. To explore potential audience bias, we examine the link between female CEO attractiveness and market responses to acquisitions.

Drawing on the within group role congruity research, we argue that more rather than less attractive female CEOs will face greater bias in acquisitions, which, as we develop below, are often considered a stereotypically “male-typed” strategic action. Psychology research on sex differences between males and females suggests that audiences hold gender stereotypes about job requirements, which may be viewed through a gendered lens (e.g., “male-typed”, “female-typed”, and “gender-neutral”) (Cejka & Eagly, 1999). Such gender stereotypes about jobs have been shown to exist among different occupations (e.g., truck driver vs. administrative assistant), professional specialties (e.g., surgery vs. nursing), academic fields (e.g., physics vs. psychology), and functions in organizations (e.g., R&D vs.

human resource management) (Heilman, 2012; Reichel, Scheibmayr, & Brandl, 2019). In the context of strategic actions, acquisitions are stereotypically male-typed strategic actions in which CEOs are often highly involved. Success in acquisitions is perceived to require that CEOs demonstrate competitive, forceful, and dominant behaviors, which are agentic qualities stereotypically associated with males.

For example, ability to negotiate about the acquisition premium influences acquisition performance (e.g., Devers et al., 2020; Welch, Pavićević, Keil, & Laamanen, 2019), and is stereotypically perceived “as a masculine activity” in which “the attributes that describe economically effective negotiators are conflated with prescriptive male attributes” (Mazei, Zerres, & Hüffmeier, 2021: 112). Therefore, attractive female CEOs—that are more prone to fit to the female stereotype—may be biasedly perceived as less agentic and therefore less competent in deal negotiation. In addition, while acquisition integration is often a process with high potential for conflict (Graebner et al., 2017), the ability to settle conflict is often associated with dominance (Mueller & Mazur, 1996; Ridgeway & Diekema, 1989). In acquisitions, dominant CEOs are expected to exert their will to (a) align the values of the target with those of acquiring firm, (b) remove inefficiency, and (c) consolidate the target firm’s networks. Although communal traits - such as tendency for collaboration, caring, and warmth – may also be helpful for winning stakeholder support and to promote trust during integration, agentic qualities are *stereotypically* perceived as *even more* relevant to acquisition success. Accordingly, even though attractive female CEOs may be as dominant as less attractive female CEOs, investors may end up underestimating the competence of more attractive female CEOs in managing acquisitions.

Our first hypothesis assumes that acquisitions are perceived as a “male-typed” task. To assess if this perception holds, we conducted a survey on MBA students at a leading university. Based on prior work, we identified prototypical *communal* (e.g., affectionate, warm in relations with others, understanding of others, sympathetic, and gentle) and *agentic* (e.g., willing to take risks, aggressive, competitive, dominant, forceful) traits (Bem, 1981; Cejka & Eagly, 1999; Schein, 1973) and asked MBA students to evaluate four key strategic actions. These actions included acquisitions, strategic alliances, human resource management, and research and development. Based on our survey, we found that acquisitions were rated significantly higher on the agentic dimension than the communal dimension, which indicates that a “male-typed” gender stereotype is associated with acquisitions (e.g., Koenig et al., 2011). In contrast, for alliances and human resource management (HRM)

activities agentic ratings were not significantly higher than communal ratings. We elaborate more on the results of this survey in the supplemental analysis section.

To sum up, based on the stereotypical view of acquisitions as “male-typed” strategic transactions, we draw on the role congruity perspective and the beauty-is-beastly effect to predict that female facial attractiveness heightens perceived communal characteristics of female CEOs, which results in increased perceptions of incongruity relative to investor expectations about the agentic qualities deemed critical for acquisitions. Therefore, we expect that increased female CEO facial attractiveness – a seemingly irrelevant point of information in acquisition evaluation – will result in more negative evaluation of acquisition announcements by investors, as compared to acquisitions pursued by less attractive female CEOs. Accordingly, we hypothesize:

Hypothesis 1: Investors will react more negatively to acquisitions conducted by more attractive, as compared to less attractive, female CEOs.

Mitigating Investor Bias against More Attractive Female CEOs

Although establishing bias against female CEO attractiveness may increase understanding of investor behavior, the manner in which this bias can be mitigated presents even more significant theoretical and practical implications. Although extensive investigation has been conducted of gender-biased perceptions about female CEOs, research on bias mitigation has remained rather limited (Parker et al., 2019). For example, a handful of studies have shown that gender bias against female leaders is reduced in the industries in which women more commonly serve as leaders, because the normative agentic expectations associated with leaders in these industries are less salient (Abraham, 2019; Joshi, Son, & Roh, 2015). In the context of film directors, it was shown that biased evaluations about female-led films, as compared to male-led films, are reduced when the movie projects are unconventional, because the unconventionality distances the stereotypical expectations about male-typed qualities to succeed in these projects (Parker et al., 2019). In another study, Lee and Huang (2018) showed that social impact framing – the framing emphasizing a venture’s social-environmental benefits – help portray the venture as congruent with female stereotypes, which reduced gender bias against female entrepreneurs. Finally, in the case of CEO succession, female CEOs have been shown more likely to succeed under conditions in which the predecessor male CEOs promoted gender inclusiveness, which reduces the normative agentic stereotypes about the CEO role (Dwivedi et al., 2018).

While the research on gender bias mitigation has provided important insights, it has neglected the potential role of quality signals regarding female executives – such as their prior experience – in bias mitigation. In particular, psychology research emphasizes the importance of job-related, unambiguous, and diagnostic information about an individual, which has been referred to as “*individuating information*” as a means to reduce stereotypes (Kunda & Spencer, 2003; Locksley, Borgida, Brekke, & Hepburn, 1980). Stereotypes influence judgment through two different processes: stereotype activation, “the extent to which a stereotype is accessible in one’s mind”, and stereotype application, “the extent to which one uses a stereotype to judge a member of the stereotyped group” (Kunda & Spencer, 2003: 522). Under conditions in which such individuating information is present, stereotype application can be weakened, even when stereotypes are activated by gender cues. Individuating information provides alternative, individual level information that is more salient than group level categorical information (i.e., stereotypes) (Koch et al., 2015).

In terms of reducing gender bias, role congruity theory highlights that the influence of gender-role stereotypes are lessened as people “obtain more individuating information about one another” (Eagly & Karau, 2002: 585). One powerful source of such individuating information is the direct observations of the subject’s competence and performance (Roth, Purvis, & Bobko, 2012). It has been shown that gender-role (in)congruity bias is reduced under conditions in which information about the individual clearly points to high competence (Koch et al., 2015). In a similar vein, highly structured job interviews that allow direct interactions with female candidates have been found to focus attention on job-related information, which reduces biased evaluations about female candidates (McCarthy, Van Iddekinge, & Campion, 2010). Similarly, individuating information about the commitment and flexibility of focal pregnant job candidates was found to reduce discrimination (Morgan et al., 2013).

In addition to individuating information from direct observations of competence and performance, indirect observations of female leaders through media reporting represents another important information source that influences perceptions (Ellemers, 2018). Media reporting can be highly influential for shaping perceptions (Van der Pas & Aaldering, 2020). Prior work has found that after reading a positively framed article about a focal female politician, readers viewed her as more likable and competent, which reduced the bias stemmed from perceived gender role incongruity (Bligh, Schlehofer, Casad, & Gaffney, 2012).

Based on research on individuating information obtained from direct observations of experience and indirect observations from the media, we expect that job-related information about a focal female CEO's competence and performance may help reduce the bias that stems from facial attractiveness and perceptions of role incongruity. Specifically, we test whether a female CEO's prior acquisition performance (direct observation) and positive media reports (indirect observations) will lessen the role incongruity perceptions of investors.

Individuating information from direct observations: CEO successful acquisition experience. Psychology research suggests that job-related, individuating information can “attenuate inferences made on the basis of physical attractiveness” (Eagly et al., 1991: 119). Empirical analysis has shown that the magnitude of the attractiveness bias is lower under conditions in which relevant individuating information is present (Nault et al., 2020). Moreover, research suggests that the mitigating effect of individuating information on gender bias is stronger under conditions in which the information is less ambiguous and more related to job performance (e.g., information about job performance), than when it is not (e.g., information about hobbies) (Koch et al., 2015; Nault et al., 2020).

In the context of acquisitions, female CEO's prior performance in conducting acquisitions provides an important alternative source of information to establish performance expectations. This observation may reduce investor incongruity perceptions associated with attractive female CEO. Individuating information allows the competence of the individual to be observed. Prior acquisition performance of the CEO provides investors with specific, task-related information, which helps them better diagnose acquisition performance as compared to facial cues only. Therefore, under conditions in which a focal female CEO has conducted successful acquisitions, investors are more likely to evaluate her specific acquisition capabilities based on prior acquisition experience while simultaneously relying less on other, more general cues.

Individuating information about the CEO's prior acquisition performance may act as a signal of a female CEO's knowledge and capability in leading acquisitions. Since acquisitions are complex strategic actions that require CEO involvement (Barkema & Schijven, 2008), learning from acquisition experiences develops acquisition capability (Devers et al., 2020; Halebian et al., 2009). A track record of successfully conducted acquisitions provides evidence of “true” CEO competence and signals accumulated knowledge and practices to manage acquisitions. Therefore, we posit that the performance of a focal female CEO in leading acquisitions will reduce the potential within-gender investor bias associated with facial characteristics. A focal female CEO's successful acquisition

experience will reduce stereotypical thinking by investors as they evaluate acquisition announcements. Accordingly, we suggest that a female CEO's successful acquisition experiences will reduce the negative baseline effect of a female CEO's facial attractiveness on investor perceptions to acquisition announcements in which we hypothesize:

H2: The negative relationship between female CEO facial attractiveness and investor reactions to their acquisition announcements will be mitigated by focal female CEO successful acquisition experience.

Individuating information from indirect observations: CEO positive media reports.

A second important source of individuating information is indirect observation of individual female leaders through the lens of the media. The media affects how its audiences consider a wide range of social categories, such as age, ethnicity, and gender (Kroon, van Selm, ter Hoeven, & Vliegenthart, 2016; Schemer, 2012). Accordingly, perceptions of female CEOs are likely affected by news coverage and media tone.

The media shapes the public image of female CEOs, which subsequently also influences investor perceptions (Dixon-Fowler et al., 2013; Lee & James, 2007; Park & Westphal, 2013). Specifically, research suggests that the intensity, tone, and content of media reporting tends to be generally less favorable about female rather than male leaders (Aaldering & Van Der Pas, 2018; Jungblut & Haim, 2021). However, under conditions in which media articles are framed positively about an individual female leader, they can lead to a reduction in stereotypical thinking (Schlehofer, Casad, Bligh, & Grotto, 2011).

In our research context, we argue that positive media reports regarding a focal female CEO helps mitigate the role incongruity associated with the beauty-is-beastly effect, for two main reasons. First, given that the media disseminates work related information about a focal female CEO, investors are less likely to judge the CEO's capability merely based on her facial attractiveness. Media coverage may increase investors' knowledge about the CEO's experience, skills, personality, strategies, and behaviors (Dyck, Volchkova, & Zingales, 2008). Accordingly, as such individuating information increases in the media, investors are less likely to be influenced by facial cues when evaluating acquisitions.

Second, in addition to disseminating "raw" information on a CEO's capabilities, media can also shape the overall reputation of the CEO. In particular, positive media reports can enhance a female CEO's reputation (Deephouse, 2000; Liu & McConnell, 2013) and her CEO celebrity status (e.g., Hayward, Rindova, & Pollock, 2004). Such positive media reports regarding a female CEO makes stakeholders aware of her competence and raises positive performance expectations about her acquisitions (Farrell & Whidbee, 2002; Liu, McConnell,

& Xu, 2017). Positive media reports are often associated with high past performance, favorable public opinions, and convincing strategies towards the future. Thus, positive media reports about a female CEO may help eliminate the potential bias associated with the beauty-is-beastly effect.

Taken together, we argue that individuating information from indirect observations of through positive media reports reduces investor bias associated with female CEO's facial attractiveness and enhances perceptions of competence. Thus, we hypothesize:

H3: The negative relationship between female CEO facial attractiveness and investor reactions to acquisition announcements will be mitigated by positive media reports about a focal female CEO prior to the acquisition announcement.

METHODS

Sample and Data

We examined our predictions in the context of publicly listed companies listed on the Shanghai and Shenzhen stock exchanges in China. This context is appropriate for testing our predictions for several reasons. First, female representation in CEO positions in the Chinese public companies provides a good basis for testing our theory due to a large number of female CEOs. Second, race is not a salient identity feature influencing social perceptions of facial attractiveness in China. The Han ethnic group makes up 91.5% of China's population according to the 2010 Population Census of China. Ethnically, almost all female CEOs of our sampled companies were Han. Third, according to the China Securities Regulatory Commission, about 95% of the market capitalization of the sampled stock exchanges in 2019 is held by domestic investors that have relatively unanimous perceptions of facial attractiveness. Furthermore, photos of female CEOs are easily accessible via the company official websites, news reports, and online roadshows of listed firms. In addition, China was among the most active markets in terms of acquisition transactions during our research window, which enabled us to collect sufficient observations of investor reactions to acquisition announcements by female CEOs. Finally, China is among the most masculine societies according to Hofstede (2001), which enhances its appropriateness for testing our predictions. In a masculine culture, the society endorses achievement, competition, and dominance, as opposed to relationships or the quality of life (feminine culture) (Hofstede, 2001).

We compiled our sample in two steps: First, we identified all female CEOs of publicly listed companies on the Shanghai and Shenzhen stock exchanges between 2014 and

2017. We excluded 104 female CEOs who had not announced any acquisitions from the beginning of their tenure to June 30, 2019. Since we relied on photographs of CEOs to evaluate their perceived attractiveness, we excluded 18 female CEOs whose photographs were not found online. As the second step, we collected all acquisitions announced by these female CEOs during their tenure until June 30, 2019. We dropped observations from our sample when critical values of control variables are missing. At the end, our final sample included 644 acquisitions announced by 210 female CEOs.

We collected data on executive characteristics, acquisitions, and company financials from the China Stock Market and Accounting Research (CSMAR) database. Data from CSMAR has been used in prior research to study both acquisitions and female leadership (Zhang & Greve, 2019; Zhang & Qu, 2016). With regards to the data on CEO media reports, we used the Chinese Executives News Database of Listed Company (CEND), which is a leading database of Chinese financial news and covers over 40 million news articles published by major Chinese finance and business news sources.

Dependent Variable

Investor Reactions - CAR. Consistent with prior studies on investor reactions to acquisition announcements (Haleblian et al., 2009; Haleblian & Finkelstein, 1999), we applied an event-study method to capture the abnormal stock market returns surrounding the date of a focal acquisition announcement. Following Brown and Warner (1985), we measured cumulative abnormal returns (CAR) as the difference between a company's observed returns and its normal returns over the event time window. Normal returns are the anticipated returns when an acquisition does not take place. Abnormal returns indicate investors' expected acquisition performance and their confidence in future acquisition success (Arikan & Capron, 2010; Sleptsov, Anand, & Vasudeva, 2013). Instead of capturing the actual, longer-term acquisition performance, event study methods capture the immediate reactions of investors to the acquisition announcements.

To calculate the cumulative abnormal returns of a focal acquisition announcement, we first calculated the predicted return over an estimation window from 240 to 40 days before a focal acquisition announcement consistent with prior acquisition research (e.g., Goranova, Dharwadkar, & Brandes, 2010; Laamanen, 2007). After that we then calculated cumulative abnormal returns over a 7-day event window from 3 days before a focal acquisition announcement to 3 days after the focal acquisition announcement [-3, +3] (Schijven & Hitt, 2012; Steinbach, Holcomb, Holmes, Devers, & Cannella, 2017). The use of a short event

time window minimizes the likelihood of having confounding events (McWilliams & Siegel, 1997). We found consistent results when using alternative event windows of 5 days [-2, +2] and 11 days [-5, +5].

Independent Variable

Facial Attractiveness. Following prior research in psychology (e.g., Eagly et al., 1991; Heilman & Saruwatari, 1979), we measured facial attractiveness with ratings of photographs of the female CEOs. We first collected head-and-shoulder photographs of sampled female CEOs via the Internet. We qualified a photograph to the study only when they satisfied all the following criteria: (1) the photograph was with sufficiently high resolution; (2) minor and natural facial expressions were presented; (3) the subject was in business attire; and (4) no noisy background information was posted. We cropped the photographs so that photo sizes were approximately the same, head sizes were similar, and eyes were located at the center of the photograph. We carefully applied all photograph collection and adjustment procedures following the prior research in this area (Graham, Harvey, & Puri, 2017; Herrmann & Shikano, 2016; Stoker, Garretsen, & Spreuwers, 2016).

Next, we organized the rating of the photographs of female CEOs. In total, 174 Chinese MBA students from three part-time MBA classes of a leading Chinese university participated in the rating of the female CEOs' facial attractiveness. 72% of these MBA students were male and 28% are female. The average age of the raters was 34. Compared with undergraduates who have been used as raters in some of the prior studies, we found MBA students more suitable for our research of investor perceptions, since MBA students are closer to the common investment analyst and investor profiles with their prior work experience.

The rating of facial attractiveness was conducted in a controlled environment. Participants were informed that they would rate the attractiveness of female CEOs in China based on photographs. Consistent with prior work on facial attractiveness (Herrmann & Shikano, 2016; Judge et al., 2009), all photographs were rated on a 7-point scale ranging from "not at all attractive" (1 point) to "very attractive" (7 points). Because the perceived attractiveness can vary by age (Judge et al., 2009), we clustered all photographs into five age groups and presented photographs by age group. The intra-class correlation coefficient for rated facial attractiveness is 0.77. The resulting score of *Facial Attractiveness* was calculated for each photograph by averaging all its ratings across raters. We used a continuous measure of facial attractiveness in the main analysis.

Moderators

CEO Successful Acquisition Experience. In line with prior studies on acquisition experience (e.g., Kim et al., 2015), we measured *CEO Successful Acquisition Experience* based on the number of acquisitions that received positive investor reactions measured based on cumulative abnormal returns during one year prior to a focal acquisition.

CEO Positive Media Reports. Following prior work on media coverage (Graf-Vlachy et al., 2020), we captured CEO positive media reports based on the tone in news reports about a focal female CEO. The data on media tone was extracted from the Chinese Executives News Database of Listed Company (CEND). While some other established news databases have strengths in analyzing English media reports, CEND focuses on Mandarin media and provides relatively accurate analysis of Chinese financial news. The database covers well the most prominent financial information providers in China. It enabled us to identify the news that explicitly mentioned the CEO, and categorize each report as a positive, neutral, or negative, by analyzing the relative number of positive and negative terms used in each report. We calculated *CEO Positive Media Reports* as the total number of positive media reports of a focal female CEO released by major finance and business newspapers, during the two years prior to a focal acquisition announcement. We took the natural logarithm of this figure plus one to address the skewness of the distribution. In the robustness tests, we also employed alternative one-year and three-year news windows prior to a focal deal to calculate positive media reports and found consistent results.

Control variables

Following prior research of acquisitions, we controlled for potential alternative explanations for investor reactions to acquisition announcements at the acquisition, CEO, board, firm, industry, and year levels of analysis.

Acquisition-level controls. We included acquisition level controls to our analyses. Large acquisitions have generally been found to be negatively related to acquisition performance due to the higher integration complexity (Moeller, Schlingemann, & Stulz, 2004). Consequently, we controlled for the *Transaction Value* by taking the natural log of the deal size. In addition, the percentage of acquired stake is a key component of acquisition decision-making and indicates the level of market orientation (Welch et al., 2019; Zhang & Greve, 2019). Therefore, we controlled for *Acquired Stake*, which we measured as the percentage of purchased equity stake. In addition, internal acquisitions, defined as acquisitions between companies with at least one same shareholder, are viewed as less

market-oriented and less transparent (Zhang & Greve, 2019). We thus included a binary variable, *Internal Acquisitions*, which equals one when the acquisition is an internal acquisition and zero otherwise. Furthermore, since acquisitions of target firms in the same industry may involve less risks (Capron & Shen, 2007) or provide less exploration opportunities (Stettner & Lavie, 2014), we controlled for *Cross-industry Acquisitions*, which equals to one when target firms are not in the same industry as the acquirer and zero otherwise.

CEO- and board-level controls. We also controlled for a range of CEO-level variables that could potentially affect investor reactions to acquisition announcements. First, younger CEOs tend to engage in more acquisitions and conduct larger, riskier acquisitions (Goranova, Priem, Ndofor, & Trahms, 2017; Matta & Beamish, 2008; Yim, 2013). Age also affects perceived facial attractiveness (Todorov et al., 2015). We thus controlled for *CEO Age*, measured as the biological age of the CEO at the time of the acquisition announcement. In addition, CEO compensation may affect the motivation of a CEO to conduct acquisitions (Seo, Gamache, Devers, & Carpenter, 2015) and the investor reaction to the acquisition (Bebchuk, Cremers, & Peyer, 2011; Datta, Iskandar-Datta, & Raman, 2001; Minnick, Unal, & Yang, 2011). Hence, we controlled for *CEO Compensation*, measured as the natural log of CEO overall compensation in a given year plus one. Furthermore, CEO tenures are associated with enhanced experience (Hambrick & Fukutomi, 1991; Nadolska & Barkema, 2014), but can also be related to CEO overconfidence and the pursuit of risky acquisitions (Humphery-Jenner, 2014). Therefore, we also included *CEO Tenure* in our analysis, measured as the natural log of the number of years a CEO held the position plus one.

With regards to board-level controls, we controlled for *CEO-Chairwoman Duality*, measured as an indicator variable which equals to one when the CEO also serves as the chairwoman, zero otherwise. CEO duality may result in a less effective or independent board (Rechner & Dalton, 1991), and associate with riskier acquisitions (Grinstein & Hribar, 2004). Large board or top management team (TMT) may correlate with certain tendency for strategic change and the efficiency in monitoring (Dalton, Daily, Johnson, & Ellstrand, 1999; Goodstein, Gautam, & Boeker, 1994). Hence, we controlled for both the *TMT Size* and the *Board Size*, measured as the absolute number of TMT and board members, respectively.

Firm-level controls. We included four firm-level controls. Since large firms tend to conduct more acquisitions and create less value for shareholders in acquisitions (Bettis, 1981; Moeller et al., 2004), we controlled for *Firm Size*, which we measured as the natural logarithm of the number of total employees (Shi et al., 2017b). We also controlled for *Firm*

Acquisition Experience during the five years prior to a focal acquisition to account for the familiarity of the firm with acquisitions. In addition, prior performance of the acquiring firm prior to a focal acquisition announcement may affect expected acquisition success (Morck, Shleifer, & Vishny, 1990). We thus controlled for *Firm Performance*, which was measured as the industry-adjusted return on assets (ROA) in the year prior to acquisition announcements (Laamanen, 2007; Schijven & Hitt, 2012). Specifically, we calculated industry-adjusted ROA as the ROA of a focal firm minus the average ROA of the industry and then divided it by the standard deviation of ROA in the industry. To minimize the influence of outliers, we winsorized firm performance with one percent at both tails. In addition, we controlled for *Firm Age*, measured as the number of years after the firm was founded to control for its influence on risk-taking (Desai, 2008; Hannan & Freeman, 1984). Finally, state ownership may also affect acquisition decisions (Zhang & Greve, 2019) and deal completion (Li, Xia, & Lin, 2017). We therefore also controlled for *State Ownership* as the percentage of state ownership of the total ownership.

Industry and year effects. We included *Industry* and *Year Dummy* variables to control for the industry and year effects. At the industry level, we distinguished whether the acquiring firm is from the manufacturing industry or from other industry sectors. We also controlled for *Industry Acquisition Intensity* to account for the potential effect of industry acquisition waves. Finally, we included year dummies to account for economic conditions and acquisition waves (Haleblian et al., 2012; McNamara et al., 2008).

Models

Since the facial attractiveness of female CEOs was captured as a static measure by the rating of CEO photographs (which is a time invariant measure and would be automatically dropped in the fixed effect model), a fixed-effect model was not suitable for our research design. Accordingly, we followed prior research (e.g., Abraham, 2017; Crossland, Zyung, Hiller, & Hambrick, 2014) and estimated a generalized estimating equations (GEE) model that allowed us to obtain a maximum likelihood estimate that can account for non-independence of multiple observations from the same CEO (Hanley, Negassa, Edwardes, & Forrester, 2003). In all models, we specified a Gaussian distribution with an identity link function and equal-correlation variance structure. The equal-correlation structure allows the repeated observations within a person to be correlated with a constant correlation. In addition, we also used Huber-Sandwich-White robust standard errors in our analysis (White, 1980). The ordinary least squares (OLS) analysis with standard errors, clustered by individual CEOs

could also handle the non-independence because of repeated observations of the same CEO. It differs from the GEE mainly in that OLS assumes a normal distribution of the dependent variable while GEE does not. As a robustness check, we nevertheless also conducted OLS analyses and found results consistent with our GEE models.

RESULTS

Hypotheses Testing

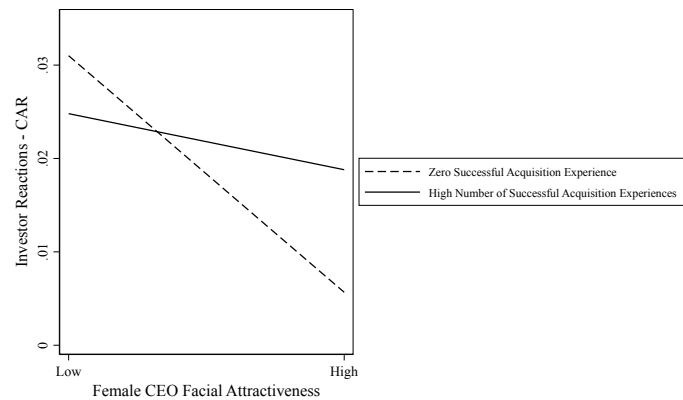
Table 1 displays the descriptive statistics and correlation matrix for all the variables used in our study. Table 2 presents the GEE regression results of the hypothesis tests. Model 1 includes control variables only. Model 2 includes our independent variable, facial attractiveness, and is used to test Hypothesis 1. Models 3 and 4 include two moderators (CEO acquisition experience, and CEO positive media reports). Model 5 is the full model that includes all variables used in this study.

Insert Table 1 & 2 about here

In Hypothesis 1, we predicted a negative effect of facial attractiveness of female CEOs on investor reactions to female CEOs' acquisition announcements. Model 2 shows that the coefficient for facial attractiveness is negative and significant ($\beta = -0.014, p < 0.05$), which supports Hypothesis 1. Model 5 provides the full model in which the impact of facial attractiveness of female CEOs on market responses to acquisition announcements continues to be consistently negative and significant ($\beta = -0.020, p < 0.01$). Across all models, we found consistent support for Hypothesis 1 in which facial attractiveness of female CEOs is negatively related to investor reactions to acquisition announcements.

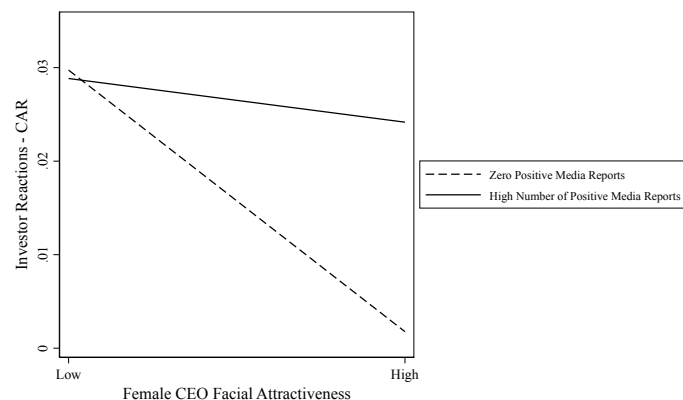
In Hypothesis 2, we predicted that a CEO's successful prior acquisition performance attenuates the negative effect of facial attractiveness of female CEOs on investor reactions to acquisition announcements. Model 3 adds the interaction term of facial attractiveness and CEO acquisition experience. The coefficient of the interaction term is positive and significant ($\beta = .011, p < 0.05$). Similarly, in Model 5, we find consistent significant moderating effects of CEO acquisition experience on the relationship of facial attractiveness and investor reactions to acquisition announcements ($\beta = .008, p < 0.05$). These results provide consistent support for Hypothesis 2. A plot of the moderating effect based on the full model (Model 5) is shown in Figure 1.

FIGURE 1 Moderating Effect of CEO Successful Acquisition Experience



In Hypothesis 3, we predicted that CEO positive media reports mitigate the negative effect of facial attractiveness of female CEOs on investor reactions to acquisition announcements. We add the interaction term of facial attractiveness and CEO positive media reports in Model 4. As predicted, the coefficient of the interaction term is positive and significant ($\beta = 0.010, p < 0.01$). Also, in Model 5, the mitigating role of CEO positive media reports is supported ($\beta = 0.009, p < 0.01$), which further supports Hypothesis 3. Figure 2 shows the interaction effect based on the full model (Model 5).

FIGURE 2 Moderating Effect of CEO Positive Media Reports



Supplementary Analysis

Acquisitions as a perceived “male-typed” action. As noted in the lead up to Hypothesis 1, we conducted a validation survey to determine if acquisitions are perceived as a “male-typed” strategic action. Based on the well-established psychology questionnaires on gender stereotypes about occupations and leadership (Bem, 1981; Cejka & Eagly, 1999; Schein, 1973), we identified common communal and agentic traits. These included five communal traits (i.e., affectionate, warm in relations with others, understanding of others,

sympathetic, and gentle) and five agentic traits (i.e., willing to take risks, aggressive, competitive, dominant, forceful). We surveyed 58 MBA students in a leading Chinese university to examine how the different traits are associated with different types of strategic actions (i.e., acquisitions, strategic alliances, human resource management, and research and development). Table 3 summarizes the results of ratings of each action and t-tests statistics show a statistically significant difference between agency and communion ratings of acquisitions. A statistically significant positive difference indicates that acquisitions are perceived as more “male-typed” than “female-typed” (e.g., Koenig et al., 2011). In addition, further paired sample t tests show that acquisitions are perceived as significantly more “male-typed” than both alliances and human resource management (HRM) activities.

Table 3: Rated Gender Stereotypes about Key CEO Strategic Actions

	Rated Agency (a)	Rated Communion (b)	Rated Gender Stereotypes* (a-b)	Single-Sample <i>t</i> value	Single-Sample <i>p</i> value	Paired-Sample <i>t</i> value	Paired-Sample <i>p</i> value
Acquisitions	3.87	3.20	0.67	-6.45	0.00	-	-
Alliances	3.67	3.57	0.11	-1.05	0.31	5.15	0.00
HRM	2.95	4.22	-1.28	9.30	0.00	12.95	0.00
R&D	3.57	3.00	0.57	-5.20	0.00	0.80	0.42

* *Rated Gender Stereotypes* = *rated agency minus rated communion* (see a summary in the meta-analysis by Koenig et al., 2011)

Female CEO facial attractiveness and investor bias in alliance evaluation. To further examine the mechanism and the boundary conditions of the bias against more attractive female CEOs, we also analyzed investor reactions to alliances. Unlike acquisitions that are stereotypically perceived as a “male-typed” action, alliances are strategic collaborations with stakeholders that are perceived as relatively “gender-neutral”. On the one hand, alliance success requires communication and coordination skills, collaborative spirit, and efforts toward common goals, which are associated with female stereotypes. On the other hand, to capture value from alliances, individual parties in alliances need to promote their own aspirations, safeguard their position in alliances, and compete for best shares of interest allocation, which are associated with male stereotypes.

Our survey of MBA students (see Table 3) provides support for these stereotypical expectations. Specifically, alliance are perceived as (1) gender neutral, because the rated communion and agency of alliances have no statistically significant difference; (2) less male-typed than acquisitions, since the paired sample t-test between gender stereotypes about

alliances ($mean = 0.11$) and acquisitions ($mean = 0.67$) is statistically significant ($p < .00$). Given the relatively balanced stereotypes about alliances, we expect female facial attractiveness will create less incongruity relative to the expected qualities needed in order to achieve alliance success. To test our expectations, we manually coded a comparison sample of 264 alliance announcements of our sampled female CEOs during the observation window and conducted the regression analysis in a similar manner as our main analysis of acquisitions. As expected based on the gender neutral perception of alliances, we found no statistical difference in investor reactions to alliances announced by more, as compared to less, attractive female CEOs ($\beta = .003$, statistically *non-significant*).

Male CEO attractiveness and acquisition outcomes. We also examined whether attractive male CEOs face biased perceptions, similar to attractive female CEOs, in conducting acquisitions. Prior research on this topic makes mainly two predictions. First, in contrast to women, men benefit from their facial attractiveness in “male-typed” occupations. Prior research argues that more attractive men are perceived to be more agentic and thus are expected to perform better. Most evidence following this line of reasoning comes from entrepreneurship research, which shows that more attractive male entrepreneurs receive higher income (Patel & Wolfe, 2019) and are more likely to succeed in their selling their ideas to investors (Brooks et al., 2014). The second prediction is that attractiveness has no significant effect for men in “male-typed” occupations (Hume & Montgomerie, 2001). For male leaders, looking competent and dominant tends to be more relevant for perception formation than attractiveness (Graham et al., 2017).

Neither of these predictions suggest that the beauty-is-beastly effect would apply to male CEOs. To test this prediction, we generated a random sample of male CEOs of companies listed on Shanghai and Shenzhen stock exchanges in 2017, and collected photographs of the male CEOs and monitored their acquisition activities. The final sample included 578 acquisitions that were announced by 203 male CEOs from the beginning of their tenure to June 2019. Following the same procedures and analyses as with female CEOs, we found no relationship between male CEOs’ facial attractiveness and investor reactions to their acquisition announcements ($\beta = -.007$, non-significant), which indicates that investors do not appear to pay attention to facial attractiveness when assessing acquisitions conducted by male CEOs.

Female CEO’s facial attractiveness and long-term acquisition performance. We assessed if short-term market reactions to the acquisition announcements predict long-term performance of acquisitions conducted by more, as compared to less, attractive female CEOs.

Drawing on gender-role incongruity perspectives and the beauty-is-beastly effect, we suggest that although female CEOs may be disadvantaged by their facial attractiveness during the impression formation processes, they do not differ in their actual capabilities. We measured long-term acquisition performance by using one-, two-, and three-year buy-and-hold stock returns after a focal acquisition announcement (Devers et al., 2020). Based on this supplementary analysis, we found that the longer-term performance of acquisitions conducted by more attractive female CEOs do *not* statistically significantly differ from the performance of the ones conducted by less attractive female CEOs.

Endogeneity Checks

Finally, the acquisitions in our sample could represent a biased sample since acquisitions do not occur randomly across firms. There may be systematic differences between female CEOs who have and who have not conducted acquisitions. Although we included a comprehensive set of control variables to our main analysis to address this issue, we further account for this potential selection effect with Heckman's two-stage model (Heckman, 1979). In the first-stage analysis, we predict the likelihood of a focal CEO conducting any acquisitions in a given year. We included *The Number of Firms in a Certain Industry in the Year Prior to a Focal Acquisition Announcement* as our instrument, because it relates to the acquisition likelihood, but does not relate to investor reactions to acquisition announcements. Based on the first-stage regression model, we predicted the inverse Mills ratio (IMR) for each year (Wooldridge, 1995) and included the IMRs in the second-stage GEE models. Based this analysis, we also found consistent results that more attractive female CEOs have more negative investor reaction to their acquisition announcements compared to less attractive female CEOs.

Endogeneity issues may also arise if attractive female CEOs manage systematically different types of firms when compared to unattractive female CEOs. This would mean that female CEO facial attractiveness is not exogenous but associated with other unobservable variables. To check if female facial attractiveness is endogenous, we conducted a Durbin-Wu-Hausman (DWH) test. We leveraged a binary industry variable *Manufacturing Company* as an instrument because it relates to the likelihood of having a more attractive female CEO as compared to other industries, but it does not naturally relate to market responses to acquisitions. The DWH test shows no evidence of endogeneity associated with female CEOs' facial attractiveness. Relatedly, we also analyzed the potential mediating effects of different acquisition characteristics – such as cross-border acquisitions, percentage of shares acquired,

and unrelated acquisitions – on the relationship between female CEOs’ facial attractiveness and investor reactions to their acquisitions. Yet, we found no evidence of statistically significant mediation in these analyses.

DISCUSSION

Drawing on role congruity logic, our study introduces facial attractiveness as a novel source of within-group variation of gender bias among female CEOs. Incorporating the beauty-is-beastly effect to role congruity theory, we hypothesized and found an inverse relationship between female CEO facial attractiveness and investor reactions to acquisition announcements. In addition, building further on the gender-role congruity argumentation, we theorized and found that the beauty-is-beastly bias against female CEOs is reduced under conditions in which: (a) a focal female CEO has demonstrated prior acquisition performance experience and (b) positive media reports are more readily available regarding the focal female CEO.

Theoretical Implications

Our findings contribute to upper echelon’s research and, more specifically, to research on female CEO research in several important ways. First, our study provides novel empirical evidence on the *occurrence* of within-group variation of gender bias among female CEOs. Nearly all prior studies in this area have examined how female CEOs are perceived differently when compared to their male counterparts. Hence, the existing research tends to assume that there is a uniform bias against all female CEOs when compared to male CEOs. We argue that there are also important differences between different individual female CEOs and to what extent they are viewed through a biased lens.

Drawing on recent work on role congruity theory and within-gender bias variability, we argue for the necessity to further deepen the research on gender bias against female CEOs to better understand within-gender variability. Based on our empirical analysis, more attractive female CEOs are perceived as more prototypical members of the female group, and thus face greater gender bias than the less attractive female CEOs under conditions in which they engage in stereotypically “male-typed” strategic actions. Our findings demonstrate that not all female executives face similar degrees of gender bias, which may help explain prior mixed findings about gender bias against female corporate leaders (Kolev et al., 2021; Lee & James, 2007; Smith et al., 2021). Our study makes an important step from the “categorical” view of gender bias against female executives toward a more “continuous” one in which we

go beyond the categorical differences between female and male executives to focus on the variability among female leaders (Dwivedi et al., 2018; Hoobler et al., 2018).

Second, our paper identifies facial attractiveness as an important novel *source* of within-group variability in gender bias among female CEOs. Although prior work has examined the existence of “what-is-beautiful-is-good” bias in people’s perception of others (Dion, Walster, & Berscheid, 1972), female facial attractiveness in “male-typed” occupational contexts may serve as a visible and distinguishing feminine attribute and thus heighten gender. Female leaders often encounter intense public media scrutiny of their appearance (e.g., Hillary Clinton’s pantsuits, Theresa May’s shoe fashion, Marissa Mayer’s appearance, and Mingzhu Dong’s make-up). Despite media attention on such task irrelevant factors, surprisingly little is understood about whether and how female executive appearance influences the gender bias against them among key stakeholders.

Drawing on the beauty-is-beastly effect as an offshoot of gender-role incongruity perspective (Heilman & Saruwatari, 1979; Heilman & Stopeck, 1985), we find that facial attractiveness may place female leaders at a disadvantage in “male-typed” tasks, such as acquisitions. More attractive female CEOs received systematically more negative market responses to their acquisition behaviors, which suggests that they are discriminated against since they are not assumed to possess stereotypical agentic qualities (e.g., dominance, aggressiveness, competitiveness, and decisiveness) commonly thought to be associated with acquisition success. In the supplementary analysis, we found no beauty-is-beastly effect in alliances, which can be regarded as a “gender-neutral” context. This finding supports the gender-role incongruity logic and further provides evidence of the underlying mechanism of bias against more attractive female CEOs.

Despite consistent empirical evidence of within-gender bias among female CEOs due to their facial attractiveness, the beauty-is-beastly effect does not seem to apply to male CEOs. We found no effect of male CEOs’ facial attractiveness on investor reactions to their acquisition announcements. This is consistent with prior psychological work that has shown that attractiveness seems to be more relevant to the perception of women than to men (Bartal & Saxe, 1976; Eagly et al., 1991; Hume & Montgomerie, 2001; Maner, Kenrick, Becker, Delton, Hofer, Wilbur et al., 2003). This suggests that investors attend more to the female than male CEOs’ attractiveness in assessing their strategic actions.

Third, we advance knowledge of the *mitigation* of within-group gender bias against attractive female CEOs. Whereas prior female leadership research has largely focused on the existence of gender bias per se, bias mitigation has received only limited attention (Parker et

al., 2019). In particular, prior research has seldom considered whether female CEOs' individual-level factors offset the bias against them and rather focused on contextual factors such as female representation in a certain context (Post & Byron, 2015). For example, recent work has considered how predecessor male CEOs could serve as gatekeepers to reduce the bias against individual female CEOs (Dwivedi et al., 2018). Moreover, attempts to reduce gender-based bias have not always been fruitful. For example, although diversity-enhancing initiatives (Hekman, Johnson, Foo, & Yang, 2017) and external pressures regarding gender diversity (Knippen, Shen, & Zhu, 2019) have brought gender into the spotlight, these tactics may in some cases have even resulted into an amplified gender bias against female leaders.

Given that gender bias arises from gender-role incongruity perceptions, we explored the roles of individuating information about focal female CEOs. Although female CEOs should obviously not have to face bias associated with gender, our findings highlight the importance of CEO positive acquisition experience for offsetting the beauty-is-beastly bias. Psychology research suggests that simply having additional information about a focal person is not yet sufficient to replace the use of stereotypes in judgment, and that such information must be job-related, unequivocal, and diagnostic in its implications for performance expectations (Heilman, 2012). Our results show that a successful track record of acquisitions can help reduce the bias against female CEOs. Moreover, we also found that positive media reporting helps attenuate the bias against more attractive female CEOs. Media reporting provides job-related, diagnostic, individuating information about female CEOs' skills, knowledge, and abilities. We find that such additional information can help counteract the negative bias against attractive female CEOs.

Finally, our paper also informs the acquisition literature by introducing a novel antecedent, female CEO facial attractiveness, of cumulative abnormal returns of acquisition announcements. Prior work on female CEOs and acquisitions has tended to focus on whether and to what extent female leaders influence acquisition behavior (Chen et al., 2016; Huang & Kisgen, 2013). Our empirical analysis shows that characteristics of female CEOs influence the manner in which acquisitions are perceived by investors (Fieberg et al., 2021; Schijven & Hitt, 2012).

Practical Implications

In terms of practical implications, our findings suggest that investors should be more mindful of their biases in assessing acquisition announcements. Since attributions of attractiveness tend to be effortless, automatic, and unintentional (Willis & Todorov, 2006),

being conscious of one's potential biases may help reduce the mistakes done by investors. For public media, our findings show that positive media reporting about a focal female CEO can reduce the beauty-is-beastly bias. Recent political science analysis of 25,000 politicians in over 750,000 media articles showed that female politicians receive significantly more attention on their physical appearance than their male counterparts (Van der Pas & Aaldering, 2020). Hence, public attention should shift away from female leaders' appearance and focus instead on their true competencies. Accordingly, firms have a tool by which to counteract bias if they disseminate job-related, accessible, and favorable information about their female CEO leadership capabilities. In particular, discrimination against attractive female CEOs can be reduced by an enhanced understanding of the female CEOs' acquisition capabilities.

Limitations and Future Research

We were not able to observe investors' cognitive processes and how the potential bias arises against attractive female leaders. Following prior research in this area (Lee & James, 2007), we inferred investor perceptions based on their observed reactions to acquisitions announced by female CEOs. Future research could complement our study by using experimental and qualitative self-report methods to more directly examine investors' cognitive processes to evaluate CEO strategic actions. Moreover, while the relatively high representation of female CEOs in China provided a unique context to test our hypotheses, it is not clear whether our findings can be generalized to other contexts. We suspect that the beauty-is-beastly effect could be generalizable also to other cultural contexts, because gender bias against female leaders has been found to exist across cultures (Eagly & Karau, 2002). Prior empirical studies of female corporate leaders in France (Byrne, Radu-Lefebvre, Fattoum, & Balachandra, 2019), the United States (Lee & James, 2007), and the United Kingdom (Kulich, Trojanowski, Ryan, Alexander Haslam, & Renneboog, 2011), would seem to suggest that gender bias against female leaders is common, and may even be universal. Nevertheless, further analyses in other contexts would be useful to examine the generalizability of the beauty-is-beastly effect we discovered in this paper.

CONCLUSION

Despite their progress in climbing up the corporate ladder, female executives continue to face biased perceptions regarding their competences. We extend the female leadership research by demonstrating the existence of facial attractiveness of female CEOs as an important source of within-group gender bias. Our results suggest that investors are influenced by the

facial appearance of female CEOs in their assessment of acquisition announcements, rather than solely basing their investment decisions on substantive data relating to acquisition synergy and potential. Our study provides a platform for future research to examine different types of within-gender bias and how such bias influences different strategic transactions by female executives. We hope our paper sparks an active stream of research on within-group gender biases that contributes to a better understanding, and even elimination, of such biases.

REFERENCES:

- Aaldering, L. & Van Der Pas, D. J. 2018. Political Leadership in the Media: Gender Bias in Leader Stereotypes during Campaign and Routine Times. *British Journal of Political Science*, 50(3): 911-931.
- Abraham, M. 2017. Pay Formalization Revisited: Considering the Effects of Manager Gender and Discretion on Closing the Gender Wage Gap. *Academy of Management Journal*, 60(1): 29-54.
- Abraham, M. 2019. Gender-role Incongruity and Audience-based Gender Bias: An Examination of Networking among Entrepreneurs. *Administrative Science Quarterly*, 65(1): 151-180.
- Arikan, A. M. & Capron, L. 2010. Do newly public acquirers benefit or suffer from their pre-IPO affiliations with underwriters and VCs? *Strategic Management Journal*, 31(12): 1257-1289.
- Bakan, D. 1966. *The duality of human existence: An essay on psychology and religion*. Chicago: Rand McNally.
- Barkema, H. G. & Schijven, M. 2008. How Do Firms Learn to Make Acquisitions? A Review of Past Research and an Agenda for the Future. *Journal of Management*, 34(3): 594-634.
- Bartal, D. & Saxe, L. 1976. Physical Attractiveness and Its Relationship to Sex-Role Stereotyping. *Sex Roles*, 2(2): 123-133.
- Bebchuk, L. A., Cremers, K. J. M., & Peyer, U. C. 2011. The CEO pay slice. *Journal of Financial Economics*, 102(1): 199-221.
- Bem, S. L. 1981. Gender Schema Theory - a Cognitive Account of Sex Typing. *Psychological Review*, 88(4): 354-364.
- Bettis, R. A. 1981. Performance Differences in Related and Unrelated Diversified Firms. *Strategic Management Journal*, 2(4): 379-393.
- Bligh, M. C., Schlehofer, M. M., Casad, B. J., & Gaffney, A. M. 2012. Competent Enough, But Would You Vote for Her? Gender Stereotypes and Media Influences on Perceptions of Women Politicians. *Journal of Applied Social Psychology*, 42(3): 560-597.
- Brinkhuis, E. & Scholtens, B. 2018. Investor response to appointment of female CEOs and CFOs. *The Leadership Quarterly*, 29(3): 423-441.
- Brooks, A. W., Huang, L., Kearney, S. W., & Murray, F. E. 2014. Investors prefer entrepreneurial ventures pitched by attractive men. *Proceedings of the National Academy of Sciences of the United States of America*, 111(12): 4427-4431.
- Broverman, I. K., Vogel, S. R., Broverman, D. M., Clarkson, F. E., & Rosenkrantz, P. S. 1972. Sex-Role Stereotypes - Current Appraisal. *Journal of Social Issues*, 28(2): 59-78.
- Brown, S. J. & Warner, J. B. 1985. Using daily stock returns: The case of event studies. *Journal of financial economics*, 14(1): 3-31.
- Butler, J. 1990. *Gender Trouble: Feminism and the Subversion of Identity*. Abingdon: Routledge.
- Byrne, J., Radu-Lefebvre, M., Fattoum, S., & Balachandra, L. 2019. Gender Gymnastics in CEO succession: Masculinities, Femininities and Legitimacy. *Organization Studies*.
- Capron, L. & Shen, J. C. 2007. Acquisitions of private vs. public firms: Private information, target selection, and acquirer returns. *Strategic Management Journal*, 28(9): 891-911.
- Cash, T. F., Gillen, B., & Burns, D. S. 1977. Sexism and Beautyism in Personnel Consultant Decision-Making. *Journal of Applied Psychology*, 62(3): 301-310.

- Cejka, M. A. & Eagly, A. H. 1999. Gender-stereotypic images of occupations correspond to the sex segregation of employment (vol 25, pg 413, 1999). *Personality and Social Psychology Bulletin*, 25(8): 1059-1059.
- Chen, G., Crossland, C., & Huang, S. 2016. Female board representation and corporate acquisition intensity. *Strategic Management Journal*, 37(2): 303-313.
- Crossland, C., Zyung, J. Y., Hiller, N. J., & Hambrick, D. C. 2014. Ceo Career Variety: Effects on Firm-Level Strategic and Social Novelty. *Academy of Management Journal*, 57(3): 652-674.
- Dalton, D. R., Daily, C. M., Johnson, J. L., & Ellstrand, A. E. 1999. Number of directors and financial performance: A meta-analysis. *Academy of Management Journal*, 42(6): 674-686.
- Datta, S., Iskandar-Datta, M., & Raman, K. 2001. Executive compensation and corporate acquisition decisions. *Journal of Finance*, 56(6): 2299-2336.
- Deephouse, D. L. 2000. Media reputation as a strategic resource: An integration of mass communication and resource-based theories. *Journal of Management*, 26(6): 1091-1112.
- Desai, V. M. 2008. Constrained Growth: How Experience, Legitimacy, and Age Influence Risk Taking in Organizations. *Organization Science*, 19(4): 594-608.
- Devers, C. E., Wuorinen, S., McNamara, G., Halebian, J., Gee, I. H., & Kim, J. 2020. An Integrative Review of the Emerging Behavioral Acquisition Literature: Charting the Next Decade of Research. *Academy of Management Annals*, 14(2): 869-907.
- Dion, K., Walster, E., & Berscheid, E. 1972. What Is Beautiful Is Good. *Journal of Personality and Social Psychology*, 24(3): 285-+.
- Dixon-Fowler, H. R., Ellstrand, A. E., & Johnson, J. L. 2013. Strength in numbers or guilt by association? Intragroup effects of female chief executive announcements. *Strategic Management Journal*, 34(12): 1488-1501.
- Dwivedi, P., Joshi, A., & Misangyi, V. F. 2018. Gender-inclusive Gatekeeping: How (Mostly Male) Predecessors Influence the Success of Female CEOs. *Academy of Management Journal*, 61(2): 379-404.
- Dyck, A., Volchkova, N., & Zingales, L. 2008. The corporate governance role of the media: Evidence from Russia. *Journal of Finance*, 63(3): 1093-1135.
- Eagly, A. H. & Steffen, V. J. 1984. Gender stereotypes stem from the distribution of women and men into social roles. *Journal of Personality and Social Psychology*, 46(4): 735-754.
- Eagly, A. H. 1987. Sex differences in social behavior: A social-role interpretation: Hillsdale, New Jersey: Lawrence Erlbaum.
- Eagly, A. H., Makhijani, M. G., Ashmore, R. D., & Longo, L. C. 1991. What Is Beautiful Is Good, but - a Meta-Analytic Review of Research on the Physical Attractiveness Stereotype. *Psychological Bulletin*, 110(1): 109-128.
- Eagly, A. H. & Karau, S. J. 2002. Role congruity theory of prejudice toward female leaders. *Psychological Review*, 109(3): 573-598.
- Eagly, A. H. & Wood, W. 2013. Feminism and Evolutionary Psychology: Moving Forward. *Sex Roles*, 69(9-10): 549-556.
- Ellemers, N. 2018. Gender Stereotypes. *Annual Review of Psychology*, Vol 69, 69: 275-298.
- Farrell, K. A. & Whidbee, D. A. 2002. Monitoring by the financial press and forced CEO turnover. *Journal of Banking & Finance*, 26(12): 2249-2276.
- Fieberg, C., Lopatta, K., Tammen, T., & Tideman, S. A. 2021. Political affinity and investors' response to the acquisition premium in cross-border M&A transactions - A moderation analysis. *Strategic Management Journal*.

- Gomulya, D., Wong, E. M., Ormiston, M. E., & Boeker, W. 2017. The role of facial appearance on CEO selection after firm misconduct. *J Appl Psychol*, 102(4): 617-635.
- Goodstein, J., Gautam, K., & Boeker, W. 1994. The Effects of Board Size and Diversity on Strategic Change. *Strategic Management Journal*, 15(3): 241-250.
- Goranova, M., Dharwadkar, R., & Brandes, P. 2010. Owners on both sides of the deal: mergers and acquisitions and overlapping institutional ownership. *Strategic Management Journal*, 31(10): 1114-1135.
- Goranova, M., Priem, R. L., Ndofor, H. A., & Trahms, C. A. 2017. Is there a “Dark Side” to Monitoring? Board and Shareholder Monitoring Effects on M&A Performance Extremeness. *Strategic Management Journal*, 38(11): 2285-2297.
- Gorn, G. J., Jiang, Y., & Johar, G. V. 2008. Babyfaces, Trait Inferences, and Company Evaluations in a Public Relations Crisis. *Journal of Consumer Research*, 35(1): 36-49.
- Graebner, M. E., Heimeriks, K. H., Huy, Q. N., & Vaara, E. 2017. The Process of Postmerger Integration: A Review and Agenda for Future Research. *Academy of Management Annals*, 11(1): 1-32.
- Graf-Vlachy, L., Bundy, J., & Hambrick, D. C. 2020. Effects of an Advancing Tenure on CEO Cognitive Complexity. *Organization Science*, 31(4): 936-959.
- Graham, J. R., Harvey, C. R., & Puri, M. 2017. A Corporate Beauty Contest. *Management Science*, 63(9): 3044-3056.
- Grinstein, Y. & Hribar, P. 2004. CEO compensation and incentives: Evidence from M&A bonuses. *Journal of Financial Economics*, 73(1): 119-143.
- Gupta, V. K., Mortal, S. C., & Guo, X. 2018. Revisiting the gender gap in CEO compensation: Replication and extension of Hill, Upadhyay, and Beekun's (2015) work on CEO gender pay gap. *Strategic Management Journal*, 39(7): 2036-2050.
- Haleblian, J. & Finkelstein, S. 1999. The influence of organizational acquisition experience on acquisition performance: A behavioral learning perspective. *Administrative Science Quarterly*, 44(1): 29-56.
- Haleblian, J., Devers, C. E., McNamara, G., Carpenter, M. A., & Davison, R. B. 2009. Taking Stock of What We Know About Mergers and Acquisitions: A Review and Research Agenda. *Journal of Management*, 35(3): 469-502.
- Haleblian, J., McNamara, G., Kolev, K., & Dykes, B. J. 2012. Exploring firm characteristics that differentiate leaders from followers in industry merger waves: a competitive dynamics perspective. *Strategic Management Journal*, 33(9): 1037-1052.
- Hambrick, D. C. & Fukutomi, G. D. S. 1991. The Seasons of a Ceo Tenure. *Academy of Management Review*, 16(4): 719-742.
- Hanley, J. A., Negassa, A., Edwardes, M. D. D., & Forrester, J. E. 2003. Statistical analysis of correlated data using generalized estimating equations: An orientation. *American Journal of Epidemiology*, 157(4): 364-375.
- Hannan, M. T. & Freeman, J. 1984. Structural Inertia and Organizational-Change. *American Sociological Review*, 49(2): 149-164.
- Hayward, M. L. A., Rindova, V. P., & Pollock, T. G. 2004. Believing one's own press: the causes and consequences of CEO celebrity. *Strategic Management Journal*, 25(7): 637-653.
- Heckman, J. J. 1979. Sample Selection Bias as a Specification Error. *Econometrica*, 47(1): 153-161.
- Heilman, M. E. & Saruwatari, L. R. 1979. When Beauty Is Beastly - Effects of Appearance and Sex on Evaluations of Job Applicants for Managerial and Non-Managerial Jobs. *Organizational Behavior and Human Performance*, 23(3): 360-372.

- Heilman, M. E. 1983. Sex bias in work settings: The lack of fit model. *Research in Organizational Behavior*, 5: 269–298.
- Heilman, M. E. & Stopeck, M. H. 1985. Being Attractive, Advantage or Disadvantage - Performance-Based Evaluations and Recommended Personnel Actions as a Function of Appearance, Sex, and Job Type. *Organizational Behavior and Human Decision Processes*, 35(2): 202-215.
- Heilman, M. E. 1997. Sex discrimination and the affirmative action remedy: The role of sex stereotypes, *Women in corporate management*: 5-17. Dordrecht: Springer.
- Heilman, M. E. 2001. Description and prescription: How gender stereotypes prevent women's ascent up the organizational ladder. *Journal of Social Issues*, 57(4): 657-674.
- Heilman, M. E. & Okimoto, T. G. 2008. Motherhood: a potential source of bias in employment decisions. *J Appl Psychol*, 93(1): 189-198.
- Heilman, M. E. 2012. Gender stereotypes and workplace bias. *Research in Organizational Behavior*, 32: 113-135.
- Heilman, M. E., Manzi, F., & Braun, S. 2015. Presumed incompetent: perceived lack of fit and gender bias in recruitment and selection, *Handbook of Gendered Careers in Management*: 90-104.
- Hekman, D. R., Johnson, S. K., Foo, M.-D., & Yang, W. 2017. Does Diversity-Valuing Behavior Result in Diminished Performance Ratings for Non-White and Female Leaders? *Academy of Management Journal*, 60(2): 771-797.
- Herrmann, M. & Shikano, S. 2016. Attractiveness and Facial Competence Bias Face-Based Inferences of Candidate Ideology. *Political Psychology*, 37(3): 401-417.
- Hill, A. D., Upadhyay, A. D., & Beekun, R. I. 2015. Do female and ethnically diverse executives endure inequity in the CEO position or do they benefit from their minority status? An empirical examination. *Strategic Management Journal*, 36(8): 1115-1134.
- Hofstede, G. 2001. *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*: Sage publications.
- Hoobler, J. M., Masterson, C. R., Nkomo, S. M., & Michel, E. J. 2018. The Business Case for Women Leaders: Meta-Analysis, Research Critique, and Path Forward. *Journal of Management*, 44(6): 2473-2499.
- Huang, J. & Kisgen, D. J. 2013. Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics*, 108(3): 822-839.
- Hume, D. K. & Montgomerie, R. 2001. Facial attractiveness signals different aspects of "quality" in women and men. *Evolution and Human Behavior*, 22(2): 93-112.
- Humphrey-Jenner, M. 2014. Takeover defenses, innovation, and value creation: Evidence from acquisition decisions. *Strategic Management Journal*, 35(5): 668-690.
- Jackson, L. A. 1983. The Influence of Sex, Physical Attractiveness, Sex-Role, and Occupational Sex-Linkage on Perceptions of Occupational Suitability. *Journal of Applied Social Psychology*, 13(1): 31-44.
- Jeong, S.-H. & Harrison, D. A. 2017. Glass Breaking, Strategy Making, and Value Creating: Meta-Analytic Outcomes of Women as CEOs and TMT members. *Academy of Management Journal*, 60(4): 1219-1252.
- Jia, Y., Lent, L. V., & Zeng, Y. 2014. Masculinity, Testosterone, and Financial Misreporting. *Journal of Accounting Research*, 52(5): 1195-1246.
- Johnson, S. K., Podratz, K. E., Dipboye, R. L., & Gibbons, E. 2010. Physical attractiveness biases in ratings of employment suitability: tracking down the "beauty is beastly" effect. *J Soc Psychol*, 150(3): 301-318.

- Johnson, S. K., Sitzmann, T., & Nguyen, A. T. 2014. Don't hate me because I'm beautiful: Acknowledging appearance mitigates the "beauty is beastly" effect. *Organizational Behavior and Human Decision Processes*, 125(2): 184-192.
- Joshi, A., Son, J., & Roh, H. 2015. When Can Women Close the Gap? A Meta-Analytic Test of Sex Differences in Performance and Rewards. *Academy of Management Journal*, 58(5): 1516-1545.
- Judge, T. A., Hurst, C., & Simon, L. S. 2009. Does it pay to be smart, attractive, or confident (or all three)? Relationships among general mental ability, physical attractiveness, core self-evaluations, and income. *J Appl Psychol*, 94(3): 742-755.
- Jungblut, M. & Haim, M. 2021. Visual Gender Stereotyping in Campaign Communication: Evidence on Female and Male Candidate Imagery in 28 Countries. *Communication Research*.
- Kim, J.-Y., Finkelstein, S., & Halebian, J. 2015. All Aspirations are not Created Equal: The Differential Effects of Historical and Social Aspirations on Acquisition Behavior. *Academy of Management Journal*, 58(5): 1361-1388.
- Knippen, J. M., Shen, W., & Zhu, Q. 2019. Limited progress? The effect of external pressure for board gender diversity on the increase of female directors. *Strategic Management Journal*, 40(7): 1123-1150.
- Koch, A. J., D'Mello, S. D., & Sackett, P. R. 2015. A meta-analysis of gender stereotypes and bias in experimental simulations of employment decision making. *J Appl Psychol*, 100(1): 128-161.
- Koenig, A. M., Eagly, A. H., Mitchell, A. A., & Ristikari, T. 2011. Are leader stereotypes masculine? A meta-analysis of three research paradigms. *Psychol Bull*, 137(4): 616-642.
- Kolev, Mah, & McNamara. 2021. Does CEO Gender Bias Still Exist? Examination of Market Reaction to Female CEO Appointments, *Strategic Management Society*.
- Kroon, A. C., van Selm, M., ter Hoeven, C. L., & Vliegenthart, R. 2016. Poles Apart: The Processing and Consequences of Mixed Media Stereotypes of Older Workers. *Journal of Communication*, 66(5): 811-833.
- Kulich, C., Trojanowski, G., Ryan, M. K., Alexander Haslam, S., & Renneboog, L. D. R. 2011. Who gets the carrot and who gets the stick? Evidence of gender disparities in executive remuneration. *Strategic Management Journal*, 32(3): 301-321.
- Kunda, Z. & Spencer, S. J. 2003. When do stereotypes come to mind and when do they color judgment? A goal-based theoretical framework for stereotype activation and application. *Psychological Bulletin*, 129(4): 522-544.
- Laamanen, T. 2007. On the role of acquisition premium in acquisition research. *Strategic Management Journal*, 28(13): 1359-1369.
- Lee, M. & Huang, L. 2018. Gender Bias, Social Impact Framing, and Evaluation of Entrepreneurial Ventures. *Organization Science*, 29(1): 1-16.
- Lee, P. M. & James, E. H. 2007. She'-e-os: gender effects and investor reactions to the announcements of top executive appointments. *Strategic Management Journal*, 28(3): 227-241.
- Lenz, G. S. & Lawson, C. 2011. Looking the Part: Television Leads Less Informed Citizens to Vote Based on Candidates' Appearance. *American Journal of Political Science*, 55(3): 574-589.
- Li, J., Xia, J., & Lin, Z. Y. 2017. Cross-Border Acquisitions by State-Owned Firms: How Do Legitimacy Concerns Affect the Completion and Duration of Their Acquisitions? *Strategic Management Journal*, 38(9): 1915-1934.

- Little, L. M., Major, V. S., Hinojosa, A. S., & Nelson, D. L. 2015. Professional Image Maintenance: How Women Navigate Pregnancy in the Workplace. *Academy of Management Journal*, 58(1): 8-37.
- Liu, B. & McConnell, J. J. 2013. The role of the media in corporate governance: Do the media influence managers' capital allocation decisions? *Journal of Financial Economics*, 110(1): 1-17.
- Liu, B., McConnell, J. J., & Xu, W. 2017. The power of the pen reconsidered: The media, CEO human capital, and corporate governance. *Journal of Banking & Finance*, 76: 175-188.
- Locksley, A., Borgida, E., Brekke, N., & Hepburn, C. 1980. Sex Stereotypes and Social Judgment. *Journal of Personality and Social Psychology*, 39(5): 821-831.
- Maner, J. K., Kenrick, D. T., Becker, D. V., Delton, A. W., Hofer, B., Wilbur, C. J., & Neuberg, S. L. 2003. Sexually selective cognition: Beauty captures the mind of the beholder. *Journal of Personality and Social Psychology*, 85(6): 1107-1120.
- Matta, E. & Beamish, P. W. 2008. The accentuated CEO career horizon problem: Evidence from international acquisitions. *Strategic Management Journal*(7): 683-700.
- Mazei, J., Zeres, A., & Hüffmeier, J. 2021. Masculinity at the Negotiation Table: A Theory of Men's Negotiation Behaviors and Outcomes. *Academy of Management Review*, 46(1): 108-127.
- McCarthy, J. M., Van Iddekinge, C. H., & Campion, M. A. 2010. Are Highly Structured Job Interviews Resistant to Demographic Similarity Effects? *Personnel Psychology*, 63(2): 325-359.
- McDonald, M. L., Keeses, G. D., & Westphal, J. D. 2018. One Step Forward, One Step Back: White Male Top Manager Organizational Identification and Helping Behavior toward Other Executives Following the Appointment of a Female or Racial Minority CEO. *Academy of Management Journal*, 61(2): 405-439.
- McNamara, G. M., Halebian, J., & Dykes, B. J. 2008. The performance implications of participating in an acquisition wave: Early mover advantages, bandwagon effects, and the moderating influence of industry characteristics and acquirer tactics. *Academy of Management Journal*, 51(1): 113-130.
- McWilliams, A. & Siegel, D. 1997. Event studies in management research: Theoretical and empirical issues. *Academy of management journal*, 40(3): 626-657.
- Meyer-Doyle, P., Lee, S., & Helfat, C. E. 2019. Disentangling the microfoundations of acquisition behavior and performance. *Strategic Management Journal*, 40(11): 1733-1756.
- Minnick, K., Unal, H., & Yang, L. 2011. Pay for Performance? CEO Compensation and Acquirer Returns in BHCs. *Review of Financial Studies*, 24(2): 439-472.
- Moeller, S. B., Schlingemann, F. P., & Stulz, R. M. 2004. Firm size and the gains from acquisitions. *Journal of Financial Economics*, 73(2): 201-228.
- Morck, R., Shleifer, A., & Vishny, R. W. 1990. Do Managerial Objectives Drive Bad Acquisitions. *Journal of Finance*, 45(1): 31-48.
- Morgan, W. B., Walker, S. S., Hebl, M. M., & King, E. B. 2013. A field experiment: reducing interpersonal discrimination toward pregnant job applicants. *J Appl Psychol*, 98(5): 799-809.
- Morgenroth, T. & Ryan, M. K. 2018. Gender Trouble in Social Psychology: How Can Butler's Work Inform Experimental Social Psychologists' Conceptualization of Gender? *Frontiers in Psychology*, 9.
- Mueller, U. & Mazur, A. 1996. Facial dominance of West Point cadets as a predictor of later military rank. *Social Forces*, 74(3): 823-850.

- Nadolska, A. & Barkema, H. G. 2014. Good learners: How top management teams affect the success and frequency of acquisitions. *Strategic Management Journal*, 35(10): 1483-1507.
- Nault, K. A., Pitesa, M., & Thau, S. 2020. The Attractiveness Advantage At Work: A Cross-Disciplinary Integrative Review. *Academy of Management Annals*, 14(2): 1103-1139.
- Park, S. H. & Westphal, J. D. 2013. Social Discrimination in the Corporate Elite. *Administrative Science Quarterly*, 58(4): 542-586.
- Parker, O., Mui, R., & Titus, V. 2019. Unwelcome voices: The gender bias-mitigating potential of unconventionality. *Strategic Management Journal*, 41(4): 738-757.
- Patel, P. C. & Wolfe, M. T. 2019. In the eye of the beholder? The returns to beauty and IQ for the self-employed. *Strategic Entrepreneurship Journal*.
- Pillemer, J., Graham, E. R., & Burke, D. M. 2014. The face says it all: CEOs, gender, and predicting corporate performance. *The Leadership Quarterly*, 25(5): 855-864.
- Porter, S., ten Brinke, L., & Gustaw, C. 2010. Dangerous decisions: the impact of first impressions of trustworthiness on the evaluation of legal evidence and defendant culpability. *Psychology Crime & Law*, 16(6): 477-491.
- Post, C. & Byron, K. 2015. Women on Boards and Firm Financial Performance: A Meta-Analysis. *Academy of Management Journal*, 58(5): 1546-1571.
- Rechner, P. L. & Dalton, D. R. 1991. Ceo Duality and Organizational Performance - a Longitudinal Analysis. *Strategic Management Journal*, 12(2): 155-160.
- Reichel, A., Scheibmayr, I., & Brandl, J. 2019. The HR lady is on board: Untangling the link between HRM's feminine image and HRM's board representation. *Human Resource Management Journal*, 30(4): 586-603.
- Ridgeway, C. L. & Diekema, D. 1989. Dominance and Collective Hierarchy Formation in Male and Female Task Groups. *American Sociological Review*, 54(1): 79-93.
- Roberts, S. O., Ho, A. K., Rhodes, M., & Gelman, S. A. 2017. Making Boundaries Great Again: Essentialism and Support for Boundary-Enhancing Initiatives. *Personality and Social Psychology Bulletin*, 43(12): 1643-1658.
- Roth, P. L., Purvis, K. L., & Bobko, P. 2012. A Meta-Analysis of Gender Group Differences for Measures of Job Performance in Field Studies. *Journal of Management*, 38(2): 719-739.
- Rule, N. O. & Ambady, N. 2009. She's Got the Look: Inferences from Female Chief Executive Officers' Faces Predict their Success. *Sex Roles*, 61(9-10): 644-652.
- Schein, V. E. 1973. Relationship between Sex Role Stereotypes and Requisite Management Characteristics. *Journal of Applied Psychology*, 57(2): 95-100.
- Schemer, C. 2012. The Influence of News Media on Stereotypic Attitudes Toward Immigrants in a Political Campaign. *Journal of Communication*, 62(5): 739-757.
- Schijven, M. & Hitt, M. A. 2012. The vicarious wisdom of crowds: toward a behavioral perspective on investor reactions to acquisition announcements. *Strategic Management Journal*, 33(11): 1247-1268.
- Schlehofer, M. M., Casad, B. J., Bligh, M. C., & Grotto, A. R. 2011. Navigating Public Prejudices: The Impact of Media and Attitudes on High-Profile Female Political Leaders. *Sex Roles*, 65(1-2): 69-82.
- Seo, J., Gamache, D. L., Devers, C. E., & Carpenter, M. A. 2015. The role of CEO relative standing in acquisition behavior and CEO pay. *Strategic Management Journal*, 36(12): 1877-1894.
- Shi, W., Zhang, Y., & Hoskisson, R. E. 2017b. Ripple Effects of CEO Awards: Investigating the Acquisition Activities of Superstar CEOs' Competitors. *Strategic Management Journal*, 38(10): 2080-2102.

- Sleptsov, A., Anand, J., & Vasudeva, G. 2013. Relational configurations with information intermediaries: The effect of firm-investment bank ties on expected acquisition performance. *Strategic Management Journal*, 34(8): 957-977.
- Smith, E., Chown, J., & Gaughan, K. 2021. Better in the Shadows? Public Attention, Media Coverage, and Market Reactions to Female CEO Announcements. *Sociological Science*, 8: 119-149.
- Steinbach, A. L., Holcomb, T. R., Holmes, R. M., Devers, C. E., & Cannella, A. A. 2017. Top Management Team Incentive Heterogeneity, Strategic Investment Behavior, and Performance: A Contingency Theory of Incentive Alignment. *Strategic Management Journal*, 38(8): 1701-1720.
- Stettner, U. & Lavie, D. 2014. Ambidexterity under scrutiny: Exploration and exploitation via internal organization, alliances, and acquisitions. *Strategic management journal*, 35(13): 1903-1929.
- Stoker, J. I., Garretsen, H., & Spreeuwiers, L. J. 2016. The Facial Appearance of CEOs: Faces Signal Selection but Not Performance. *PLoS One*, 11(7): e0159950.
- Thomas, M., Harell, A., Rijkhoff, S. A. M., & Gosselin, T. 2020. Gendered News Coverage and Women as Heads of Government. *Political Communication*, 38(4): 388-406.
- Todorov, A., Olivola, C. Y., Dotsch, R., & Mende-Siedlecki, P. 2015. Social attributions from faces: determinants, consequences, accuracy, and functional significance. *Annu Rev Psychol*, 66: 519-545.
- Van der Pas, D. J. & Aaldering, L. 2020. Gender Differences in Political Media Coverage: A Meta-Analysis. *Journal of Communication*, 70(1): 114-143.
- Wang, J. C., Markóczy, L., Sun, S. L., & Peng, M. W. 2018. She'-E-O Compensation Gap: A Role Congruity View. *Journal of Business Ethics*, 159(3): 745-760.
- Welch, X., Pavićević, S., Keil, T., & Laamanen, T. 2019. The Pre-Deal Phase of Mergers and Acquisitions: A Review and Research Agenda. *Journal of Management*.
- White, H. 1980. A Heteroskedasticity-Consistent Covariance-Matrix Estimator and a Direct Test for Heteroskedasticity. *Econometrica*, 48(4): 817-838.
- Willis, J. & Todorov, A. 2006. First impressions: Making up your mind after a 100-ms exposure to a face. *Psychological Science*, 17(7): 592-598.
- Wong, E. M., Ormiston, M. E., & Haselhuhn, M. P. 2011. A face only an investor could love: CEOs' facial structure predicts their firms' financial performance. *Psychol Sci*, 22(12): 1478-1483.
- Wooldridge, J. M. 1995. Selection Corrections for Panel-Data Models under Conditional Mean Independence Assumptions. *Journal of Econometrics*, 68(1): 115-132.
- Yim, S. 2013. The acquisitiveness of youth: CEO age and acquisition behavior. *Journal of Financial Economics*, 108(1): 250-273.
- Zhang, C. M. & Greve, H. R. 2019. Dominant Coalitions Directing Acquisitions: Different Decision Makers, Different Decisions. *Academy of Management Journal*.
- Zhang, Y. & Qu, H. 2016. The Impact of CEO Succession with Gender Change on Firm Performance and Successor Early Departure: Evidence from China's Publicly Listed Companies in 1997–2010. *Academy of Management Journal*, 59(5): 1845-1868.

TABLE 1
Descriptive Statistics and Correlations

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) Investor Reactions - CAR	.02	.11	1.00																		
(2) Facial Attractiveness	3.06	.81	-0.12	1.00																	
(3) CEO Successful Acquisition Experience	.36	1.03	-0.02	-0.03	1.00																
(4) CEO Positive Media Reporting	.53	1.12	-0.03	0.13	-0.04	1.00															
(5) Transaction Value	17.78	3.8	0.16	-0.03	0.00	0.05	1.00														
(6) Acquired Stake	58.35	34.82	0.14	-0.13	-0.07	-0.11	0.21	1.00													
(7) Internal Acquisition	.26	.44	0.12	0.02	-0.05	-0.10	0.20	0.21	1.00												
(8) Cross-industry Acquisitions	.28	.45	0.10	0.01	0.00	-0.06	0.02	-0.06	0.08	1.00											
(9) CEO Age	48.18	6.4	-0.01	-0.17	-0.11	0.25	-0.01	0.04	-0.01	0.01	1.00										
(10) CEO Compensation	13.28	1.33	-0.13	0.10	0.00	0.24	0.01	-0.12	-0.02	-0.06	0.04	1.00									
(11) CEO Tenure	1.35	.63	-0.01	-0.10	-0.01	0.20	-0.01	0.00	-0.10	0.06	0.33	0.14	1.00								
(12) CEO-chairman Duality	.25	.43	-0.11	-0.01	-0.07	0.16	-0.03	0.07	0.01	0.01	0.15	0.03	0.07	1.00							
(13) TMT Size	5.92	2.07	-0.11	-0.02	-0.07	0.18	0.00	-0.01	-0.03	-0.04	0.07	0.12	0.02	0.01	1.00						
(14) Board Size	8.03	1.56	-0.05	0.06	-0.04	-0.01	0.11	0.01	0.13	0.03	-0.05	0.08	-0.12	-0.08	0.31	1.00					
(15) Firm Size	7.55	1.3	-0.07	0.06	0.02	0.31	0.14	-0.01	0.08	-0.10	0.03	0.17	0.13	0.07	0.27	0.24	1.00				
(16) Firm Acquisition Experience	2.93	3.2	-0.04	0.07	0.48	-0.01	0.05	-0.16	-0.01	-0.01	-0.09	0.09	-0.06	-0.07	0.03	-0.01	0.19	1.00			
(17) Firm Performance in the Prior Year	.22	.83	-0.16	0.17	0.07	0.26	-0.05	-0.04	-0.16	-0.16	0.00	0.12	0.07	0.03	0.12	0.06	0.18	-0.05	1.00		
(18) Firm Age	16.65	6.03	0.05	0.07	-0.03	-0.01	0.02	0.00	0.10	0.08	0.18	0.15	0.00	-0.16	0.08	0.11	0.09	0.15	-0.01	1.00	
(19) State Ownership	2.78	9.71	-0.10	-0.06	0.01	-0.01	0.04	0.02	0.10	-0.05	-0.04	-0.03	-0.12	-0.06	0.06	0.21	0.11	0.01	-0.06	0.12	1.00
(20) Industry Acquisition Intensity	5.36	1.61	0.07	-0.12	-0.06	-0.07	-0.04	0.05	-0.05	-0.01	0.11	0.00	0.14	0.14	-0.09	-0.17	0.12	-0.10	-0.03	-0.08	-0.25

Note: n = 644. |Coefficients| larger than 0.079 are significant at the 0.05 level. Year and industry dummies are included in models but omitted in this table due to space limitations.

**TABLE 2 GEE Regressions: Effects of Female CEO Facial Attractiveness
on Investor Reactions to Acquisition Announcements**

	Model 1	Model 2	Model 3	Model 4	Model 5
Facial Attractiveness		-0.014*	-0.017*	-0.019**	-0.020**
		(0.006)	(0.006)	(0.007)	(0.007)
Facial Attractiveness # CEO Successful Acquisition Experience			0.011*		0.009*
			(0.005)		(0.004)
Facial Attractiveness # CEO Positive Media Reports				0.010**	0.009**
				(0.003)	(0.003)
CEO Successful Acquisition Experience	0.002	0.001	-0.030*	0.001	-0.024*
	(0.003)	(0.003)	(0.013)	(0.003)	(0.011)
CEO Positive Media Reports	0.007.Ä†	0.009*	0.008*	-0.024*	-0.020.Ä†
	(0.004)	(0.004)	(0.004)	(0.012)	(0.012)
Transaction Value	0.003**	0.003**	0.003**	0.003**	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Acquired Stake	0.000***	0.000**	0.000**	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Internal Acquisitions	0.015	0.016	0.016	0.017.Ä†	0.016
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Cross-industry Acquisitions	0.009	0.010	0.009	0.009	0.009
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
CEO Age	-0.000	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
CEO Compensation	-0.008*	-0.008*	-0.008*	-0.008*	-0.008*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
CEO Tenure	-0.001	-0.002	-0.002	0.000	-0.000
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
CEO-chairman Duality	-0.028*	-0.027*	-0.025*	-0.024*	-0.023*
	(0.011)	(0.010)	(0.011)	(0.010)	(0.010)
TMT Size	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Board Size	-0.001	-0.001	-0.001	-0.000	-0.000
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Firm Size	-0.003	-0.003	-0.003	-0.004	-0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Firm Acquisition Experience	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Firm Performance in the Prior Year	-0.021*	-0.019.Ä†	-0.019.Ä†	-0.020.Ä†	-0.020*
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Firm Age	0.002**	0.002**	0.002**	0.002**	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
State Ownership	-0.002.Ä†	-0.002.Ä†	-0.002.Ä†	-0.002.Ä†	-0.002.Ä†
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Industry Acquisition Intensity	0.004	0.004	0.004	0.003	0.003
	(0.008)	(0.009)	(0.009)	(0.008)	(0.008)
Industry & Year Dummies	YES	YES	YES	YES	YES
Constant	0.050	0.109	0.120.Ä†	0.133.Ä†	0.138.Ä†
	(0.075)	(0.073)	(0.072)	(0.073)	(0.073)
chi2	164.472	174.637	180.570	189.098	212.271
Observations	644	644	644	644	644

Standard errors in parentheses, Ä† $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

CURRICULUM VITAE

Di Bian

di.bian@unisg.ch

Born in Kaifeng, China

Education

2016-2021	University of St.Gallen, PhD in Strategic Management, summa cum laude
2020	INSEAD Asia Campus, Visiting PhD Student
2013-2016	Tsinghua University, Master in Management Science
2014-2016	CEMS, Master in International Management
2015	Ivey Business School, Canada, Visiting Student
2009-2013	Central University of Finance and Economics, B.A. of Management (Accounting)

Paper Presentations at Conferences

2022	Academy of Management Annual Conference, Seattle & Virtual, 2022
2021	Strategic Management Society 41 st Annual Meeting, Virtual, 2021
2021	Academy of Management Annual Conference, Virtual, 2021
2020	Strategic Management Society 40 th Annual Meeting, Virtual, 2020
2019	Academy of Management Annual Conference, Boston, 2019
2019	Strategic Management Society 39 th Annual Meeting, Minneapolis, 2019
2018	Academy of Management Annual Conference, Chicago, 2018
2018	Strategic Management Society 38 th Annual Meeting, Paris, 2018

Grants and Awards

- [1] CHF 86,810, Doc.Mobility Fellowship, Swiss National Science Foundation, 2019
- [2] USD 6,000, Chinese Government Award for Outstanding Self-financed Students Abroad, 2022
- [3] ~ USD 1,000, Strategic Management Society Doctoral Workshop Scholarship, 2018

Professional Experience

Practitioner publications:

- [1] Report on Transformative M&A with Deloitte Switzerland, 2022
- [2] Report on Business Transformation with Deloitte Germany, 2020
- [3] Report on the External Asset Manager with Credit Suisse Switzerland, 2018
- [4] Report on the Private Banking Industry with KPMG Switzerland, 2018

Internship experience:

McKinsey & Co., China, 2015; the United Nations Economic Commission for Europe, Switzerland, 2015; Stanford Freeman Spogli Institute for International Studies, the U.S., 2014; Accenture Consulting, China, 2012; China Banking Regulatory Commission, China, 2012; Price Waterhouse Coopers, the Auditing Department, China, 2010