Feedback Environment: A Meta-Analysis

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Abstract

Feedback environment reflects the perceptions of the contextual, day-to-day feedback process within supervisor-subordinate relationships. Here, we present a comprehensive meta-analysis of the feedback environment literature. Based on $K = 112$ independent samples, representing $N = 31,089$ workers, results suggest that feedback environment is positively related to feedback orientation ($r_c = .42$), leader-member exchange ($r_c = .81$), supervisor-rated performance ($r_c = .29$), and negatively related to burnout ($r_c = -.51$). Moreover, we present multiple regression and relative weights analyses to consider the unique and incremental predictive power of feedback environment above-and-beyond two related constructs: leader-member exchange and feedback orientation. The results suggest that feedback environment explains unique variance in several correlates and is a particularly important predictor of (lower) burnout.

Keywords. Feedback Environment; Meta-Analysis; Performance Appraisal; Performance Management

Feedback Environment: A Meta-Analysis

Performance feedback research and practice have undergone a dramatic shift in focus in recent decades. Whereas focus was once on performance appraisals as isolated events, the contemporary focus is on a process of continuous performance feedback. As evidence of this shift, more “traditional” notions of *performance appraisals* and related processes have been by-and-large subsumed into a more holistic conceptualization of *performance management* (see Levy, Tseng, Rosen, & Lueke, 2017). Supporting this integration, research has increasingly focused on constructs that describe ongoing feedback processes within organizations. One such construct, feedback environment, refers to “...the contextual aspects of day-to-day supervisor–subordinate and coworker–coworker feedback processes rather than to the formal performance appraisal feedback session” (Steelman, Levy, & Snell, 2004, p. 166).

Although not a new concept (Herold & Parsons, 1985), a validated instrument to assess feedback environment has only been available for the last 17 years (Steelman et al., 2004). Research on the informal feedback process within organizations has experienced rapid growth since the introduction of Steelman and colleagues’ feedback environment scale. However, despite the increase in research on informal performance management, this literature remains somewhat scattered and in need of systematic organization and clarification. For example, although some studies suggest that feedback environment is positively associated with supervisor-rated task performance (e.g., Dahling, Chau, & O'Malley, 2012), other studies find no such relationship (e.g., Dahling, O'Malley, & Chau, 2015). Currently, no systematic, quantitative review of the feedback environment literature exists. To address this gap, we present the results of a meta-analysis to quantitatively integrate the existing research on feedback environment.

Our goals in conducting this study and the associated contributions of this work to the performance management literature are two-fold: First, we meta-analytically synthesize relationships of feedback environment and a set of *a priori* determined individual differences, job characteristics, job attitudes, well-being constructs, organizational perceptions, and work behaviors. In addition to these hypothesized relationships, we report the results of a set of additional relationships as exploratory analyses. The second goal of this paper is to differentiate feedback environment from two related constructs: feedback orientation and leader–member exchange (LMX). Feedback orientation is an individual difference reflecting one’s overall propensity for feedback (Linderbaum & Levy, 2010; London & Smither, 2002). LMX describes one’s perceived relationship quality with their leader (see Martin, Guillaume, Thomas, Lee, & Epitropaki, 2016). To achieve this goal, we conducted meta-analytic regression analyses with several correlates included in our primary analyses to parse the unique variance accounted for by feedback environment, above-and-beyond these two constructs. With the scope and goals of this study now established, we next turn our attention to a closer consideration of feedback environment to set the stage for hypothesis development.

Feedback Environment: Conceptualization and Measurement

The importance of external feedback has long been recognized by a variety of theories, and especially so in the organizational sciences (e.g., Katz & Kahn, 1978). For example, control theory positions feedback as a self-regulatory process by which individuals monitor progress towards their goals (Carver & Scheier, 1981), with similar propositions set forth by goal-setting theory (Locke & Latham, 1990). Although the goal of performance feedback is to encourage the feedback recipient to maintain or change future performance, feedback intervention theory offers that there is a great deal of variability in the effectiveness of feedback interventions (Kluger &

DeNisi, 1996). Notably, performance feedback does not occur in a vacuum; while feedback content matters for the effectiveness of feedback, the context in which feedback occurs is likewise pertinent to its effectiveness (Schleicher et al., 2018).

To this end, feedback has also been described as one piece of the broader performance management process within organizations (London & Smither, 2002; Schleicher et al., 2018). Historically, the context in which feedback occurs has been treated as a nuisance factor or moderator of feedback perceptions (e.g., Herold & Parsons, 1985). Embedding feedback in the organizational context, as opposed to isolating feedback to single instances, likewise brings into question the importance of the context in which feedback occurs. With respect to this idea, London and Smither's (2002) performance management model suggests that organizations vary in their feedback culture; a strong feedback culture is one in which employees continuously receive and use both formal and informal feedback to attain goals and change behavior.

Beyond feedback culture, feedback contexts emerge at lower levels of analysis within organizations. Fundamentally, performance feedback occurs at the dyadic level. Thus, feedback environment explains *perceptions* of feedback within dyadic relationships (e.g., between supervisors and their subordinates). Dyadic theories of employee development have referred to the important role of feedback environment for both coaching (Gregory, Levy, & Jeffers, 2008) and leadership (Tseng & Levy, 2018) processes. For example, Gregory and colleagues (2008) suggest that a positive feedback environment helps coaches maximize the efficacy of developmental interventions. Moreover, leaders can foster positive feedback environments, which signal to their employees that feedback will be consistent, available, and important (Tseng & Levy, 2018).

Separate from feedback culture and feedback environment, the concept of feedback orientation was introduced as an individual difference reflecting one's propensity for feedback across four dimensions (London & Smither, 2002). Specifically, feedback orientation describes one's likelihood of believing that feedback is useful for achieving goals (i.e., feedback utility), one's likelihood of feeling an obligation to follow up on feedback (i.e., feedback accountability), one's perceived external pressure to use feedback in some way (i.e., social awareness of feedback), and one's perceived ability to both understand and act on feedback adequately (i.e., feedback self-efficacy, see Linderbaum & Levy, 2010; London & Smither, 2002). Moreover, London and Smither (2002) postulate that feedback culture and feedback orientation are moderators of the feedback process.

Together, feedback culture, environment, and orientation account for organizational-, dyadic-, and individual-level constructs that describe the feedback process within organizations, respectively. With a dearth of empirical feedback culture research, feedback environment is often used as a diagnostic indicator (albeit, at the individual level of analysis) of an organization's feedback culture (e.g., Gregory & Levy, 2011). Although theoretically construed dyadically or as a manifestation of higher (i.e., organizational) level feedback culture, feedback environment has only ever been conceptualized and measured at the individual level of analysis, in terms of *perceptions* of dyadic feedback interactions. Unlike feedback culture, for example, feedback environment entails perceptions of feedback relationships, rather than perceptions of organizational support for feedback (Steelman et al., 2004). Feedback process theories often conflate the two constructs and use the terms interchangeably (e.g., Gregory et al., 2008). Although perceived feedback environment may be a product of a higher-level feedback culture construct, studies included in our meta-analysis and all theoretical implications of such

relationships can only be interpreted at the individual level, which is a reflection (and limitation) of the current state of this literature. Moreover, feedback environment is theoretically distinct from feedback orientation in that feedback orientation focuses on one's internal relationship with feedback and feedback environment is concerned with one's perceptions of a frequent/typical source of feedback (e.g., one's supervisor or coworkers; Linderbaum & Levy, 2010; Steelman et al., 2004).

Steelman and colleagues (2004) developed the feedback environment scale intending to create a diagnostic tool to evaluate the perceived effectiveness and state of the feedback process within organizations. Feedback environment is conceptualized by this measure as a multi-focal source and multi-faceted construct. In terms of focal-source, it manifests in both supervisor–subordinate (i.e., “supervisor-source feedback environment”) and coworker–coworker (i.e., “coworker-source feedback environment”) relationships. The “source” terminology should be interpreted with caution as it appears to imply that supervisors or coworkers report feedback environment perceptions; however, the distinction in “source” refers only to which work relationship a subordinate considers when conceptualizing their feedback environment. In terms of facets, parallel sets of seven feedback environment dimensions exist within these two distinct feedback environment sources—supervisor and coworkers. Feedback environment is thus conceived as a higher-order construct, comprised of perceptions of supervisor- and coworker-source feedback environments. However, when characterized in the literature, “feedback environment” more often than not refers to “supervisor-source feedback environment.” For the sake of simplicity, we will do the same here unless we are specifically referencing coworker-source feedback environment or distinguishing the two sources from one another.

As scaled by this index, a positive feedback environment is marked by higher ratings on each of the seven feedback environment dimensions, within each source (Steelman et al., 2004). For example, a strong or “positive” supervisor-source feedback environment is one in which employees believe their supervisor a) is a *credible source* for feedback, b) gives *quality feedback* (i.e., that which is consistent, specific, and useful; London, 2003), c) *delivers feedback* in an appropriate manner and displays consideration for the subordinate, d) provides *favorable feedback* and e) provides *unfavorable feedback* (i.e., favorable and unfavorable feedback reflects feedback to positive and negative performance, respectively), f) is *available* for informal day-to-day feedback communications, and g) *promotes feedback seeking* from the employee. In summary, these seven dimensions are said to comprise the contextual aspects of the feedback process that employees experience on a day-to-day basis (Steelman et al., 2004).

With a clearer sense of the theoretical underpinnings and measurement of feedback environment, we next introduce theoretical and empirical evidence that explains the links between various correlates of feedback environment to build grounded arguments for the *a priori* hypotheses tested.

Hypothesis Development

As suggested, feedback environment was initially conceptualized as a multi-source (i.e., supervisor or coworker), multi-faceted (i.e., seven dimensions within each source) construct (Steelman et al., 2004). Because most studies on feedback environment exclusively investigate supervisor-source feedback environment, all hypotheses presented here refer to the anticipated relationships between supervisor-source feedback environment and various correlates. Although we have conducted an exhaustive search for primary studies that measure coworker-source feedback environment and additionally provide meta-analytic results that describe its

relationships with correlates, we did not create *a priori* hypotheses for such relationships. Thus, where relevant, such relationships are included as exploratory analyses.

Providing theoretical rationale for the relationships reported herein is complicated because there is no comprehensive theory of feedback environment. However, feedback is assumed to be “good,” in that employee participation in the feedback experience is expected to generate positive outcomes (London, 2003). There are several contextual factors that impact the efficacy of feedback to influence outcomes. For example, feedback that cues recipients’ attention to meta-task processes rather than task or learning processes could attenuate relationships between feedback and positive outcomes (Kluger & DeNisi, 1996). However, these contextual factors are not considered by feedback environment theory or measurement; therefore, it is assumed that having a positive feedback environment can enhance positive processes (e.g., organizational commitment) and decrease negative processes (e.g., burnout).

Individual Differences

We considered five individual difference correlates of feedback environment, including feedback orientation, dispositional motivational constructs, implicit person theory, self-efficacy, and emotional skill. Generally, these individual differences contribute to employee’s tendency to engage in proactive work behaviors, such as engagement with feedback (e.g., Parker & Collins, 2010). Feedback orientation (e.g., Linderbaum & Levy, 2010; London & Smither, 2002) has been shown to be positively related to feedback environment (e.g., Dahling, Gabriel, & MacGowan, 2017; Gabriel, Frantz, Levy, & Hilliard, 2014; Wang, Burlacu, Truxillo, James, & Yao, 2015). This finding is supported by theory, as one’s orientation to feedback likely shapes their perceptions of informal feedback relationships, and *vice-versa* (London & Smither, 2002). London and Smither (2002) posit that feedback environment and feedback orientation should

have a reciprocal relationship because as one accrues positive experiences with feedback (i.e., develops a favorable feedback environment), one's overall receptivity to engaging with feedback would likewise increase. Testing for such reciprocal relationships is beyond the possibilities of this meta-analytic synthesis; however, the longitudinal performance management process model (London & Smither, 2002) provides insight into the feedback orientation-feedback environment relationship. We anticipated our meta-analytic findings would be in line with this rationale and the findings of other research.

We also hypothesized that feedback environment would manifest a positive relationship with a broad constellation of positively-valenced dispositional motivational constructs (e.g., intrinsic motivation, goal orientation, locus of control, proactive personality, self-determination, & promotion focus). Specifically, constructs describing self-motivation toward desirable outcomes and improvements (e.g., as opposed to motivations to avoid undesirable outcomes) should be positively related to feedback environment inasmuch as they relate to seeking and using goal-relevant and -enabling information. Research has likewise supported these hypotheses, with positive relationships observed between feedback orientation and "positive" dispositional motivational constructs (e.g., intrinsic motivation, Dahling et al., 2017; mastery prove orientation, Kabins, 2010; promotion focus, Marando, 2011).

We also hypothesized that feedback environment would have a positive relationship with implicit person theory, as this construct describes the perceived malleability of human abilities and attributes. Feedback seeking and use is contingent, at least in part, on the belief that such changes are possible. This means that the degree to which an individual holds an incremental as opposed to an entity viewpoint (i.e., the belief that such change is possible, rather than not)

should impact their feedback environment, accordingly. Such findings have been supported by research (e.g., Gregory, 2010; Katz & O'Malley, 2016; Marando, 2011).

Self-efficacy was also anticipated to manifest a positive relationship with feedback environment. Indeed, research has demonstrated the link between feedback environment and self-efficacy (e.g., Gijbels et al., 2014; Van Waeyenberg, Decramer, & Anseel, 2015), citing self-perceived competence and confidence (e.g., in one's job performance) as central to the reception and use of feedback as well as the perception of one's feedback environment more broadly. Additionally, the feedback literature has adopted self-efficacy as a dispositional factor, which is implicated in the feedback process. Specifically, feedback self-efficacy, a dimension of feedback orientation, reflects one's perception of their ability to use feedback effectively (Linderbaum & Levy, 2010).

Emotional skills (e.g., empathy) were hypothesized to manifest positive relationships with feedback environment, as both constructs are relevant to relationship quality and perceptions such as informal feedback relationships with supervisors and coworkers. Interpersonal and intrapersonal awareness are core to social relationships and have thus demonstrated positive associations to feedback environment in research (e.g., Dahling, et al., 2012; Gregory et al., 2011).

Hypotheses 1-5. There is a positive relationship between feedback environment and feedback orientation, dispositional motivational constructs, implicit person theory, self-efficacy, and emotional skill.

Job Attitudes

Three job attitudes were considered in our meta-analysis: organizational commitment, job satisfaction, and turnover intentions. With respect to organizational commitment, findings

suggest a positive relationship with feedback environment, such that those who perceive a more positive feedback environment also demonstrate a higher commitment to their organization (Dahling et al., 2017; Norris-Watts & Levy, 2004; Peng & Chiu, 2010). We expected a similar relationship to emerge in our meta-analysis. Additionally, organizational commitment likely manifests because of perceived support from supervisors (Allen & Meyer, 1996). In work relationships marked by high-quality feedback environments, a subordinate may construe features of their feedback environment (e.g., perceived support during feedback delivery) as a form of supervisor support, resulting in increased commitment.

Another important job attitude, job satisfaction, has also been studied in the feedback environment literature. As the experience of a positive feedback environment at work is likely to contribute to an individual's satisfaction with their job, it is unsurprising that consistently positive relationships have been found between these two constructs (e.g., Dalton, Davis, & Viator, 2015; Mosquera, Soares, & Ribeiro, 2018; Sparr & Sonnentag, 2008) and were expected herein as well.

The final job attitude considered in this meta-analysis, turnover intentions, was expected to manifest a negative relationship with feedback environment, as in other research (e.g., withdrawal cognitions, Lonsdale, 2016; turnover intentions, Sparr & Sonnentag, 2008; Van Waeyenberg et al., 2015). As mentioned, individuals with a positive feedback environment are more likely to also have higher job satisfaction and commitment; thus, they are less likely to intend to withdraw from their organization.

Hypotheses 6-8. Feedback environment is positively related to organizational commitment and job satisfaction and negatively related to turnover intentions.

Well-Being

Hypotheses regarding three well-being constructs, burnout, psychological empowerment, and work engagement, were tested here. First, for burnout, it was expected that a negative relationship with feedback environment would be observed. Job demands-resources theory suggests that job demands and job resources, two categories of job characteristics, predict burnout (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Research concerning both feedback and occupational health has identified feedback environment as a job resource that aids in offsetting the harmful effects of job demands (Bakker, Demerouti, & Euwema, 2005; Peng & Chiu, 2010). In support of this line of theorizing, empirical work has found negative relationships between burnout and feedback environment, owing to the positive impact that a satisfactory feedback environment has on employee well-being (Dahling et al., 2017; Gong, Zhang, Zhao, & Yin, 2017b). As such, it would be expected that individuals with higher feedback environments would display lower levels of burnout.

Likewise, feedback environment should be positively related to other well-being indicators, such as psychological empowerment (i.e., feelings of agency, impact, and meaningfulness) and engagement (i.e., fulfillment, positive mindset). Indeed, research has supported the existence of positive feedback environment–empowerment (Dahling et al., 2017; Gong et al., 2017b) and –engagement (Arora, 2008; Young & Steelman, 2017) relationships. The same relationships were thus expected in this meta-analysis.

Hypotheses 9-11. Feedback environment is negatively related to burnout and has a positive relationship with psychological empowerment and work engagement.

Feedback- and Work-Related Perceptions

A wide variety of perceptions, both feedback-related and more generally work-related, are represented in the feedback environment literature. Feedback reactions, which comprise a

range of reactions to feedback (e.g., feedback acceptance, motivation to use feedback, perceived accuracy of feedback, & satisfaction with feedback), have been found to be positively related to feedback environment (e.g., satisfaction with feedback, Steelman et al., 2004; perceived accuracy of feedback, Wang et al., 2015; motivation to use feedback, Pappachan, 2008). As such, we anticipated that we would observe a similar positive relationship between feedback environment and feedback reactions, such that those with “better” feedback environments also exhibit more positive reactions to the feedback received in such environments.

Politics perceptions, conversely, possess a negative valence and were thus anticipated to have a negative relationship with feedback environment. These perceptions entail the degree to which an individual perceives their organization’s (and its members’) behavior and decisions as politically driven and therefore unjust and/or out of one’s control. Positive feedback environments, however, reduce ambiguity and uncertainty for employees as well as provide them with support, and this directly counters the detached and obfuscating effects of organizational politics. Accordingly, negative relationships between feedback environment and politics perceptions have been observed in other research (e.g., Dahling et al., 2017; Rosen, 2006; Rosen, Levy, & Hall, 2006).

In opposition to politics, trust in the work context entails an individual’s faith in the positive intentions and/or behavior of one’s supervisor/organization. Thus, individuals with a more favorable feedback environment may deepen their trust in their supervisor (and *vice-versa*). This finding has been supported by research (e.g., Katz & O’Malley, 2016; Nae, Moon, & Choi, 2015) and was anticipated herein as well.

The perceived quality of an individual’s relationship with their supervisor is also likely to be linked to feedback environment. Specifically, LMX and perceptions of the quality of one’s

coaching relationship (e.g., with their supervisor) have been studied in the feedback environment literature, with the reasoning that a positive feedback environment can contribute to positive supervisor–subordinate relationship quality perceptions. A good deal of research has found support for this (e.g., LMX, Katz & O'Malley, 2016; Peng & Lin, 2016; coaching relationship quality, Gregory, 2010; Steelman & Wolfeld, 2018) and thus the present hypotheses were in line with these other findings.

Additionally, research has studied the feedback environment–organizational support relationship, consistently finding positive links between these two constructs (e.g., Borden, Levy, & Silverman, 2017; Cavanaugh, 2016; Gallo, 2012). This is consistent with the theoretical nature of the two constructs, as supportive work environments are likely to lend themselves specifically to positive and empowering feedback environments as well.

The final work-related perception considered in this meta-analysis was role clarity. Given that feedback environment is at least in part an indicator of feedback-based guidance and direction in the workplace, clarity about one's job expectations and responsibilities can likely be enhanced in feedback-rich contexts. Such a positive relationship has been supported in other research (e.g., Dalton et al., 2015; Whitaker & Levy, 2012) and was expected here as well.

Hypotheses 12-18. There is a negative relationship between feedback environment and politics perceptions. There are positive relationships between feedback environment and feedback reactions, trust, LMX, perceived coaching behaviors, organizational support, and role clarity.

Performance

With respect to performance-relevant behaviors, three hypotheses were formed. First, we anticipated a positive relationship between job/task performance and feedback environment, as

the reception of valuable and relevant feedback should aid in enhancing the performance of job duties. This finding has been supported by research with a variety of performance rating sources as well (e.g., Dahling et al., 2015; Omar, Dahalan, Mohammed, Shah, & Azman, 2016; Rosen et al., 2006). The relationship between feedback and performance is complex and contingent upon several contextual moderators (Kluger & DeNisi, 1996). However, research is clear that both performance information and positive interpersonal interactions between a supervisor and their subordinates should increase subordinate performance (Ilgen, Fisher, & Taylor, 1979; Martin et al., 2016).

Creativity (i.e., as displayed by creative performance) was also expected to manifest a positive relationship with feedback environment for much the same reason. Given a supportive and beneficial feedback environment, individuals should be better able to perform well and do so innovatively. This has also been supported by research with both self- and supervisor-rated creative performance (Davidson & De Stobbeleir, 2011; Davis, Dibrell, Craig, & Green, 2013; Zhang, Gong, Zhang, & Zhao, 2017). These relationships may exist because of the increased intrinsic motivation gained as an outcome of receiving performance-relevant information (Deci & Ryan, 1980). It would be expected that with the provision of higher levels of performance-relevant information, workers would have the motivation to master their tasks by employing creative skills or strategies (Dweck, 1986). Additionally, creative performance is predicted by the interaction of supervisor feedback and the presence of creative coworkers (Zhou, 2003). Therefore, supervisors who form positive feedback environments with their subordinates likely also facilitate creative performance.

Third, in line with research (e.g., Lonsdale, 2016; Norris-Watts & Levy, 2004; Peng & Chiu, 2010), we expected to find a positive relationship between organizational citizenship

behaviors (OCBs) and feedback environment, regardless of rating source (i.e., self and supervisor-rated OCBs). Not only should a positive feedback environment support task performance, but it can theoretically promote individual- and organization-directed contextual performance as well. Feedback environment could be conceptualized as a form of social exchange within work relationships. Therefore, if subordinates perceive positive social exchanges with their supervisors, it is possible that those subordinates would reciprocate those positive experiences back towards their organization (Cropanzano & Mitchell, 2005).

Hypothesis 19-21. There is a positive relationship between feedback environment and supervisor-rated job performance, supervisor-rated creative performance, and supervisor-rated OCBs.

Work Behaviors

Finally, with respect to feedback-specific behavior, working in a positive feedback environment should encourage informal feedback seeking (i.e., through providing a conducive context for receiving relevant and meaningful feedback). Additionally, this relationship has been consistently found in the literature (e.g., Steelman et al., 2004; van der Rijt, Van den Bossche, van de Wiel, Segers, & Gijssels, 2012; Whitaker & Levy, 2012) and was thus expected herein as well. Furthermore, the feedback environment–feedback seeking relationship has been summarized in a previous meta-analysis of the correlates of feedback seeking (Anseel, Beatty, Shen, Lievens, & Sackett, 2015). The previous meta-analytic estimate ($r_c = .40$) was calculated from a substantially smaller number of studies ($K = 5$) than we present here ($K = 37$). In our updated and expanded meta-analysis, we expected that this relationship will also be positive.

Hypothesis 22. There is a positive relationship between feedback environment and feedback seeking.

Exploratory Analyses

In addition to these primary hypothesis tests, a variety of exploratory analyses for which we did not offer *a priori* hypotheses were also performed. Because no theory exists to make informed predictions about the relationship between demographic variables and feedback environment, we did not develop formal hypotheses regarding these relationships. However, we included demographic variables as correlates in our meta-analysis as exploratory analyses, which are available in our online appendix (OA; see OA Table A). Furthermore, when adequate effect sizes (i.e., at least three) were found, we individually considered constructs that were initially expected to be aggregated as part of our synthetic construct groupings (Table 1). For example, learning goal orientation was anticipated to be included in our dispositional motivational synthetic construct grouping; however, during coding, we had an adequate number of studies to include learning goal orientation on its own. Additionally, with regard to overall feedback environment relationships, we included a sensitivity analysis to determine whether using all seven dimensions of feedback environment at the study level has an impact on the magnitude of feedback environment relationships.

We additionally considered a meta-analysis of the coworker-source feedback environment literature, which is substantially less-studied compared to supervisor-source feedback environment. Lastly, in accordance with the second goal of this manuscript, to disentangle feedback environment from other similar constructs, we specified meta-analytic multiple regression models to determine the incremental variance accounted for in certain correlates by feedback environment, above-and-beyond feedback orientation and LMX. Feedback orientation and feedback environment were developed from the same theoretical framework (London & Smither, 2002), which implies that both constructs are important factors

that have implications for employee's feedback experiences. Feedback, particularly as it is construed by feedback environment (i.e., feedback receiver perceptions of their relationship with the feedback giver), is a relational and dyadic process (Anseel & Brutus, 2019). Therefore, LMX was chosen to be included in these models because it reflects a subordinate's general perceptions of their leader-follower relationship (Liden, Sparrowe, & Wayne, 1997).

Method

Open Science Practices

All study hypotheses and procedures were pre-registered *a priori* via the Open Science Framework (OSF): <https://osf.io/hnytc>. Deviations from the pre-registration, where relevant, are noted in the *deviations from pre-registration* document found on OSF. The data that support the findings of this study are available from the corresponding author upon reasonable request.

Literature Search

In order to collect primary studies of relationships between feedback environment, and the correlates described previously, a comprehensive literature search strategy was employed. Primary literature searching was completed between November 2017 and February 2018, with supplementary literature searches in September 2018 and January 2021 to ensure that more recent publications were included in our database. To ensure comprehensive coverage of the feedback environment literature, we conducted iterative keyword searches of several electronic search engines and databases (i.e., Google Scholar, Science Direct, Web of Science, PsycINFO, ProQuest Dissertations and Theses, and EBSCOHost, see Figure 1). Searches used the keyword “feedback environment” as well as the individual dimensions of feedback environment as defined by Steelman et al. (2004; i.e., “source credibility,” “feedback delivery,” “feedback quality,” “favorable feedback,” “unfavorable feedback,” “source availability,” and “promotes

feedback seeking”). Throughout the search process, all non-redundant articles were considered for inclusion in our meta-analysis (i.e., articles that were found in previous databases were not noted).

A secondary search strategy was implemented within each database, such that forward searches were completed from the feedback environment scale development paper (Steelman et al., 2004). Subsequently, a tertiary literature search strategy was conducted by searching conference programs (i.e., SIOP, AOM) to identify unpublished studies. Calls for unpublished data were posted on various websites/listservs. Furthermore, all corresponding authors on obtained articles were contacted to request unpublished data (in total, 42 emails were sent; no authors responded with useable data for inclusion). Once literature searching was completed in October 2018, our search had an initial yield of over 1,400 studies. As suggested, a supplementary forward search for studies citing Steelman and colleagues (2004) was conducted in January 2021 to identify relevant studies made available after the previous search ended.

Inclusion Criteria and Coding of Studies

Five specific inclusion criteria were determined *a priori*. First, included studies must have measured feedback environment as either a composite score or have measured at least one of the dimensions of feedback environment via the feedback environment scale (Steelman et al., 2004) or a related instrument that captures feedback environment in a similar manner (e.g., the shortened version of the feedback environment scale developed by Marshall & Howard, 2017). Second, studies must have included bivariate correlations, derived from original data, of feedback environment and at least one of the correlates hypothesized above. Third, for studies that include data from multiple time points, only time-one data were included in our analysis.

Fourth, for studies that did not include a composite feedback environment score, but reported all seven dimensions of feedback environment, we created a composite via Hunter & Schmidt's (2004) composite formulae. Finally, and related to the preceding criterion, for studies that did not include a composite feedback environment score, and that reported fewer than all seven feedback environment dimensions, a composite score was computed across those dimensions that were reported (e.g., if a study reported on only five feedback environment dimensions, the composite was formed across those five dimensions). A sensitivity analysis, described below, suggested that there is no evidence of a systematic difference in the magnitude of these relationships contingent on the number of dimensions included at the study level. Regardless of their formation, reliabilities for all composite relationships were computed via the suggestions of Mosier (1943). Composite correlations were also created using the same procedure for correlates, where necessary (e.g., OCB-I & OCB-O were aggregated to compute overall OCB).

Initial coding took place from May to October of 2018 and resumed in January 2021 with the addition of new studies. Two independent coders, with extensive meta-analysis coding experience, initially coded 12% of the literature database to establish calibration. Various coding issues were worked out in an initial coding calibration meeting. Each week after this initial coding calibration meeting, the two independent coders coded an additional independent 10% of the literature database. At the end of each week, the coders met to discuss issues that arose during the coding process. Most often these coding discussions surrounded decisions regarding the coding of multiple studies that presented results from the same dataset. We generally resolved this issue by including the primary study that included "more" information (e.g., larger sample size, greater number of correlates, etc.) regardless of publication status. For an expanded

description of coding decisions regarding one particular study that used several samples from other published articles (Dahling et al., 2017), see our OA (Section H & Table I).

A variety of other issues arose throughout the coding process that resulted in the exclusion of studies initially expected to be included in the meta-analysis. Multiple studies were excluded because they used a student sample to understand the feedback environment between students and their teacher (Kelly, 2016; Kyaruzi, Strijbos, Ufer, & Brown, 2018; Leh, Abdullah, & Ismail, 2015a); these primary studies were excluded because this use of the feedback environment scale does not map onto the originally intended use of the scale (i.e., feedback among professionals and in working populations; see Steelman et al., 2004). Other excluded studies generally had incompatible level-of-analysis issues. For example, studies where feedback environment was aggregated to the supervisor level (Cherry, 2012; Peters, 2010) or the team level (Visser, 2008), and where individual-level relationships were not reported, were excluded. In cases where information was missing from primary studies that were pertinent for inclusion in our meta-analysis, we contacted authors to request information in an attempt to clarify such issues; no authors replied such that we could sufficiently resolve these issues. After applying the inclusion criteria and completing the coding procedure, the main feedback environment literature database yielded $K = 112$ independent samples representing a total of $N = 31,089$ workers.

Coded Relationships. Feedback environment was measured in nearly all studies using the feedback environment scale (Steelman et al., 2004). Few studies were found that measured dimensions of feedback environment (e.g., feedback quality) using measures other than the feedback environment scale; these were excluded from our analyses because the items did not map onto the original measure. Two exceptions to this rule were made. First, studies that used

translated versions of the feedback environment scale were included (e.g., Momotani & Otsuka, 2018). Second, a shortened version of the feedback environment scale was more recently validated and is intended to map onto the factor structure of the main scale (Marshall & Howard, 2017). For most correlates included in this study, the direct operationalization of the constructs was considered (e.g., job satisfaction). There are a few exceptions to this, however. Specifically, certain broad domains of correlates (e.g., dispositional motivational constructs) were classified *a priori* into synthetic construct groupings (see Table 1 for a mapping of synthetic constructs).

Meta-Analytic Procedures

For our analysis of hypothesized zero-order effects, we used Hunter and Schmidt's (2004) random-effects procedure. Analyses for the main meta-analysis were completed using the 'psychometric' package (Version 2.2; Fletcher, 2010) for the R statistical computing environment (R Core Team, 2013). Sampling error was accounted for by sample size-weighting correlations. We also corrected for (un)reliability in both feedback environment and its correlates; if studies did not report a reliability estimate for feedback environment or a given correlate, artefact distributions were used (Hunter & Schmidt, 2004). Descriptive information for reliabilities can be found in the OA (Table B).

Beyond the sample size-weighted correlation (r) and the sample size-weighted and reliability-corrected correlation (r_c), we present the 95% confidence interval and the 80% credibility interval for the r_c , in addition to the variance attributable to statistical artefacts (%var). A sample size-weighted and reliability-corrected correlation is statistically significant ($p < .05$) when its associated 95% confidence interval does not include zero. If the 80% credibility interval includes zero, moderators are likely present (Geyskens, Krishnan, Steenkamp, & Cunha, 2009).

Likewise, moderators are also likely present if the percentage of variance accounted for by statistical artefacts is less than 75% (Hunter & Schmidt, 2004).

Results

The results of our hypothesized relationships are summarized below and detailed in full in Tables 2-6. Unless otherwise noted, all results presented below are statistically significant at $p < .05$. Additionally, expanded tables and summaries of all exploratory analyses are available in our OA: <https://osf.io/8qa4m/>

Hypothesized Supervisor-Source Feedback Environment Relationships

Individual differences. Supporting hypotheses 1-5, we find positive associations between feedback environment and feedback orientation ($r_c = 0.42$), dispositional motivational constructs ($r_c = 0.17$), implicit person theory, ($r_c = 0.16$), self-efficacy ($r_c = 0.35$), and emotional skill ($r_c = 0.75$). The full results of these models can be found in Table 2.

Job attitudes. Supporting hypotheses 6-8, supervisor-source feedback environment is positively related to organizational commitment ($r_c = 0.46$) and job satisfaction ($r_c = 0.51$) and negatively related to turnover intentions ($r_c = -0.41$). The full results of these models can be found in Table 3.

Well-being. Supporting hypothesis 9, we find a negative relationship between feedback environment and burnout ($r_c = -0.51$). In contrast, and supporting hypotheses 10 and 11, feedback environment is positively associated with psychological empowerment ($r_c = 0.54$) and work engagement ($r_c = 0.42$). The full results of these models are available in Table 4.

Feedback and work-related perceptions. Supporting hypotheses 12-18, supervisor-source feedback environment is negatively related to perceptions of politics ($r_c = -0.48$) and is positively related to composite feedback reactions ($r_c = .59$), trust in one's supervisor ($r_c = 0.74$),

LMX ($r_c = 0.81$), perceived quality of supervisor coaching behaviors ($r_c = .84$), organizational support ($r_c = 0.59$), and role clarity ($r_c = 0.33$). Table 5 provides complete details of the feedback environment–feedback and –work-related perceptions relationships.

Performance. Supporting hypotheses 19-21, feedback environment is positively related to supervisor-rated job performance ($r_c = 0.29$), creative performance ($r_c = 0.35$), and supervisor-rated OCBs ($r_c = 0.52$). Full results of these models can be found in Table 6. Additionally we considered self-reported performance and OCBs as correlates of feedback environment as exploratory analyses but there is no meaningful difference in the relationship between feedback environment and self- (CI: .25-.55) and other-reported (CI: .29-.75) OCBs. Notably, the relationship between feedback environment and self-reported performance is stronger ($r_c = 0.36$; CI: .11-.61) than with supervisor-rated performance ($r_c = 0.29$; CI: .20-.38); however, the confidence intervals overlap with one another, indicating a non-statistically significant difference.

Work behaviors. Supporting hypothesis 22, feedback environment is positively related to feedback seeking behavior ($r_c = 0.40$). Additionally, there is no meaningful difference in the relationship between feedback environment and feedback seeking contingent whether feedback seeking was self-report (CI: .34-.46) or other-report (CI: .22-.34) Table 7 provides these complete models.

Incremental models

We specified a series of meta-analytic multiple regression models to determine the incremental contribution of feedback environment above-and-beyond two constructs related to feedback environment, feedback orientation and LMX. We employed a four-step process for testing the incremental effects of feedback environment (Bergh et al., 2016; Viswesvaran &

Ones, 1995). First, the zero-order meta-analytic relationships between feedback environment, feedback orientation, and the correlates, in addition to the zero-order meta-analytic feedback environment-feedback orientation, feedback environment-LMX, and feedback orientation-LMX relationships, were calculated in our primary meta-analysis. Second, because we did not meta-analyze the LMX literature, we conducted an exhaustive search for meta-analytic estimates of the relationships between LMX and our correlates. Through our search, we collected meta-analytic relationships for LMX and feedback seeking (Anseel et al., 2015), job satisfaction (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012), burnout (Montano, Reeske, Franke, & Hüffmeier, 2017), task performance, OCB, and role clarity (Martin et al., 2016).

Third, using relationships obtained from the literature and our meta-analysis, a separate correlation matrix was constructed for each correlate including the meta-analytic intercorrelations between feedback environment, feedback orientation, and LMX, and the correlate. Fourth, completed meta-analytic correlation matrices were subjected to regression using conventional ordinary least squares procedures. The sample size for each model estimated was the harmonic mean of the sample size across correlations within each matrix (Viswesvaran & Ones, 1995). The correlations and sample sizes used for these models can be found in Table J in the OA.

Statistically significant changes in R^2 between two hierarchical models (i.e., model one: correlate regressed onto feedback orientation and LMX; model two: correlate regressed onto feedback orientation, LMX, and feedback environment) was indicative of feedback environment having incremental predictive validity beyond feedback orientation and LMX. We observed a statistically significant change in R^2 for all correlates with the addition of feedback environment to the model that considered feedback orientation and LMX alone. Changes in variance

explained were $\Delta R^2 = .003$ (i.e., supervisor-rated performance), $\Delta R^2 = .196$ (i.e., supervisor-rated OCB), $\Delta R^2 = .022$ (i.e., job satisfaction), $\Delta R^2 = .020$ (i.e., role clarity), $\Delta R^2 = .120$ (i.e., feedback seeking), and $\Delta R^2 = .236$ (i.e., burnout). Complete results can be found in Table 9.

Exploratory Analyses

In addition to tests of our *a priori* hypotheses, we also conducted a number of ancillary and supplemental/exploratory analyses. Only certain exploratory analyses are reported in text in the subsequent sections, but all results of our exploratory analyses can be found in the OA.

Non-hypothesized feedback environment relationships. Relationships between demographic variables and feedback environment are considered in Table 2. Moreover, although not exhaustively discussed here, there are several correlates of feedback environment that are provided in Tables 2-6. These non-hypothesized relationships are with correlates that were found to have an adequate number of effect sizes present in the literature ($K \geq 3$). Exploratory relationships fit into one of two categories, each chosen to be as narrow as possible in our evaluation of feedback environment relationships. First, when possible, we broke out specific constructs from the synthetic construct groupings (Table 1). Second, correlate dimensions were included when possible (e.g., feedback orientation & OCB dimensions).

Coworker-source feedback environment relationships. Coworker-source feedback environment is scarcely studied relative to supervisor-source feedback environment. However, we report meta-analytic estimates of relationships between coworker-source feedback environment and various correlates in Table C in the OA.

Sensitivity analysis. As suggested, we conducted a sensitivity analysis to determine whether the magnitude of the relationships reported here vary as a function of the number of dimensions of the feedback environment scale reported (i.e., scale completeness). To do so, we

classified studies into those including all seven dimensions (i.e., complete scales) versus those including fewer than seven dimensions (i.e., incomplete scales). Evidence for moderation exists if the confidence intervals from both sub-analyses within each correlate do not overlap (Hunter & Schmidt, 2004). We conducted this sensitivity analysis using the two correlates with the highest number of independent samples (i.e., highest K) in our database (i.e., feedback seeking and feedback orientation). Complete results for this analysis can be found in Table 8. In summary, we did not find evidence to suggest that scale completeness impacts the magnitude of the relationships reported above, as indicated by overlapping 95% confidence intervals for both models considered.

Moderator analyses. We were able to consider four exploratory moderators. First, we considered the use of single versus multiple organization samples as a moderator to determine if the strength of feedback environment–correlate relationships was contingent upon sample type. Results of this analysis can be found in Table D of the OA. For one correlate, feedback seeking, we found evidence of significant moderation such that the relationship between feedback environment and feedback seeking was stronger in single organization samples compared to multiple organization samples. These results provide some evidence that perceptions of feedback environment may be tied to more general organizational perceptions. However, no overarching pattern of results was found, and owing to low sample sizes, these results should be interpreted with some caution. More work is needed to determine if feedback environment can and should be construed at higher levels of analysis.

Second, we considered mean feedback orientation at the study level as a moderator with the assumption that one's propensity for feedback shapes their perceptions of the feedback environment and engagement with the feedback process. For all correlates considered, no

significant results were found. Full results of these analyses can be found in Table E in the OA. Third and fourth, based on the assumption that the development of feedback environments is to some extent temporally bound, we tested study-level mean age (OA Table F) and study-level mean organizational tenure (OA Table G) as moderators to determine whether the average age or average organizational tenure in the samples considered in our meta-analysis systematically affect the magnitude of feedback environment-correlate relationships, respectively. No significant effects were found from these analyses, indicating that effect size strength does not vary as a function of age or organizational tenure.

Discussion

The overarching goal of this study was to meta-analytically summarize the nomological network of feedback environment. Each of the *a priori* hypotheses we made about zero-order relationships between feedback environment and its correlates was supported. However, within each correlate grouping, there was notable variability in the magnitude of these relationships. For example, considering individual differences, feedback environment was most strongly related to feedback orientation. This was anticipated, due to the theoretical linkage between these two constructs as important components of the feedback process within organizations (Gregory et al., 2008; London & Smither, 2002). Generally, relationships between feedback environment and job attitudes were moderately strong, with the strongest relationship observed with job satisfaction. Perceiving a more positive feedback environment encourages workers to adopt favorable job attitudes, and especially enhances satisfaction with their work.

Similarly, feedback environment is moderately related to well-being constructs, yet there is some variability in these relationships. For example, feedback environment has a positive relationship with empowerment and a negative relationship with burnout. Feedback environment

is thus important for worker well-being, in that positive feedback environments support healthier workers. Work-related perception correlates were strongly related to feedback environment, particularly correlates that imply dyadic relationship perceptions (i.e., trust, LMX, and coaching behaviors). These results could imply that positive feedback environments influence related perceptions, and *vice-versa*. Despite these strong zero-order relationships, we note that the upper bounds of the 95% confidence intervals for these corrected relationships do not contain the value of 1.00, suggesting that they are empirically distinguishable in the population, and assuaging some concerns about construct redundancy (Harari, Reaves, & Viswesvaran, 2016; Viswesvaran, Schmidt, & Ones, 2002). Additional evidence for the discriminant validity of feedback environment is demonstrated in our tests of the incremental effects of feedback environment, feedback orientation, and LMX. Across all correlates considered, feedback environment predicted a statistically significant amount of variance above-and-beyond these related constructs.

Finally, we observed that feedback environment is positively related, although generally less strongly so compared to other correlate groupings, to work performance and behaviors. Of particular interest, feedback environment is positively related to supervisor-rated job performance, supervisor-rated contextual performance (i.e., OCB), and feedback seeking behaviors. If feedback interventions are successful, they should lead to improved performance (Kluger & DeNisi, 1996), and our results offer evidence to support this idea, at least with respect to these positive feedback environment relationships.

Although there are fewer studies from which to base these conclusions, observed relationships between coworker-source feedback environment and its correlates provide useful insight into the dyadic coworker–coworker feedback relationship. Coworker-source feedback

environment has weaker positive relationships with measures of performance than supervisor-source feedback environment. Moreover, and unsurprisingly, coworker-source feedback environment was more strongly related to coworker-source feedback seeking than supervisor-source feedback environment. This suggests that feedback relationships *between* coworkers may drive feedback seeking *from* coworkers. Other notably strong correlates of coworker-source feedback environment were feedback orientation and perceptions of organizational support.

The second goal of our paper was to explore the incremental contribution of feedback environment above and beyond two related constructs—feedback orientation and LMX. Of the correlates considered in these analyses, feedback environment was found to be the dominant predictor (i.e., inasmuch as it accounted for/explained the most variance in these correlates) of burnout (70.11%). This suggests that feedback environment plays an important role in worker well-being, such that it is more important than LMX and feedback orientation for predicting burnout, though feedback orientation and LMX are still important and account for nearly 30% of the variance explained in burnout. Additionally, feedback environment is the dominant predictor of contextual performance but accounts for less variability in task performance than LMX. Considering these findings, in the subsequent sections, we explore the theoretical and practical implications of this work.

Theoretical Contributions

Feedback environment is related to variables important to organizations, such as employee burnout, job satisfaction, and performance. These results provide support for core tenets of general theories of feedback (i.e., those that would suggest that there is utility in the provision of feedback; e.g., Kluger & DeNisi, 1996), suggesting that positive feedback environments are associated with better worker well-being, attitudes, perceptions, and

performance. Beyond general support for the utility of feedback, our meta-analysis provides support for the importance of informal feedback processes at work. Recent performance management (e.g., Schleicher et al., 2018) and leadership theories (e.g., Tseng & Levy, 2018) have suggested that supervisors influence informal practices in their workplaces. Although it would be beyond the scope of our meta-analysis to imply that managers are uniquely responsible for developing feedback environments (i.e., it is likely that both supervisors and subordinates contribute to the emergence of feedback environment perceptions within each dyadic relationship), we do provide support for these theories by demonstrating the importance of such informal processes within organizations.

Although feedback itself is likely important to the correlates examined here, the process of relationship-building, manifested in the *development* of feedback environment in supervisor–subordinate and coworker–coworker relationships needs to be examined further. London and Smither (2002) conceptualized feedback environment as feedback culture, an organization-level moderator of the feedback process; however, future work should conceptualize feedback environment both as a diagnostic tool for feedback interactions (Steelman et al., 2004) and as an indicator of the quality of dyadic relationships (e.g., Gregory et al., 2008; Tseng & Levy, 2018).

Although our results suggest that feedback environment has importance for a number of organizational correlates, some caution is also warranted and should be expressed in future theoretical development. The finding that feedback environment does not explain much incremental variance for certain correlates (e.g., performance, role clarity) is important and suggests that theory needs to be (re)formed about the potentially differential effects of feedback environment on such correlates. At the same time, enhanced theorizing around feedback

environment must also recognize that there is a network of related constructs that need to be accounted for to understand its influences.

We can postulate that feedback environment may be a facet of dyadic relationship quality, which, along with various other indicators thereof (e.g., LMX, perceived coaching behaviors), form a set of relationship quality constructs. Our results point to this possibility, with high meta-analytic feedback environment–LMX and feedback environment–coaching behaviors relationships. On the other hand, research on LMX should examine the residual importance of leadership relationship quality after accounting for feedback environment perceptions. Alternatively, it is possible that feedback environment and LMX are redundant with one another. However, we noted that the upper boundary of the associated confidence interval for the relationship between feedback environment and LMX ($r_c = .81$) does not exceed 1.00, suggesting that they are distinct constructs (Harari, Manapragada, & Viswesvaran, 2017; Viswesvaran, Schmidt, & Ones, 2002). Moreover, unique effects of feedback environment and LMX were observed in our meta-analytic multiple regression models. Still, the strong relationship observed here for certain correlates should give us pause, and we hope that the findings presented here inspire more research on the potential overlap/redundancy of feedback environment and related constructs (e.g., LMX, coaching behaviors).

Furthermore, theories in performance management, particularly regarding feedback processes, do not allow for causal ordering of relationships to be inferred. Our meta-analysis likewise cannot speak to the process by which feedback environment might cause variables traditionally considered outcomes, such as burnout or performance, or be caused by individual differences, such as learning goal orientation. Therefore, we acknowledge the possibility of reverse causality in our models, or perhaps more likely, a cyclical process by which correlates of

feedback environment increase levels of feedback environment across time and *vice-versa*. This process is theoretically consistent with longitudinal performance management theories which suggest that feedback culture and feedback orientation systematically vary together over time, such that continued positive experiences in a feedback culture would increase feedback orientation (e.g., London & Smither, 2002). Future empirical work should incorporate methodologies that would provide clarity to the ambiguous causal ordering of these concepts.

Practical Implications

Practically speaking, our results suggest that positive feedback environments are important components of healthy supervisor–subordinate relationships. Considering the incremental models reported here, feedback environment accounts for a notable amount of explained variance in burnout, incremental to LMX and feedback orientation. This suggests that positive feedback environments are instrumental for facilitating well-being at work. We suggest that managers and employees attempt to build positive feedback in an attempt to decrease burnout and increase worker well-being.

Although feedback environment is a strong predictor of well-being, we advise practitioners to be realistic about the limits of the positive influence of feedback environment as well. By no means is feedback environment a panacea for performance or other organizationally relevant correlates, as also evidenced by our incremental models. LMX seems to be more important than feedback environment for predicting both job and contextual performance. Additionally, feedback orientation is a stronger predictor of feedback seeking behavior than feedback environment. In sum, feedback environment should be a target for practitioners who want to increase worker well-being; however, it is important to acknowledge that feedback

environment is but one facet of a larger network of related constructs that aid in improving the working experience.

Limitations

We acknowledge five limitations to the generalizability of the results reported here. First, all of the relationships that were synthesized here were cross-sectional (i.e., collected at a single time point) in nature. Similarly, feedback environment has been nearly exclusively studied at the between-person level of analysis; thus, the relationships we provide reflect differences between workers, exclusively. While between-person main effects are important for gauging those correlates that are related to feedback environment, our meta-analysis does not provide insight into how feedback environment changes across time or how correlates related to feedback environment emerge in work relationships. Purposefully, our study only included non-experimental studies; thus, we are unable to determine the causal direction of the examined relationships. To better address these concerns, we suggest that more longitudinal and within-person, as well as experimental, research be conducted to better ascertain the causal nature of feedback environment relationships.

Second, beyond the cross-sectional nature of these effects, many are based on common sources (i.e., self-reports of feedback environment and its correlates), which is a pervasive concern in the organizational sciences that can bias parameter estimates in primary studies (see Podsakoff et al., 2003; Williams & McGonagle, 2016). Observed differences in self- vs. other-reported correlates should speak to the possibility of common-source or common-method bias. For example, we find that feedback environment exhibits a stronger relationship with self-reported overall performance than with supervisor-rated overall performance. Interestingly, the opposite is true of contextual performance, such that feedback environment has a stronger

relationship with supervisor-rated OCBs than self-reported OCBs. Regardless of whether self- or other-report correlates are more strongly related to feedback environment, the difference in the magnitude of the relationships indicates that there may be an inflation of these effects by virtue of common-method bias present at the study level. Although these qualitative differences warrant consideration, it is important to note that the 95% confidence intervals for the self- vs. other-reported comparisons overlap with one another in each case (i.e., task-, contextual-performance, & feedback seeking). This overlap indicates that there are non-significant differences in the magnitude of these relationships, suggesting that their magnitude is *not* contingent upon the source of the ratings. More generally, although we acknowledge that common method variance may influence the results of the primary studies that contributed to this meta-analysis (i.e., inasmuch as we cannot rule out all artefacts of common method variance for each correlate considered herein), it is important to note that we are able to correct for the artefacts of (un)reliability and sampling error in these meta-analytic estimates.

Third, the lack of negative correlates of feedback environment found in the literature is a limitation of the body of work. We found an underwhelming number of dysfunctional correlates of feedback environment, mostly limited to burnout and turnover intentions. While positive correlates are important for understanding the benefit of a positive feedback environment, there must be negative correlates of feedback environment as well.

Fourth, we acknowledge that there is some debate in the literature regarding the minimal number of effect sizes required to generate significant and generalizable meta-analytic relationships (e.g., Jackson & Turner, 2017), however as suggested by Valentine, Pigott, and Rothstein (2010, p. 215), the minimum number is "...‘two studies,’ because all other synthesis techniques are less transparent and/or are less likely to be valid." In the present study, we

preregistered a “minimum K ” of three studies to enumerate any meta-analytic relationship and conducted an exhaustive and comprehensive literature search to support our analysis. As a result, we report feedback environment relationships with three *a priori* correlates (i.e., implicit person theory, emotional skill, & politics perceptions) derived from just $K = 3$ independent samples (i.e., 86% of the relationships presented herein are based off $K > 3$ samples). Despite the arguably limited number of samples to understand these relationships, we found statistically significant effects in the anticipated directions for each of these correlates. However, we recognize that the low number of samples and a high degree of heterogeneity associated with those effect sizes affects our ability to provide a definitive estimate of each effect size in the population. Research is needed to replicate these relationships in question to gather support for the generalizability of our meta-analysis.

Lastly, our results indicate high levels of heterogeneity in effect sizes for the relationships between feedback environment and a few of our focal correlates (e.g., LMX; performance). High heterogeneity implies the presence of moderators that may explain differences in the effect sizes (Hunter & Schmidt, 2004). To address this issue, we tested various methodological and substantive moderators. Across all examinations, no discernable pattern of results emerged, indicating that none of these factors explain the heterogeneity in effect sizes. Despite our efforts, the results indicate that there are unexplained factors, unique to specific primary studies, that influence the magnitude of feedback environment-correlate relationships. The theoretical foundation of feedback environment does not clearly designate substantive variables as moderators of feedback environment-correlate relationships, limiting progress in this regard. Thus, we suggest that future research be cognizant of moderators and seek theoretical and methodological explanations for the heterogeneity observed here.

Directions for Future Research

Considering the scope of this literature, both in terms of theory development and empirical studies, there has thus far been an underwhelming amount of work done with coworker-source feedback environment. Our results suggest that while having a high supervisor-source feedback environment is important for several correlates, coworker-source feedback environment is likewise positively related to the same correlates (e.g., job satisfaction, work engagement). Thus, future theoretical and empirical work should strive to consider feedback environment in its originally prescribed fashion (i.e., conceptualizing supervisor- and coworker-source feedback environment as manifestations of a higher-order, latent construct of feedback environment; Steelman et al., 2004). Furthermore, more work must be done to examine how feedback environment functions at the dimension level, within each source.

Additionally, future research would benefit from empirically integrating feedback environment at multiple levels of analysis. Conceptually, feedback environment is understood to exist at dyadic and organizational levels; however, no published studies identified in our exhaustive literature search consider feedback environment as such (i.e., all studies construe perceived feedback at the between-person level of analysis, without regard to the assumed dyadic nature of this construct). Studying feedback environment at the dyadic level is integral to a theoretical understanding of dyadic relationships at work, particularly whether the individual-level relationships we find here are isomorphic to the dyadic level. Several studies in our database (e.g., Norris-Watts & Levy, 2004; Rosen et al., 2006) employed a multi-source design in their collection of outcomes but did not capture feedback environment perceptions from both subordinates and their supervisors. Moreover, in the dynamic feedback process model (London & Smither, 2002) and model of coaching relationships (Gregory et al., 2008), feedback

environment and feedback culture are discussed interchangeably; thus, empirical work is needed to support theoretical claims that feedback environment is, in fact, a lower-level manifestation of feedback culture at the organizational level.

Conclusion

In this study we sought to meta-analytically quantify the strength of feedback environment relationships with a network of correlates and explore the incremental contribution of feedback environment to the prediction of work-relevant variables above-and-beyond feedback orientation and LMX. The results of our comprehensive meta-analysis suggest that feedback environment has important relationships with individual differences, job attitudes, well-being, feedback- and work-related perceptions, and performance and work behaviors. Additionally, we show that feedback environment demonstrates unique predictive relationships with burnout, feedback seeking, job satisfaction, OCB, performance, and role clarity. Beyond these findings, our analysis suggests several areas for enhancing future research on feedback environment. Our hope is that this study inspires researchers to continue exploring the complexities of the feedback process in organizations, and in particular the environment in which feedback occurs.

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Table 1. Summary of Synthetic Construct Groupings

Correlate Category	Synthetic Construct Grouping	Constructs Within Grouping
Individual Differences	Dispositional Motivational Constructs	Intrinsic Motivation Locus of Control Proactive Personality Self-Determination Promotion Focus
	Emotional Skill	Emotional Intelligence Empathy
Perceptions	Coaching Behaviors	Coaching Behaviors Quality of the Coaching Relationship
Work Behaviors	Supervisor-Rated Overall Performance	Supervisor Rated Performance Supervisor Rated Task Performance Supervisor Rated Job Performance Supervisor Rated Creative Performance
	Feedback Seeking	Self-Report Feedback Seeking Coworker Source Feedback Seeking Supervisor Rated Feedback Seeking

Table 2. Summary of Meta-Analytic Relationships: Individual Differences as Correlates of Feedback Environment

Correlate	<i>N</i>	<i>K</i>	<i>r</i>	<i>r_c</i>	<i>sd_{rc}</i>	%Var	CV_L	CV_U	CI_L	CI_U
Feedback Orientation	8,294	23	0.39	0.42	0.14	15.71	0.27	0.57	0.37	0.48
<i>Feedback Orientation-Accountability</i>	2,299	7	0.28	0.33	0.11	26.00	0.20	0.47	0.24	0.43
<i>Feedback Orientation-Utility</i>	2,592	8	0.34	0.38	0.09	26.31	0.25	0.50	0.30	0.48
<i>Feedback Orientation-Self Efficacy</i>	2,299	7	0.29	0.34	0.11	24.09	0.20	0.47	0.25	0.43
<i>Feedback Orientation-Social Awareness</i>	2,299	7	0.17	0.19	0.00	100.00	0.15	0.24	0.15	0.24
Learning Goal Orientation	2,707	11	0.21	0.24	0.22	19.01	0.05	0.43	0.14	0.34
Performance Avoid Goal Orientation	1,699	8	-0.11	-0.13	0.07	55.12	-0.22	-0.03	-0.21	-0.05
Performance Prove Goal Orientation	1,699	8	0.06	0.08	0.14	26.63	-0.10	0.26	-0.03	0.19
Dispositional Motivational Constructs	3,763	8	0.14	0.17	0.25	11.39	-0.03	0.37	0.05	0.29
Implicit Person Theory	838	3	0.15	0.16	0.00	100.00	0.09	0.23	0.09	0.23
Self-Efficacy	2,340	9	0.31	0.35	0.19	10.23	0.10	0.60	0.21	0.49
Emotional Skill	919	3	0.68	0.75	0.13	7.13	0.59	0.91	0.60	0.90

Note. *K* = cumulative number of studies; *N* = cumulative sample size; *r* = sample-sized weighted correlation; *r_c* = sample size-weighted and reliability-corrected correlation; *sd_{rc}* = standard deviation of *r_c*; %Var = variance attributable to statistical artefacts (sampling error & unreliability); CV = 80% credibility interval for *r_c*; CI = 95% confidence interval for *r_c*

Table 3. Summary of Meta-Analytic Relationships: Job Attitudes as Correlates of Feedback Environment

Correlate	<i>N</i>	<i>K</i>	<i>r</i>	<i>r_c</i>	<i>sd_{rc}</i>	%Var	CV_L	CV_U	CI_L	CI_U
Organizational Commitment	4,450	10	0.41	0.46	0.05	47.29	0.40	0.53	0.42	0.51
<i>Organizational Commitment-Affective</i>	1,062	3	0.45	0.49	0.02	86.85	0.46	0.51	0.43	0.54
Job Satisfaction	6,220	14	0.46	0.51	0.05	52.15	0.45	0.57	0.47	0.54
Turnover Intentions	3,360	10	-0.37	-0.41	0.01	68.75	-0.46	-0.36	-0.45	-0.37

Note. *K* = cumulative number of studies; *N* = cumulative sample size; *r* = sample-sized weighted correlation; *r_c* = sample size-weighted and reliability-corrected correlation; *sd_{rc}* = standard deviation of *r_c*; %Var = variance attributable to statistical artefacts (sampling error & unreliability); CV = 80% credibility interval for *r_c*; CI = 95% confidence interval for *r_c*

Table 4. Summary of Meta-Analytic Relationships: Well-Being as Correlates of Feedback Environment

Correlate	<i>N</i>	<i>K</i>	<i>r</i>	<i>r_c</i>	<i>sd_{rc}</i>	%Var	CV_L	CV_U	CI_L	CI_U
Burnout	3,053	9	-0.46	-0.51	0.05	33.12	-0.60	-0.41	-0.57	-0.45
<i>Burnout-Depersonalization</i>	760	3	-0.52	-0.61	0.13	16.14	-0.79	-0.44	-0.78	-0.45
<i>Burnout-Emotional Exhaustion</i>	2,210	5	-0.49	-0.55	0.16	9.35	-0.76	-0.35	-0.70	-0.41
Empowerment	1,101	3	0.48	0.54	0.25	3.71	0.21	0.86	0.25	0.82
Work Engagement	4,872	11	0.38	0.42	0.14	13.35	0.27	0.58	0.35	0.50

Note. *K* = cumulative number of studies; *N* = cumulative sample size; *r* = sample-sized weighted correlation; *r_c* = sample size-weighted and reliability-corrected correlation; *sd_{rc}* = standard deviation of *r_c*; %Var = variance attributable to statistical artefacts (sampling error & unreliability); CV = 80% credibility interval for *r_c*; CI = 95% confidence interval for *r_c*

Table 5. Summary of Meta-Analytic Relationships: Feedback- & Work-Related Perceptions as Correlates of Feedback Environment

Correlate	<i>N</i>	<i>K</i>	<i>r</i>	<i>r_c</i>	<i>sd_{rc}</i>	%Var	CV _L	CV _U	CI _L	CI _U
Feedback Reactions	6,955	20	0.52	0.59	0.32	3.54	0.17	1.00	0.44	0.73
<i>Feedback Reactions-Feedback Acceptance</i>	615	3	0.32	0.41	0.30	8.39	0.02	0.80	0.05	0.77
<i>Feedback Reactions-Motivation to Use Feedback</i>	750	3	0.41	0.47	0.00	100.00	0.27	0.67	0.27	0.67
<i>Feedback Reactions-Perceived Accuracy of Feedback</i>	943	3	0.48	0.53	0.16	10.23	0.32	0.74	0.34	0.72
<i>Feedback Reactions-Satisfaction with Feedback</i>	2,024	7	0.69	0.74	0.12	11.45	0.60	0.89	0.66	0.83
Politics Perceptions	1008	4	-0.42	-0.48	0.10	26.87	-0.61	-0.34	-0.59	-0.36
Trust	4,095	11	0.64	0.74	0.11	29.52	0.60	0.88	0.66	0.82
LMX	6,031	18	0.75	0.81	0.08	13.77	0.69	0.93	0.77	0.86
Coaching Behaviors	2,041	7	0.81	0.84	0.03	14.38	0.77	0.92	0.80	0.89
Role Clarity	3,536	8	0.30	0.33	0.16	12.87	0.16	0.49	0.23	0.42
Organizational Support	2,544	9	0.55	0.59	0.08	24.93	0.49	0.69	0.53	0.65

Note. *K* = cumulative number of studies; *N* = cumulative sample size; *r* = sample-sized weighted correlation; *r_c* = sample size-weighted and reliability-corrected correlation; *sd_{rc}* = standard deviation of *r_c*; %Var = variance attributable to statistical artefacts (sampling error & unreliability); CV = 80% credibility interval for *r_c*; CI = 95% confidence interval for *r_c*

Table 6. Summary of Meta-Analytic Relationships: Performance as Correlates of Feedback Environment

Correlate	<i>N</i>	<i>K</i>	<i>r</i>	<i>r_c</i>	<i>sd_{rc}</i>	%Var	CV_L	CV_U	CI_L	CI_U
Supervisor-Rated Performance	3,363	17	0.25	0.29	0.31	15.40	0.06	0.51	0.20	0.38
Self-Report Performance	823	3	0.31	0.36	0.21	9.42	0.09	0.63	0.11	0.61
Supervisor-Rated Creative Performance	1,111	4	0.29	0.35	0.25	6.83	0.02	0.67	0.09	0.60
Supervisor-Rated OCB	3,008	10	0.47	0.52	0.13	2.34	0.05	0.98	0.29	0.75
<i>Supervisor Rated OCB-I</i>	1,284	3	0.09	0.10	0.12	15.82	-0.05	0.26	-0.05	0.26
<i>Supervisor Rated OCB-O</i>	1,284	3	0.16	0.18	0.00	100.00	0.13	0.23	0.13	0.23
Self-Report OCB	3,066	3	0.37	0.40	0.13	5.30	0.24	0.57	0.25	0.55
CWB	1,241	4	-0.34	-0.37	0.00	100.00	-0.42	-0.32	-0.42	-0.32

Note. *K* = cumulative number of studies; *N* = cumulative sample size; *r* = sample-sized weighted correlation; *r_c* = sample size-weighted and reliability-corrected correlation; *sd_{rc}* = standard deviation of *r_c*; %Var = variance attributable to statistical artefacts (sampling error & unreliability); CV = 80% credibility interval for *r_c*; CI = 95% confidence interval for *r_c*

Table 7. Summary of Meta-Analytic Relationships: Work Behaviors as Correlates of Feedback Environment

Correlate	<i>N</i>	<i>K</i>	<i>r</i>	<i>r_c</i>	<i>sd_{rc}</i>	%Var	CV_L	CV_U	CI_L	CI_U
Feedback Seeking	10,175	37	0.35	0.40	0.27	17.09	0.19	0.61	0.34	0.46
<i>Feedback Seeking-Feedback Inquiry</i>	1,975	8	0.46	0.59	0.07	21.60	0.25	0.92	0.38	0.79
<i>Feedback Seeking-Feedback Monitoring</i>	1,741	6	0.42	0.53	0.09	14.32	0.14	0.93	0.27	0.80
<i>Feedback Seeking-Coworker Source</i>	1,061	5	0.10	0.11	0.00	100.00	0.05	0.18	0.05	0.18
<i>Feedback Seeking-Supervisor Rated</i>	697	3	0.25	0.28	0.00	100.00	0.22	0.34	0.22	0.34

Note. *K* = cumulative number of studies; *N* = cumulative sample size; *r* = sample-sized weighted correlation; *r_c* = sample size-weighted and reliability-corrected correlation; *sd_{rc}* = standard deviation of *r_c*; %Var = variance attributable to statistical artefacts (sampling error & unreliability); CV = 80% credibility interval for *r_c*; CI = 95% confidence interval for *r_c*

Table 8. Sensitivity Analysis: All Seven Dimensions vs. Less than Seven Dimensions

Correlate	All 7	<i>N</i>	<i>K</i>	<i>r</i>	<i>r_c</i>	<i>sd_{rc}</i>	%Var	CV_L	CV_U	CI_L	CI_U
Feedback Seeking	Yes	8,597	28	0.35	0.40	0.27	16.00	0.19	0.61	0.33	0.47
Feedback Seeking	No	1,578	9	0.34	0.40	0.21	25.96	0.21	0.59	0.29	0.51
Feedback Orientation	Yes	6,824	19	0.41	0.44	0.13	15.58	0.30	0.59	0.39	0.50
Feedback Orientation	No	1,470	4	0.29	0.33	0.03	47.14	0.25	0.40	0.25	0.40

Note. All 7 = whether all 7 feedback environment dimensions included at the study level; *K* = cumulative number of studies; *N* = cumulative sample size; *r* = sample-sized weighted correlation; *r_c* = sample size-weighted and reliability-corrected correlation; *sd_{rc}* = standard deviation of *r_c*; %Var = variance attributable to statistical artefacts (sampling error & unreliability); CV = 80% credibility interval for *r_c*; CI = 95% confidence interval for *r_c*

Table 9. Results of Meta-Analytic Incremental Models

Correlate	FO + LMX	FO + LMX + FE	ΔR^2	Dominant Predictor	%R^2	F_{PARTIAL}	p
Burnout	0.103	0.340	0.236	Feedback Environment	70.113%	1,378.93	< .01
Feedback Seeking	0.178	0.298	0.120	Feedback Environment	44.736%	466.877	< .01
Job Satisfaction	0.268	0.290	0.022	Feedback Environment	43.191%	3.239	< .01
Supervisor-Rated OCB	0.110	0.306	0.196	Feedback Environment	74.332%	1,151.25	< .01
Supervisor-Rated Performance	0.103	0.106	0.003	LMX	39.985%	12.785	< .01
Role Clarity	0.244	0.264	0.020	LMX	65.979%	84.226	< .01

Note. $FO + LMX = R^2$ from a model with feedback orientation & leader-member exchange; $FO + LMX + FE = R^2$ from a model with feedback orientation, leader-member exchange, & feedback environment; ΔR^2 = change in R^2 from the FO + LMX model to the FO + LMX + FE model; *Dominant Predictor* = predictor in the model that accounts for the most variance in the correlate; % R^2 = rescaled raw relative weight as a percent of the total variance explained by the dominant predictor

Figure 1. Flowchart of the Literature Search Process