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Enhancing feedback and improving feedback: subjective perceptions, psychological consequences, behavioral outcomes

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Abstract

Three experiments examined subjective perceptions, psychological consequences, and behavioral outcomes of enhancing versus improving feedback. Across experiments, feedback delivery and assessment were sequential (i.e., at each testing juncture) or cumulative (i.e., at the end of the testing session). Although enhancing feedback was seen as more satisfying than useful, and improving feedback was not seen as more useful than satisfying, perceptions differed as a function of short-term versus long-term feedback delivery and assessment. Overall, however, enhancing feedback was more impactful psychologically and behaviorally. Enhancing feedback engendered greater success consistency, overall satisfaction and usefulness, optimism, state self-esteem, perceived ability, and test persistence intentions; improving feedback, on the other hand, engendered greater state improvement. The findings provide fodder for theory development and applications.

Feedback is a common occurrence in daily life. Employees, students, actors, or athletes receive it frequently from their managers, instructors, directors, or coaches, respectively. A body of literature attests to its relevance. Feedback, for example, may contribute to the formation of competence self-views and intrinsic task values (Gniewosz, Eccles, & Noack, 2014; Harackiewicz, 1979). It may also influence subsequent responses, including job performance (Brown, Hyatt, & Benson, 2010; Whitaker & Levy, 2012) and educational attainment (Hattie & Timperley, 2007; Kluger & DeNisi, 1996).

Such responses, however, may not be what the feedback giver (e.g., manager, teacher) had in mind (Fisher, 1979; Gabriel, Frantz, Levy, & Hilliard, 2014; Kluger & DeNisi, 1996) and may not necessarily be in the recipient's (e.g., employer's, student's) best interest (Gregory & Levy, 2012; Ilgen & Davis, 2000; Kulhavy, 1977). Therefore, understanding how recipients *perceive* the feedback in the first place is crucial, if well-meaning evaluators wish to shape effectively recipient responding for organizational or educational benefit, or if recipients wish to maximize feedback-derived advantages (Atwater & Brett, 2005; Brett & Atwater, 2001; Hattie & Timperley, 2007). Do recipients, for example, perceive feedback as satisfying or useful? Perceptions of satisfaction and usefulness are arguably prerequisites for recipients to engage with and benefit from feedback. Understanding the psychological consequences and behavioral outcomes of feedback is equally important. How do recipients, for example, feel about and respond to feedback that aims at satisfying them versus improving them? We explore, in this article, comparative perceptions of enhancing and improving feedback, as well as some of its potential psychological consequences (i.e., optimism, state self-esteem, state improvement, perceived ability) and behavioral outcomes (i.e., persistence intentions).

Background and scope

The bulk of the literature has been concerned with the critical (i.e., negative) versus enhancing (i.e., positive) dimension of feedback. This literature, for example, has examined critical and enhancing feedback in terms of recall, goal pursuit, or performance (Fishbach, Eyal, & Finkelstein, 2010; Sedikides, Green, Saunders, Skowronski, & Zengel, 2016), perceptions of one's competence or the evaluator (Aronson & Linder, 1965; Vallerand & Reid, 1984), and judgments of test validity or credibility (Campbell & Sedikides, 1999; Wyer & Frey, 1983). A generalized statement based on this large literature

is that, on balance, enhancing feedback is seen as more satisfying and useful than critical feedback (Brett & Atwater, 2001; Hepper & Sedikides, 2012; Hsee & Abelson, 1991; Sedikides & Gregg, 2008; Sutton, Hornsey, & Douglas, 2012).

Little research, however, has addressed another pivotal feedback dimension, enhancing versus improving. For the purposes of our research, enhancing feedback will refer to consistently positive information linked to task performance, whereas improving feedback will refers to an upward information trajectory linked to task performance. How enhancing versus improving feedback is perceived, felt, and reacted upon is not well understood. This is somewhat surprising, given the growing presence of improvement motivation (e.g., the desire to improve) in the self-evaluation literature (Breines & Chen, 2012; Collins, 1996; Green, Sedikides, Pinter, & Van Tongeren, 2009; Heine & Raineri, 2009; Kurman, 2006; Pyszczynski, Greenberg, & Arndt, 2012; Sedikides, 2009). Do individuals perceive one type of feedback as more satisfying or more useful than the other? Do the two feedback types elicit different psychological and behavioral reactions? Are perceptions, psychological consequences, and behavioral outcomes influenced by repeated (i.e., multiple-occasion) feedback delivery?

We explored, in three experiments, how subjective perceptions, psychological consequences, and behavioral outcomes are impacted within a particular type of feedback and also between types of feedback. We were concerned with task level feedback (i.e., how well tasks are performed; Hattie & Timperley, 2007) and externally-framed (rather than internally-framed) feedback (MoEller, Pohlmann, Koeller, & Marsh, 2009). Further, we focused on feedback that was (a) based on multiple testing occasions; (b) delivered to recipients sequentially (i.e., at each testing juncture) or cumulatively (i.e., at the end of the testing session); and (c) assessed (in terms of perceptions, psychological consequences, and behavioral outcomes) sequentially or cumulatively. Enhancing feedback was consistently positive (e.g., percentile rankings in relation to other test-takers could be 92, 90, 91, and 92 across four sessions), whereas improving feedback tracked an upward performance trajectory (e.g., percentile rankings in relation to other test-takers could be 59, 68, 81, and 92 across four sessions).

Theoretical and practical considerations

Our exploratory foray was informed by two contrasting theoretical perspectives. The *self-enhancement perspective* posits that individuals strive mostly for information positivity, with information improvement value playing a secondary hand (Alicke & Sedikides, 2011; Brown & Dutton, 1995; Dunning, 2005; Hepper, Gramzow, & Sedikides, 2010; Sedikides & Strube, 1997). This perspective predicts that enhancing (i.e., uniformly-positive) feedback will be perceived as more satisfying than improving (i.e., upward-trajectory) feedback, and also as generally more satisfying than useful, because of its hedonic tone. The perspective also anticipates that enhancing feedback will exert stronger psychological and behavioral impact than improving feedback. The *self-improvement perspective*, on the other hand, posits that individuals strive mostly for improvement information, giving secondary importance to information positivity (Gregg, Sedikides, & Gebauer, 2011; Markman, Elizaga, Ratcliff, & McMullen, 2007; Prelec & Loewenstein, 1997; Sedikides & Hepper, 2009; Taylor, Neter, & Wayment, 1995). This perspective predicts that improving feedback will be perceived as more useful than enhancing feedback, and also as generally more useful than satisfying, because of its utilitarian value. Further, this perspective anticipates that improving feedback will have greater psychological and behavioral impact than enhancing feedback. Although the two perspectives make general predictions about perceptions of feedback, they do not offer specific enough guidance about perceptions of feedback at distinct junctures of delivery or assessment; this is a matter of exploration.

Not only will the investigation of perceptions, psychological consequences, and behavioral outcomes of enhancing and improving feedback stretch the scope of the self-enhancement and self-improvement perspectives, but it will also address external validity issues. In ecological settings (e.g., occupational environments, classrooms, artistic performances, athletic events), feedback is often targeted toward both enhancement and improvement, while being delivered on multiple (as opposed to single) occasions. In addition, in organizational settings, employees appear to desire, not just self-enhancement feedback, but constructive or self-improvement feedback, if one were to consult popular business coaching and training books (e.g., Silberman & Hansburg, 2005). Self-improvement motivation has indeed been investigated in such settings as organizations (Seifert, Yukl, & McDonald, 2003), university enrolment (Clayton & Smith, 1987), the classroom (Harks, Rakoczy, Hattie, Besser, & Klieme, 2014; Ryan, Gheen, & Midgley, 1998), volunteering (Dickinson, 1999), correctional facilities (Neiss, Sedikides, Shahinfar, & Kupersmidt, 2006), and enlistment in the army (Pliske, Elig, & Johnson, 1986); however, perceptions of improving feedback juxtaposed to perceptions of enhancing feedback, as well as comparative psychological consequences and behavioral outcomes, have not been addressed.

Perceptions of feedback satisfaction and usefulness ought to be investigated for both theoretical and practical reasons. Satisfaction reflects the affective and valence focus of the self-enhancement motive, whereas usefulness reflects the constructive focus of the self-improvement motive. Moreover, in organizational settings for example, it is arguably vital for feedback (e.g., appraisals) to be perceived as useful in order

for staff to engage with both feedback and management in a mutually beneficial manner. In addition, organizations, especially those competing for talent, are often under pressure to devise ways to keep their staff satisfied.

Experiment 1: sequential feedback delivery and cumulative feedback assessment

In Experiment 1, we addressed, for the first time, subjective perceptions of self-enhancing and self-improving feedback. We note that in this and all subsequent experiments, we (a) randomly assigned participants to between-subjects factors of balanced designs, (b) tested participants in individual cubicles, and (c) obtained no sex differences or counterbalancing order effects.

Participants were under the impression that they were tested in four key domains of human functioning: creativity, verbal intelligence, social sensitivity, analytical ability. Numerical feedback, either enhancing or improving, was delivered at several (i.e., four) junctures, and feedback perceptions were assessed cumulatively at the end of the testing session. The starting point for enhancing and improving feedback was different (positive for enhancing, average for improving), but the end-point was identical (i.e., positive). While providing a preliminary test of the self-enhancement and self-improvement perspective, the experiment simulated multiple-occasion feedback delivery to employees, students, actors, or athletes by a supervisor, instructor, director, or coach, respectively. Would such feedback be perceived as satisfying or useful at the end of a business quarter, academic semester, rehearsal period, or athletic event?

Method

Participants and design

Participants were 102 introductory psychology students at University of North Carolina in Chapel Hill (71 female, 31 male), who volunteered for course credit. Information about participant age is unavailable, due to a coding error. Nevertheless, the vast majority of participants were traditional students, aged between 18 and 22 years. The design was a 2 (feedback type: enhancing, improving) $\times$ 2 (feedback rating: satisfaction, usefulness) mixed factorial, with repeated measures on the latter factor.

Procedure and measures

Participants learned that they would be assessed on four pivotal domains of human functioning: creativity, verbal intelligence, social sensitivity, analytic ability. The relevant tests had ostensibly been standardized and administered to university students since 1985 by the Educational Testing Service in order to study the impact of the university environment on social skills. Participants were then handed a booklet containing the tests, which were divided into four sections. They received feedback (featuring an enhancing or improving trajectory) after each section.

The first section, consisting of *Raven's Progressive Matrices* (RPM; 10 minutes), assessed creativity. Participants learned that the RPM measures spatial perception and creativity, and is a valid indicator of superior memory and innovative thinking. The RPM comprised eight questions. Participants deciphered a pattern in the displayed figures and selected, from eight choices, the correct item to complete the pattern. Feedback followed.

The second section, consisting of the *Verbal Fluency Test* (4 minutes) and the *Analogies Test* (5 minutes), assessed verbal intelligence. Participants learned that better test scores were associated with higher IQ and greater professional success. For the Verbal Fluency Test, participants were given two sets of four letters (L, C, E, N; F, O, S, P) and were asked to generate as many 4-word sentences as possible using the specified first letters for each word. For the Analogies Test, participants were to complete 10 analogies. They received three words, the first two of which were related. Their task was to pick the word that related to the stimulus word in the same way as the first two words. For example, the correct answer for the analogy "Shoe: Foot:: Glove: (a. Arm, b. Elbow, c. Hand)" would be Hand, because Hand is related to Glove in the same way as Foot is related to Shoe. Feedback followed.

The third section, consisting of the *Perception of Relationships Test* (5 minutes) and the *Perception of Deception Test* (5 minutes), assessed social sensitivity. Participants learned that individuals who performed well on these tasks were more adept at solving interpersonal conflicts and had longer-lasting relationships. We adapted the Perception of Relationships Test from the Social-Cognitive Aptitude Test (Crocker, Thompson, McGraw, & Ingerman, 1987). Participants read paragraphs about two couples and indicated their impression of each couple, whether the couple members were supportive of each other, and the likelihood that each couple would still be together in one year. In the Perception of Deception Test, participants read two incidents (a man late for a date, a city council member accused of neglecting to report campaign contributions). Then participants indicated their impression of each character, the quality of the relationship in the first incident, the popularity of the city council member in the second incident, and whether the main characters were lying. Feedback followed.

The fourth and final section, consisting of the *Analytical Ability Test* (9 minutes), assessed logical reasoning. Participants learned that better performance was linked with success in careers that involve critical thinking skills. The test asked participants to determine in what grade each of eight

children was and what costume they wore in the Thanksgiving pageant. Feedback followed.

The feedback, in the form of percentile rankings in relation to other university student test-takers, was either enhancing or improving across the test sections. In the enhancing condition, participants received feedback that started at a high level and remained constant. The section scores were: 92, 90, 91, 92. In the improving condition, participants received feedback that started relatively low and became progressively higher. The section scores were: 59, 68, 81, 92.

Finally, participants completed the satisfaction and usefulness scales in counterbalanced order (1 = *not at all*, 9 = *very much*). The *satisfaction* scale comprised three questions asking how pleased, satisfied, and content participants were with the feedback ($\alpha = .95$). The *usefulness* scale comprised three questions asking how useful, helpful, and constructive participants considered the feedback ($\alpha = .95$). Responses to the two scale indices were correlated, $r(100) = .50$, $p < .001$.

Results and discussion

Satisfaction and usefulness

Overall, participants in the enhancing condition ($M = 6.53$, $SD = 1.78$) rated the feedback higher (i.e., perceived it as more satisfying and useful) than those in the improving condition ($M = 5.65$, $SD = 1.78$), feedback type main effect $F(1, 100) = 6.19$, $p = .015$, $\eta^2_{\text{partial}} = .06$. Also, participants overall perceived the feedback as descriptively but not significantly more satisfying ($M = 6.25$, $SD = 1.96$) than useful ($M = 5.92$, $SD = 2.27$), feedback rating main effect $F(1, 100) = 2.57$, $p = .112$, $\eta^2_{\text{partial}} = .03$.

Crucially, the interaction was significant, $F(1, 100) = 4.38$, $p = .039$, $\eta^2_{\text{partial}} = .04$. We proceeded to calculate four comparison tests, using the Bonferroni correction (.05/4 = .0125). We examined the effects of feedback type separately on satisfaction and usefulness (i.e., each level of feedback rating). Participants in the enhancing condition ($M = 6.91$, $SD = 1.89$) perceived feedback as more satisfying than those in the improving condition ($M = 5.59$, $SD = 1.81$), $t(100) = 3.58$, $p = .001$, $d = 0.77$; however, participants in the enhancing ($M = 6.14$, $SD = 2.37$) and improving ($M = 5.70$, $SD = 2.16$) conditions perceived feedback as equivalently useful, $t(100) = 1.00$, $p = .321$, $d = 0.19$. We also examined the effects of feedback rating separately for each feedback type condition (i.e., enhancing, improving). Participants in the enhancing condition perceived the feedback as more satisfying than useful, $t(50) = 2.86$, $p = .006$, $d = 0.40$; however, participants in the improving condition perceived the feedback as equivalently satisfying and useful, $t(50) = -0.32$, $p = .750$, $d = -0.04$.

Summary

Overall, participants regarded enhancing (compared to improving) feedback as more satisfying. Furthermore, they regarded enhancing feedback as more satisfying than useful, whereas they regarded improving feedback as equivalently useful and satisfying. Although these findings are generally consistent with the self-enhancement perspective, it is possible that the design of Experiment 1 did not allow for a fair test of the self-improvement perspective. In particular, the delivery and assessment of the feedback may have afforded limited opportunities for improvement, thus reducing the feedback's utilitarian value. Experiment 2 addressed this potential limitation.

Experiment 2: sequential feedback delivery and sequential feedback assessment

In Experiment 2, we asked a more focused question: Do participants perceive the two feedback types (i.e., enhancing and improving) differently when feedback is both delivered *and* assessed at each performance juncture? Participants were under the impression that they were tested in the same four key domains as in the previous experiment. We delivered feedback, either enhancing or improving, at several junctures and assessed feedback perceptions separately at each juncture (Ariely, 1998; Ilies, Nahrgang, & Morgeson, 2007; Tonidandel, Quiñones, & Adams, 2002). This experiment simulated situations such as the appraisal of multiple-occasion (enhancing or improving) feedback administered to employees, students, actors, or athletes over the course of a business quarter, academic term, rehearsal period, or athletic event. Will recipients perceive such feedback as satisfying or useful on each occasion? In addition, this experiment examined a potential psychological consequence of feedback, optimism about performance on future aptitude tests. Will enhancing or improving feedback elicit higher optimism at the end of the testing session (i.e., cumulatively)? This was an open-ended question, as the relevant literature is equivocal (Sedikides, 2012; Sedikides & Hepper, 2009; Taylor & Brown, 1988).

Method

Participants and design

Sixty University of Southampton undergraduates (35 female, 6 male, 19 undeclared; $M_{\text{AGE}} = 19.27$, $SD_{\text{AGE}} = 3.21$) participated in exchange for course credit. We excluded (on an a priori basis) 10 additional participants due to incomplete responses ($n = 3$), errors during data collation ($n = 6$), or suspicion ($n = 1$). The design was a 2 (feedback type: enhancing, improving) × 2 (feedback rating: satisfaction,

usefulness) × 4 (time: 1, 2, 3, 4) mixed factorial, with repeated measures on the last two factors.

Procedure and measures

Under a pretext similar to that of Experiment 1, participants completed four testing sections via computer and received feedback (enhancing or improving) following each one. Distinctly from Experiment 1, they also indicated their perceptions of feedback following each section.

The first section, consisting of the *Uses Test* (6 minutes), assessed creativity. Participants generated as many uses as possible for a candle, a brick, and a spoon (Sedikides, Campbell, Reeder, & Elliot, 1998). The second section, consisting of the *Verbal Fluency Test* (4 minutes) and the *Analogies Test* (5 minutes), assessed verbal intelligence and was the same as in Experiment 1. The third section, consisting of the *Perception of Relationships Test* (5 minutes) and the *Perception of Deception Test* (5 minutes), assessed social sensitivity and was virtually identical to that of Experiment 1. The fourth and final section, consisting of an *Analytical Capacity Test* (10 minutes), assessed logical thinking by asking participants to decipher the full names and habitual situations of several persons who had recently moved house.

After each section, participants received computer-administered feedback, which represented a percentile ranking in relation to other university student test-takers. In the enhancing condition, the feedback started and ended at a high level (92, 90, 91, 92). In the improving condition, the feedback started low and increased steadily (59, 68, 81, 92). Four times (i.e., once after each feedback administration), participants completed the satisfaction (αs > .88) and then usefulness (αs > .86) scales used in Experiment 1. Responses to the two scales at each administration time were correlated, rs(58) > .44, ps < .001.

At the end of the testing session, participants completed a 3-item optimism measure. The items assessed optimism about performance on future aptitude tests (10 = *low, not at all*, 100 = *high, very much*). They were: "Using the percentile scores below, how do you expect to perform on aptitude tests in the future?," "How confident are you about your ability to successfully perform on aptitude tests in the future?," and "How optimistic are you about your ability to excel at aptitude tests in the future?" (α = .78).

Finally, given the positive relation between optimism and mood (Cheung et al., 2013; Segerstrom, Taylor, Kemeny, & Fahey, 1998), we included a mood measure in order to rule out the possibility that participants in the improving condition were in a negative mood due to their low performance (e.g., 59th percentile) on a valued dimension and therefore less optimistic. Specifically, all participants indicated how sad, blue, content, happy, pleased, and unhappy (Martin, Abend, Sedikides, & Green, 1997) they were currently feeling (1 = *not at all*, 5 = *extremely*; α = .86). Participants in the improving condition (M = 3.79, SD = 0.75) did not differ significantly from those in the enhancing condition (M = 4.06, SD = 0.61), $F(1, 58) = 2.42$, $p = .125$, $\eta^2_{partial} = 0.04$. Thus, the reported results cannot be attributed to between-condition mood differences and the mood variable is not discussed further.

Results and discussion

Satisfaction and usefulness over time

In replication of Experiment 1, overall participants in the enhancing condition (M = 6.37, SD = 1.07) perceived the feedback as more satisfying and useful compared to those in the improving condition (M = 5.74, SD = 1.07), feedback type main effect $F(1, 58) = 5.15$, $p = .027$, $\eta^2_{partial} = 0.08$. Also, consistent with Experiment 1's directional pattern, participants overall perceived the feedback as more satisfying (M = 6.81, SD = 0.96) than useful (M = 5.30, SD = 1.50), feedback rating main effect $F(1, 58) = 76.80$, $p < .001$, $\eta^2_{partial} = 0.59$. Neither the time main effect, $F(2, 116) = 0.38$, $p = .685$, $\eta^2_{partial} = 0.007$, nor the feedback type × feedback rating interaction, $F(1, 58) = 1.15$, $p = .289$, $\eta^2_{partial} = 0.02$, were significant. However, the feedback type × time interaction, $F(2, 116) = 22.50$, $p < .001$, $\eta^2_{partial} = 0.28$, as well as the feedback rating ×time interaction, $F(3, 154) = 8.64$, $p < .001$, $\eta^2_{partial} = 0.13$, were significant.

Crucially, the significant effects were qualified by the three-way interaction, $F(3, 154) = 4.56$, $p = .006$, $\eta^2_{partial} = 0.07$ (Figure 1). We conducted two 2 (feedback type) × 4 (time) Analyses of Variance (ANOVAs), followed by pairwise comparisons with Bonferroni correction, for each level of feedback rating—that is, separately for satisfaction (.05/4 = .0125) and usefulness (.05/4 = .0125).

First, we examined *satisfaction*. A 2 (feedback type) × 4 (time) mixed ANOVA revealed a significant interaction, $F(2, 129) = 32.86$, $p < .001$, $\eta^2_{partial} = 0.36$. The linear trend for time differed by feedback type, $F(1, 58) = 54.97$, $p < .001$, $\eta^2_{partial} = 0.49$. Although the linear trends were significant for the enhancing condition, $F(1, 29) = 10.19$, $p = .003$, $\eta^2_{partial} = 0.26$, and improving condition, $F(1, 29) = 54.33$, $p < .001$, $\eta^2_{partial} = 0.65$, the effect of the trend was greater for the improving condition. Thus, participants perceived the enhancing feedback as less satisfying over time, but perceived improving feedback as more satisfying over time (Figure 1). Pairwise comparisons of feedback type showed that participants in the enhancing condition were more satisfied than those in the improving condition at time 1, $t(58) = 8.52$, $p < .001$, $d = 2.20$, and at time 2, $t(58) = 4.29$, $p < .001$, $d = 1.10$, but not at time 3 or 4, ts(58) < |1.50|, ps > .141, ds < |0.40|.

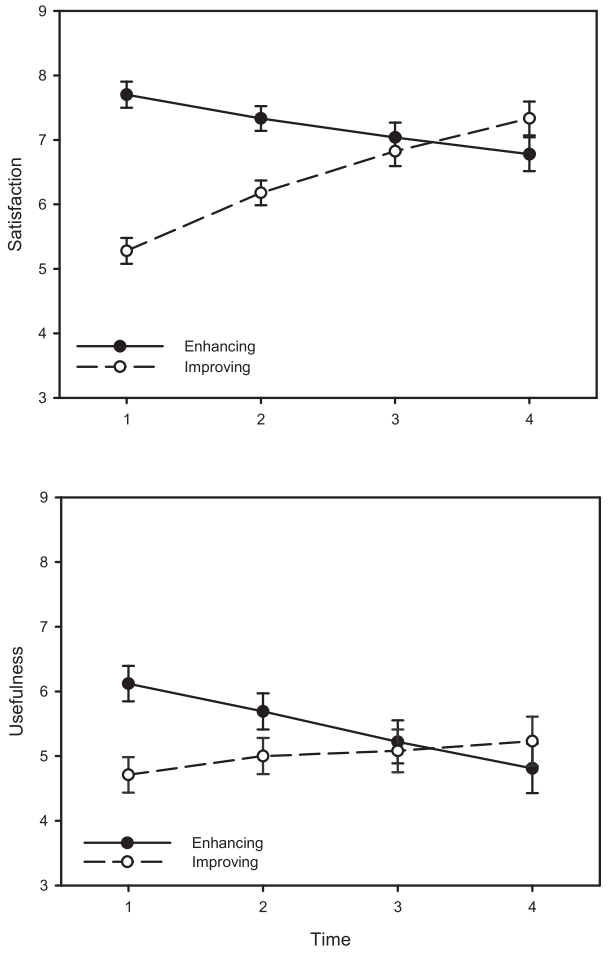

Figure 1 Satisfaction and usefulness as a function of feedback type and time in Experiment 2. Error bars indicate standard errors of the mean.

We proceeded with examining *usefulness*. The feedback type × time interaction was again significant, $F(2, 125) = 7.71$, $p = .001$, $\eta^2_{partial} = 0.12$, with the linear trend differing by feedback type, $F(1, 58) = 12.64$, $p = .001$, $\eta^2_{partial} = 0.18$. The linear trend was significant in the enhancing condition, $F(1, 29) = 11.61$, $p = .002$, $\eta^2_{partial} = 0.29$, but not in the improving condition, $F(1, 29) = 2.72$, $p = .110$, $\eta^2_{partial} = 0.09$. Given that the means decreased over time, we conclude that participants perceived enhancing feedback as less useful over time (Figure 1). Pairwise comparisons revealed that participants in the enhancing condition found feedback marginally more useful than those in the improving condition at time 1, $t(58) = 3.60$, $p = .001$, $d = 0.92$, but not at time 2, $t(58) = 1.60$, $p = .115$, $d = 0.45$, nor time 3 or 4, $ts(58) < |.661|$, $ps > .510$, $ds < |0.21|$. Together, as illustrated in Figure 1, these patterns demonstrate that feedback was perceived as more satisfying over time in the improving condition but not in the enhancing condition, and was perceived as less useful over time in the enhancing condition but not in the improving condition.

Optimism

Participants in the enhancing condition expressed more optimism ($M = 73.11$, $SD = 11.84$) compared to those in the improving condition ($M = 67.11$, $SD = 8.79$), $F(1, 58) = 4.97$, $p = .030$, $\eta^2_{partial} = 0.08$.

Summary

Consistent with the findings of Experiment 1 and the self-enhancement perspective, participants regarded enhancing feedback as more satisfying and useful compared to improving feedback. However, several effects, which emerged due to sequential feedback assessment, added texture to this conclusion. *First*, participants in the enhancing feedback condition rated the feedback as less satisfying and useful over time. *Second*, participants in the improving feedback condition rated the feedback as more satisfying but not more useful over time. *Third*, participants in the enhancing condition began by rating the feedback as more satisfying and useful than those in the improving condition, but by time 3 and 4 this was no longer the case. In all, participants regarded enhancing (compared to improving) feedback as more satisfying and useful, but they did so in the short-term rather than long-term. Finally, participants reported higher levels of optimism following enhancing than improving feedback.

Experiment 3: subjective perceptions, psychological consequences and behavioral outcomes as a function of sequential feedback delivery and feedback assessment

Experiments 1–2 delivered enhancing or improving feedback on several domains (i.e., creativity, verbal intelligence, social sensitivity, analytical ability), although these domains were said to exemplify "human functioning." Nevertheless, in academic and employment settings, repeated feedback often pertains to a single ability domain. Moreover, arguably the improvement value of feedback is highest when that feedback targets a specific domain instead of spreading over multiple domains. Therefore, in Experiment 3 we tested the replicability of Experiment 2 findings while delivering feedback, at several (i.e., five) junctures, about participants' performance in *one* domain: cognitive flexibility. How do recipients perceive single-domain feedback when it is delivered and assessed sequentially?

Experiment 3 additionally aimed to extend our prior work in two ways. To begin, it expanded the measures of psychological outcomes to include not only optimism about future performance, but also overall satisfaction and usefulness, state self-esteem and state improvement, as well as perceived ability. Also, it included a behavioral outcome, test persistence intentions. Do enhancing and improving feedback

affect differentially psychological consequences and behavioral outcomes?

Method

Participants and design

Participants ($n = 50$; 32 females, 18 males; $M_{AGE} = 20.64$, $SD_{AGE} = 2.39$) were recruited from several academic departments at the University of Southampton in return for course credit or £5 payment. We excluded on an a priori basis 11 additional participants for suspicion. The design was a 2 (feedback type: enhancing, improving) × 2 (feedback rating: satisfaction, usefulness) × 5 (time: 1, 2, 3, 4, 5) mixed factorial design with repeated measures on the last two factors.

Procedure and measures

Participants were led to believe that they were involved in the establishment of normative UK data on an index of cognitive flexibility, *integrative orientation* (IO), which predicted performance on IQ and GRE tests as well as successful management of relational conflict. They responded to all measures on computer.

Participants began by completing a 3-item pre-test measure of *perceived IO ability*. Each item required them to move a sliding scale between two opposing anchors (e.g., 0 = *I have extremely low IO ability . . .* 9 = *I have extremely high IO ability*; $\alpha = .87$).

Subsequently, participants took the ostensible IO test, which consisted of five rounds of nine Remote Associates Test (Mednick & Mednick, 1967) items, and lasted 10–25 minutes. Participants in the enhancing condition responded to test items that were relatively easy in every round (as per normative data: Bowden & Jung-Beeman, 2003; McFarlin & Blascovich, 1984). Participants in the improving condition responded to test items that were difficult in round 1 and became increasingly easy, with those in round 5 being identical to those in round 5 of the enhancing condition. We recorded the number of correct responses as a manipulation check index of *test performance*.

After each round, participants received feedback in the form of percentile scores. In the enhancing condition, feedback started at a relatively high level and remained there (92, 90, 93, 91, 92). In the improving condition, feedback started at a relatively low level and became progressively positive (54, 65, 77, 84, 92). Following each round, participants rated the feedback on satisfaction (*pleased*, *satisfied*; $\alpha > .85$) and usefulness (*useful*, *helpful*; $\alpha > .78$) by moving a sliding scale between two anchors (0 = *not at all*, 100 = *extremely*). These ratings constituted the *satisfaction and usefulness over time* measure. Responses to the two scales were weakly or moderately correlated at each time-point, rs(48) ranging from .22, $p = .122$ (time 5), to .48, $p < .001$ (time 3). Finally, at the conclusion of the testing session, participants completed, in randomized order, psychological consequences measures (i.e., overall satisfaction and usefulness, optimism, state self-esteem and state improvement, perceived ability) and a behavioral outcomes measure (i.e., test persistence intentions).

Overall satisfaction and usefulness

These scales were identical to the ones used in Experiment 1 (αs = .90). Responses to the two scales were uncorrelated, $r(48) = .21$, $p = .149$.

Optimism

This scale was similar to the one used in Experiment 2. We reworded the three items to reflect optimism about performance on future integrative orientation tests (0 = *low, not at all*, 100 = *high, very much*; $\alpha = .89$).

State self-esteem and state improvement

One item assessed state self-esteem: "Right now, I am feeling good about myself" (0 = *strongly disagree*, 9 = *strongly agree*). Six items assessed how much participants believed they had improved during the session (0 = *not at all*, 9 = *extremely*; $\alpha = .80$). Examples are: "To what extent did your ability to solve IO questions improve during the course of the test?," "How much progress do you feel you made over the session?," "To what extent was your ability to solve integration orientation questions stuck in a rut during the test?" (reverse-scored).

Perceived ability

The same three items as the relevant pre-test measure assessed perceived IO ability ($\alpha = .87$).

Test persistence intentions

One item assessed test persistence intentions by asking how willing participants would be to complete a similar test in the future (0 = *not at all*, 9 = *extremely*).

Results and discussion

Test performance

We began by examining the effectiveness of the manipulation. Were participants in the enhancing condition consistently successful at the IO test, and did participants in the improving condition improve over time? To address these questions, we conducted a 2 (feedback type) × 5 (time) mixed ANOVA on number of correct responses in the test. Overall, participants in the enhancing condition ($M = 5.54$,

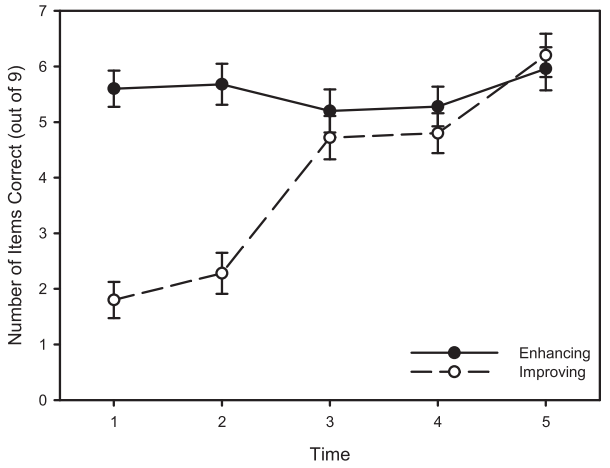

Figure 2 Task performance as a function of feedback type and time in Experiment 3. Error bars indicate standard errors of the mean.

$SD = 1.76$) performed better than those in the improving condition ($M = 3.96$, $SD = 1.04$), feedback type main effect $F(1, 48) = 14.99$, $p < .001$, $\eta^2_{partial} = 0.24$. Also, performance improved on average across rounds, time main effect $F(4, 192) = 28.24$, $p < .001$, $\eta^2_{partial} = 0.37$; linear trend $F(1, 48) = 102.02$, $p < .001$ (Figure 2). Importantly, the feedback type × time interaction was significant, $F(4, 192) = 27.46$, $p < .001$, $\eta^2_{partial} = 0.36$. The linear trend differed significantly by feedback type, $F(1, 48) = 91.11$, $p < .001$, $\eta^2_{partial} = 0.66$. Performance did not increase over time in the enhancing condition, $F(1, 24) = 0.15$, $p = .707$, $\eta^2_{partial} = 0.01$, but it did increase in the improving condition, $F(1, 24) = 205.88$, $p < .001$, $\eta^2_{partial} = 0.90$ (Figure 2). Pairwise comparisons with Bonferroni correction (.05/5 = .01) confirmed that participants in the enhancing condition performed better than those in the improving condition at time 1, $F(1, 48) = 67.69$, $p < .001$, $\eta^2_{partial} = 0.59$, and time 2, $F(1, 48) = 42.17$, $p < .001$, $\eta^2_{partial} = 0.47$, but not at time 3, 4, or 5, $Fs < 1$, $ps > .346$. In all, the manipulation was effective.

Satisfaction and usefulness over time

In replication of Experiment 2, overall participants in the enhancing condition ($M = 72.49$, $SD = 12.89$) perceived the feedback as more satisfying and useful compared to those in the improving condition ($M = 63.62$, $SD = 12.71$), feedback type main effect $F(1, 48) = 6.00$, $p = .018$, $\eta^2_{partial} = 0.11$. Also, consistent with Experiment 2, participants overall perceived the feedback as more satisfying ($M = 71.60$, $SD = 15.35$) than useful ($M = 64.51$, $SD = 16.32$), feedback rating main effect $F(1, 48) = 9.31$, $p = .004$, $\eta^2_{partial} = 0.16$. Overall, evaluations of feedback increased over time, $F(4, 192) = 18.01$, $p < .001$, $\eta^2_{partial} = 0.27$ (Figure 3). The analysis also produced significant interactions between feedback type and time, $F(3, 141) = 36.10$, $p < .001$, $\eta^2_{partial} = 0.43$, and

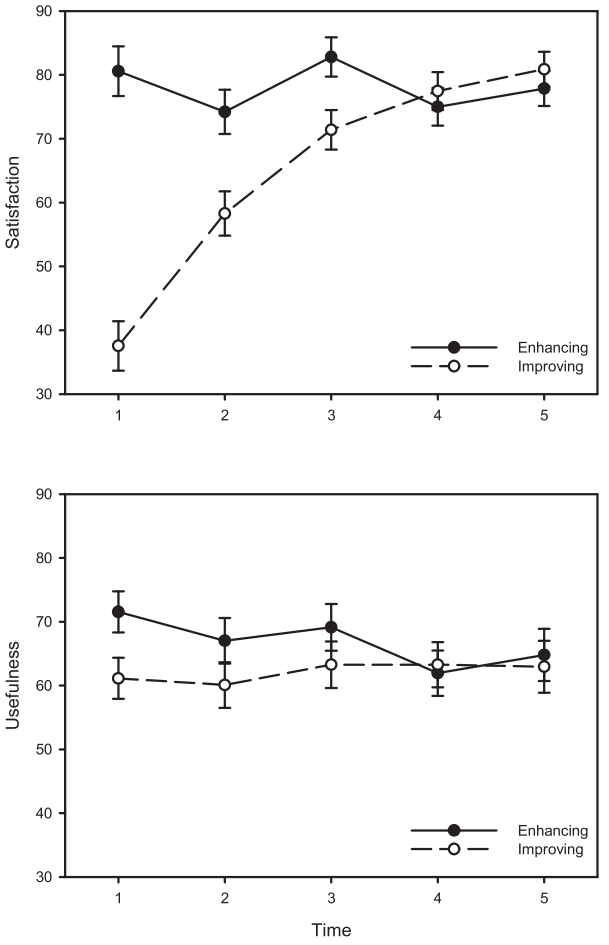

Figure 3 Satisfaction and usefulness as a function of feedback type and time in Experiment 3. Error bars indicate standard errors of the mean.

feedback rating and time, $F(2, 116) = 31.22$, $p < .001$, $\eta^2_{partial} = 0.39$.

Crucially, the significant effects were qualified by the three-way interaction, $F(2, 116) = 19.03$, $p < .001$, $\eta^2_{partial} = 0.28$ (Figure 3). As in Experiment 2, we conducted two 2 (feedback type) × 5 (time) mixed ANOVAs, followed by trend and pairwise analyses with Bonferroni correction (.05/5 = .01) for satisfaction and usefulness.

First, we examined *satisfaction*. The feedback type × time interaction was significant, $F(3, 122) = 52.23$, $p < .001$, $\eta^2_{partial} = 0.52$. The linear trend for time differed by feedback type, $F(1, 48) = 74.38$, $p < .001$, $\eta^2_{partial} = 0.61$: it was significant for the improving condition, $F(1, 24) = 88.75$, $p < .001$, $\eta^2_{partial} = 0.79$, but not for the enhancing condition, $F(1, 24) = 0.57$, $p = .458$, $\eta^2_{partial} = 0.02$. Thus, participants perceived improving (but not enhancing) feedback as more satisfying over time (Figure 3). Pairwise comparisons of feedback type showed that participants in the enhancing condition were more satisfied than those in the improving condition at time 1, $F(1, 48) = 61.46$, $p < .001$, $\eta^2_{partial} = 0.56$,

time 2, $F(1, 48) = 10.60$, $p = .002$, $\eta^2_{partial} = 0.18$, and time 3, $F(1, 48) = 6.79$, $p = .012$, $\eta^2_{partial} = 0.12$, but not at time 4 or 5, $Fs < 1$, $ps > .436$, $\eta^2_{partial} < 0.02$.

We proceeded with examining *usefulness*. The feedback type × time interaction was again significant, $F(3, 143) = 3.33$, $p = .012$, $\eta^2_{partial} = 0.07$, with the linear trend differing by feedback type, $F(1, 48) = 5.06$, $p = .029$, $\eta^2_{partial} = 0.10$. The linear trend was significant in the enhancing condition, $F(1, 24) = 5.76$, $p = .024$, $\eta^2_{partial} = 0.19$, but not in the improving condition, $F(1, 24) = 0.69$, $p = .415$, $\eta^2_{partial} = 0.03$. Thus, participants perceived enhancing feedback as less useful over time (Figure 3). Pairwise comparisons showed that participants in the enhancing condition found feedback marginally more useful than those in the improving condition at time 1, $F(1, 48) = 5.22$, $p = .027$, $\eta^2_{partial} = 0.10$, but not at times 2, 3, 4, or 5, $Fs(1, 48) < 1.87$, $ps > .176$, $\eta^2_{partial} < 0.04$. Together, as illustrated in Figure 3, these patterns demonstrate that feedback was perceived as more satisfying over time in the improving condition but not in the enhancing condition, and was perceived as less useful over time in the enhancing condition but not in the improving condition.

Overall satisfaction and usefulness

Participants in the enhancing condition were more satisfied overall ($M = 7.45$, $SD = 1.14$) than those in the improvement condition ($M = 6.24$, $SD = 1.29$), $F(1, 48) = 12.45$, $p < .001$, $\eta^2_{partial} = 0.21$. However, participants in the enhancing ($M = 5.15$, $SD = 2.26$) and improving ($M = 4.96$, $SD = 2.00$) condition did not differ in how useful they found the feedback, $F(1, 48) = 0.10$, $p = .758$, $\eta^2_{partial} = 0.002$. These results replicate those of Experiment 1.

Optimism

In replication of Experiment 2, participants in the enhancing condition ($M = 82.59$, $SD = 11.66$) expressed more optimism about their future performance on aptitude tests than their improving condition counterparts ($M = 68.49$, $SD = 14.13$), $F(1, 48) = 14.79$, $p < .001$, $\eta^2_{partial} = 0.24$.

Self-esteem and state improvement

We examined participants' state self-esteem and state improvement in a 2 (feedback type) × 2 (feedback rating) mixed ANOVA. Overall, participants reported higher state self-esteem ($M = 6.64$, $SD = 13.37$) than state improvement ($M = 5.81$, $SD = 1.57$), feedback rating main effect $F(1, 48) = 12.30$, $p = .001$, $\eta^2_{partial} = 0.20$. There was no main effect of condition, $F(1, 48) = 0.47$, $p = .498$, $\eta^2_{partial} = 0.01$, but there was a significant feedback type × feedback rating interaction, $F(1, 48) = 24.10$, $p < .001$, $\eta^2_{partial} = 0.33$. Pairwise comparisons with Bonferroni correction ($.05/2 = .025$) confirmed that, whereas participants in the enhancing condition ($M = 7.12$, $SD = 1.01$) reported higher state self-esteem than those in the improving condition ($M = 6.16$, $SD = 1.52$), $F(1, 48) = 6.91$, $p = .011$, $\eta^2_{partial} = 0.13$, participants in the improving condition ($M = 6.49$, $SD = 1.131$) reported higher state improvement than those in the enhancing condition ($M = 5.12$, $SD = 1.53$), $F(1, 48) = 11.60$, $p = .001$, $\eta^2_{partial} = 0.20$. Enhancing and improving feedback elicited feelings of self-esteem and improvement, respectively.

Perceived ability

We conducted a one-way Analysis of Covariance on perceived IO ability, controlling for perceived IO ability before test-taking. Participants in the enhancing condition ($M = 6.79$, $SD = 1.20$) believed that they were higher on IO ability than those in the improving condition ($M = 5.95$, $SD = .94$), $F(1, 47) = 7.75$, $p = .010$, $\eta^2_{partial} = 0.13$. Participants in the enhancing condition incorporated their consistently positive feedback into a positive self-view in this domain.

Test persistence intentions

Participants in the enhancing condition ($M = 8.16$, $SD = .94$) were more willing to persist at the task than those in the improving condition ($M = 7.12$, $SD = 1.33$), $F(1, 48) = 10.14$, $p = .003$, $\eta^2_{partial} = 0.17$.

Summary

Experiment 3 replicated and extended the findings of Experiment 2. Participants in the enhancing condition were more satisfied than those in the improving condition at time 1, 2, and 3, but not 4 or 5. Also, participants in the enhancing condition found feedback more useful than those in the improving condition at time 1, but not at times 2, 3, 4, or 5. From a different vantage point, participants found the feedback more satisfying over time in the improving condition but not in the enhancing condition (Elicker et al., 2010; Hsee & Abelson, 1991), and found it less useful over time in the enhancing condition but not in the improving condition.

In addition, Experiment 3 expanded the range of psychological consequences of enhancing and improving feedback. Participants in the enhancing condition were more satisfied overall, were more optimistic about future performance, reported higher state self-esteem, and believed that they were higher on IO ability; conversely, participants in the improving condition reported higher state improvement. Finally, Experiment 3 revealed a behavioral outcome: Participants in the enhancing condition were more willing to persist at the test in the future.

General discussion

Feedback is prevalent in organizational settings. Investigating reactions to feedback is important for theoretical as well as practical reasons. Reactions to feedback are included in many theories of interpersonal or intragroup behavior (Sutton et al., 2012), as the feedback process is considered an immediate predecessor of performance. That is, assuming that recipients are willing to accept and respond to it (Cawley, Keeping, & Levy, 1998; Latham, Cheng, & Macpherson, 2012), feedback can augment performance (Ilgen & Davis, 2000). It is because of this theoretical and practical relevance that reactions to feedback have been studied in such contexts as performance appraisal (Keeping & Levy, 2000), 360-degree and upward feedback programs (Brett & Atwater, 2001), computer-adaptive testing (Tonidandel et al., 2002), selection decisions (Bauer, Maertz, Dolen, & Campion, 1998), and management development (Ryan, Brutus, Greguras, & Hakel, 2000).

Yet, what has been studied in such settings is feedback preferences, reactions to different versions of the same feedback, or reactions to enhancing versus critical feedback. Lacking is a systematic investigation of reactions to another feedback dimension, enhancing versus improving. The objective of our research was to begin to address this gap in the literature.

We wondered how these two distinct types of feedback would be perceived, and how they could influence the recipients—both psychologically and behaviorally. Two broad theoretical perspectives provided the impetus for our empirical quest: self-enhancement and self-improvement. According to the self-enhancement perspective (Alicke & Sedikides, 2009; Brown & Dutton, 1995; Hepper et al., 2010), enhancing feedback will be perceived as more satisfying than improving feedback, and also as generally more satisfying than useful. In addition, enhancing feedback will exert stronger psychological and behavioral impact than improving feedback. On the other hand, according to the self-improvement perspective (Prelec & Loewenstein, 1997; Sedikides & Hepper, 2009; Taylor et al., 1995), improving feedback will be perceived as more useful than enhancing feedback, and also as generally more useful than satisfying. In addition, improving feedback will exert stronger psychological and behavioral impact than enhancing feedback.

Summary of findings

We carried out three experiments, in which we systematically manipulated aspects of enhancing and improving feedback delivery and assessment. Each experiment simulated a pertinent naturalistic setting. In Experiment 1, feedback delivery was sequential, whereas the assessment of feedback perceptions was cumulative. In Experiment 2, both feedback delivery and perception assessment were sequential; this experiment also began to examine psychological consequences (i.e., optimism) of feedback. Finally, in Experiment 3, feedback delivery and feedback perception assessment were both sequential and cumulative. More important, in this experiment a fuller range of psychological consequences were assessed (i.e., optimism, state self-esteem, state improvement, perceived ability) as well as a behavioral outcome (i.e., test persistence intentions). In addition, feedback here pertained to a single aptitude domain (also used in Experiments 1–2), whereas feedback in the prior experiments pertained to multiple domains.

In general, participants considered (a) enhancing feedback as more satisfying and useful relative to improving feedback, and (b) enhancing feedback as more satisfying than useful (Experiments 1–3). These result patterns were anticipated by the self-enhancement perspective. Nevertheless, the implications of feedback came to be more intricate, as a function of delivery time and assessment time. Participants who received enhancing feedback perceived it initially (times 1–2, Experiment 2; times 1–3, Experiment 3) as more satisfying than those who received improving feedback, but later (times 3-4, Experiment 2; times 4-5, Experiment 3) this difference vanished. Similarly, participants who received enhancing feedback perceived it initially (times 1–2, Experiment 2; time 1, Experiment 3) as more useful than those who received improving feedback, but later (times 3–4, Experiment 2; times 2–5, Experiment 3) this difference vanished. Moreover, participants who received enhancing feedback found it either less satisfying (Experiment 2) or equally satisfying (Experiment 3) over time, and found it less useful over time (Experiment 2–3); however, participants who received improving feedback found it more satisfying, albeit not more useful, over time (Experiment 2–3). Also, enhancing (compared to improving) feedback sparked greater optimism, overall satisfaction, state self-esteem, belief in aptitude ability, and intentions to persist on the test; improving feedback, on the other hand, sparked greater state feelings of improvement.

Implications

The findings have theoretical and practical implications. On the basis of cumulative assessments of feedback perceptions, psychological consequences, and behavioral outcomes, the results are congruent with the self-enhancement perspective. Participants found enhancing (relative to improving) feedback more satisfying and useful, and found enhancing feedback more satisfying than useful. Also, under the influence of enhancing (relative to improving) feedback, they reported higher optimism about future test performance, overall satisfaction, state self-esteem, belief in their ability on the relevant aptitude domain, and intentions for test persistence. Enhancing feedback fueled a multitude of processes. It elevated

feelings of satisfaction, self-esteem, and optimism; it was incorporated into participants' self-efficacious beliefs, and it instigated stronger behavioral intentions of persistence (and thus achievement) on similar future tasks. From a practical standpoint, then, enhancing feedback is likely to be more impactful than improving feedback when assessment is cumulative.

However, on the basis of sequential assessments of feedback perceptions, the results proved intricate and were congruent with neither the self-enhancement nor the self-improvement perspective. Participants found enhancing (relative to improving) feedback more satisfying and more useful in the short-term but not long-term. Alternatively, they found enhancing feedback less satisfying and less useful over time, but they found improving feedback more satisfying, albeit not more useful, over time. Time, then, qualifies the effects of cumulative assessment. Viewed from a different angle, enhancing feedback per se is less satisfying and useful in the long-term (than short-term), but improving feedback per se is more satisfying, but not more useful, in the long-term (than short-term). The results provide the fodder for subsequent theory development. From a practical standpoint, the impact of enhancing versus improving feedback will depend on its temporal assessment. It could be, for example, that people come to appreciate the value of improving feedback only over time (in accord with the self-improvement perspective), or alternatively that they only value it as it becomes more positive (in accord with the self-enhancement perspective).

Limitations and future directions

Some results from Experiments 2 and 3 are amenable to a more nuanced interpretation. In Experiment 2, differences between perceptions of enhancing and improving feedback declined as discrepancies in performance information diminished, and ultimately such differences disappeared by time 4 when participants in both feedback conditions received an identical performance score (i.e., percentile score of 92). A similar trend emerged in Experiment 3. As we mentioned above, the self-enhancement and self-improvement perspectives do not provide detailed guidance that would allow a full understanding of these temporal changes. At a low construal level, one could argue that we have simply documented that people find uniformly positive feedback more satisfying compared to feedback that starts negative before it becomes positive, and that people (in both conditions) find feedback that ends at the same level of positivity as satisfying. A more substantive interpretation would state that the low percentile scores (negative feedback) that we provided in the improvement condition implied unexpectedly weak ability, whereas successively higher scores contributed to perceptions of having reached an acceptably positive level. Regardless, the issue is whether satisfaction and usefulness ratings merely reflected participants' percentile rankings: as the ranking increased, so did satisfaction and usefulness perceptions. Indeed, the fact that participants' perceptions in the enhancement condition varied over time, in spite of percentile scores remaining at approximately the same level, would argue against a monotonic relationship between percentile scores and feedback perceptions. Limitations in our operationalization of enhancing and improving feedback may be responsible for such result patterns. Follow-up research could manipulate the starting position of feedback (i.e., high vs. low, while manipulating orthogonally upward vs. stable trajectory) or introduce a setback within the improvement sequence.

More general limitations included *structural characteristics*. We were concerned exclusively with task level feedback and delivered it in a specific format (i.e., in terms of percentile rankings). Future investigations will need to address other types of feedback (Hattie & Timperley, 2007; Kamins & Dweck, 1999), such as process level feedback (i.e., the key process presumed to underlie task performance), self-regulation level feedback (i.e., directing and monitoring one's own behavior), self or person level feedback (i.e., person-directed evaluative or affective statements), and outcome level feedback (i.e., concrete, action-directed feedback). Future investigations will also need to address internally-framed (as opposed to externally framed) feedback (MoEller et al., 2009). In addition, the findings will need to be replicated with bigger samples, and also with more diverse (e.g., gender-balanced, organizationally-derived) samples.

Another limitation concerns the assessment of *actual performance*. How does enhancing versus improving feedback influence subsequent reactions and subsequent performance in similar or different domains for which the original feedback was delivered? Do feedback satisfaction and usefulness impact differentially on motivation (e.g., goal-setting), productivity and quality of output, attitudes toward the feedback provider, as well as organizational identification and commitment? Does the impact of feedback satisfaction and usefulness vary as a function of feedback delivery and assessment in the short-run and long-run? Do the results extend to other feedback manipulations outside of the academic or achievement context? These are questions that need to be addressed by future research. Other unresolved issues will also need to be tackled. One concerns the *circumstances* under which improving versus enhancing feedback is likely to be more effective. It is possible, for example, that improving feedback is more effective when the recipient (e.g., organizational member) is an expert than a novice (Finkelstein & Fishbach, 2012) and when the rate of improvement is perceived to be higher in later sequences (i.e., recency effect) than in earlier sequences (Jones, Rock, Shaver, Goethals, & Ward, 1968). Another issue concerns *individual differences*. Is improving feedback likely to be more effective for low than high self-

esteem persons (Brown, Farnham, & Cook, 2002), low than high narcissists (Campbell, Rudich, & Sedikides, 2002), incremental self-theorists than entity self-theorists (Plaks & Stecher, 2007), individuals with mastery-approach goals than mastery-avoidance goals (Elliot & McGregor, 2001), and persons with a prevention-focus than a promotion-focus orientation (Van Dijk & Kluger, 2010)? Yet another issue concerns *cultural context*. Does culture qualify the findings we reported? Here, the scant literature is mixed, with some evidence pointing to higher impact of improving than enhancing feedback among East-Asians than Westerners (Heine et al., 2001; Heine & Raineri, 2009) and other evidence pointing to equivalent impact of enhancing and improving and enhancing feedback among East-Asian and Westerners (Gaertner, Sedikides, & Cai, 2012; Sedikides, Gaertner, & Cai, 2015).

Finally, although we set to examine in our research the relative impact of enhancing and improving feedback, such feedback may be temporally separated. Research by Gramzow, Elliot, Asher, and McGregor (2003) has indicated that initial self-enhancement (i.e., GPA exaggeration at the beginning of an academic semester) predicted improvement (i.e., better grades) at the end of the semester, controlling statistically for the relation between GPA exaggeration and initial academic performance. Wright (2000), as well as Kurman (2006), reported conceptually similar findings. It remains to be seen whether enhancing feedback predicts better performance, and whether this pattern is observed cross-culturally.

Coda

We examined perceptions, psychological consequences, and behavioral outcomes of enhancing versus improving feedback that was delivered and assessed sequentially or cumulatively. Although, overall, enhancing feedback was seen as more satisfying than useful and improving feedback was not seen as more useful than satisfying, perceptions differed as a function of short-term versus long-term delivery and assessment. In general, though, enhancing feedback was more impactful psychologically and behaviorally than improving feedback. Our findings provide the fodder for theory development and practical considerations.

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