

## **Personality and Multisource Feedback Improvement: A Longitudinal Investigation**

Alan G. Walker  
Auburn University

James W. Smither  
La Salle University

Leanne E. Atwater  
University of Houston

Peter G. Dominick  
Stevens Institute of Technology

Joan F. Brett  
Arizona State University West

Richard R. Reilly  
Stevens Institute of Technology

### **ABSTRACT**

Recently, several researchers have suggested that personality will influence the extent to which people improve their performance after receiving multisource feedback (MSF). Building on previous research, we offer theory-driven hypotheses about how specific aspects of personality might influence improvement in MSF ratings over time. In three longitudinal studies, using three different and well-established measures of personality and three multisource feedback instruments, we found little or no evidence to support hypotheses that personality is systematically related to improvement following receipt of multisource feedback.

### **Personality and Multisource Feedback Improvement: A Longitudinal Investigation**

Over the past 15 to 20 years, many organizations have implemented multisource feedback (MSF) programs in which evaluations about a focal participant are gathered from multiple raters or rating sources, most often supervisors, peers, and direct reports. A recent meta-analysis of 24 longitudinal MSF studies (Smither, London, & Reilly, 2005)

found that improvement in direct report, peer, and supervisor ratings over time was positive but small. For example, the corrected effect sizes, expressed in standard deviation units ( $d$ ), were .15, .05, and .15 for direct reports, peers, and supervisors, respectively. A large percentage of the variance in effect sizes was not explained by sampling error, even after accounting for the effects of several moderator variables such as study design, purpose (developmental vs. administrative), months between the two administrations of feedback, and the presence or absence of a facilitator.

A meta-analysis of feedback interventions in general (not specifically MSF) by Kluger and DeNisi (1996) found that feedback interventions, on average, had a positive effect on performance (weighted  $d = .41$ ) but they also found that 38% of the 607 effect sizes in their meta-analysis were negative, thereby indicating that the impact of feedback interventions in general is also quite variable.

Taken together, these findings indicate that some feedback recipients improve their performance after receiving feedback whereas others do not and begs the question, "Who is likely to benefit from feedback?"

### **Personality and Feedback**

Smither et al. (2005) proposed that the feedback recipient's personality is one factor likely to play a role in determining the extent of behavior change and performance improvement following MSF. They suggested that personality could influence reactions to feedback, goal setting, and taking action in response to the MSF. Other authors have also recently proposed that personality will affect feedback recipients' reactions and responses to MSF (Smither, London, & Richmond, 2003; Dominick, Reilly, & Byrne, 2004; Bono & Colbert, 2005; Brett & Atwater, 2001; Atwater & Brett, 2005). However, no study has yet examined whether personality is related to improvement in MSF over time.

More generally, Kluger and DeNisi (1996) have suggested that personality might shape how feedback recipients respond to gaps between feedback and desired performance and thereby influence the impact of feedback interventions on subsequent performance. However, Kluger and DeNisi (1996) noted that they could not examine the potential role of personality in their meta-analysis of feedback interventions because studies have generally not examined the effects of personality on responses to feedback interventions. They urged that personality be included in future research concerning the impact of feedback interventions.

In this paper, we address these limitations in prior research by presenting three longitudinal, independently-conducted studies that examine whether personality is related to improvement in MSF over time. Smither et al. (2005) described how various factors such as personality might influence whether feedback leads to positive, negative, or no change in subsequent administrations of MSF. The key point is that, after receiving MSF, some recipients are likely to become more effective, some might become less effective, and others will remain unchanged. For the reasons described

below, it seems likely that improvements (declines) in MSF will be associated with personality as conceptualized using the Five Factor Model (FFM). That is, prior research indicates that MSF will not lead all managers to become more effective over time and thereby result in widespread improvements in MSF. Instead, managers who do become more (less) effective are likely to possess varying amounts of the traits associated with the FFM of personality. Thus, unlike the majority of prior research on MSF (e.g., Smither et al., 2005), we were not interested merely in whether MSF ratings improved over time. Instead, we examined whether changes in MSF might be related to the feedback recipient's personality.

### **The Five-Factor Model as an Organizing Framework**

Because a large amount of research has focused on the five-factor model (FFM) of personality (Goldberg, 1990) and because the validity of this framework has been widely documented (Digman, 1990; Goldberg, 1992; Hogan, Hogan, & Roberts, 1996; McCrae & Costa, 1987, 1989; McCrae & John, 1992; Mount & Barrick, 1998), we use this framework to suggest relationships between personality and improvement in MSF over time. Also, as documented by previous research, (e.g., Mount & Barrick, 1995; Tett, Jackson, & Rothstein, 1991), theory-driven personality-performance relationships are more likely to result in statistically significant and practically important findings than are exploratory studies that examine personality-performance relationships in an unfocused or shotgun approach (i.e., when a collection of personality variables is related to whatever performance criteria happen to be at hand). As such, we next briefly define each of the components of the FFM and describe how each component might be related to improvement in MSF over time.

#### Emotional Stability

Emotional stability is characterized by being calm, relaxed, patient, even-tempered, and composed, whereas neuroticism (or low emotional stability) is characterized by anxiety, self-consciousness, impulsiveness, sadness, and anger. Unfavorable feedback might be especially unwelcome and adversely affect individuals who are low in emotional stability because such feedback is likely to cause them to disengage from the task or to think about, doubt, or blame themselves. According to feedback intervention theory, this disengagement from the task and/or focus on self is likely to debilitate performance except on very simple tasks. This is in contrast to people with high emotional stability who are more likely to deal with unfavorable feedback by changing their behavior in response to the feedback (Kluger & DeNisi, 1996).

In support of this notion, Smither et al. (2003) examined leaders in an elite unit of the United States military who completed the Jackson Personality Inventory six months prior to receiving MSF. Self-report and psychologists' ratings of reactions to feedback were collected immediately after feedback was provided, and self-report ratings of developmental actions were collected six months later. Leaders high in emotional stability were more likely to be rated by a psychologist as motivated to use the feedback. Atwater and Brett (2005) found that leaders low in emotional stability reported more negative emotions (describing themselves as angry, frustrated, unhappy,

discouraged, and disappointed) after receiving MSF, although they did not receive less favorable MSF than other leaders.

Houghton, Bonham, Neck, and Singh (2004) examined the relationship between several dimensions of personality (emotional stability, conscientiousness, and extraversion) and self-leadership (i.e., the set of strategies that people use to motivate and direct themselves to attain effective performance). Behavior-focused self-leadership strategies involve self-regulation of behavior through self-assessment, self-discipline, and self-reward, and are thought to be especially important in accomplishing important although unpleasant tasks. Natural reward self-leadership strategies involve focusing one's attention on the more positive or pleasant aspects of a task rather than its less pleasant aspects, and are involved with seeking out work activities that are inherently enjoyable. Constructive thought pattern self-leadership strategies involve challenging irrational beliefs and assumptions, imagining successful performance in the future, and positive self-talk.

They found that emotional stability was positively related to one component (natural reward strategies) of self-leadership. Similarly, using the Jackson Research Form L and the Jackson Personality Inventory Form L, Goffin and Anderson (2007) examined the relationships between several dimensions of personality (achievement, self-esteem, anxiety, and narcissism) and self-other disagreement in MSF ratings. Their results suggested that focal managers who rated themselves as being more anxious than other managers were also more likely to rate themselves less favorably than did their superiors. Thus, these managers appeared to undervalue their contributions.

Finally, a recent meta-analysis by Payne, Youngcourt, and Beaubien (2007) found that emotional stability was positively related to learning goal orientation, which in turn was related to feedback seeking, effective learning strategies, self-efficacy, self-set goals, learning, and job performance.

In sum, people who are low in emotional stability are especially likely to react poorly to negative feedback, whereas people who are high in emotional stability are more likely to be motivated to use the feedback and employ a learning goal orientation and self-leadership strategies that can guide performance improvement.

### Conscientiousness

Conscientiousness is characterized by being dutiful, reliable, organized, hard-working, responsible, persevering, self-disciplined, and achievement-oriented. Conscientiousness should be logically related to the tendency to set and remain committed to improvement goals after receiving MSF. Houghton et al. (2004) found that conscientiousness was positively related to all three components of self-leadership. Payne et al. (2007) found that conscientiousness was positively related to learning goal orientation. Locke and Latham (1990) have shown that feedback alone is not the cause of behavior change; instead it is the goals that people set in response to feedback. This suggests that performance improvement after MSF will depend on the extent to which

feedback recipients use the feedback to set goals and monitor their progress toward those goals. For example, Goffin and Anderson (2007) found that those managers who rated themselves as high in Achievement on the Personality Research Form L were more likely to overrate themselves in comparison to superior and peer ratings, but conclude that this discrepancy is actually beneficial given Achievement is related to positive responses to one's feedback.

Dominick et al. (2004,) utilized a sample of 38 first-year college students and found that conscientiousness was positively related to enhanced effectiveness as a team member after students received feedback from classmates (where ratings were collected from different classmates over a two-semester period). Similarly, Smither et al. (2003) found that feedback recipients who were high in responsibility (a component of conscientiousness) indicated that they felt obligated to use their MSF; six months later they were more likely to have sought additional feedback from others and to have undertaken developmental actions.

In sum, conscientiousness should be associated with setting (and remaining committed) to goals in response to MSF, feeling obligated to use the feedback, and employing a learning goal orientation and self-leadership strategies that can guide performance improvement.

### Openness to Experience

Openness to experience is characterized by being curious, willing to entertain novel ideas, attentive to inner feelings, imaginative, and having broad interests. Openness to experience should be related to being open to others' perspectives, suggestions, and feedback. Payne et al. (2007) found that openness to experience was positively related to learning goal orientation. Smither et al. (2003) found that breadth of interest was positively related to feedback recipients viewing MSF as valuable. Dominick et al. (2004) found that openness to experience was positively related to enhanced effectiveness as a team member after first-year college students received feedback from classmates.

In sum, openness to experience should be associated with heightened receptivity to and interest in MSF.

### Extraversion

Extraversion is characterized by being energetic, sociable, active, assertive, and self-assured in dealing with others. To the extent that extraversion leads to seeking additional feedback and discussing one's feedback with others, extraversion might have a positive relationship with improvements in MSF over time. Indeed, two studies (Smither, London, Reilly, Flautt, Vargas, & Kucine, 2004; Walker & Smither, 1999) have shown that discussing one's MSF with others is related to improvement in MSF over time. Smither et al. (2003) found that, six months after receiving MSF, leaders high in sociability were more likely to have sought additional feedback. Payne et al. (2007)

found that extraversion was positively related to learning goal orientation. Finally, Houghton et al. (2004) found that extraversion was positively related to all three components of self-leadership.

In sum, extraverts should be more likely than introverts to seek additional feedback and to employ a learning goal orientation and self-leadership strategies that can guide performance improvement.

### Agreeableness

Agreeableness is characterized by being cooperative, eager to help, trusting, sympathetic, and altruistic. We suggest that feedback recipients who are high in agreeableness are likely to be concerned with pleasing others by being responsive to the feedback. Smither et al. (2003) found that agreeableness was positively related to feedback recipients being concerned about what raters thought of them. Also, agreeableness was positively related to having set improvement goals six months after receiving MSF, while empathy (a component of agreeableness) was positively related to having sought additional feedback six months later. Atwater and Brett (2005) found that dispositional distrust (a characteristic presumably associated with low agreeableness) was negatively related to feedback recipients' attitudes toward using feedback. Finally, Payne et al. (2007) found that agreeableness was positively related to learning goal orientation.

In sum, agreeableness appears to be associated with heightened responsiveness to MSF, seeking additional feedback, and setting improvement goals.

## **Hypotheses**

Based on the above, we hypothesize that emotional stability, conscientiousness, openness to experience, extraversion, and agreeableness, and will be positively related to improvement in MSF over time.

Finally, Smither et al. (2005) in accordance with control theory (Klein, 1989) and self-regulation theory suggested that receiving unfavorable feedback will lead feedback recipients to perceive a need to change. That is, as feedback recipients perceive a discrepancy between their feedback and their referent standard or goal, they will be motivated to close this gap. This suggests the possibility that personality might be related to improvement in MSF over time, but only for feedback recipients who initially receive (relatively) unfavorable feedback. Therefore, in each of the studies described below, we explore this possibility by examining whether there is an interaction between personality and time-1 MSF such that personality is related to improvement in MSF over time, but only for feedback recipients who initially receive less favorable feedback.

## **Study 1 Method**

### Sample

Participants included 83 district and regional sales managers from a large retail chain organization and 62 participants from an elementary school district for a combined sample of 145 participants. Participants from the school district included school principals, assistant principals, staff directors, and first-line supervisors in support areas such as transportation and food services. Approximately 70 percent of the leaders were male. In the case of the elementary school district, all teachers were given the opportunity to complete the MSF instrument on both their assistant principal and principal and in some schools the number of teachers was as many as 60.

## Measures

Personality. The 16PF (Russell & Karol, 1994) was used to assess personality. The 16 PF is designed to assess 16 personality variables: warmth, conceptual thinking, emotional stability, dominance, liveliness, rule consciousness, boldness, sensitivity, suspiciousness, imaginative, privateness, worried, open to change, individualistic, perfectionism, and tense. Using previous factor-analytic work (Byravan & Ramanaiah, 1995; 1996) the 16 personality factors were categorized into the Five Factor Model (FFM) of personality as follows: Neuroticism (privateness, perfectionism, and emotional stability which was reversed-scored); Extraversion (liveliness, boldness, warmth, imaginative and openness which was reversed-scored); Conscientiousness (individualistic, rule conscious, and suspiciousness which was reversed-scored); Openness (apprehension, vigilance); Agreeableness (dominance which was reversed-scored). The individual 16PF dimension scores were first standardized and then combined into the FFM composites as indicated above.

Multisource Feedback Instrument. A 47-item MSF instrument was designed and implemented specifically for this study. Items were adapted from an earlier study (see Atwater, Waldman, Atwater, & Cartier, 2000). All items were reviewed by managers at each organization to ensure they measured applicable behaviors. Each of the 47 items was rated on a 9-point frequency scale where 1 = not at all, 3 = once in awhile, 5 = sometimes, 7 = fairly often, and 9 = almost always. Preliminary exploratory factor analyses conducted for each rating source separately revealed that the leadership items reflected three underlying dimensions. Inspection of loadings indicated that 15 items comprised a factor related to the leader's Consideration ( $\alpha = .90$ ) of employees (e.g., "patiently listens to concerns"), 7 items comprised a factor related to Developing and Recognizing Employees ( $\alpha = .91$ ) (e.g., "provides public recognition for a job well done" and "gives direct reports opportunities to learn and grow,") and 17 items comprised a factor related to the leader's Performance Orientation ( $\alpha = .89$ ) (e.g., "sets goals that challenge others"). Eight of the 47 items had sufficiently high cross-loadings that we did not include them in the 3-factor solution.

## **Procedure**

Survey packages for each leader and his or her raters were prepared by the research team. They were delivered to raters in each organization via internal mail. Stamped,

return envelopes were included with the surveys so they could be mailed directly back to the research team. All direct report and peer surveys were anonymous. In each organization, all of the leaders' direct reports (ranging from 3 to 60), his or her manager and a sample of 6 to 9 peers were asked to complete the MSF instrument on the focal manager. Time-1 leadership scores were created for each rating source by averaging responses to items on each of the three scales. The same procedure was used to create time-2 scores. Two waves of data were collected approximately 1 year apart.

A facilitator met with feedback recipients to help them interpret the feedback report and to encourage them to use the feedback to set developmental goals. This study was part of an ongoing project to assess reactions to and effectiveness of different feedback formats. Thus feedback format was varied. The feedback was presented in a numeric or text format. Because the investigation of feedback format was not the purpose of this study, feedback format was controlled in all analyses.

### Comparison of Covariance Matrices

We used LISREL 8.5 to conduct an omnibus comparison of the time-1 covariance matrices from the 4 rater groups (direct reports, peers, supervisors, and self) to determine whether there was measurement equivalence across the rater groups. McCallum (1998) and Kenny (2003) point out that, when sample sizes are large (e.g., greater than 200),  $\chi^2$  is of less value in determining the fit of a solution than the root mean square error of approximation (RMSEA) and other fit indices (i.e., for models with large sample sizes,  $\chi^2$  is almost always significant). We therefore evaluated fit by examining the RMSEA, the non-normed fit index (NNFI), and the comparative fit index (CFI). The fit was acceptable (RMSEA = .05, NNFI = .92, CFI = .93) thereby indicating that the covariance matrices did not differ meaningfully across the 4 rater groups.

We then used LISREL 8.5 to examine whether this 3-factor solution was an acceptable fit for the covariance matrices from each of the 4 rater groups. Our measurement model included the items (indicators) that were hypothesized to load on each of the three factors described above. We first tested a 3-factor measurement model where factor correlations, factor loadings, and error variances were invariant across the 4 groups. This model was not a good fit (RMSEA = .11, NNFI = .82, CFI = .82). The modification indices suggested that the fit could be improved by allowing the error variance of several items to vary across groups and by allowing several pairs of items (about 5% of the item pairs) to have correlated error terms (i.e., these error terms share common, perhaps halo, variance not explained by the underlying factor). This revised model, where factor correlations and factor loadings remained invariant across the 4 groups, showed an acceptable fit (RMSEA = .075, NNFI = .90, CFI = .90).

We also examined a 3-factor measurement model where factor correlations were invariant but factor loadings were free to vary across the four groups. The fit of this model was virtually identical to the fit of the 3-factor model when factor correlations and factor loadings were invariant, thereby indicating that model fit was not improved by allowing factor loadings to vary across the four groups. Finally, we also examined a

measurement model where all items loaded on a single leadership factor. The fit of this 1-factor model (RMSEA = .19, NNFI = .71, CFI = .70) was much poorer than the fit of the 3-factor model, thereby indicating that the 3-factor model is a better fit across the 4 groups than a single-factor model.

In sum, the covariance matrices from the different rater groups appear to be roughly equivalent, and a 3-factor model with invariance of factor correlations and factor loadings across groups is an acceptable and better fit than a 1-factor model or a 3-factor model where factor loadings are free to vary.

### Analysis

As Edwards (1995) notes, one approach that has been advocated in the study of change (e.g., Cronbach & Furby, 1970) is to use the time-1 score as a covariate, such that the analysis controls for the level of time-1 scores while estimating time-2 scores. This covariance analysis removes from the variability of time-2 scores any variability that is predictable from the linear relationship between time-1 and time-2 scores. That is, this analysis of covariance focuses on *residual* deviations or variability (improvements or declines) not associated with time-1 scores, rather than change scores (i.e., time-2 minus time-1) per se. Despite early criticism of change scores, several authors have recently recommended their use in some settings (e.g., Allison, 1990; Willett, 1989). However, Allison notes that the covariance approach (analysis of residuals) described above remains appropriate when time-1 scores are likely to influence time-2 scores. One example of this process described by Allison (1990) is when halo influences both time-1 and time-2 scores (as is likely the case with MSF ratings). Based on the above, we operationalized change using residuals (e.g., the 'actual time-2 score' minus the 'predicted time-2 score based on the time-1 score').

### **Study 1 Results**

Residual scores were created as measures of change, i.e., actual time 2 score minus the predicted time 2 score based on the time-1 score, feedback format (numeric or text), and organization (retail or school). Note that in this first step we are removing any variance in time 2 scores that is related to version (numeric or text) or organization (retail or school). In other words, feedback format and organizational setting were controlled (i.e., treated as covariates). Residual scores were calculated in this way separately for peer, subordinate, and boss ratings on each of the three dimensions. The personality measures (for the 16 scales of 16PF and for the five FFM composites) were then correlated with the residual change scores. As shown in Table 1, only five correlations were significant ( $p < .05$ ). However, given the 189 correlations (21 personality indicators X 3 rating sources X 3 MSF dimensions), about 10 significant correlations would be expected solely due to chance with  $p = .05$ . In sum, results indicated that personality was not related to residual change scores for any of the three sources (peers, direct reports, and boss) beyond what would be expected due to chance.

Table 1. Correlations between Personality Measure and Residual Change Scores for Study 1

Personality 16PF Dimensions	Direct Report			Peer			Boss		
	Con	PO	Emp	Con	PO	Emp	Con	PO	Emp
1. Warmth	-.04	.00	.02	<b>.19*</b>	.10	<b>.19*</b>	.06	-.01	.11
2. Conceptual Thinking	.00	.00	-.03	-.01	.00	-.08	-.09	-.09	.01
3. Emotional Stability	.08	.05	.10	.09	-.08	.12	-.05	-.10	.05
4. Dominance	.04	.00	.05	.01	.04	-.01	-.04	.04	-.05
5. Liveliness	-.11	-.11	-.12	-.06	.00	.06	.02	-.02	.03
6. Rule Consciousness	-.03	-.04	-.08	.12	.05	.08	-.17	-.16	-.12
7. Boldness	.00	.03	.00	.10	-.04	.08	.01	-.02	.04
8. Sensitivity	-.10	-.06	-.12	-.03	.04	-.03	-.05	.00	.00
9. Suspiciousness	.03	.00	.04	<b>-.19*</b>	-.07	-.07	.05	.11	-.06
10. Imaginative	-.08	-.06	-.10	.02	.02	-.13	<b>.20*</b>	.16	<b>.22*</b>
11. Privatness	.03	-.05	-.04	-.03	-.06	-.07	.06	.01	.00
12. Worried	-.01	-.03	-.06	.08	.14	-.01	-.08	.00	-.08
13. Open to Change	-.10	-.11	-.06	.06	.01	.00	.01	.07	.07
14. Individualistic	.02	-.02	.02	.06	.04	.12	.01	.03	.05
15. Perfectionistic	.16	.14	.13	-.07	-.12	.03	-.12	-.02	-.09
16. Tense	-.08	-.08	-.10	-.17	.08	-.04	-.04	.14	-.04
Five Factor Model									
1. Open to Experience	.01	-.02	-.01	-.07	.05	-.06	-.02	.07	-.09
2. Conscientiousness	-.02	-.04	-.07	.10	.10	.16	-.12	-.14	.00
3. Extraversion	-.06	-.02	-.05	.09	.03	.09	.12	.02	.14
4. Agreeableness	-.04	.00	-.05	-.04	-.04	.01	.04	-.04	.05
5. Neuroticism	.06	.07	.03	-.04	-.08	-.09	.06	.12	.11

Con = Consideration, PO = Performance Orientation, Emp = Employee Development

\* $p < .05$

## Study 2 Method

### Sample

Participants consisted of 113 managers who received feedback following two administrations (separated by, on average, 29.3 months) of a major consulting organization's proprietary MSF instrument and one administration of the California Psychological Inventory. Participants were administered these instruments as a part of their involvement in an overall assessment process designed to evaluate the leadership competencies of mid-level leaders. The managers came from 33 different organizations with fifty-four percent having 10 or more years of experience being a manager. The average age of participants was 40 years. Eighty-three percent of participants were male. Ninety-one percent of participants were white. Seventy-five percent of participants had earned a Bachelor's degree or higher. Participants had, on average, four ratings from direct reports, three ratings from peers, and one boss rating, for a total average across all sources of 8 raters for each participant.

### Measures

Personality. The personality measure was the California Psychological Inventory (CPI) Form 462. The CPI Form 462 is a 462-item self-report personality inventory that measures behavioral tendencies on 20 primary scales that are important for normal functioning in adults (see Gough, 1987, for details and reliability data). The 20 scales are: dominance, capacity for status, sociability, social presence, self-acceptance, independence, empathy, responsibility, socialization, self-control, good impression, communality, well-being, tolerance, achievement via conformance, achievement via independence, intellectual efficiency, psychological mindedness, flexibility, and femininity/masculinity. As in study 1, we utilized previous factor analytic work (Fleener & Eastman, 1997) to categorize the individual CPI dimensions into the FFM as follows: Openness to Experience (achievement via independence, tolerance, intellectual efficiency, flexibility, psychological minded); Conscientiousness (self-control, good impression, achievement via conformance, socialization, responsibility, and well-being); Extraversion (sociability, self-acceptance, dominance, social presence, capacity for status, empathy, independence); Neuroticism (femininity/masculinity; note that higher values on this scale indicate sensitivity to criticism, tendency to interpret events personally, and feeling vulnerable, whereas lower values indicate decisiveness, action-orientation, taking initiative, and not easily subdued); Agreeableness (communality). CPI dimensions were standardized prior to being combined into their respective FFM composites.

Multisource Feedback Instrument. The widely-used MSF instrument contains 130 items and is comprised of eight major dimensions each having two to four sub-components containing four to nine items each. The eight dimensions (along with the averaged coefficient alpha of the subcomponents) are: thinking ( $\alpha = .83$ ) (e.g., "learns new information quickly"), administrative ( $\alpha = .84$ ) (e.g., "translates business strategies into clear objectives and tactics"), leadership ( $\alpha = .88$ ) (e.g., "takes a stand and resolves

important issues”), interpersonal ( $\alpha = .83$ ) (e.g., “treats people with respect”), communication ( $\alpha = .84$ ) (e.g., “gets point across when talking”), motivation ( $\alpha = .80$ ) (e.g., “initiates activities without being asked to do so”), self-management ( $\alpha = .81$ ) (e.g., “pursues learning and self-development”), and organizational knowledge ( $\alpha = .80$ ) (e.g., “brings cross-disciplinary knowledge to bear on issues and opportunities”). The MSF instrument utilizes a rating scale where 1 = “Not At All,” 2 = “To a Little Extent,” 3 = “To Some Extent,” 4 = “To a Great Extent,” and 5 = “To a Very Great Extent.” Additionally, each item contains a “Does Not Apply” response option.

## Study 2 Results

Time-2 scores for each dimension and rating source were regressed onto the corresponding time-1 scores and residual change scores were obtained. For direct report ratings, as shown in Table 2, out of 200 correlations between the residual scores and the personality factors (25 personality indicators X 8 MSF dimensions), only 3 were significant ( $p < .05$ ) and this is fewer than the number of significant correlations (10) that would be expected solely due to chance. For peer ratings, only 2 significant ( $p < .05$ ) correlations were observed, and this is fewer than the number of significant correlations (10) that would be expected solely due to chance. For supervisor ratings, 12 significant ( $p < .05$ ) correlations were observed, and this is about the number of significant correlations (10) that would be expected solely due to chance. It is noteworthy that 11 of the 12 significant correlations suggested a relationship between extraversion (or its component scales) and improvement in supervisor ratings over time.

Table 2. Bivariate Correlations between Personality Measure and Residual Change Scores for Study 2

CPI Dimensions	Direct Report Data							
	MSF Dimensions							Self-
	Thinking	Administrative	Leadership	Interpersonal	Communication	Motivation	Management	Knowledge
1. Capacity for Status	-.03	-.05	-.04	.00	-.06	-.05	-.06	-.04
2. Sociability	-.05	-.08	-.05	-.06	-.09	-.04	-.13	-.10
3. Social Presence	-.02	.03	.02	-.03	-.02	-.03	-.11	-.08
4. Self-Acceptance	-.03	-.05	-.02	-.06	-.05	-.02	-.11	-.14
5. Independence	-.05	-.05	-.06	-.09	-.09	-.06	-.13	-.09
6. Empathy	-.15	<b>-.20*</b>	-.14	-.09	-.13	-.17	-.18	.16
7. Responsibility	-.09	-.14	-.13	-.06	-.11	-.13	-.10	-.08
8. Socialization	<b>.19*</b>	.11	.12	<b>.19*</b>	.14	.13	.15	.11
9. Self-Control	.03	-.02	-.03	.06	.00	.08	.05	.03
10. Good Impression	-.04	-.09	-.07	-.01	-.06	.03	-.05	-.03
11. Communality	-.09	-.06	-.07	-.11	-.16	-.05	-.13	.02
12. Well-Being	.06	.08	.04	.06	.05	.10	.02	.03
13. Tolerance	-.05	-.09	-.10	-.03	-.02	-.05	-.03	.00

Table 2. Bivariate Correlations between Personality Measure and Residual Change Scores for Study 2 (*continued*)

CPI Dimensions	Direct Report Data							
	MSF Dimensions							
	Thinking	Administrative	Leadership	Interpersonal	Communication	Motivation	Self- Management	Organization Knowledge
14. Ach via Conform	.00	-.01	-.02	.02	-.04	.02	.00	.03
15. Ach via Independ	-.07	-.11	-.13	-.07	-.06	-.14	-.08	-.08
16. Intellect Efficiency	-.03	-.05	-.04	.04	.00	-.06	-.02	.00
17. Psych Minded	.02	.01	-.02	.02	.01	-.03	.02	.05
18. Flexibility	-.05	-.08	-.05	-.08	-.07	-.07	-.10	-.09
19. Dominance	-.07	-.11	-.18	-.15	-.15	-.07	-.18	-.07
20. Masc/Femininity	.08	.01	.01	.06	.04	.02	.08	-.09
Five Factor Model								
1. Open to Experience	-.04	-.08	-.09	-.03	-.04	-.10	-.06	-.03
2. Conscientiousness	.03	-.01	-.02	.06	.00	.05	.02	.02
3. Extraversion	-.07	-.09	-.07	-.09	-.11	-.08	-.16	-.12
4. Agreeableness	-.09	-.06	-.07	-.10	-.12	-.05	-.13	.02
5. Neuroticism	.08	.01	.01	.06	.04	.02	.08	.04

Table 2. Bivariate Correlations between Personality Measure and Residual Change Scores for Study 2 (*continued*)

CPI Dimensions	Peer Data							
	Thinking	Administrative	Leadership	Interpersonal	Communication	Motivation	Self-Management	Organization Knowledge
1. Capacity for Status	-.06	-.07	-.07	-.11	-.04	-.16	-.09	-.02
2. Sociability	-.04	-.11	-.06	-.12	-.06	-.05	-.09	-.01
3. Social Presence	-.05	-.08	.00	-.07	-.01	-.04	-.06	-.07
4. Self-Acceptance	.07	.07	.12	.02	.12	.11	.09	.12
5. Independence	-.12	-.17	-.12	-.16	-.05	-.09	-.13	.01
6. Empathy	-.15	<b>-.24*</b>	-.16	-.15	-.10	-.16	-.17	-.13
7. Responsibility	-.13	-.12	-.16	-.13	-.09	-.15	-.11	-.09
8. Socialization	.14	.15	.07	.12	.06	.10	.11	.02
9. Self-Control	.05	.02	.00	.10	.03	-.04	.04	-.07
10. Good Impression	-.03	-.07	-.05	-.06	-.05	-.06	-.07	-.05
11. Communality	-.04	-.03	-.09	-.15	-.09	.04	-.09	-.02
12. Well-Being	.08	.12	.09	.10	.11	.07	.10	.02
13. Tolerance	.06	-.04	-.06	.03	-.01	-.01	.06	.01

Table 2. Bivariate Correlations between Personality Measure and Residual Change Scores for Study 2 (*continued*)

CPI Dimensions	Peer Data							
	MSF Dimensions							
	Thinking	Administrative	Leadership	Interpersonal	Communication	Motivation	Self-Management	Organization Knowledge
14. Ach via Conform	-.07	-.02	-.06	-.08	-.09	.05	-.06	-.01
15. Ach Independ	-.06	-.14	-.11	-.04	-.01	-.15	.00	-.08
16. Intellect Efficiency	-.08	-.14	-.11	-.07	-.07	-.14	-.09	-.05
17. Psych Minded	-.01	-.08	-.09	-.03	-.06	-.08	-.06	-.01
18. Flexibility	-.11	-.18	-.16	-.07	-.09	-.18	-.13	-.16
19. Dominance	-.19	-.08	-.07	<b>-.24*</b>	-.10	-.01	-.16	-.01
20. Masc/Femininity	-.01	-.04	-.02	.10	-.03	-.08	.00	-.07
Five Factor Model								
1. Open to Experience	-.05	-.15	-.14	-.05	-.06	-.15	-.06	-.08
2. Conscientiousness	.01	.02	-.02	.01	.00	.00	.00	-.04
3. Extraversion	-.08	-.12	-.06	-.15	-.04	-.07	-.11	-.02
4. Agreeableness	-.04	-.03	-.09	-.15	-.09	.04	-.09	-.02
5. Neuroticism	-.01	-.04	-.02	.10	-.03	-.08	.00	-.07

Table 2

. Bivariate Correlations between Personality Measure and Residual Change Scores for Study 2 (*continued*)

CPI Dimensions	Boss Data							
	MSF Dimensions							
	Thinking	Administrative	Leadership	Interpersonal	Communication	Motivation	Self- Management	Organization Knowledge
1. Capacity for Status	.17	.13	.17	.14	.14	.09	.09	.16
2. Sociability	.16	<b>.28**</b>	<b>.25**</b>	.13	.18	.19	.15	.19
3. Social Presence	<b>.21*</b>	.18	<b>.23*</b>	.14	<b>.21*</b>	.14	.09	.14
4. Self-Acceptance	<b>.24*</b>	<b>.30**</b>	<b>.28**</b>	.17	<b>.21*</b>	.17	.19	.17
5. Independence	.17	.18	.16	.08	.17	.15	.08	.17
6. Empathy	.09	.08	.15	.04	.08	.02	.04	.14
7. Responsibility	-.01	.05	.02	.02	.01	-.04	-.05	.00
8. Socialization	.10	<b>.22*</b>	.11	.11	.10	.01	.10	.10
9. Self-Control	.01	-.12	-.07	-.02	-.13	-.08	-.07	.10
10. Good Impression	.06	-.03	-.01	-.05	-.09	-.08	-.07	-.06
11. Communality	-.07	-.05	-.09	-.04	-.07	-.01	-.05	-.09
12. Well-Being	.04	-.03	-.01	.01	-.07	-.04	-.08	-.05
13. Tolerance	.09	.10	.06	.07	.03	.09	.08	.09

Table 2. Bivariate Correlations between Personality Measure and Residual Change Scores for Study 2 (*continued*)

CPI Dimensions	Boss Data							
	MSF Dimensions							
	Thinking	Administrative	Leadership	Interpersonal	Communication	Motivation	Self- Management	Organization Knowledge
14. Ach via Conform	.13	.14	.06	.07	-.01	.01	.02	.16
15. Ach via Independ	.09	-.01	-.03	.06	.03	-.09	.03	.11
16. Intellect Efficiency	.15	.10	.07	.11	.11	.03	.11	.13
17. Psych Minded	.01	-.06	-.04	-.04	-.01	.03	-.05	.05
18. Flexibility	.05	-.11	.03	.03	.15	.04	.01	-.06
19. Dominance	.05	.15	.10	-.03	.08	.01	-.01	.07
20. Masc/Femininity	.04	.11	.11	.08	.16	.05	.19	.15
Five Factor Model								
1. Open to Experience	.11	.01	.02	.06	.08	.03	.05	.09
2. Conscientiousness	.07	.05	.03	.03	-.04	-.05	-.03	.00
3. Extraversion	.19	<b>.23*</b>	<b>.24*</b>	.12	.20	.13	.11	.19
4. Agreeableness	-.07	-.05	-.09	-.04	-.07	-.01	-.05	-.09
5. Neuroticism	.04	.11	.11	.08	.16	.05	.19	.15

\*  $p < .05$ , \*\*  $p < .01$

## Study 3 Method

### Sample

Participants were 124 graduate students (average age of 38, 101 males and 23 females) enrolled in an Executive Masters in Technology Management program at a northeastern university. All participants were working professionals with a minimum of five years work experience and an average of fourteen years work experience. A key feature of this program included the use of a team-based model. At the beginning of their matriculation, students were assigned to self-managed work teams of 4 or 5 members each and students remained in these work teams throughout the entire program. No formal team leader was assigned and teams established their own ground rules and procedures for working together. Each of the courses these students took involved both team projects and assignments. Students involved in this study were enrolled over a five-year time frame. That is, 35 initially enrolled from Fall 2003 through Spring 2005 and 34 enrolled from Fall 2004 through Spring 2006, 23 enrolled from Fall 2005 through Spring 2007, and 22 enrolled from Fall 2006 through Spring 2008.

### Measures

Personality. The personality measure utilized in this study was the NEO Five-Factor Inventory Form S. The NEO is a 60-item self-report measure designed to yield scores on each of the five-factor model (FFM) personality factors. A class lecture also described the FFM personality model. The NEO was administered at the beginning of their second semester during the first meeting of a team leadership course that was part of their curriculum. All students received interpretive reports explaining their results. Participants completed the NEO roughly 12 weeks prior to the first round of peer feedback and received their interpretive results about ten weeks prior to the first round of peer feedback.

Multisource Feedback Instrument. Study 3 utilized the Team Feedback Survey (Reilly, 2003) which is a 20-item instrument designed to allow participants working in team projects to evaluate themselves and their teammates on behaviors related to team effectiveness. Ratings are based on a five-point frequency scale where 1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, and 5 = always. The 20 items are comprised of two dimensions. Ten items emphasized initiating structure (which was labeled "team leadership," e.g., "defines task priorities for work sessions and/or overall projects") and ten items stressed relationship management (which was labeled "team facilitation," e.g., "encourages participation among all participants"). Reilly (2003) found alphas of .96 and .95 and .88 and .89 for the team leadership and team facilitation scales respectively for self and peer ratings for a sample of 4,000 peer and 1,248 self-ratings. Additionally, results from a confirmatory factor analysis with peer data provided evidence for good fit for the two-factor model (RMSEA = .068, goodness of fit = .92, adjusted goodness of fit = .91, comparative fit index = .92, and normed fit index = .95), which suggests that the two dimensions can be differentiated by peers.

## Procedure

The first round of peer feedback was administered via the web after students had been working in their respective teams for about six months. Subsequent feedback reports were also distributed online. The feedback reports included averaged peer ratings at both the item and dimension levels. There was no additional intervention or specific discussion of results after they received this first round of peer feedback.

Students worked together in their teams extensively during the 6 months prior to the first round of peer feedback. For example, students completed a variety of other individual difference assessments such as tolerance for ambiguity and locus of control. During the semester students worked with their various assessment results to identify areas of strength and areas for development. This work also included establishing personal development objectives. It should be noted again, however, that these efforts were all completed *prior* to students participating in and receiving feedback from the first round of peer feedback.

A second round of peer feedback was collected from the same students approximately one year later after students had been working in their respective teams for about 18 months. The team-based work engaged in by students between the first and second administrations included collaborative case studies and presentations within six additional classes as well as an extensive business simulation exercise that served as a capstone experience for the program.

## Study 3 Results

To determine whether personality was related to changes in peer ratings over time, time-2 scores for each dimension were regressed onto time-1 scores for the corresponding dimension. We then created residual scores (the differences between actual time-2 scores and predicted time-2 scores) and correlated these residual scores with the FFM dimensions of Extraversion, Agreeableness, Openness to Experience, Conscientiousness, and Neuroticism as captured by the NEO. As shown in Table 3, two significant ( $p < .05$ ) correlations were observed for the team leadership and team facilitation dimensions and this is only slightly more than the number that would be expected solely due to chance (1).

Table 3. Correlations between Personality Measure and Residual Change Scores for Study 3

NEO Personality Dimensions	Team Leadership	Team Facilitation
1. Neuroticism	-.09	.01
2. Extraversion	.01	-.06
3. Openness to Experience	.07	-.16
4. Agreeableness	.12	.23
5. Conscientiousness	.01	-.04

n = 69 for all correlations. For all correlations,  $p > .05$ .

### Exploratory Analyses

For each of the three studies, we examined whether there was an interaction between personality and time-1 feedback scores such that personality was related to improvement in MSF over time, but only for feedback recipients who initially received less favorable feedback. To do so, we conducted a series of hierarchical regression analyses. We conducted separate analyses for each rater source (direct reports, peers, supervisors). In each analysis, the dependent variable was time-2 MSF scores. For study 1, we conducted separate analyses using each of the three MSF dimensions (Consideration, Developing and Recognizing Employees, and Performance Orientation) as criteria. For study 2, we used the composite MSF score (average rating across all eight dimensions) as the criterion. For study 3, we conducted separate analyses using each of the two dimensions (Team Leadership and Team Facilitation) as criteria.

On the first step of each analysis, we entered time-1 MSF scores (e.g., in study 1, direct report ratings of Consideration) and one of the FFM composites (e.g., extraversion). On step 2 of each analysis, we entered the cross-product term representing the interaction between time-1 MSF scores and the FFM composite (e.g., extraversion X direct report ratings of Consideration). On step 3 of the analysis, we entered squared terms (e.g., squared extraversion and squared direct report ratings of Consideration). A significant increase in  $R^2$  at step 2 would indicate the presence of an interaction. A significant increase in  $R^2$  at step 3 would point to the presence of curvilinear relationships.

For study 1, we conducted 45 regression analyses (3 rating sources X 3 MSF dimensions X 5 FFM dimensions). Five of 45 interaction terms were significant ( $p < .05$ ). Only 2 of 45 squared personality terms were significant ( $p < .05$ ). For study 2, we

conducted 15 separate regression analyses (3 rating sources X 1 MSF composite X 5 FFM dimensions). Two interaction terms were significant and only 1 squared personality term was significant ( $p < .05$ ). For study 3, we conducted 10 separate regression analyses (1 rating source X 2 MSF dimensions X 5 FFM dimensions). Two interaction terms reached significance and only one squared personality term reached significance.

We conducted post hoc analyses to explore each of the significant interactions. The pattern was not as predicted. For example, in study 1, for supervisor ratings of Performance Orientation and Consideration, when participants initially received unfavorable feedback, extraversion was positively related to improvement whereas conscientiousness was negatively related to improvement. The opposite pattern was observed for those who initially received favorable feedback. In study 2, for direct report ratings, when participants initially received unfavorable feedback, extraversion was unrelated to improvement; when feedback was initially favorable, extraversion was negatively related to improvement. Also in study 2, for supervisor ratings, when participants initially received unfavorable feedback, conscientiousness was positively related to improvement; when feedback was initially favorable, conscientiousness was negatively related to improvement. Note that the pattern of results for conscientiousness was in the opposite direction in these two studies. In study 3, when participants initially received favorable feedback, agreeableness was positively related to improvement, while neuroticism was negatively related to improvement. The pattern was opposite when participants initially received unfavorable feedback. Complete details are available from the author.

In sum, across all three studies, 9 of 70 (13%) of the interaction terms reached significance (i.e.,  $p < .05$ ) and only 4 of 70 (6%) of the squared personality terms reached significance. That is, the number of significant results does not differ substantially from what could be expected by chance.

Taken together, these results indicate that the relationship between personality and improvement in MSF scores over time is not affected by the feedback recipient's time-1 MSF scores.

## Discussion

Smither et al.'s (2005) theoretical model suggested that personality should play a role in determining who improves after receiving MSF and who does not. But despite our efforts to create theory-guided hypotheses and despite previous research showing that reactions to feedback are sometimes related to personality, the three studies presented here provide little or no evidence that personality is systematically related to improvement in MSF over time. Because these studies employed three different and well-established measures of personality, the results cannot be attributed to an artifact associated with any one personality measure. Nor can the results be attributed to an artifact associated with any one MSF instrument. Given an anticipated small expected effect size of .20 for our personality measures (see discussion below for our rationale for this effect size), the power to detect a significant ( $p < .05$ ) correlation utilizing a one-

tailed test was .78 in Study 1, .69 in Study 2, and .72 in Study 3. Due to the small expected effect size, power was slightly less than .80 (usually seen as a desirable level of power). Still, the level of power across the three studies was not low, thereby suggesting that the results are not likely due to a lack of statistical power.

### Implications for the Scientific Literature and Community

Although we obtained null results, we nevertheless believe our findings offer a valuable addition to the literature for two reasons. First, as noted by Cortina and Folger (1998) confidence concerning null results (such as those we report here) is strengthened to the extent that the null finding is consistent across measures and situations and not the result of low power, inappropriate samples, or inadequate measures. Second, and more importantly, we believe that our results are important to the scientific literature from a publication bias or 'file-drawer' perspective regarding potential conclusions that might be drawn from future (i.e., not yet conducted) meta-analyses (Rosenthal, 1979).

Sterling (1959) was perhaps the first to point out that biases likely exist in favor of publishing studies showing significant results and against studies with non-significant results. Rosenthal (1979) concurred, and added that an extreme view on this perspective might result in journals containing the 5% of studies that show Type I errors, and that this issue is especially critical to growing interest in and use of meta-analysis. While many might argue that this perspective is extreme, Bradley & Gupta (1997) argued that 'file drawer' errors are potentially larger than many expected effect sizes in psychology, noting that when true effect sizes are close to zero the problem is especially problematic. Based on a table that estimates quantitatively the magnitude of bias toward exaggerating an effect size, they show, for instance, that if only 11.51% of primary studies are omitted from a research literature (e.g., due to non-significant results) in which the true effect size is .20, this omission from the literature would more than double the reported effect size – that is, from a true effect size of .20 to a biased effect size of .42.

Offering a more concrete example, McDaniel, Rothstein, & Whetzel (2006) report on the effect of the 'file drawer' problem on meta-analysis comparing structured versus non-structured interviews. They cite a meta-analysis conducted by McDaniel, Whetzel, Schmidt, and Maurer (1994) showing that structured interviews are more valid than unstructured interviews (.27 vs. .19). Publication bias analysis subsequently revealed that, in the absence of publication bias, the validity of structured interviews would likely be lower (.21) and hence closer to the validity of unstructured validities. McDaniel et al. (2006) note two undesirable consequences of the initial (1994) misleading conclusion. First, many practitioners likely spent time and organizational resources carefully crafting structure into the interview process. Second, the results of this meta-analysis likely hampered the likelihood of null result studies subsequently making their way into the scientific literature – or perhaps even more problematic - even the attempt to undertake a study comparing the two types of interviews. Indeed, Rotton (1995) in a survey of 740 authors, found that obtaining null results was the single most common reason for deciding not to pursue publication of a research study.

While there is not broad acceptance of a single, best approach to addressing the ‘file drawer’ problem (see Rothstein, 2008 for a review of four methods), most agree that the potential for misleading results due to publication bias and ‘file drawer’ effects are greatest when the expected true effect size is small. Such would appear to be the case with research examining relationships between personality and other work-related outcomes. For example, an early meta-analysis by Tett, Jackson, and Rothstein (1991) involving 494 studies and utilizing 97 independent samples with a total N of 13, 521, found corrected mean correlations between the Big Five and job performance to vary between .16 for extraversion to .33 for agreeableness. Another early meta-analysis by Robertson and Kinder (1993) found, on average, mean sample size-weighted validity coefficients of around .20 for personality variables. More recently, Hurtz and Donovan (2000) utilizing personality measures designed to explicitly measure the Big Five, found that the estimated true validities ranged from .06 to .20. Further, moderator analyses found no evidence that the personality – job performance relationship varied as a function of whether job performance was operationalized as task performance, job dedication, or interpersonal facilitation. Thus, previous research provides evidence that the true relationship between personality and job performance is probably quite modest. Note that this is probably also the case with performance as measured by multisource feedback.

In sum, evidence indicates that: (a) publication bias does indeed exist, (b) is especially problematic when true effect sizes are small, (c) that the effect size of personality on various operationalizations of job performance is likely small, and (d) publication bias and the resulting ‘file drawer’ problem has a documented history of affecting literature in a given area. As such, we believe that the results from the three studies reported here offer a valuable addition to the research literature on the relationship between personality and performance improvement in multisource feedback by potentially circumventing misleading findings in future meta-analyses. Indeed, the three studies conducted here were all initially undertaken without knowledge of each other’s efforts. It was only after each learned of the others’ work, and subsequent null findings, that we realized the potential benefits of publishing our work as a three-study paper.

### Future Research

It is of course possible that other, individual difference measures, not examined here, might be related to improvement in MSF over time. For example, Bono and Colbert (2005) found that core self-evaluations were related to responses to MSF. Core self-evaluations are related to self-esteem, generalized self-efficacy, neuroticism, and locus of control (Judge, Erez, Bono, & Thoresen, 2003). Maurer and Palmer (1999) found that intentions to participate in development following feedback from peers and subordinates were related to recipients’ sense of having control over their own improvement. And, Heslin and Latham (2004), in a study of Australian managers in a professional services firm who received upward feedback, found that those with high self-efficacy and a learning goal orientation subsequently improved more than other managers. Taken together, these studies suggest that constructs related to core self-evaluations

(including locus of control and self-efficacy) are worthy of further study. Finally, London and Smither (2002) proposed an individual-difference construct related to an employee's predisposition to seek and use feedback. They called this construct feedback orientation and suggested that people who are high in feedback orientation are not afraid of being evaluated, like and seek feedback, process it carefully, care about how others view them, believe that feedback offers insights that may help them become more effective, and feel accountable to use feedback. In a recent empirical test, Rutkowski, Griffith, and Steelman (2004) found that feedback orientation is positively correlated with feedback acceptance.

It is also possible that the relationship between personality and MSF improvement over time is more complex than hypothesized here and elsewhere. For example, Barrick, Parks, and Mount (2005) found that self-monitoring moderated the relationship between personality traits and interpersonal performance. Specifically, when self-monitoring was high, the relationships between extraversion, emotional stability, and openness to experience with supervisory ratings of interpersonal performance (but not task performance) were attenuated. It is therefore possible that self-monitoring (which was not measured in the three studies reported here) will moderate the relationship between personality and improvement in MSF over time.

In some settings, the operation of contextual factors such as the feedback climate or environment might also heighten or suppress the effect of personality on improvement in MSF over time. Steelman, Levy, and Snell (2004) define feedback environment as the contextual aspects of day-to-day supervisor-subordinate and coworker-coworker feedback processes rather than the formal performance appraisal feedback session. They created and validated a feedback environment scale (FES) that contains two factors (supervisor source and co-worker source) and seven facets within each of those source factors (source credibility, feedback quality, feedback delivery, frequency of favorable feedback, frequency of unfavorable feedback, source availability, and promotes feedback seeking). They showed that FES was related to satisfaction with feedback, motivation to use feedback, and feedback seeking frequency. Anseel and Lievens (2007) recently found that feedback environment was related to job satisfaction 5 months later, and this relationship was fully mediated by the quality of leader-member exchange. These results point to the desirability of assessing contextual factors, as well as individual differences, in future research. For example, personality might be related to improvement in MSF but only when the feedback environment is poor. In those contexts in which the feedback environment is favorable, MSF might be less valuable because helpful feedback is already available from coworkers, supervisors, and others in the work environment.

Finally, it should be kept in mind that although we found that personality was unrelated to improvement in MSF across measures and situations (including participants from multiple organizations) and that this was not the result of low power or invalid measures, we emphasize that these studies all involved MSF feedback interventions and hence cannot speak to the possibility that personality might affect reactions to feedback in

other contexts (e.g., face-to-face feedback, single-source feedback that accompanies formal performance reviews, feedback in contexts outside of work, and so on).

### Practical Implications

For practitioners, it is probably wise to focus on what people actually do with their feedback. Stated differently, performance improvement is likely only for feedback recipients who take appropriate action in response to their MSF. Smither et al. (2005) summarize empirical research showing that talking to others about one's MSF (Walker & Smither, 1999), working with an executive coach (Luthans & Peterson, 2003; Smither, London, Flautt, Vargas, & Kucine, 2003), and participating in developmental activities (Hazucha, Hezlett, & Schneider., 1993) are all related to improvement in MSF over time.

One potential avenue for practitioners to pursue to help feedback recipients make better use of their feedback (e.g., to set goals and take action) concerns feedback recipients' self-efficacy. Heslin and Latham (2004) found that those managers with higher self-efficacy enjoyed greater improvement in upward feedback scores over a six-month period than did those with lower self-efficacy. Therefore, it may be productive for organizations to attempt to address self-efficacy concerns, especially for those with very negative feedback or low self-efficacy to begin with. One potential means to accomplish this might be for those managers who are high in self-efficacy and who have enjoyed performance improvement over time with an organizational MSF process to offer testimonials or to otherwise make "best practice" presentations at training sessions designed by human resource departments to enhance the productive use of MSF. Other options for practitioners may be to approach those managers who have been able to improve their performance to seek their involvement in "buddy" systems or other mentoring-type or coaching programs where they would be matched to those with lower scores or self-efficacy.

In any event, what one does with MSF is likely to be more important than one's dispositions. Practitioner efforts focused on ensuring that feedback recipients use their feedback to set goals and take action are, at least for the moment, the best prescription to enhance the impact of MSF on subsequent performance.

## References

- Allison, P. D. (1990). Change scores as dependent variables in regression analysis. In C. C. Clogg (Ed.), *Sociological methodology 1990* (pp. 93-114). Washington, DC: Amer. Sociol. Assoc.
- Anseel, F., & Lievens, F. (2007). The long-term impact of the feedback environment on job satisfaction: A field study in a Belgian context. *Applied Psychology: An International Review, 56*(2), 256-266.
- Atwater, L. E., and Brett, J. F. (2005). Antecedents and consequences of reactions to developmental 360° feedback. *Journal of Vocational Behavior, 66*, 532-548.
- Atwater, L. A., Waldman, D., Atwater, D., & Cartier, P. (2000). An upward feedback field experiment. Supervisors' cynicism, follow-up and commitment to subordinates. *Personnel Psychology, 53*, 275-297.
- Barrick, M. R., Parks, L., & Mount, M. K. (2005). Self-monitoring as a moderator of the relationships between personality traits and performance. *Personnel Psychology, 58*, 745-767.
- Bono, J. E., & Colbert, A. E. (2005). Understanding responses to multisource feedback: The role of core self-evaluations. *Personnel Psychology, 58*(1), 171-203.
- Bradley, M. T., & Gupta, R. D. (1997). Estimating the effect of the file drawer problem in meta-analysis. *Perceptual and Motor Skills, 85*, 719-722.
- Brett, J. F., & Atwater, L. E. (2001). 360° feedback: Accuracy, reactions, and perceptions of usefulness. *Journal of Applied Psychology, 86*(5), 930-942.
- Byravan, A., & Ramanaiah, N. (1995). Structure of the 16PF fifth edition from the perspectives of the five-factor model. *Psychological Reports, 76*, 555-560.
- Byravan, A. & Ramanaiah, N. (1996). Reply to comments on Byravan and Ramanaiah's 1995 study of the structure of the 16pf fifth edition from the perspective of the five-factor model. *Psychological Reports, 79*, 123-126.
- Cortina, J. M., & Folger, R. G. (1998). When is it acceptable to accept a null hypothesis: No way, Jose? *Organizational Research Methods, 1*, 334-350.
- Cronbach, L. J., & Furby, L. (1970). How should we measure "change" – or should we? *Psychological Bulletin, 74*, 68-80.
- Digman, J. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology, 41*, 417-440.
- Dominick, P. G., Reilly, R. R., & Byrne, J. (2004). Individual differences and peer feedback: Personality's impact on behavior change. Paper presented at the 19<sup>th</sup> annual conference of the Society for Industrial and Organizational Psychology, Chicago, Illinois.
- Edwards, J. E. (1995). Alternatives to difference scores as dependent variables in the study of congruence in organizational research. *Organizational Behavior and Human Decision Processes, 64*, 307-324.
- Fleenor, J. W., & Eastman, L. (1997). The relationship between the five-factor model of personality and the California Psychological Inventory. *Educational and Psychological Measurement, 57*(4), 698-703.
- Goffin, R. D., & Anderson, D. W. (2007). The self-rater's personality and self-other disagreement in multi-source performance ratings: Is disagreement healthy? *Journal of Managerial Psychology, 22*(3), 271-289.

- Goldberg, L. R. (1992). The development of markers for the big five factor structure. *Psychological Assessment*, 4, 26-42.
- Goldberg, L. R. (1990). An alternative "description of personality": The big-five factor structure. *Journal of Personality and Social Psychology*, 59, 1216-1229.
- Gough, H. G. (1987). The California Psychological Inventory<sup>tm</sup> administrator's guide. Palo Alto, CA: CPP, Inc.
- Hazucha, J. F., Hezlett, S. A., & Schneider, R. J. (1993). The impact of multisource feedback on management skills development. *Human Resource Management*, 32, 325-351.
- Heslin, P. A., & Latham, G. P. (2004). The effect of upward feedback on managerial behavior. *Applied Psychology: An International Review*, 53, 23-37.
- Hogan, R., Hogan J., & Roberts B. W. (1996). Personality measurement and employment decisions: Questions and answers. *American Psychologist*, 51, 469-477.
- Houghton, J. D., Bonham, T. W., Neck, C. P., & Singh, K. (2004). The relationship between self-leadership and personality: A comparison of hierarchical factor structures. *Journal of Managerial Psychology*, 19, 427-441.
- Hurtz, G. M., & Donovan, J. J. (2000). Personality and job performance: The Big Five revisited. *Journal of Applied Psychology*, 85(6), 869-879.
- Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2003). The core self-evaluations scale: Development of a measure. *Personnel Psychology*, 56, 303-331.
- Kenny, D. A. (2003). Structural equation modeling. Retrieved June 21, 2004 from <http://users.rcn.com/dakenny/causalm.htm>.
- Klein, H. J. (1989). An integrated control theory model of work motivation. *Academy of Management Review*, 14, 150-172.
- Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, 119, 254-284.
- Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
- London, M., & Smither, J. W. (2002). Feedback orientation, feedback culture, and the longitudinal performance management process. *Human Resource Management Review*, 12, 81-100.
- Luthans, F., & Peterson, S. J. (2003). 360-degree feedback with systematic coaching: Empirical analysis suggests a winning combination. *Human Resource Management*, 42, 243-256.
- MacCallum, R. (1998). Commentary on quantitative methods in I-O research. *The Industrial-Organizational Psychologist*, 35(4), 18-30.
- Maurer, T. J., & Palmer, J. K. (1999). Management development intentions following feedback: Role of perceived outcomes, social pressures, and control. *Journal of Management Development*, 18(9), 733-751.
- McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, 52, 81-90.
- McCrae, R. R., & Costa, P. T. (1989). More reasons to adopt the five-factor model. *American Psychologist*, 44, 451-452.

- McCrae, R. R., & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality, 60*, 175-216.
- McDaniel, M. A., Whetzel, D. L., Schmidt, F. L., & Maurer, S. D. (1994). The validity of employment interviews: A comprehensive review and meta-analysis. *Journal of Applied Psychology, 79*, 599-616.
- McDaniel, M. A., Rothstein, H. R., & Whetzel, D. L. (2006). Publication bias: A case study of four test vendors. *Personnel Psychology, 59*, 927-953.
- Mount, M. K., & Barrick, M. R. (1995). The Big Five personality dimensions: Implications for research and practice in human resources management. *Research in Personnel and Human Resources Management, 13*, 153-200.
- Mount, M. K., & Barrick, M. R. (1998). Five reasons why the "Big Five" article has been frequently cited. *Personnel Psychology, 51*, 849-857.
- Payne, S. C., Youngcourt, S. S., & Beaubien, J. M. (2007). A meta-analytic examination of the goal orientation nomological net. *Journal of Applied Psychology, 92*, 128-150.
- Reilly, R. R. (2003). *Team helper peer feedback survey*. New York: Learning Bridge.
- Robertson, I. T., & Kinder, A. (1993). Personality and job competences: The criterion-related validity of some personality variables. *Journal of Occupational and Organizational Psychology, 66*(3), 225-244.
- Rosenthal, R. (1979). The 'file drawer problem' and tolerance for null results. *Psychological Bulletin, 86*(3), 638-641.
- Rothstein, H. R. (2008). Publication bias as a threat to the validity of meta-analytic results. *Journal of Experimental Criminology, 4*(1), 61-81.
- Rotton, J. (1995). Publication practices and the file drawer problem: A survey of published authors. *Journal of Social Behavior & Personality, 10*(1), 1-13.
- Russell, M., & Karol, D. (1994). *16 PF Administrator's Manual*. IPAT. Champaign, IL.
- Rutkowski, K., Griffith, R. L., & Steelman, L. A. (2004, April). *An empirical examination of accountability for performance development*. Paper presented at the 19<sup>th</sup> Annual Conference of the Society of Industrial and Organizational Psychology. Chicago.
- Smither, J. W., London, M., & Reilly, R. R. (2005). Does performance improve following multisource feedback? A theoretical model, meta-analysis, and review of empirical findings. *Personnel Psychology, 58*, 33-66.
- Smither, J. W., London, M., Flautt, R., Vargas, Y., & Kucine, I. (2003). Can executive coaches enhance the impact of multisource feedback on behavior change? A quasi-experimental field study. *Personnel Psychology, 56*, 23-44.
- Smither, J. W., London, M., Reilly, R. R., Flautt, R., Vargas, Y., & Kucine, I. (2004). Discussing multisource feedback with raters and performance improvement. *Journal of Management Development, 23*, 456-468.
- Smither, J. W., London, M., & Richmond, K. R. (2003). The relationship between leaders' personality and their reactions to and use of multisource feedback: A longitudinal study. *Group & Organization Management, 30*(2), 181-210.
- Steelman, L. A., Levy, P. E., & Snell, A. F. (2004). The feedback environment scale: Construct definition, measurement, and validation. *Educational and Psychological Measurement, 64*(1), 165-184.

- Sterling, T. D. Publication decisions and their possible effects on inferences drawn from tests of significance-or vice versa. *Journal of the American Statistical Association*, 54, 30-34.
- Tett, R. P., Jackson, D. N., & Rothstein, M. (1991). Personality measures as predictors of job performance: A Meta-analytic review. *Personnel Psychology*, 44, 703-742.
- Walker, A. G., & Smither, J. W. (1999). A five-year study of upward feedback: What managers do with their results matters. *Personnel Psychology*, 52, 393-423.