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Abstract

Purpose – The purpose of this paper is to conceptualize, understand, and measure positive and negative aspects of supervisor developmental feedback (SDF) and investigate their relationships with task performance.

Design/methodology/approach – In Study 1, common themes in SDF were identified and a set of SDF items were developed to capture the positive and negative SDF domain. Study 2 entailed the administration of the items to respondents to examine the dimensionality of the items through exploratory factor analysis. In Study 3, using confirmatory factor analysis we further examined the extent to which positive and negative developmental feedback (PSDF and NSDF) were conceptually distinct from each other and different from an existing general measure of supervisor feedback.

Findings – Study 1 and Study 2 yielded evidence that positive and negative SDF are distinct yet related constructs. Positive SDF predicted employee task performance. The positive SDF by negative SDF interaction predicted task performance.

Research limitations/implications – The authors provide criterion-related validity evidence by examining the predictive validity of positive and negative SDF on subordinate task performance (reported by supervisors). Future research should examine the role of positive and negative SDF in predicting job performance in other samples and cultural contexts and for other outcomes, including organizational citizenship.

Originality/value – This research refines the SDF domain by identifying positive and negative domains of the SDF construct. The authors propose and test the joint influence of positive and negative SDF. The novel findings point to the importance of supervisors providing both positive and negative feedback to enhance performance.

Keywords Task performance, Developmental feedback, Supervisor feedback

Paper type Research paper

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Leader feedback is essential in every organization, and often employees will seek out feedback from supervisors rather than from colleagues or subordinates (Ashford and Tsui, 1991). Supervisors are supposed to hold expert knowledge about the performance domain and know about performance criteria; their feedback is therefore a credible and useful source of information. Supervisors provide feedback to help employees remedy performance deficits or to reinforce effective or desirable employee performance (Steelman *et al.*, 2004). Much of the work concerning developmental feedback accepts the premise that developmental feedback is unidimental. Absent from extant research is an examination of developmental feedback from supervisors that affirms desirable employee behaviors and developmental feedback that remedies undesirable or ineffective behaviors. This conceptualization requires that researchers examine the possibility that supervisors provide both positive and negative feedback to reinforce desirable behaviors and correct undesirable behavior.

The purpose of this study is to provide a conceptualization of supervisor developmental feedback (SDF) that considers the positive and negative valence of SDF and develops a corresponding operationalization. This conceptualization of positive and negative developmental feedback can only be based on developing measures to adequately assess each valence, and to place both positive and negative SDF in their common nomological network .In this research, we propose a conceptualization of SDF as two-dimensional construct (e.g. with a positive dimension intended to reinforce desirable employee performance, and a negative dimension intended to correct undesirable or ineffective performance behaviors, described as PSDF and NSDF).

SDF contains an important developmental component that facilitates subordinate personal and professional development and has a positive impact on subordinate work effectiveness (Zhou, 2003). Subordinates use SDF to change behaviors, learn, and modify effort levels to achieve performance goals. Developmental feedback is complex, and may be delivered by supervisors who point out and draw attention to the positive (e.g. encouraging) and negative (e.g. critical) elements of employee behavior. Understanding the nature of SDF may shed light on how developmental feedback relates to performance gains. Previous conceptualizations of SDF provided by Zhou (2003), proposed three key elements: the extent to which the supervisor provides developmental feedback, whether the information provided helps with job performance improvement, and whether feedback helps the subordinate to learn and improve. Although Zhou (2003) provided adequate validity and reliability evidence for the three-item measure of SDF, there are further issues to be addressed to capture this complex construct.

Feedback is an important component for performance management (Fedor *et al.*, 2001; Ilgen *et al.*, 1979; Nadler, 1979). Supervisors provide feedback as a developmental tool, helping employees learn and develop. The need to understand performance gains due to feedback from supervisors remains important (De Stobbeleir *et al.*, 2011; Northcraft *et al.*, 2011). Early work examined how feedback related to gains in organizational performance by affecting organizational learning and motivation (Ammons, 1956; Adams, 1968; Ashford, 1986; Ashford and Tsui, 1991; Ashford *et al.*, 2003; Sassenrath, 1975). Feedback has previously been defined as "a special case of the general communication process in which a sender conveys a message to a recipient that comprises information about the recipient's behavior and/or performance" (Ilgen *et al.*, 1979; p. 350). Feedback is received by recipients who judge their own job performance accordingly. It can originate from external sources (i.e. feedback from supervisors, subordinates, colleagues, and customers who observe the behavior and give feedback),

as well as from the task environment (e.g. whether individuals themselves consciously know they are keeping up with the organization's mission and objectives; Ilgen *et al.*, 1979).

Ashford and Tsui (1991) found that managers were more likely to seek feedback from supervisors, indicating a higher perceived value of supervisor feedback. Ashford's (1993) three subsequent studies demonstrated that employees paid more attention to, and gave more credence to, feedback sources with legitimate power to influence their achievement. For both performance and developmental purposes in the organization, employees rely on, and pay attention to, supervisor feedback.

Zhou (2003) operationalized SDF as "the extent to which supervisors provide their employees with helpful or valuable information that enables the employees to learn, develop, and make improvements on the job" (p. 414). According to Zhou (2003), feedback source is the direct supervisor who can observe subordinate behavior and provide feedback information from an external vantage point. SDF is developmental insofar as it helps employees learn, develop, and improve. Developmental feedback contains both task/competence and outcome/process feedback. SDF can have a negative or positive valence in its focus, by correcting and remedying behaviors and deficiencies that contribute to poor performance or by reinforcing and supporting positive or desirable behaviors and can improve employee performance (Kohli and Jaworski, 1994; Podsakoff and Farh, 1989; Sansone, 1989). SDF is informational: the more employees are provided feedback, the more they can incorporate expert supervisor information about performance into their behaviors, which may result in better employee performance.

In the existing literature, Zhou (2003) focussed on three supervisor feedback behaviors which reflected a general and positive – but not negative – valence of SDF. Since Zhou's (2003) study there have been no investigations related to the internal structure of SDF. Considering the complexities of delivering information and the complicated content of feedback, the internal structures of SDF may not be as straightforward as posited by Zhou (2003), as it may include both positively and negatively valenced feedback. In this research, we investigate SDF's internal structure and develop a new scale that captures both the positive and negative valence of SDF.

The SDF construct and conceptualization

Research concerning how positive and negative feedback affect employees' organizational behaviors is inconsistent. Missing is an empirical examination of positive and negative developmental feedback to understand how it might relate to task performance. Work is needed to develop a measure of positive and negative feedback and to test the predictions made by others (Ilies and Judge, 2005; Nease *et al.*, 1999; Podsakoff and Farh, 1986; Waldersee and Luthans, 1994).

We posit that SDF can be classified into two dimensions: positive SDF (henceforth PSDF) and negative SDF (henceforth NSDF). Providing developmental feedback is part of the supervisor's approach to developing the potential of employees (e.g. providing training, assessment, or coaching) through various methods, programs, tools, techniques, and assessment systems that "support human development at the individual level in organizations" (Aubrey, 2010, p. 9).

PSDF is characterized by the approval/appreciation of a supervisor (e.g. a favorable opinion or a favorable commendation) expressed to employees via information sharing (e.g. feedback). PSDF encompasses the common three characteristics of SDF posited by (Zhou, 2003): the feedback source is the supervisor, and feedback is developmental and informational in content. With PSDF, the content of supervisor feedback is

encouraging, the purpose of the feedback content is for subordinate's overall personal or professional development. PSDF can be found in many contexts and relates with various kinds of informational uses: task, competence, outcome, and process. Conversely, NSDF content includes negative information and criticism, and the content of information feedback by supervisor may sometimes be discouraging for subordinates. NSDF also encompasses the three defining characteristics of SDF (Zhou, 2003). We provide more information about the specific behavioral dimensions of PSDF and NSDF in the later part of this research, as resulting from both our qualitative data and quantitative analyses.

The outcomes of positive and negative SDF

Understanding how to maximize employee performance is one of the central concerns of many scholars and practitioners (Cascio and Aguinis, 2005). We suggest that both PSDF and NSDF have a positive impact on employee performance-related outcomes through their developmental nature. When employees received positive performance-based feedback, they likely believe the feedback content is accurate and feel satisfied with the feedback. On the other hand, when receiving negative feedback, subordinates may become doubtful about the feedback content, resulting in unfavorable employee reactions (Ilgen *et al.* (1979). Yet Podsakoff and Farh (1986) found that negative feedback (in terms of outcomes) motivates people to improve more than positive feedback, and enhance employee performance through employees setting higher and more difficult performance goals. For both Ilgen *et al.* (1979) and Podsakoff and Farh (1986), the nature of the feedback was performance and outcome based.

More recently, Nease *et al.* (1999) highlighted the complexity of positive and negative feedback effects on employee reactions and behavior: some individuals receiving positive feedback improved employee work goals (via higher self-confidence) while others reduced efforts (also due to self-satisfaction). As Nease *et al.* (1999) reported, some employees made more efforts to improve, while others refused to accept negative feedback and reduced their own efforts. As Daniels and Larson (2001) later reported, positive feedback increased self-efficacy, while negative feedback weakened self-efficacy. Positive feedback increases performance goals, while negative feedback reduces performance objectives (Ilies and Judge, 2005). These inconsistencies point out toward a need for additional theoretical development.

Information processing and developmental feedback

We suggest that information from developmental feedback is useful and motivating regardless of valence (Kohli and Jaworski, 1994; Wade, 1974). Rolison *et al.* (2012) for example suggest that multiple cues when people learn and train are desirable above and beyond only single cues. Positive and negative feedback are both desirable above and beyond just positive or just negative feedback. Developmental feedback can be understood as a learning episode (Rolison *et al.*, 2012). If we consider the daily experiences of employees as learning episodes, more feedback (both positive and negative) is desirable from an information richness standpoint.

We propose that both positive and negative feedback have positive influences on task performance. Regardless of valence, more feedback is advantageous. We thus argue that both NSDF and PSDF are positively related to employees' task performance. As Halperin *et al.* (1976) suggested, positive feedback is easily accepted when it comes from any source, while negative feedback is accepted only when it originates from a

high status source (e.g. a supervisor or manager). Since the developmental feedback source is an employee's direct leader, and because NSDF information is important to employee performance, we propose that NSDF and PSDF are each important to facilitate task performance. Thus we posit:

H1. PSDF will be positively related to employee task performance.

H2. NSDF will be positively related to employee task performance.

Joint influence of PSDF and NSDF

When NSDF is provided, employees will readily make changes to their own behavior because of the critical nature of the feedback. NSDF entails identifying deficiencies in individual task performance (e.g. a focus on problems or shortcomings on the job; what is otherwise known as "an unwelcome spotlight," Kohli and Jaworski, 1994, p. 85). Thus, NSDF from an expert in the performance domain (the supervisor) may explain how NSDF may help employee modify behaviors and subsequently improve performance (Kohli and Jaworski, 1994). NSDF may have certain redeeming explanatory and predictive values (Jacoby *et al.*, 1984; Weitz, 1978). It may make subordinates understand why they were unable to do the work correctly and help employees focus clearly on behaviors they need to enact in the future (which may not be the case with PSDF alone). While NSDF helps subordinates identify deficiencies in their own competence, task, behaviors, and performance to the same extent as PSDF.

When NSDF is not provided, increasing PSDF may not necessarily lead to performance gains; we argue that developmental feedback is good regardless of the valence. NSDF is useful since it helps employee identify areas for improvement in the same way that PSDF does, and both together may interact and enhance performance due to a richness of feedback information of both domains of the feedback valence. Increasing PSDF will lead to better performance when there is also an increase in NSDF.

We also argue that more forms of informational feedback are desirable: when both are delivered, PSDF can strengthen the effective behaviors employees enact, while NSDF can help employee identify and correct deficiencies in skill or performance. Providing both forms of feedback may result in information richness insofar as all areas of performance are better understood. NSDF could act as a "dose of reality" to overcome complacency and pride one may feel when only PSDF is high. Both forms of SDF would have additive benefits for employees, but we also suggest that the presence of both NSDF and PSDF would interact, and that high NSDF would modulate employee performance when there is also high PSDF.

Consistent with this argument, Wade (1974) found that better performance was observed when subjects had both accumulative positive and accumulative negative feedback, those who had both forms performed better than those with only positive or only negative feedback. As time passed, performance decreased with only positive feedback was given suggesting that subjects become complacent when only given positive feedback. It may also be the case that high PSDF and high NSDF represent higher information richness than only PSDF or only NSDF. The premise in our argument is that more forms of informational feedback are desirable: when both are delivered, PSDF can strengthen the effective behaviors employees enact, while NSDF can help employee identify and correct deficiencies in skill or performance. Based on the above we posit:

H3. PSDF and NSDF will interact to predict employee task performance, such that performance will be higher when both PSDF and NSDF are high.

Setting positive and negative developmental feedback apart

Before proceeding with a discussion of the methods and approach to developing and validating the PSDF and NSDF scales, we must first address the need for this scale, and clarify the contribution of this scale to extant measures. Our goal is to advance the fields understanding of how feedback that is framed in a developmental light by one's leader may contribute to employee performance. Consistent with Zhou (2003), we recognize the role of leaders as sense-makers and as a partner in the success of employee (Maslyn and Uhl-Bien, 2001). We agree that developmental feedback may encourage employees to develop their own skills and to take risks and try new approaches or work with more creative means of performing the work (Zhou, 2003). We agree with Steelman *et al.* (2004), that feedback delivered in an informal setting (outside of the formal performance appraisal period) is informative and motivating for employees. Where we depart from Zhou (2003) is in recognizing that feedback can be positive or negative (not in terms of employee reactions but in terms of pointing out acceptable and unacceptable performance).

Like Steelman *et al.* (2004), we suggest conceptualizing feedback as positive and negative as they do. To build on Steelman *et al.* (2004), we are also interested in the extent to which positive and forms of negative feedback are framed by leaders as encouraging desirable behaviors and correcting or discouraging undesirable or ineffective behaviors. Whereas the items in Steelman *et al.* (2004) speak to the extent to which supervisors serve as performance feedback sources that point to successful or unsuccessful performance, our measure focusses on the extent to which the leader serves as a developmental source of information that help clarify the relationship between employee behaviors, skills, and approaches to work and their outcomes. PSDF and NSDF were developed to measure the extent to which positive and negative feedback is developmental and focussed on fostering desirable employee behaviors, skills, and approaches to work approaches and not just on reporting good or bad performance *per se*.

Overview of studies

Study 1 focusses the experiences of employees in two organizations, using qualitative methods; common themes in SDF behaviors reported by employees via interviews are identified. A set of SDF items are developed to represent two valances (positive and negative) of the SDF domain. Study 2 entails administration of those items to respondents, for subsequent quantitative data analysis (exploratory factor analysis; EFA). In Study 3, we examine if positive and negative SDF are conceptually distinct from each other, and from the existing general measure of supervisor feedback (Zhou, 2003), using confirmatory factor analysis (CFA). Also in Study 3, we also examine the differential predictive validity of positive and negative SDF using an external validation approach (criterion validity of both positive and negative SDF as predictors of supervisor generated task performance ratings).

Study 1: SDF scale development

Method

Sample and procedures. In the first study, we generated scale items using a deductive and inductive approach. Deductively (drawing on work by Zhou, 2003), one faculty expert and four doctoral students majoring in applied psychology wrote eight descriptive items that they thought represent the domain of SDF (e.g. "My supervisor

uses expressions of approval or praise when providing feedback to improve my job performance," "My supervisor uses negative expressions or criticism to give feedback when providing feedback to improve my job performance").

Inductively, we use the critical incident interview method (Flanagan, 1954) with a semi-structured open-ended questionnaire, and face-to-face interviews to assess SDF critical incidents. Prior to administering questionnaires and interviews, we defined the concept of SDF to 60 respondents and 15 interviewees. Among 60 questionnaire respondents, 30 were graduate students majoring in management in a university located in Shanghai, and 30 were full-time employees working in various different companies in Shanghai. The 15 interviewees were employed in a power company. In total, 77 critical incidents (behaviors) were collected, 16 of which are presented in the list: representative PSDF and NSDF behaviors and key elements. In the critical incident reporting, many participants use "approval" in terms of PSDF and used phrases like "point out problems" or "shortage" to describe instances of NSDF (see the list: representative PSDF and NSDF behaviors and key elements, for a presentation of these key elements). Then, the aforementioned faculty expert and four doctoral students grouped these 77 critical incidents and generated 12 items. Using both approaches, 20 SDF items total were generated. The experts further sorted the 20 items and removed redundant items, resulting in 12 items.

To test the face validity of these 12 SDF items, we recruited another expert faculty member and four additional graduate students majoring in applied psychology. We shared the definition of SDF with this new group, provided examples, and asked them to evaluate each statement as being not representative of SDF, somewhat representative, or clearly representative. We then kept items that had been rated as clearly representative by three of the above four graduate students and as either somewhat representative or clearly representative by the expert faculty. With this procedure, we dropped four items and obtained eight items in total (five PSDF items, and three NSDF items). The list: positive supervisor developmental feedback and negative supervisor developmental feedback scales, shows the items. Based on these eight items, we performed an exploratory factor analysis (EFA) with a sample of working adults in Study 2.

Representative PSDF and NSDF behaviors and key elements (key elements are italicized).

Representative PSDF behaviors and key elements:

(1) "My section chief thought I deserved to be praised for my good performance when first attending our bureau's meeting. Consequently, he convinced others and *encouraged me to attend the employment discussion in our city meeting on behalf of our firm.*"

(2) "My lead *said that I could accomplish the tasks of working independently.* He encouraged me to learn from highly-experienced colleagues in terms of planning, in order to better my ability at handling and planning tasks in an advanced stage."

(3) "My leader *approved of, and appreciated my skills in computing*. In order to meet the growing demand of business of our company, he encouraged me to enroll myself in an SAP software training class."

(4) "My supervisor *praised my capabilities and gave me access to enrichment training programs as a way of acknowledging of my abilities and preference.*"

(5) "Recently, I was *praised by my supervisor* and I got a promotion in a new position. At the beginning, I was a little unfamiliar with this job and my work was not up to par. But, my supervisor often encouraged me along every stage and shared some of his personal work experiences."

(6) "Previously, my supervisor *appreciated my good performance and my initiative*. Later, he shared feedback about other projects, making me better understand my job responsibilities."

(7) "During the stage of new product developing, my supervisor *appreciated my originality*; he encouraged me to take responsibility in the whole range of the product development process."

(8) "My supervisor *fully appreciated my ability to communicate with entry level staff*. He often brought me with him to visit the entry level business units and pointed to me as a role-model to other middle-level managers."

Representative NSDF behaviors and key elements:

(1) "My supervisor thought the reason for my recent failing to fulfill sale task requirements was that I was lacking products related knowledge. He *pointed out my problems directly* and brought me to visit an end product line to strengthen my job knowledge."

(2) "My job required extensive communication with some high level managers. I felt I could not fulfill my tasks very well at the beginning. My supervisor identified my problem, *immediately pointed out my shortcoming*, and taught me the communication skills."

(3) "My supervisor *said I was a little incompetent when dealing with interpersonal affairs*. He sent me an email and told me how to behavior and act properly at work."

(4) "My supervisor *pointed out that I was still incompetent in my job of quality management*. He recommended me to attend an occupation skill test training program."

(5) "My supervisor *pointed out my performance problems work during my annual job review*. He guided me to improve quality of my writing to enhance the quality of my work."

(6) "After we finished our annual performance review, my supervisor communicated with me in a timely way. He *pointed out some problems and my performance shortcomings*, helping me find a way to improve my performance."

(7) "My supervisor *said to me directly that I was lacking skills and experiences due to limited continuing education*. He recommended I attended the training program about continuing education engineering. He said it was best I choose lessons for my future management work."

(8) "Since my omitting some original certificates when I first started working here, my supervisor *pointed out my mistakes promptly* and told me how to ask the agent to offer the missed original certificates."

Positive supervisor developmental feedback and negative supervisor developmental feedback scales.

PSDF:

(1) My supervisor uses expressions of approval or praise when providing feedback to improve my job performance.

(2) My supervisor offers developmental feedback based on his or her approval of my work results.

(3) My supervisor inspires me to think how to accomplish tasks more efficiently through praising some of my work behaviors or tactics.

(4) When providing feedback, my supervisor recognizes my skills for task completion and helps me improve.

(5) When giving me feedback, my supervisor recognizes my competence compared with other employees and provides me with useful information on how to improve my job performance.

NSDF:

(6) My supervisor uses negative expressions or criticism to give feedback when providing feedback to improve my job performance.

(7) My supervisor inspires me to think how to accomplish tasks more efficiently through criticizing some of my work behaviors or tactics.

(8) When giving me feedback, my supervisor criticizes my lack of competence compared with other employees and provides me with useful information on how to improve my job performance.

Study 2: EFA

Method

Sample and procedures. Using the items developed in Study 1, we administered a survey to a second sample. Data were collected from corporate employees of two companies in Jiangxi and Shanghai; one in manufacturing and the other in the electric power generation domain. The surveys were conducted by trained human resources assistants recruited for the study. Informed consent was obtained from participants before the study began, and employees were assured in advance that the data collection process would be confidential.

In total, 201 valid questionnaires were collected. Among the 201 employees, 69.7 percent were male and 30.3 percent were female. About 75.0 percent of respondents were <30 years old, 22.5 percent were between 31 and 40, and 2.5 percent were older than 40. Approximately 25.0 percent reported three years or less working in their present company, 74.5 percent reported having more than three years working time. About 35.0 percent reported a high school education or below, 19.5 percent reported earning an associate degree, 36.5 percent were university graduates, and 9.0 percent held graduate degrees.

Measures

We used the eight newly developed SDF items, five for PSDF and three for NSDF, using a seven-point Likert scale response scale ranging from 1 (strongly disagree) to 7 (strongly agree). Items are provided in the list: positive supervisor developmental feedback and negative supervisor developmental feedback scales.

Analysis and results

We conducted an EFA using principal axis factoring. Extracting one factor only explained 37.15 percent total variance, extracting two factors explained 58.95 percent total variance. One-factor solution resulted in eigenvalue of 3.81, two-factor solution resulted in eigenvalue of 1.73. Three-factor solution was not acceptable (eigenvalue was 0.60). An examination of the scree plot demonstrates a sharp decline in the line after two factors. These criteria (see Fabrigar *et al.*, 1999) indicate that SDF had two internal factors (positive and negative). Table I shows the factor loadings for PSDF and NSDF.

Items 1, 2, 3, 4, 5 (PSDF) loaded onto factor 1 and items 6, 7, 8 (NSDF) loaded onto factor 2. Factor loadings on the two dimensions were distinctive; every item's factor loading on its own dimension was above 0.71. The EFA results provide evidence in support of our expectation that SDF has an internal structure of distinct positive and negative dimensions. Estimated reliability for PSDF was 0.88, and for NSDF 0.79. To further assess dimensionality, we continued with a CFA, in Study 3.

Study 3: CFA

Method

Sample and procedures. To corroborate findings in Study 2, we gathered data from a sample of working adults, and applied CFA procedures. We tested a model where all items loaded onto one overall factor. We tested a set of two factor models where items predicted various combinations of Zhou SDF (ZSDF), PSDF and NSDF were specified. These two factor models were compared to one three factor model where ZSDF, PSDF, and NSDF were specified to load onto three distinct factors (our hypothesized model). Models were compared to a full independence model (where items were specified to be independent of each other).

CFA data were collected from corporate employees of two companies in Shanghai. One was from the automotive industry and the other from manufacturing industry. Trained HR assistants collected the data, participation based on informed voluntary consent, and employees were ensured confidentiality. In total, 270 anonymous questionnaires were distributed among employees, and 243 useful employee questionnaires were returned (valid response rate 93.6 percent).

To ensure data quality the researchers trained the HR department of the target companies about pertinent research issues (e.g. maintaining anonymity, respecting confidentiality). Those 243 participants are nested among 81 supervisors, who gave

Variable	Factor 1	Factor 2
PSDF1	*0.79*	0.214
PSDF2	*0.83*	0.13
PSDF3	*0.93*	0.10
PSDF4	*0.73*	0.15
PSDF5	*0.71*	0.18
NSDF1	0.04	*0.74*
NSDF2	0.19	*0.77*
NSDF3	0.20	*0.71*

Notes: Principal axis factoring with direct oblimin factor rotation; eigenvalues for Factor 1 = 3.81 (37.15 percent variance explained) and Factor 2 = 1.73 (21.80 percent variance explained). Cumulative variance explained by two factors was 58.95 percent

Table I. Exploratory factor analysis: factor loadings (Study 2)

their evaluation of employee task performance. Among the 243 employees, 28.4 percent were female. Approximately 50 percent of respondents were below 30 years old, 38.8 percent were between 31 and 40, and 11.1 percent were older than 40. About 18.2 percent reported a high school education or below, 9.9 percent reported having an associate degree, 48.8 percent were university graduates, and 23.1 percent held advanced or graduate degrees. Approximately 57 percent of employees had been working with their current supervisor for three years or more. On average, each supervisor provided ratings for about 3.0 employees.

All surveys were conducted on site during work hours. Subordinates and their corresponding supervisors completed surveys in separate locations to ensure anonymity and confidentiality. All questionnaires were sealed at the worksite and collected by two research assistants. Using separate raters for employee performance was useful to minimize rater biases which may distort the effects (Morgeson and Campion, 1997).

Measures

All constructs were rated on a seven-point Likert response scale ranging from 1 (strongly disagree) to 7 (strongly agree). The data for PSDF and NSDF were collected from employees. Data on performance were provided by supervisors.

SDF. Five items we developed to measure PSDF. We used three items to measure the NSDF dimension. For PSDF $\alpha = 0.91$, for NSDF $\alpha = 0.84$. We also measured the original three items found in Zhou (2003). An example item is, "My supervisor provides me with useful information on how to improve my job performance" ($\alpha = 0.84$).

Results

Various models were tested and compared to identify which model adequate captured our hypothesized structure. The three-factor model fit best compared to the other models with PSDF, NSDF, and the original SDF scale of (Zhou, 2003) as separate factors. The one factor-model did not fit well, χ^2 (55, $n = 243$) = 406.38, CFI = 0.88, NNFI = 0.85, RMSEA = 0.18, SRMR = 14. The three-factor model fit the data best, χ^2 (41, $n = 243$) = 76.01, CFI = 0.99, NNFI = 0.98, RMSEA = 0.06, SRMR = 0.05. Table II provides fit information of the various competing models, and Table III presents factor loadings. The above results indicate the superior fit of a three-factor model to all alternative models, providing evidence of discriminant validity (Hu and Bentler, 1995).

Model	χ^2	df	$\lvert\Delta\chi^2\rvert$	$\lvert\Delta df\rvert$	CFI	NNFI	RMSEA	SRMR
1. Null	3,026.38	55	–	–	–	–	–	–
2. One-factor	406.34	44	2,620.04	11	0.88	0.85	0.18	0.14
3. Two-factor A	111.52	43	2,914.86	12	0.98	0.97	0.09	0.05
4. Two-factor B	371.36	43	2,655.02	12	0.89	0.86	0.17	0.14
5. Two-factor C	375.36	43	2,651.02	12	0.89	0.86	0.18	0.14
6. Three-factor	76.01	41	2,950.37	14	0.99	0.98	0.06	0.05

Notes: PSDF, positive supervisor developmental feedback; NSDF, negative supervisor developmental feedback; ZSDF, Zhou supervisor developmental feedback. Estimated reliability was acceptable for Zhou SDF ($\alpha = 0.84$), PSDF ($\alpha = 0.91$), and NSDF ($\alpha = 0.84$). Model specifications were the following, Model 1 – full independence; Model 2 – F1: ZSDF, PSDF, NSDF; Model 3 – F1: ZSDF, PSDF, F2: NSDF; Model 4 – F1: ZSDF, NSDF; F2: PSDF; Model 5 – F1: ZSDF; F2: PSDF, NSDF; Model 6 –- F1: ZSDF; F2: PSDF, F3: NSDF

Table II.
Confirmatory factor analyses: model comparisons and fit statistics (Study 3)

Variable	Factor 1	Factor 2	Factor 3
ZSDF1	0.76		
ZSDF2	0.79		
ZSDF3	0.85		
PSDF1		0.84	
PSDF2		0.85	
PSDF3		0.87	
PSDF4		0.87	
PSDF5		0.66	
NSDF1			0.78
NSDF2			0.91
NSDF3			0.71

Notes: PSDF, positive supervisor developmental feedback; NSDF, negative supervisor developmental feedback; ZSDF, Zhou supervisor developmental feedback

Table III. Standardized factor loadings from confirmatory factor analysis (Study 3)

Study 3: criterion-related validity

Measures

All constructs were rated on a seven-point Likert response scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Task performance. The four items task performance scale was adapted from Williams and Anderson (1991) and validated by Van Dyne and LePine (1998). Two sample items are: "fulfills the responsibilities specified in his/her job description," and "performs the tasks that are expected as part of the job." The four items demonstrated acceptable internal consistency ($\alpha = 0.86$).

Control variables. Because of the potential effects of various demographic variables on the quality of supervisor-subordinate relationships (Maslyn and Uhl Bien, 2001), we used employee's gender, age, education, organization tenure, and tenure with supervisor, as control variables.

Analyses

Each supervisor directly rated their multiple employees' performance level, employees were nested within supervisors. Thus, considering the multilevel nature of our data, we implemented hierarchical linear modeling (HLM; Raudenbush *et al.*, 2004) to test our hypotheses and to appropriately model the non-interdependence of the dependent variable ratings. Evaluating within supervisor and between-supervisor variances and covariances separately and with corrected standard errors, HLM offers appropriate parameter estimates and significance tests for multilevel and non-independent data (Bliese, 2002). We standardized all predictors to facilitate interpretation (Aiken and West, 1991).

Results

Table IV shows means, standard deviations, and correlations for main measures. Consistent with expectations, PSDF was significantly and positively related to task performance ($r = 0.32$, $p < 0.01$), NSDF was not related to task performance ($r = 0.00$). PSDF was not significantly related to NSDF ($r = 0.11$).

In *HH1* and *H2*, we predicted that PSDF and NSDF had significant and positive relationship with task performance. The results of the HLM analysis (Table V) showed that after controlling for employee gender, age, education, organizational time, and the length of the dyadic relationship, PSDF significantly predicted employee task

performance ($\gamma = 0.17$, $p < 0.01$), NSDF did not significantly predict employee task performance ($\gamma = 0.04$, $p > 0.05$). This provides support for *H1*, but not for *H2*.

In *H3*, we predicted that NSDF would have a moderating influence between PSDF and employee task performance. As showed in Table V, the interaction between PSDF and NSDF was significantly related to task performance ($\gamma = 0.10$, $p < 0.05$). To get a better understanding of the form of the interaction, we plotted simple slopes by using the Johnson-Neyman technique to probe multilevel interactions by accounting

Table IV.
Means, standard deviation, and correlations among control and study variables (Study 3)

	M	SD	1	2	3	4	5	6	7	8
1. Task performance	5.61	0.76								
2. Gender	1.31	0.49	−0.09							
3. Age	1.62	0.70	−0.13*	−0.08						
4. Education	2.77	1.00	0.22**	0.17**	−0.54**					
5. Organization tenure	2.43	1.13	−0.18**	−0.06	0.66**	−0.64**				
6. Tenure with leader	1.89	1.00	−0.16*	−0.17**	0.46**	−0.50**	0.69**			
7. ZSDF	5.63	0.96	0.24**	0.06	−0.15*	0.16*	−0.31**	−0.20**		
8. NSDF	4.48	1.40	0.02	−0.14*	0.19**	−0.24**	0.22**	0.18**	0.14*	
9. PSDF	5.56	0.91	0.30**	−0.02	−0.12	0.18**	−0.27**	−0.13*	0.79**	0.11

Notes: ZSDF, Zhou supervisor developmental feedback; PSDF, Positive supervisor developmental feedback; NSDF, negative supervisor developmental feedback. $^{**}p < 0.01$; $^{*}p < 0.05$

Table V.
The joint relationship of NSDF and PSDF on task performance (Study 3)

	Task performance					
	Estimate	SE	Estimate	SE	Estimate	SE
Step 1						
Intercept	5.22***	0.28	5.25***	0.28	5.21***	0.28
Gender	−0.13	0.08	−0.10	0.08	−0.12	0.08
Age	0.00	0.08	−0.02	0.08	−0.03	0.08
Education	0.15**	0.06	0.14**	0.06	0.15**	0.06
Org tenure	0.08	0.07	0.09	0.07	0.11	0.07
Time with leader	−0.04	0.06	−0.05	0.06	−0.05	0.06
ZSDF	0.12**	0.04	−0.01	0.06	0.01	0.06
Step 2						
PSDF			0.16**	0.06	0.17**	0.06
NSDF			0.02	0.04	−0.04	0.05
Step 3						
PSDF×NSDF					0.10*	0.05
Level 2 σ^2	0.53		0.52		0.51	
Level 1 σ^2	0.29		0.25		0.25	
Level 2 R^2	0.16		0.19		0.21	
Level 1 R^2	0.02		0.00		0.01	
Total R^2	0.08		0.11		0.12	
ΔR^2	–		0.03		0.01	
Log likelihood	498.58		493.16		492.79	
AIC	502.58		497.16		496.79	

Notes: ZSDF, Zhou supervisor developmental feedback; PSDF, positive supervisor developmental feedback; NSDF, negative supervisor developmental feedback. Estimates are undstandardized *B* regression coefficients. $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

for both fixed and random effects associated with the multilevel model (Bauer and Curran, 2005). Figure 1 shows that when NSDF was high, PSDF had a stronger positive effect on task performance ($\gamma = 0.27$, $t = 3.36$, $p < 0.01$) compared to low NSDF ($\gamma = 0.07$, $t = 0.87$, ns). Thus, *H3* was supported.

Discussion

Performance feedback remains a topic of interest in organizational behavior and management research (De Stobbeleir *et al.*, 2011; Northcraft *et al.*, 2011). SDF – and its conceptualization and operationalization provided by Zhou (2003) – is an appealing and interesting construct insofar it can help researchers understand employee reactions to feedback, their motivation, and task performance. Previous work on supervisor feedback and performance remains unclear, especially when the valence of the feedback (e.g. positive and negative) is not taken into account. Our study highlights the need to understand the role feedback plays as a developmental tool. Understanding the extent to which feedback is affirmative of desirable performance behaviors may shed light on how feedback functions to motivate and direct employee efforts. We found that while only positive SDF is positively related to employee task performance, PSDF and NSDF positively reinforce each other in predicting subordinates' task performance.

Our research presents two main contributions. First, we provide a feedback measure that displays differentiation of positive and negative aspects of supervisory feedback. This may help researchers address questions about which form of SDF will account for task performance and, more generally, can be extended in the future to broader criteria of employee effectiveness, including organizational citizenship behaviors (Organ *et al.*, 2006) and proactive behaviors (Bindl and Parker, 2010; Chiaburu *et al.*, 2013). Second we examine how positive and negative forms of feedback from the same source can simultaneously predict employee task performance. This distinction and simultaneous examination is also important, provided that supervisors will most likely provide both positively and negatively framed feedback to their subordinates.

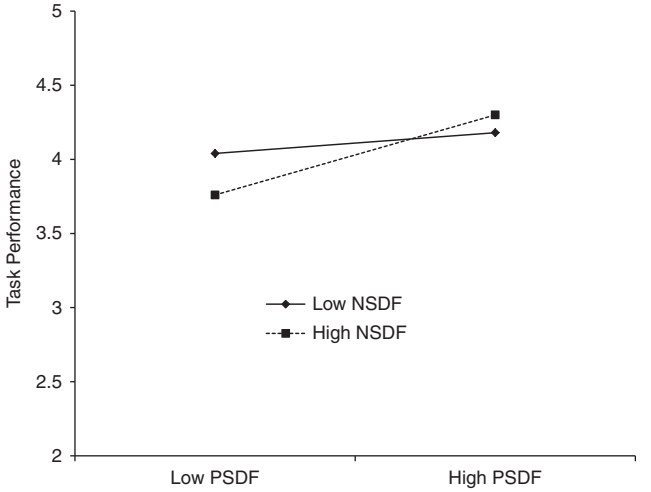

Figure 1.
Joint contribution of NSDF × PSDF on employee task performance

Theoretical and practical implications

Extending previous research (Dorfman *et al.*, 1986; Li *et al.*, 2011; Zhou, 2003) our findings suggest that developmental feedback is not one dimensional. The original SDF scale in Zhou (2003) was framed positively and generally. This scale may not have necessarily reflected SDF's internal structure (especially since developmental feedback can have both corrective and positively directed components). Previous scales often focussed on limited employee perceptions insofar as they are framed (e.g. favorable vs unfavorable; credible vs not credible; useful vs not useful; available vs unavailable; promoting feedback seeking vs not promoting feedback seeking; Steelman *et al.*, 2004). Our multi-study research captures employee reports of supervisor behaviors rather than individual employee reactions to supervisor feedback. Focussing on behaviors may have the potential to open new directions of investigation, especially when behavioral reports are combined with employee reactions.

Our findings extend prior work by providing a more encompassing theoretical perspective. According to perception theory, people respond to feedback based on their perception and past experience (Carterette and Friedman, 1978; Gibson, 1969). Other forms of negative feedback (e.g. those without a developmental focus) may be perceived as too critical to be accepted by subordinates. SDF may not be difficult for employees to accept and adopt, especially when that feedback fosters an employee's sense of control or, as Zhou (2003) mentioned, "might lead to the improvement of their performance in the future in the absence of pressure for a particular outcome" (p. 418). From another direction, Nease *et al.* (1999) pointed toward the complexity of positive and negative feedback effects and the need to refine research on the topic. These authors found that those who received positive feedback improved their work goals due to higher self-confidence while others reduced efforts (due to higher self-satisfaction). Conversely, some who received negative feedback also increased efforts, or refused to accept negative feedback and thus reduced their own efforts. The nature of feedback is complicated, and the nature of individual reactions to positive and negative feedback is likewise complex. There is a need to be clear as to what type of feedback is being measured (and clarity in the conceptualization and measurement of that feedback).

Considering both positive and negative valence has other advantages. It is possible that managers focus on positive ways of delivering feedback information to subordinates in a way that considers subordinates' feelings (e.g. being careful not to offend subordinates' dignity; Silver *et al.*, 1995; Wade, 1974). Especially given the overall focus, and even over-emphasis on positive aspects, managers may feel they should provide feedback information in only positive ways so as not to harm employee motivation (Mikulincer, 1988; Nease *et al.*, 1999). Our results reinforce the idea that the informational nature of feedback is important for employee development and performance more so than the extent to which the feedback is positive or negative *per se*. The joint relationship of positive and negative feedback is particularly potent.

Supervisors need to actively communicate with employees, and deliberately provide subordinates with valuable information that can contribute to employees' learning, development, and work improvement; whether it is corrective or reinforcing good performance (Bandura, 1986). Supervisors should clarify performance objectives to employees, and form a clear mutual understanding of each other's ability and motivation, generating a mutual trust and respect in their supervisor-subordinate relationship (Halperin *et al.*, 1976). This may in turn encourage the employee to take the initiative to be proactive and show more perceived control over his or her job (Mikulincer, 1989).

As Daniels and Larson (2001) found, positive feedback was related to increased individual self-efficacy, negative feedback weakened individual self-efficacy. Our results are inconsistent with Daniels and Larson (2001) and with other studies that position negative feedback as detrimental to performance. The feedback in Daniels and Larson (2001) was performance (outcome) focussed feedback, and did not include task, competence, or process feedback. Performance is often subject to many factors (employee motivation, situational and environmental/market factors). When feedback is not developmental, it may harm employee motivation and result in negative employee reactions. When feedback is developmental but negative, feedback content may still be discouraging, especially when presented alone. However, when negative feedback is delivered in tandem with positive feedback – it can have a positive influence on employees (Seligman, 1998) and motivate employees (Bateman and Crant, 1993; Campbell, 2000). Provision of negative feedback alone can lower motivation, or discourage employees, much like only positive feedback may be pleasing but still result in overconfidence.

Combining positive and negative feedback – as empirically illustrated by our examination of their joint influence (interaction) – may pave the way toward more complex theorizing whereby simultaneous positive and negative influences are accounted for. Different theories can be invoked to support positive (Seligman, 1998) and negative (Baumeister *et al.*, 2001) influences, including feedback that is positive (e.g. positive feedback enhancing performance; Kluger and DeNisi, 1996; Thorndike, 1913) and negative (Rolison *et al.*, 2012). Such clear cut differentiation of exclusively positive or exclusively negative feedback is, however, unlikely to be present in most work settings, highlighting the need to examine positive and negative aspects in conjunction.

When positive feedback is present, negative reinforcements may be beneficial for employees who are more likely to become complacent, while positive only feedback may be more important for subordinates who are easily discouraged. Research on the optimal balance of positive and negative feedback – not only in terms of positive and negative valence, but also in terms of frequency – can now be designed (Fredrickson and Losada, 2005; Losada and Heaphy, 2004).

It may be possible that the positive-negative interaction may be accentuated when delivered for developmental rather than performance appraisal purposes (Boswell and Boudreau, 2000). The findings in the performance appraisal literature suggest that understanding employee reactions to feedback is important (Gosselin *et al.*, 1997; Payne *et al.*, 2008). This may be especially true if positive and negative feedback elicit different reactions when it is not developmental (e.g. in the performance appraisal context).

Limitations

Our research is not without limitations. Because we used a cross-sectional design and did not actually manipulate positive and negative feedback, a causal relationship cannot be determined and needs to be examined either by using quasi-experimental or experimental designs. Relatedly, since our data is cross-sectional, we cannot conclusively rule out the possibility that performance ratings from supervisors predict PSDF and NSDF. It may be the case that higher performers (those who are given higher ratings) are also given higher PSDF and lower NSDF, suggesting that performance predicts SDF.

PSDF and NSDF were obtained through self-reports and can be thus subject to social desirability, leniency effect, state affect, and social influence. Participants provided information on others' (supervisors') behaviors, rather than about their

attitudes and behaviors. Reporting information about others will be subject to less distortion than reporting information about the self. Although we paid attention to behavioral facet of SDF we did not systematically study the impact employees reactions to SDF.

Systematic variability as a function of the country of origin must be studied. Culture has a profound influence on the ideas, cognitions, and attitudes of members of those cultures (Hofstede, 1991). Differences in culture (e.g. cultural syndromes; Hofstede, 1991) may also relate to how supervisors treat subordinates, the extent to which supervisors are willing to share information, and the manner in which information is delivered by supervisors and perceived by employees.

Future research

Future research is necessary to examine the extent to which performance appraisal usage matters (e.g. positive and negative feedback in developmental or formal performance appraisal context). It would be interesting to see how positive and negative feedback operate in the context of performance appraisal and the extent to which positive and negative feedback relates to employee reactions. This research is needed in order to understand if the benefit of positive and negative feedback is conditional on the feedback containing developmental elements or if indeed positive and negative feedback is advantageous in other context where feedback does not need to be developmental.

Alvero *et al.* (2001) reviewed previous research and found that only 55 percent of the studies on individual level feedback had a positive effect on performance, while 71 percent of the studies on team feedback had a positive effect on performance. Work should also expand the criterion space of job performance to include generalized outcomes (e.g. work effectiveness), including organizational citizenship behaviors and proactive behaviors. Combinations and interactions of positive and negative feedback may be more influential for these behaviors, because employees have more discretion over them. One could examine how positive and negative feedback relates to employee affective commitment since affective commitment has been found to predict task and extra role performance (Meyer and Herscovitch, 2001). Satisfaction or workplace attitudes might be affected by positive and negative feedback, studies should examine how PSDF and NSDF predict and interact to predict workplace attitudes related to task and extra role performance. Future work should also examine employees' individual differences like personality variables and regulatory focus (e.g. Higgins, 1997).

Researchers can examine the antecedents of supervisor provisions of positive and negative feedback (e.g. supervisor leadership style). Understanding what predicts supervisor willingness to provide feedback could be a function of supervisor personality, or other individual differences (Dahling *et al.*, 2012). From an information sharing perspective, it may also be interesting to examine PSDF and NSDF from sources other than supervisors (Li *et al.*, 2011; Peng and Chiu, 2010).

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