Organizational responses to performance feedback: A meta-analytic review

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Abstract
Performance feedback theory has been recognized as a generative theory in organization and management studies that explains why, when, and how organizations initiate or discontinue specific strategic actions. Over the past decades, an extensive body of empirical research has tested the theory, refined its key tenets, and broadened its applications. Yet, empirical results on the effects of performance feedback often vary and even produce conflicting insights that are difficult to interpret. Following recent developments, we suggest that empirical controversies can be largely reconciled once we consider different performance feedback conditions, organizational actions, and boundary conditions. We conducted a meta-analytic review of 113 empirical studies to statistically evaluate how and why the effects of performance feedback may vary according to various factors. By identifying factors shaping organizational responses to performance feedback, this study helps integrate existing empirical evidence and offers new directions for future theoretical development and empirical research.

Keywords
aspiration level, behavioral theory of the firm, meta-analysis, organizational action, performance feedback theory

Introduction
Organizational performance relative to aspirations (Cyert and March, 1963), usually referred to as performance feedback, explains how organizations may initiate or discontinue a wide range of organizational actions (Greve, 2003c; Posen et al., 2018; Shinkle, 2012). Given the central role of
performance feedback in explaining organizational actions, performance feedback theory has been
recognized as a generative theory in organization and management studies with far-reaching theo-
retical and empirical implications (Lounsbury and Beckman, 2015).1

Over the past several decades, an extensive body of empirical research has examined perfor-
mance feedback theory, refined its key tenets, and broadened its applications (Posen et al., 2018;
Shinkle, 2012). While these studies have contributed significantly to the advancement of perfor-
mance feedback theory, some have produced conflicting insights that are not always easy to
interpret and reconcile. For instance, a majority of empirical studies show that performance
above aspirations decreases the intensities of organizational actions. However, several studies
report the opposite, suggesting that performance above aspirations can intensify R&D invest-
ments (Chen and Miller, 2007) and organizational risk-taking (Baum et al., 2005). Similarly, a
majority of empirical studies suggest that organizations do not differentiate historical and social
performance feedback, yet few studies report that organizations may respond to historical and
social performance feedback with different intensities and types of actions (e.g. Audia and
Greve, 2006; Kacperczyk et al., 2014). Finally, some empirical studies show that organizational
responses to performance feedback may not be uniform and may depend on several internal and
external contingencies, such as firm size (Audia and Greve, 2006), firm age (Delmar and
Wennberg, 2007), firm ownership (O’Brien and David, 2014), slack resources (Greve, 2003b),
industry (Desai, 2013), and country (Lewellyn and Bao, 2015).

We suggest that many conflicting empirical results can be reconciled once we recognize that
organizations may alter their responses to performance feedback according to different perfor-
mance feedback conditions, organizational actions, and boundary conditions. We use meta-
analytical methods to quantitatively evaluate whether these factors may shape organizational
responses to performance feedback. Using meta-analytical methods, we can statistically and
objectively evaluate theoretically derived relationships across a wide variety of conditions,
allowing us to uncover factors contributing to variations in effect sizes (Combs et al., 2011;
Crook et al., 2008; Newbert et al., 2014). Often, a meta-analysis can cover a wide array of con-
tingent factors across many empirical studies, far beyond what a single empirical study can
accomplish (Aguinis et al., 2011; Eden, 2002). Drawing on empirical evidence from 113 stud-
ies, we evaluate the effects of performance feedback on organizational actions, assess the extent
to which the effects may vary depending on various factors, and provide a more nuanced under-
standing of the theory.

Our study makes several major contributions to performance feedback research. First, by pro-
viding a meta-analytic review, we respond to various calls for a statistical review of this large
body of empirical research (Klingebiel, 2018; Posen et al., 2018). Our meta-analytic review builds
on and complements existing narrative reviews on performance feedback research (e.g. Greve and
Gaba, 2017; Posen et al., 2018; Shinkle, 2012) to take stock of existing evidence and to identify
directions for future research. Second, we progress toward resolving a long-standing debate on
whether organizational responses to performance above aspirations are extensions of responses to
performance below aspirations (Iyer and Miller, 2008; Kacperczyk et al., 2014). Third, we address
another important debate on whether organizations differentiate between social and historical
aspirations (Bromiley and Harris, 2014; Kim et al., 2015), by comparing their effects on organi-
zational actions. Fourth, we provide new insights into how organizations may prioritize different
organizational actions in response to performance feedback. Fifth, we highlight the roles of
organizational and environmental contingencies in shaping organizational responses to perfor-
mance feedback. Overall, our meta-analytical review suggests that performance feedback theory
can benefit greatly from considering different performance feedback conditions, organizational
actions, and boundary conditions. By shedding light on factors influencing organizational
responses to performance feedback, this study helps integrate existing empirical evidence and offers new directions for future research.

Theoretical background

Organizations form aspiration levels for goals and choose courses of actions that can help them achieve their aspiration levels (Cyert and March, 1992; Greve, 2003c; Simon, 1955). “An aspiration level represents the smallest outcome that would be deemed satisfactory by the decision maker” (Schneider, 1992: 1053). Organizational goals and aspiration levels guide the search for alternative organizational actions to attain organizational goals (Simon, 1955, 1964, 1997).

Performance feedback theory suggests that aspiration levels serve as the reference points for evaluating organizational performance. For a specific goal, performing above the aspiration level is satisfactory, while performing below the aspiration level is problematic. Therefore, performing below an aspiration level usually triggers organizations to increase the intensity of organizational actions whose aim is to bring performance back to the aspiration level. In contrast, performing above an aspiration level triggers organizations to reduce the intensity of organizational actions (Greve, 2003c; Posen et al., 2018; Shinkle, 2012). Extensive research has suggested that organizations rely on two different types of aspirations to make performance evaluations: historical and social aspirations (Bromiley and Harris, 2014; Gavetti et al., 2012). Historical aspirations arise from organizations’ past performance, where they compare their current performance with past performance (Greve, 2003a). In contrast, social aspirations arise from the performance of peer firms, where organizations compare their own performance with peer performance (Audia and Brion, 2007).

Organizations respond to performance feedback by changing the likelihood and intensity of various organizational actions. In response to performance feedback, for instance, organizations may adjust the extent of risk-taking, R&D intensity, product innovation, investment and growth, and strategic change (Greve, 2003c). Although performance feedback may trigger organizations to explore a wide variety of actions, most studies have assumed that performance feedback has similar effects on different actions that might improve performance (Gavetti et al., 2012; Shinkle, 2012). Although widely accepted, this sweeping generalization does not capture the dilemmas and trade-offs that organizations may face when responding to performance feedback. There are good reasons to suggest that organizations often have to prioritize some actions over others, as they cannot possibly engage in all forms of actions to respond to performance feedback. Indeed, recent studies have started to suggest that different performance feedback conditions may drive organizations to undertake different organizational actions. For instance, Kacpenczyk et al. (2014) showed that internal social comparison triggered risk-taking, while external social comparison drove strategic change. Kuusela et al. (2017) showed that performance close to aspirations triggered resource-consuming actions, while performance distant from aspirations motivated resource-freeing actions. Following these recent developments, we differentiated five forms of organizational actions—that is, investment and growth, strategic change, R&D, risk-taking, and product innovation—and evaluated their relationships with performance feedback. By doing so, we shed light on the strategic trade-offs and choices that organizations face when responding to performance feedback.

Finally, recent studies have shown that the effects of performance feedback on organizational actions may vary according to various internal and external contingencies, such as firm size (Audia and Greve, 2006; Greve, 2008), firm age (Delmar and Wennberg, 2007; Desai, 2008), slack resources (Chen and Miller, 2007; Greve, 2003b; Tyler and Caner, 2015), ownership structure (Kavadis and Castañer, 2015; O’Brien and David, 2014; Shen and Lin, 2009), industry (Desai, 2013; Schimmer and Brauer, 2012), and country (Lewellyn and Bao, 2015). Following these
studies, we examined whether and the extent to which these internal and external contingencies shape organizational responses to performance feedback. We organize our meta-analytic review around the following four research questions to take stock of existing empirical research and identify directions for future research.

**Research question 1: How do organizations respond to performance above and below aspirations?**

Cyert and March (1963) originally suggested that performance below an aspiration level triggers problemistic search to address the performance shortfall, while performance above an aspiration level halts problemistic search. Similarly, March (1994: 28) suggested that “search continues as long as achievement is below the target and ends when the target is exceeded.” Following Cyert and March (1963), earlier research focused primarily on the condition of performance below aspirations, showing that poor performance indeed drives organizations to increase search and risk-taking (e.g. Bromiley, 1991). Earlier research, however, was mostly silent on the condition of performance above aspirations.

Subsequent research started to investigate organizational responses to performance above aspirations, mainly from two different perspectives. Some studies suggested that organizations usually do not suddenly halt the courses of actions that help them achieve their aspiration levels. Instead, they are more likely to carry on with what appears to have worked when performance was below aspirations, albeit at a diminishing rate (Greve, 2003b; Kacperczyk et al., 2014; Lehman and Hahn, 2013). Many empirical studies have indeed found support for this prediction, showing that organizations may gradually reduce the intensity of actions—for example, R&D intensity (Alessandri and Pattit, 2014; Lucas et al., 2018), new product introductions (Joseph and Gaba, 2015; Parker et al., 2017), and strategic changes (Lin, 2014)—as performance increases beyond aspirations.

In contrast, other studies have suggested that organizations that perform above aspirations increase the intensity of actions (Bromiley and Washburn, 2011; Lounsbury and Beckman, 2015). They argued that performance above aspirations can either produce (Salge et al., 2015) or allow for easier access to slack resources (Baum et al., 2005), motivating explorations. If slack resources can motivate organizations to pursue promising ideas that would have been left unnoticed (Chen, 2008), then performance above aspirations could lead to an increase in the intensity of organizational actions.

Overall, while it is widely agreed that performance below aspirations drives organizational actions, there are some controversies about how performance above aspirations influences organizational actions. Our first research question, therefore, aims to shed light on these debates by quantifying the impact of performance above aspirations on organizational actions and by comparing and contrasting the effects of performance below and above aspirations on organizational actions.

**Research question 2: How do organizations respond to performance relative to historical and social aspirations?**

Cyert and March (1963) originally suggested that a firm usually has an overall aspiration for a specific organizational goal. A firm’s overall aspiration for a goal was believed to be a combination of the firm’s past aspiration levels, its past performance levels, and its peers’ past performance levels (Cyert and March, 1992: 172). This overall aspiration level is usually referred to as combined aspiration. Combined aspiration has been shown to affect a wide variety of organizational actions, ranging from R&D intensity (O’Brien and David, 2014) to investment and growth (Delmar
and Wennberg, 2007). Most studies, however, often adopted a simpler version of combined aspiration, which is simply a combination of a firm’s past performance levels and its peers’ past performance levels. In this formulation, a firm’s past performance levels are referred to as the firm’s historical aspirations, while peers’ past performance levels are referred to as the firms’ social aspirations (Greve, 2003a).

Many other studies have suggested that, instead of being combined into an overall aspiration, historical and social aspirations can independently shape organizational responses (Greve, 2003c: 50). Following this approach, empirical studies have started to separate historical (i.e. performance relative to historical aspirations) from social performance feedback (i.e. performance relative to social aspirations) and examined their independent impacts on organizational actions (Bromiley and Harris, 2014). Yet, these studies still assume that organizations respond to historical and social performance feedback in similar ways (Greve, 2003c; Iyer and Miller, 2008). Nevertheless, several empirical studies have shown that organizations may respond more intensively to performance relative to historical aspirations (Audia and Greve, 2006; Baum et al., 2005; Joseph and Gaba, 2015), while others have found that they may react more strongly to performance relative to social aspirations (Bromiley et al., 2017; Greve, 1998; Harris and Bromiley, 2007).

More recent studies have suggested that historical and social aspirations have fundamental differences, which may drive different organizational responses. Specifically, performance relative to historical aspirations helps reveal the performance trend of a specific organization (Baum and Dahlin, 2007), while performance relative to social aspirations helps reveal relative performance against peers (Kim et al., 2015). Performance relative to historical aspirations is thus theoretically more likely to direct organizational attention to past performance and past actions, leading organizations to assess the effectiveness of their past actions and to learn from their past experiences (Greve, 2003b; Holmqvist, 2004). Conversely, performance relative to social aspirations is more likely to direct organizational attention to peer performance and peers’ actions (DiMaggio and Powell, 1983; Li et al., 2015), leading organizations to identify and learn from high-performing peers (e.g. Haunschild and Miner, 1997; Haveman, 1993). Therefore, historical and social performance feedback may trigger quite different organizational responses. There is indeed some evidence to suggest that organizations may respond to different aspirations through different types of actions. For instance, Kacperczyk et al. (2014) showed that internal social aspirations increased risk-taking, while external social aspirations motivated strategic change.

Overall, while it is generally agreed that historical and social performance feedback can independently shape organizational actions, there are some controversies about whether and how they may lead to different levels and types of actions. Our second research question, therefore, aims to shed light on this debate by comparing the effects of historical and social aspirations on organizational actions.

Research question 3: Do the effects of performance feedback vary according to organizational actions?

Organizations respond to performance feedback by adjusting the likelihood and intensity of organizational actions. The goal of these adjustments is to address or avoid performance shortfalls. In principle, organizations can respond to performance feedback with a wide variety of actions. In practice, however, organizations often focus on a few major forms of actions, including organizational risk-taking (Baum et al., 2005; Harris and Bromiley, 2007; Madsen, 2011; Miller and Chen, 2004), R&D investment (Chen, 2008; Greve, 2003a; Lucas et al., 2018; Salge et al., 2015; Tyler and Caner, 2015), product innovation (Audia and Brion, 2007; Ben-Oz and Greve, 2015; Greve, 2007; Parker et al., 2017), investment and growth (Audia and Greve, 2006; Gomez-Mejia et al.,
2018; Greve, 2008; Iyer and Miller, 2008), and strategic change (Baum and Dahlin, 2007; Bromiley et al., 2016; Massini et al., 2005; Park, 2007). In response to performance below aspirations, organizations often focus on actions that have the potential to “mend performance shortfalls” (Greve, 2003a: 687). In response to performance above aspirations, in contrast, organizations may focus on actions that can avoid performance shortfalls (Greve, 2003b).

Despite the wide variety of organizational actions, a common assumption in performance feedback research is that “we should expect similar results” when studying various organizational actions (Greve, 2003c: 76). Such an assumption, however, implies that organizations may increase or decrease all actions in similar ways and to similar extent in response to performance feedback. Yet, organizations often face trade-offs in responding to performance feedback. Often, organizations have to choose some actions over others, primarily due to constraints on capabilities, resources, and cognition. For instance, several empirical studies have found that different performance feedback conditions can affect risk-taking, strategic change, and investment and divestment in quite different ways (Kacperczyk et al., 2014; Kuusela et al., 2017; Xu et al., 2019).

By examining whether and how performance feedback may have different effects on different actions, we can shed light on the choices and trade-offs that organizations may face when responding to performance feedback. Our third research question, therefore, aims to shed light on this debate by comparing and contrasting the effects of performance feedback on different organizational actions under different performance feedback conditions.

Research question 4: What boundary conditions shape organizational responses to performance feedback?

Although it is widely recognized that contingencies matter, there is no consensus on why and how they may matter. For instance, there are some debates about how firm age and firm size may influence organizational responses to performance feedback. In relation to firm age, it is suggested that younger firms lack managerial experience and knowledge to effectively respond to performance feedback (Desai, 2008; Thornhill and Amit, 2003). Yet, it is also argued that older firms are constrained by their rigid routines and bureaucratic structures in responding to performance feedback (Audia and Greve, 2006). With regard to firm size, it is proposed that smaller firms are more conservative in responding to performance feedback than their larger counterparts, due to resource constraints (Greve, 2008; Miller and Chen, 2004; Wennberg et al., 2016). Yet, larger firms are also suggested to be more inert and rigid, due to increased hierarchy and complexity, leading to lower sensitivity to performance feedback (Chen and Hambrick, 1995; Greve, 2010). Given such contradictory arguments, it is not surprising that empirical results are also conflicting. For instance, several studies have found that younger and smaller firms are more responsive to performance feedback than older ones (Blettner et al., 2015; Desai, 2008), while others have shown the exact opposite (Delmar and Wennberg, 2007; Wennberg et al., 2016).

Ownership structure is also expected to influence organizational responses to performance feedback. Compared with private firms, for instance, public firms face stricter requirements for financial reporting (Chrisman and Patel, 2012), so their financial metrics are readily available to all stakeholders and easily comparable with other organizations. As a result, we can expect public firms to be especially attentive to performance feedback. Yet, public firms also have a large number of stakeholders as well as more complicated governance structures (Desai, 2016), constraining organizational responses to performance feedback. In empirical research, most studies focused exclusively on publicly listed firms, while only a handful of studies analyzed private firms. Focusing on private and family-owned firms, Kotlar et al. (2014) found that these firms may be rather sensitive to performance feedback, especially when performance is below
aspirations. Interestingly, Kotlar et al. (2013) also found that private and family-owned firms may be more sensitive to social performance feedback but are less sensitive to historical performance feedback.

Besides organizational characteristics, external conditions—such as industry and country—have been shown to shape organizational responses to performance feedback. Industries differ in their degrees of industry dynamism (Davis et al., 1991; Schimmer and Brauer, 2012), industry competition (Kotlar et al., 2014), and regulation (Desai, 2013), driving different responses to performance feedback. Similarly, countries differ in cultures and institutions, potentially motivating firms to pursue different responses to performance feedback (Lewellyn and Bao, 2015; Lin et al., 2011). It could be argued that power distance as a dimension of national culture can influence organizational responses to performance feedback. For instance, firms in cultures with higher power distance may value hierarchy, centralization, and control, constraining organizational responses to performance feedback, especially when performance is below aspirations (Hofstede, 2001; Lewellyn and Bao, 2015).

Overall, while it is widely recognized that boundary conditions matter, there are conflicting theoretical arguments on why and how they may shape organizational responses to performance feedback. Although we may expect empirical research to help sort out competing theoretical predictions, current empirical findings are often conflicting in themselves and are far from providing a clear answer. Our fourth research question, therefore, focuses on examining whether and how internal and external contingencies shape organizational responses to performance feedback.

**Methods**

We conducted a meta-analysis to address our four research questions. We chose meta-analytic methods for several reasons. First, meta-analytic methods can draw on all available evidence to systematically evaluate the level of empirical support for the key tenets of performance feedback theory, far beyond what a single empirical study can achieve (Aguinis et al., 2011; Eden, 2002). Second, meta-analytic methods can compare effect sizes across different performance feedback conditions and organizational actions (Aguinis et al., 2011; Lucas et al., 2018), allowing us to address our first three research questions. Third, meta-analytic methods can help identify internal and external contingencies that may shape organizational responses to performance feedback (Crook et al., 2008; Newbert et al., 2014), allowing us to address our fourth research question.

**Selection of studies**

We followed a comprehensive procedure to identify studies to be included in our meta-analysis. First, we searched broadly for all possible studies that examined performance feedback theory within the behavioral theory of the firm. We used the following keywords and their combinations in our search: “behavioral theory of the firm,” “performance feedback,” “attainment discrepancy,” “organizational decision-making,” “aspirations,” “problemistic search,” “slack search,” and “organizational change.” We conducted the search in the ABI/INFORM and Web of Science databases and included empirical studies that reported at least one relationship between a performance feedback condition and an organizational action. This search resulted in 128 empirical studies examining organizational responses to performance feedback. Second, we conducted a backward search from the references of the identified studies to expand our initial sample. This search resulted in 23 studies that were not identified in the previous step. Third, to address the “file drawer problem” (Rosenthal, 1995), we called for unpublished studies through the Academy of Management listservs for Strategy, Organization and Management Theory, and Technology and
Innovation Management divisions. We also expanded our search to EBSCO, SSRN, and Google Scholar for unpublished studies. In this step, we identified four unpublished studies to be included in our sample. Fourth, we examined whether the identified studies had the necessary statistical information for meta-analysis (e.g. sample size and correlations) and removed those without the required information. In this step, we had to eliminate 35 studies. Fifth, we avoided double counting of studies that used the exact same data. For such studies, we only included the most recently published ones in our sample. This step eliminated seven studies.

Overall, this procedure yielded a final sample of 113 studies with 302 effect sizes and a total of 1,106,120 firm-year observations. Among these studies, 63 were published in journals included in the Financial Times (FT) 50 list and the Chartered Association of Business Schools (ABS) Academic Journal Guide 2015 Tier 4 list. In addition, the majority of them (i.e. 101 studies) used archival data. Within our sample, 94 studies explored multiple performance feedback conditions (e.g. performance above and below aspirations as well as performance relative to historical and social aspirations), so we were able to obtain multiple effect sizes from a single study. Following Aguinis et al. (2018) and Combs et al. (2018), we report sample size, variable operationalization (aspirations and organizational actions), data collection procedures, time and location of data collection, and sample characteristics for each study. The bibliographic information of all studies in our meta-analysis is presented in Supplemental Appendix A1.

**Coding**

We coded each study by performance feedback conditions, organizational actions, and contingencies. If a study examined multiple relationships, we coded each relationship separately. Coding was done by a team of three researchers, and coding disagreements were resolved through discussion and consensus. The coding details for each study are included in Supplemental Appendix A1.

**Performance above and below aspirations.** We differentiated performance below aspirations from performance above aspirations. Following Greve (2003c), we labeled a relationship as examining performance below aspirations if it focused on the condition where performance was lower than aspirations. We labeled a relationship as examining performance above aspirations if it focused on the condition where performance was higher than aspirations. Within our sample, we found 130 relationships for performance below aspirations and 107 relationships for performance above aspirations.

**Performance relative to historical and social aspirations.** We also differentiated performance relative to historical aspirations from performance relative to social aspirations. We labeled a relationship as examining performance relative to historical aspirations when the aspiration level was operationalized as a function of a firm’s own past performance (Jung and Bansal, 2009). We labeled a relationship as examining performance relative to social aspirations when the aspiration level was operationalized as a function of peer performance (Kacperczyk et al., 2014). Some relationships were labeled as examining performance relative to combined aspirations when the aspiration level was operationalized as a weighted average of historical and social aspirations. Within our sample, we found 128 relationships for performance relative to social aspirations, 119 relationships for performance relative to historical aspirations, and 39 relationships for performance relative to combined aspirations.

**Organizational actions.** We differentiated five forms of organizational actions—that is, investment and growth, strategic change, R&D intensity, risk-taking, and product innovation (Greve,
and labeled each relationship by one of the actions. Table 1 presents the key definitions of these organizational actions with selected operationalizations from empirical studies. In particular, we labeled a relationship as examining investment and growth if it investigated how firms invest in or acquire assets to drive growth (Audia and Greve, 2006; Iyer and Miller, 2008; Kim et al., 2015). We labeled a relationship as examining strategic change if it investigated how firms modify their organizational structures, market positions, or market scopes (Gavetti et al., 2012). We labeled a relationship as examining R&D intensity if it investigated how firms allocate resources to R&D (Bromiley et al., 2016; Chen and Miller, 2007). We labeled a relationship as examining risk-taking if it investigated how firms engage in risky and untested courses of actions involving risky alternatives and unpredictable outcomes (Baum et al., 2005; Bromiley, 1991; Miller and Chen, 2004). We labeled a relationship as examining product innovation if it investigated how firms introduce new products or technologies to the market (Greve, 2003c; Nohria and Gulati, 1996). Within our sample, we found 135 relationships analyzing strategic change, 59 relationships analyzing investment and growth, 48 relationships analyzing R&D intensity, 36 relationships analyzing organizational risk-taking, and 24 relationships analyzing product innovation.

**Correlations.** Performance feedback theory suggests that as performance decreases below aspirations, organizations intensify their actions. As performance increases above aspirations, organizations limit their actions (Greve, 2003c). According to this prediction, the correlations between performance feedback and organizational actions should be negative, unless a study reports a contradicting result. Nevertheless, some studies reversely coded their performance feedback variables to ease interpretations and thus reported positive correlations. We took reverse coding into account and aligned the signs of the reported correlation coefficients with the conclusions of the studies. Specifically, if a study supported performance feedback theory, the correlation coefficients between performance feedback and organizational actions were coded as negative. For performance below aspirations, however, the correlation can be positive if a study reported results supporting the threat-rigidity hypothesis (Shimizu, 2007; Staw et al., 1981). To assure comparability across studies, we made sign adjustments for 16 studies that reported positive coefficients for performance below aspirations.
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below aspirations. For performance above aspirations, the correlation can be positive if a study reported results supporting the slack search argument (Baum et al., 2005; Iyer and Miller, 2008).

**Internal and external contingencies.** In our meta-regressions, we accounted for study-level differences through a set of internal and external contingencies, including ownership structure, performance metrics, industry, country, firm size, and firm age. For ownership structure, we coded a study as focusing on private firms (private firms coded as 1) or publicly listed ones. Furthermore, we included the operationalization of the performance variable. For performance metrics, we coded a study as using financial metrics if it used return on assets (ROA), return on sales (ROS), or sales revenue as performance measure; we coded a study as using non-financial metric if it used other non-financial measures (non-financial performance coded as 1). For industry, we coded a study as focusing on manufacturing industries if the majority of the firms within its sample belonged to this industry (manufacturing industries coded as 1); we coded a study as focusing on non-manufacturing industries if the majority of the firms within its sample belonged to non-manufacturing industries. For country, we coded a study as focusing on US firms (United States coded as 1) if the majority of the sampled firms were located in the United States; we coded a study as focusing on non-US firms if the majority of firms were located in non-US countries. For firm size, we used the mean firm size reported by each study. To assure comparability across studies, we only included firm size that was measured as the natural log of the number of employees. For firm age, we used the mean firm age reported by each study. To assure comparability across studies, we only included firm age that was measured as the natural log of age.

**Methodological variables.** In our meta-regressions, we also controlled for two methodological factors that might influence effect size heterogeneity. First, following Aguinis et al. (2018), we controlled for the data sources of the studies, as archival and survey data tend to produce results with substantially different effect sizes and reliabilities (Bettis et al., 2014). We included a binary variable, survey data, which was coded as 1 for survey data and 0 for archival data. Second, we controlled for the publication outlet. Following Aguinis et al. (2018), we used the 2015 Chartered Association of Business Schools (ABS) tiers to control for the quality of the publication outlet. We included a binary variable, top journals, which was coded as 1 for ABS Tier 4* and 4 journals, and 0 for ABS Tier 3 and below journals.

**Analyses**

We followed the bivariate meta-analytic procedure to assess effect sizes (Hunter and Schmidt, 1990), since it is the most accurate, intuitive, and widely used method (Bergh et al., 2016; Crook et al., 2008). We calculated the sample size–weighted average effect sizes using the following formula:

\[
\bar{r} = \frac{\sum n_i r_i}{\sum n_i}
\]

where \(\bar{r}\) is the average effect size, \(n_i\) is the sample size, and \(r_i\) is the Pearson correlation coefficient. In general, we used all reported correlations to assess the overall effect sizes. For studies that operationalized one dependent variable in multiple ways, we averaged the correlations to obtain a single result for each relationship. In our analyses, we used uncorrected correlation coefficients, since most studies drew on archival data rather than survey data and did not report information on measurement error. As Aguinis...
et al. (2011) suggested, “if primary-level studies do not provide information on measurement error for each of the variables, correcting for unreliability in a meta-analysis may turn into a guessing game” (p. 1038).

Following Aguinis et al. (2010a), we calculated the 95% credibility intervals of the sample size–weighted mean effect sizes, using uncorrected standard errors of the effect sizes. A wide credibility interval highlights the heterogeneity of the effect sizes across studies (Whitener, 1990), indicating the need to further uncover the sources of heterogeneity through meta-regressions.

We used subgroup analyses to compare and contrast the effect sizes for different performance feedback conditions and different forms of organizational actions. We calculated the mean effect sizes for each subgroup and used Z tests to evaluate the differences across groups. In subgroup analyses, different subgroups were allowed to have different degrees of heterogeneity (Schmidt and Hunter, 2014).

We used meta-analytic regressions to examine whether and the extent to which certain variables can help explain effect sizes’ heterogeneity (Aguinis et al., 2011; Gonzalez-Mulé and Aguinis, 2018). Following Crook et al. (2008), we adopted mixed-effect models. 10 For each model, the dependent variable was the mean correlation coefficient, while the independent variables included a set of boundary conditions and methodological factors.

Results

Research question 1: How do organizations respond to performance above and below aspirations?

Table 2 presents the effects of performance above and below aspirations on organizational actions. According to Table 2 (see rows 7 and 8), the effect of performance below aspirations is negative and significant, so is the effect of performance above aspirations. In addition, the effect of performance below aspirations is significantly greater than the effect of performance above aspirations ($\Delta \overline{r_c} = 0.05$, $z = 5.48$, $p = 0.000$). 11 Overall, as performance decreases below aspirations (i.e. the negative performance–aspiration gap increases), organizations are likely to increase the intensity of actions (see row 8). In contrast, as performance increases above aspirations (i.e. the positive performance–aspiration gap increases), organizations are likely to reduce the intensity of actions (see row 7).

Research question 2: How do organizations respond to performance relative to historical and social aspirations?

Table 2 also presents the effects of performance relative to historical and social aspirations on organizational actions. According to Table 2, the effect of performance relative to historical aspirations is negative and significant, so is the effect of performance relative to social aspirations (see rows 2 and 3). In addition, the two effect sizes are quite similar—the difference between the two is not statistically significant ($\Delta \overline{r_c} = 0.01$, $z = 0.77$, $p = 0.441$). Overall, these results suggest that organizations react to historical and social performance feedback to a similar extent.

Table 2 also reports the results for combined aspirations. Compared with historical and social aspirations, combined aspirations have a much smaller effect size (see row 4). 12 We further divided combined aspirations into two subgroups: one in which social aspirations dominate and the other in which historical aspirations dominate. For these two subgroups, the effect sizes are still relatively small (see rows 5 and 6).
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Research question 3: Do the effects of performance feedback vary according to organizational actions?

Table 2 also presents the effects of performance feedback on five forms of organizational actions: investment and growth, strategic change, R&D intensity, organizational risk-taking, and product innovation. According to Table 2 (see rows 9–13), performance feedback drives investment and growth, strategic change, R&D, risk-taking, and product innovation, yet it does not drive product innovation.

It is important to note that in Table 2, we present the overall effects without differentiating various performance feedback conditions. In Table 3, we differentiated between performance below and above aspirations through subgroup analyses. The results show that performance below aspirations indeed drives all forms of actions, consistent with the core tenet of performance feedback theory. As performance decreases below aspirations, therefore, firms intensify investment and growth, strategic change, R&D, risk-taking, and product innovation. In addition, the results show that performance above aspirations decreases the intensity of most forms of actions except R&D and product innovation. As performance increases above aspirations, therefore, firms reduce investment and growth, strategic change, and risk-taking—but not R&D or product innovation.

For each form of organizational action, we further compared the effects between performance above aspirations and performance below aspirations to understand whether the differences are meaningful. The mean differences of the effects are significant for four forms of actions, except for investment and growth. Overall, performance below aspirations is indeed more likely to drive organizational actions than performance above aspirations is to reduce them.
In Table 4, we differentiated between performance relative to historical and social aspirations through subgroup analyses. As Table 4 shows, performance relative to historical aspirations drives investment and growth, strategic change, and R&D intensity—but not risk-taking or product innovation. Performance relative to social aspirations drives investment and growth, strategic change, R&D intensity, and risk-taking—but not product innovation.

For each form of organizational action, we further compared the effects between performance relative to historical aspirations and performance relative to social aspirations. The differences are significant for R&D intensity and risk-taking—but not for investment and growth, strategic change, and product innovation. The results for R&D intensity and risk-taking are especially worth noting.

Between historical and social aspirations, R&D intensity reacts more strongly to historical aspirations ($\Delta \bar{r} = 0.05, z = 2.13, p = 0.033$), while organizational risk-taking reacts more strongly to social aspirations ($\Delta \bar{r} = 0.06, z = 2.16, p = 0.031$).

**Research question 4: What boundary conditions shape organizational responses to performance feedback?**

We drew on meta-regressions to evaluate the roles of internal and external contingencies in shaping organizational responses to performance feedback. Table 5, Model 2, presents the results for performance above aspirations. We highlight two interesting findings. First, private firms are more likely than public firms to decrease organizational actions in response to performance above aspirations. Second, larger firms are less likely than smaller firms to decrease the intensity of organizational actions in response to performance above aspirations.

Table 5, Model 4, presents the results for performance below aspirations. In interpreting these results, we have to keep in mind that the baseline effect is negative, so a negative moderating effect is a strengthening effect. Many results are worth noting. Private firms are more likely than public firms to intensify organizational actions in response to performance below aspirations. Non-financial metrics are more likely than financial metrics to intensify organizational actions in response to performance below aspirations. Manufacturing firms are less likely than non-manufacturing firms to intensify organizational actions in response to performance below aspirations. US firms are more likely than non-US firms to intensify organizational actions in response to performance below aspirations. Larger firms are less likely than smaller ones to intensify organizational

<table>
<thead>
<tr>
<th>Organizational action</th>
<th>Performance below aspirations k $\bar{r}$ p SE</th>
<th>Performance above aspirations k $\bar{r}$ p SE</th>
<th>Difference k $\bar{r}$ p SE Z $p_z$</th>
</tr>
</thead>
<tbody>
<tr>
<td>All actions</td>
<td>130 $-$0.08 0.000 0.01</td>
<td>107 $-$0.03 0.001 0.01</td>
<td>$-5.48$ 0.000</td>
</tr>
<tr>
<td>Investment and growth</td>
<td>26 $-$0.07 0.000 0.02</td>
<td>23 $-$0.05 0.001 0.02</td>
<td>$-0.91$ 0.361</td>
</tr>
<tr>
<td>Strategic change</td>
<td>58 $-$0.07 0.000 0.01</td>
<td>45 $-$0.03 0.000 0.01</td>
<td>$-5.12$ 0.000</td>
</tr>
<tr>
<td>R&amp;D intensity</td>
<td>18 $-$0.09 0.000 0.01</td>
<td>16 $-$0.03 0.213 0.02</td>
<td>$-2.83$ 0.005</td>
</tr>
<tr>
<td>Organizational risk-taking</td>
<td>18 $-$0.10 0.000 0.02</td>
<td>15 $-$0.04 0.021 0.02</td>
<td>$-2.09$ 0.037</td>
</tr>
<tr>
<td>Product innovation</td>
<td>10 $-$0.08 0.001 0.03</td>
<td>8 $-$0.06 0.242 0.06</td>
<td>$-2.36$ 0.018</td>
</tr>
</tbody>
</table>

SE: standard error.
Number of data points (k), sample size–weighted mean effect size, uncorrected ($\bar{r}$), standard deviation of sample size–weighted correlation (SE), and Z statistic (Z) for the critical ratio that indicates whether the subgroups are significantly different (significance of Z test is determined using two-tailed tests).
actions in response to performance below aspirations. Finally, older firms are more likely than younger ones to intensify organizational actions in response to performance below aspirations.

Table 6, Model 2, presents the results for performance relative to historical aspirations. Since a very small number of studies reported firm ownership, firm age, and industries, we could not include these three variables in Model 2. One result is worth noting. Relative to non-US firms, US firms are more sensitive to performance relative to historical aspirations.

Table 6, Model 4, presents the results for performance relative to social aspirations. Three results are especially worth noting. Private firms are more sensitive to performance relative to social aspirations than public firms. Manufacturing firms are less sensitive to performance relative to social aspirations than non-manufacturing firms. Larger firms are less sensitive to performance relative to social aspirations than smaller firms.
Post hoc analyses

We carried out an analysis to assess whether outliers might bias our results (Aguinis et al., 2010a; Schmidt and Hunter, 2014). We followed Junni et al. (2013) and excluded correlation coefficients that were more than 6 standard deviations above or below the mean correlations of the overall sample. The results from this analysis are similar to the original results. Specifically, the sample size–corrected mean correlation between performance feedback and organizational actions decreases by 0.001 when potential outliers are excluded. The difference between the two meta-analytic correlation coefficients is not significant ($p = 0.909$).

Furthermore, we carried out the Fail-Safe $N$ test, which assesses how many unpublished studies with null results are needed to invalidate our results (Rosenthal, 1995). The Fail-Safe $N$ for the mean correlation between performance feedback and organizational actions is 412,008, and all Fail-Safe $N$ values for the subsample analyses exceed the criterion suggested by Rosenthal (1979)—that is, 5 times the number of studies in the sample plus 10.

We followed Aguinis et al. (2010b) and carried out the trim-and-fill analysis to further assess the concern with the file drawer problem. The trim-and-fill method simulated studies that might be missing and included these simulated studies in estimating effect sizes (Duval and Tweedie, 2000). The results of the trim-and-fill analyses are presented in Supplemental Appendix A2. The average number of missing studies ranges between zero and eight. The differences in our calculated effect sizes and the results of trim-and-fill methods are neither statistically significant nor economically meaningful. Overall, our results are robust.

Discussion

Within a timespan of over 30 years, more than 100 empirical studies on performance feedback theory have appeared in over 25 journals. Our meta-analytic review sheds light on areas where...
agreements have been reached, addresses various controversies in current research, and improves the clarity of the theory. As a meta-analytic review, this study adds to the recent narrative reviews of Shinkle (2012), Greve and Gaba (2017), and Posen et al. (2018) in taking stock of existing empirical evidence and identifying fruitful directions for future research.

**Theoretical implications**

Our first contribution is to progress toward resolving a long-standing debate regarding organizational responses to performance above aspirations. On the one hand, many studies have suggested that performance above aspirations reduces organizational actions, as it reduces problemistic search (Greve, 2003b; Kacperczyk et al., 2014; Lehman and Hahn, 2013). On the other hand, some studies have shown that performance above aspirations intensifies organizational actions, as it produces organizational slack that can encourage exploration (Baum et al., 2005; Iyer and Miller, 2008). Our results shed light on this debate, by showing that performance above aspirations reduces some forms of organizational actions (e.g. investment and growth, strategic change, and risk-taking), but not others (e.g. R&D and product innovation) (see Table 3). Accordingly, organizational actions such as investment and growth, strategic change, and risk-taking may be driven primarily by problemistic search, so organizations become less likely to undertake such actions when they are performing well. Organizational actions such as R&D and product innovation may be driven by both problemistic search and slack search, so organizations may not reduce them even when they are performing well. Overall, our results suggest that organizations are not necessarily myopic in their responses to performance above aspirations, as they often differentiate actions that help address problems from those that help pursue opportunities. Especially, firms may innovate “both when successful and unsuccessful” (Cyert and March, 1992: 189).

We also confirm that performance below aspirations intensifies all forms of organizational actions (see Table 3), reinforcing the central tenet that performance below aspirations triggers problemistic search (Cyert and March, 1963; Greve, 2003c). Problemistic search, however, is usually believed to be problem-induced, local, routinized, and possibly myopic (Posen et al., 2018). Our results show that problemistic search drives not only short-term organizational actions (e.g. some forms of incremental risk-taking) but also longer-term strategic actions (e.g. R&D investments and product innovation). Overall, our results suggest that problemistic search is not as myopic as sometimes believed (see also Ben-Oz and Greve, 2015).

Moreover, our results show that performance below aspirations is more likely to intensify organizational actions than performance above aspirations is to reduce them (see Table 3), suggesting that organizations may be averse to performance below aspirations and will try to correct performance shortfalls (Greve, 1998). Organizations’ aversion to performance below aspirations may resemble individual-level loss aversion (Baumeister et al., 2001; Tversky and Kahneman, 1991), pointing to the promise of multi-level research to uncover the micro-foundations of organizational responses to performance feedback.

Our second contribution is to offer insights into whether and how organizations differentiate between historical and social aspirations. Although most studies have assumed that firms do not differentiate between historical and social aspirations, some have suggested otherwise. Compared with historical aspirations, for instance, social aspirations may be more ambiguous (Moliterno et al., 2014), due to the existence of multiple reference groups and the garbage-can processes of identifying a specific reference group to define social aspirations (Posen et al., 2018). A firm’s reference group can be all firms in the same industry (Lucas et al., 2018), direct rivals (Park, 2007), similar firms (Shipilov et al., 2011), or high-performing firms (Labianca et al., 2009). In carrying out social comparison, therefore, firms can compare themselves with average
performers, high performers, direct rivals, or similar firms, and there are usually ambiguities about what firms are actually doing. Unlike social aspirations, historical aspirations are more straightforward, as firms refer to their own past performance in defining historical aspirations (Greve, 1998). Even for historical aspirations, nevertheless, there are still ambiguities regarding how far firms may look back into their own past and whether they may pay more attention to their recent past than their distant past (Bromiley and Harris, 2014). Although our meta-analysis cannot provide definite conclusions on these issues, we show that historical and social aspirations have similar effects on organizational actions, suggesting that both provide important inputs into firms’ strategic decision-making processes.

Moreover, we show that historical and social aspirations may drive different forms of organizational actions. Specifically, historical aspirations drive all actions but risk-taking and product innovation, while social aspirations drive all actions but product innovation. Furthermore, certain organizational actions may be more sensitive to one aspiration than the other. Specifically, R&D intensity is more sensitive to historical aspirations, while organizational risk-taking is more sensitive to social aspirations (see Table 4). These results suggest that firms may be more likely to learn from their own past in carrying out R&D, as R&D investments may represent well-known courses of actions for mending performance shortfalls. Yet, firms may be more likely to learn from their peers in deciding risk-taking, as risk-taking often requires firms to undertake new and untested courses of actions. These results possibly highlight the need to differentiate more carefully R&D investments from risk-taking in performance feedback research (see also Bromiley et al., 2017).

Although most studies have suggested that historical and social aspirations independently shape organizational actions, some studies have suggested that they are aggregated into a combined aspiration to affect organizational actions. To address this issue, we compared combined aspirations with separate aspirations. We aggregated all available evidence and show that organizations are less sensitive to combined aspiration than to separate aspirations (see Table 2). Overall, our results suggest that historical and social aspirations may indeed register separately in organizational decision-making, providing support for separating historical and social aspirations in performance feedback research (see also Bromiley and Harris, 2014).

Our third contribution relates to the debate on whether organizations prioritize certain organizational actions in responding to performance feedback. While a large number of studies have assumed that performance feedback can trigger any type of actions, some recent studies have suggested that performance feedback may drive different actions under different conditions (e.g. Kacperczyk et al., 2014; Klingebiel, 2018; Xu et al., 2019). By aggregating all available evidence, we show that performance feedback tends to drive all major forms of actions, albeit to different degrees and in different ways (see Tables 2 to 4). For instance, our results suggest that, although performance below aspirations intensifies all forms of actions, performance above aspirations reduces investment and growth, strategic change, and risk-taking—but not R&D or product innovation. In addition, performance relative to historical aspirations drives investment and growth, strategic change, and R&D intensity—but not risk-taking or product innovation. Performance relative to social aspirations drives investment and growth, strategic change, R&D intensity, and risk-taking—but not product innovation. Overall, these results suggest that organizations are likely to focus on specific actions that can help them either mend or avoid performance shortfalls given specific performance feedback conditions.

Our fourth contribution relates to the roles of internal and external contingencies in shaping organizational responses to performance feedback. By recognizing these boundary conditions, we can help reconcile conflicting propositions and findings in performance feedback research (see Tables 5 and 6). Several contingencies are especially worth noting. Our results show that private firms are always more responsive to performance feedback than public firms. Private firms and
public firms are likely to have different dominant coalitions, governance structures, and decision-making processes (Gavetti et al., 2007; Prahalad and Bettis, 1986), driving different responses to performance feedback. Compared with public firms, for instance, private firms may have fewer stakeholders and less complicated governance structures (Desai, 2015), enhancing their responsiveness to performance feedback. Interestingly, our results also show that private firms tend to significantly cut back their actions when performing above aspirations, suggesting that private firms may focus more on problemistic search than on slack search.

Furthermore, we show that firms are especially prone to take actions when their non-financial metrics are below aspirations. Firms’ responsiveness to non-financial metrics may arise from the informativeness of such metrics, which tend to be more specific and granular than financial ones. Furthermore, certain non-financial metrics (e.g., customer satisfaction) can be especially important for certain firms (e.g., new ventures), since performing unsatisfactorily on these metrics can hurt firms not only in the short term but also in the longer term (Parker et al., 2017).

Surprisingly, we find that manufacturing firms tend to react controversially to performance feedback; they choose to cut back—rather than intensify—their actions when performing below aspirations as well as when reacting to social aspirations. One possible explanation is that manufacturing firms faced severe foreign competition over the past several decades, driving them to cut back actions when performing poorly (Autor et al., 2013). These results resonate with Schimmer and Brauer (2012) and Ben-Oz and Greve (2015) and highlight the importance of industry context in performance feedback research, suggesting that organizational responses to performance feedback are highly dependent on industry characteristics.

Moreover, we find that US firms are more likely than non-US firms to respond to performance below aspirations and performance relative to historical aspirations, possibly highlighting the pressures and negative consequences that US firms may face when they fail to maintain their performance (Love and Kraatz, 2017). Most of the US firms—especially publicly listed ones—face strong pressures from financial analysts and shareholders to perform consistently over time and to meet aspirations all the time. This finding also suggests that institutional and cultural contexts can influence organizational responses to performance feedback (Sengul and Obloj, 2017).

Our results indicate that large firms are generally less sensitive to performance feedback than smaller firms. Firm size can be a proxy for resources, market power, bureaucracy, and complexity—all of these factors associated with size can interact to shape organizational responses to performance feedback (Josefy et al., 2015). Although large firms may have more resources and market power to allow for more actions, they may be constrained by increased bureaucracy and complexity in responding to performance feedback.

Finally, older firms tend to be more responsive to performance below aspirations than younger firms, suggesting that performance below aspirations may help reverse older firms’ inertia and rigidities (Sørensen and Stuart, 2000). Overall, our results on internal and external contingencies suggest that performance feedback research can benefit greatly from careful contextualization, as contextual factors can play major roles in shaping organizational responses to performance feedback.

**Limitations and directions for future research**

Our results point to several fruitful directions for future research. Although our meta-analytic review has documented important patterns through which organizations respond to performance feedback, it does not allow for discriminating the underlying mechanisms driving these patterns. In explaining organizational responses to performance feedback, we focus on two fundamental mechanisms: problemistic search (Cyert and March, 1963; Posen et al., 2018) and slack search...
(Bourgeois, 1981; Cyert and March, 1963). Yet, existing studies have identified several other theoretical mechanisms, such as loss aversion (Chrisman and Patel, 2012; Shimizu, 2007), threat rigidity (Greve, 2010; Staw et al., 1981), variable risk preferences (March and Shapira, 1992; Miller and Chen, 2004), adaptive aspirations (Blettner et al., 2015; March, 1988), and risk-type preferences (Dye et al., 2014; Klingebiel, 2018). These different mechanisms focus on different pathways through which performance feedback can be translated into organizational actions. Although numerous theoretical mechanisms abound, most empirical studies have focused on linking performance feedback directly to organizational actions without documenting causal chains. As a result, we cannot unravel the causal chains in this meta-analytic review. Future studies may focus on investigating these theoretical mechanisms and specific causal chains through which performance feedback is translated into organizational responses.

This study has shown that the principal response to performance below aspirations is to increase the intensity of organizational actions. Yet, it has been suggested that performance far below aspirations may pose survival threats, driving organizations to cut back on their actions (March and Shapira, 1992; Shimizu, 2007; Staw et al., 1981). Several studies have examined this threat-rigidity effect using Altman’s Z score, showing that organizations performing far below aspirations may become more concerned with avoiding bankruptcy than mending performance shortfalls (Iyer and Miller, 2008). Yet, the number of studies examining the threat-rigidity effect was too small to allow for a meta-analytic assessment. Furthermore, there are controversies regarding whether organizations may cut back on actions when they face survival threats; some studies have indeed suggested otherwise (Miller and Chen, 2004; Wennberg et al., 2016). Given the lack of studies and the existence of controversies, we believe that future studies can further examine the roles of threats in shaping organizational response to performance feedback.

We focus exclusively on organization-level performance feedback, without connecting organization-level performance feedback to individual-level performance appraisal. There is a large, separate literature examining individual-level responses to performance appraisal and feedback (Aguinis, 2019; DeNisi and Kluger, 2000; DeNisi and Murphy, 2017; Kluger and DeNisi, 1996). A possible direction for future research is to connect these two separate streams of research to carry out multilevel analyses. By doing so, we may be able to identify how organization-level performance feedback is translated into individual-level performance appraisal, which may then drive managers to take actions to improve both individual-level and organization-level performance.

The small effect size for performance relative to combined aspirations is worth exploring. There may be two different interpretations for this result. The first interpretation is that organizations indeed do not aggregate historical and social aspirations into a combined aspiration. The second interpretation, which we believe is the more likely one, is the lack of consensus in operationalizing combined aspirations. In combining historical and social aspirations into an overall aspiration, we find that the weight given to historical aspirations ranges from 0.2 to 0.9. Such heterogeneity in operationalization certainly impedes our understanding of organizational responses to combined aspirations. Future research, therefore, can examine how to best operationalize combined aspirations in performance feedback research.

Future research can advance the understanding of how organizations prioritize different actions in response to different performance feedback conditions. Our results show that performance feedback may not influence all organizational actions in the same way or to the same extent. While we were able to identify some diverging patterns, our meta-analysis is largely silent on the fundamental mechanisms driving these patterns. Recent studies have started to explore possible theoretical mechanisms. For instance, Kacperczyk et al. (2014) differentiated risk-taking from strategic change; Kuusela et al. (2017) differentiated resource-consuming
from resource-freeing strategic actions; and Xu et al. (2019) differentiated aspirational from
deviant risk-taking. We suggest that future research can focus on the fundamental differences
among organizational actions and on the mechanisms driving organizational preferences toward
certain actions under different conditions.

Our meta-analysis suggests that performance metrics shape organizational responses to perfor-
mance feedback. Yet, most studies in our sample have assumed that organizations respond to dif-
ferent performance metrics in similar ways. In addition, the majority of existing studies focused on
one performance metric—ROA. Even when other metrics were used, they were usually not theo-
retically differentiated from financial metrics. Given the central role of performance metrics in
performance feedback theory (Guérard et al., 2013; March and Sutton, 1997), we suggest that
future research needs to advance our understanding of the fundamental differences and trade-offs
among various performance metrics. For instance, the temporal aspect of performance metrics may
play an important role in shaping organizational responses to performance feedback (Ben-Oz and
Greve, 2015; Gavetti, 2012; Richard et al., 2009). Besides the temporal aspect, other aspects may
matter (e.g. financial vs non-financial, subjective vs objective, and backward-looking vs forward-
looking). We believe that a deeper understanding of performance metrics can greatly contribute to
the future development of performance feedback theory.

Finally, our analyses point to the dominance of archival data and US publicly listed firms in
performance feedback research. Within our sample, only 12 out of the 113 studies (10.62%) used
survey data in their empirical analyses. Interestingly, all of the 12 studies examined pri-
ivate firms. We believe that future research can benefit from using different data sources and
different data collection methods. Among the 101 studies using archival data, 60 of them
(59.40%) focused exclusively on US corporations. If institutional contexts matter, then we may
need to examine firms operating in different countries. In addition, industry contexts may also
matter for organizational responses to performance feedback (Davis et al., 1991; Desai, 2013;
Kotlar et al., 2014; Schimmer and Brauer, 2012), and future research can further examine the
effects of various industry contexts. For instance, some interesting studies in our sample used
data from US private liberal art institutions (Askin and Bothner, 2016) and California hospitals
(Desai, 2016). We believe that studies using diverse data sources and methods from various
countries and industries can greatly enrich our understanding of organizational responses to
performance feedback.

**Conclusion**

In this study, we use meta-analytic methods to quantitatively assess the extent to which empirical
evidence supports the central propositions of performance feedback theory. We find that perfor-
mance feedback theory has received far-reaching empirical support; performance feedback indeed
drives organizational actions across a wide variety of organizational actions. Furthermore, we
show that organizational responses to performance feedback are not necessarily uniform but can
vary according to performance feedback conditions, organizational actions, and boundary condi-
tions. We also find that empirical research has made great headway in advancing our understanding
of different performance feedback conditions and different aspiration types, while advancing much
less in differentiating organizational actions, performance metrics, and boundary conditions.
Looking forward, we suggest that performance feedback theory can benefit from examining the
fundamental differences among different organizational actions, performance metrics, and bound-
ary conditions and integrate these differences into the theoretical mechanisms explaining organiza-
tional responses to performance feedback. Although significant progress has been made, a lot of
important theoretical developments remain to be done.
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Supplemental material
Supplemental material for this article is available online.

Notes
1. We follow Greve (2003c) and Kacperczyk et al. (2014) and use the term “performance feedback theory” to refer to the theoretical framework explaining organizational actions and outcomes in response to the evaluation of performance against aspirations.
2. Table 1 presents the key definitions of these organizational actions with selected operationalizations from existing empirical studies.
3. We found a large number of studies mentioning performance feedback in our literature search, as there is a large literature examining performance management at the individual and team levels. In this study, we focused exclusively on organization-level research building on the behavioral theory of the firm. As a result, we excluded performance feedback research at the individual and team levels, which had been extensively reviewed by Kluger and DeNisi (1996), DeNisi and Kluger (2000), DeNisi and Murphy (2017), and Aguinis (2019).
4. Following Aguinis et al. (2010b), we used trim-and-fill analyses to ensure that the file drawer problem does not influence our results. More details about the trim-and-fill analyses are presented in the “Post hoc analyses” section.
5. For certain moderator variables (e.g. firm age and firm size), their differences may be more meaningful within an industry rather than across industries. In a robustness check, we ran our meta-analyses and meta-regressions for a more homogeneous sample consisted of studies from the manufacturing industries. The overall effect sizes and moderation effects are rather similar.
6. In a robustness check, we dichotomized firm size and firm age. For each variable, we calculated the overall sample mean and classified each study as high or low on each variable. The results are qualitatively similar.
7. In a robustness check, we created a subsample of studies that were published in 2015 ABS Tier 4 journals or above and reran our analyses on this subsample. The results of these analyses were similar to the results presented here. The differences in the effect sizes are neither statistically significant nor economically meaningful.
8. Averaging is only done when a dependent variable was operationalized in multiple ways in a study. For instance, Desai (2008) measured the dependent variable—investment and growth—through two variables: the installed capacity of railroad tracks and the non-depreciated value of operating assets (locomotives and freight/passenger cars). For each performance feedback variable, we averaged the correlation coefficients of these two variables. It is worth noting that averaging was done only for four studies in our sample.
9. To ensure the robustness of this approach, we ran additional analyses and corrected the sample size–weighted mean effect size using the artifact distribution approaches of Olkin and Pratt (1958) and Fisher (1921). The differences between uncorrected and corrected effect sizes are neither statistically significant nor economically meaningful. This is not surprising, as Schmidt et al. (1985) has suggested that artifact corrections in meta-analysis generally account for limited variability in correlation coefficients.

10. Gonzalez-Mulé and Aguinis (2018) suggest that mixed-effect models are more appropriate than fixed-effect models when additional boundary conditions may exist. Given the current state of performance feedback research, we believe that additional boundary conditions—other than the ones that we have accounted for in this study—may indeed exist to influence organizational responses to performance feedback. We therefore used mixed-effect models in our analyses.

11. In a robustness check, we ran our analyses using only studies published in top journals, and the results are very similar. Overall, the differences in effect sizes are small and not economically meaningful.

12. We compared combined aspirations with historical and social aspirations. The difference between historical and combined aspirations ($\Delta = 0.06, z = -5.82, p = 0.000$), as well as the difference between social and combined aspirations ($\Delta = 0.07, z = -5.28, p = 0.000$), is statistically significant and economically meaningful.

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