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Feedback type as a moderator of the relationship between achievement goals and feedback reactions

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The aim of the current study is to shed new light on the inconsistent relationship between performance-approach (PAP) goals and feedback reactions by examining feedback type as a moderator. Results of a field experiment ($N = 939$) using a web-based work simulation task showed that the effect of achievement-approach goals was moderated by feedback type. Relative to individuals pursuing mastery-approach goals, individuals pursuing PAP goals responded more negatively to comparative feedback but not to task-referenced feedback. In line with the hypothesized mediated moderation model, the interaction between achievement goals and feedback type also indirectly affected task performance through feedback reactions. Providing employees with feedback is a key psychological principle used in a wide range of human resource and performance management instruments (e.g., developmental assessment centres, multi-source/360° feedback, training, selection, performance appraisal, management education, computer-adaptive testing, and coaching). The current study suggests that organizations need to strike a balance between encouraging learning and encouraging performance, as too much emphasis on comparative performance (both in goal inducement and in feedback style) may be detrimental to employees' reactions and rate of performance improvement.

The achievement goal approach to achievement motivation has emerged as a highly influential framework for understanding how people define, experience, and respond to competence-relevant situations (Elliot, 2005). Although there are some differences among achievement goal theorists regarding the exact nature and functioning of these goals, they generally agree that three achievement goals can be distinguished (e.g., Elliot & Church, 1997; VandeWalle, 1997). Mastery-approach (MAp) goals imply that the individual is focused on the development of one's competence and thus, involve an emphasis on *intrapersonal* standards. The purpose of MAp goal individuals is to learn

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and to improve on the task at hand, and ultimately, to achieve complete mastery of the task. Performance goals, in contrast, are grounded in *interpersonal* standards and may either emphasize the attainment of competence relative to others, or the avoidance of incompetence relative to others. These goals are referred to as performance-approach (PAP) goals and performance-avoidance (PAV) goals, respectively (Elliot, 2005).¹

The general picture arising from two decades of research is that MAP goals are most adaptive for learning outcomes, whereas PAV goals are consistently associated with unwanted effects (e.g., Elliot, 1999, 2005; Payne, Youngcourt, & Beaubien, 2007). For PAP goals, the story has been mixed. Some studies reported that these goals were associated with positive outcomes such as persistence, effort, task interest, and academic grades (e.g., Elliot, 1999; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Payne *et al.*, 2007). In contrast, other researchers have argued against PAP goals on the basis of their association with negative outcomes such as anxiety, distraction, disruption of behaviour, social comparison, and superficial learning strategies (Linnenbrink, 2005; Midgley, Kaplan, & Middleton, 2001).

The inconsistencies regarding PAP goal effects have troubled motivation researchers for some time now. PAP goals clearly capture an important amount of goal-related strivings in organizations and a considerable group of individuals pursue these types of goals (e.g., DeShon & Gillespie, 2005; Van Yperen, 2006). It remains unclear, however, under what conditions PAP goals represent good or bad forms of self-regulation. To solve this conundrum, several scholars have proposed that the inconsistent effects of PAP goals can be better understood by taking into account situational characteristics (e.g., Darnon, Harackiewicz, Butera, Mugny, & Quiamzade, 2007; Elliot, Shell, Henry, & Maier, 2005).

Consistent with this approach, the purpose of our study is to examine the effects of PAP goals on reactions to different types of performance feedback. Early theoretical work on achievement goals suggested that the differential effects of achievement goals on performance can only be understood by taking into account their effects on responses to performance feedback (Dweck, 1986). Thus, although performance feedback has always been attributed a central role in achievement goal theory, virtually no research has examined how different *types* of performance feedback may affect this process.

In many, if not the most, feedback settings, individuals are either directly or indirectly provided with information on their performance level in comparison to others (e.g., DeNisi & Kluger, 2000). Common sense would predict that employees pursuing PAP goals should react most favourably to comparative feedback given their natural inclination to demonstrate competence in comparison to others. This seems also to be implied by previous research showing that individuals with PAP goals seek more self-validating and less self-improvement feedback in comparison to individuals with MAP goals (Janssen & Prins, 2007). However, comparative feedback may also focus the feedback recipients' attention on meta-task processes (e.g., comparisons to others, self-presentational concerns) and divert attention away from the task at hand and increase fear of failure, particularly among PAP individuals who find interpersonal standards most important. Therefore, our main proposition is that PAP goals should lead

¹ In line with most contemporary achievement goal research and theorizing, in this article, PAP goal and MAP goal are used as labels throughout this paper (Elliot & Fryer, 2006). VandeWalle (1997) refers to these goals as *prove goal orientation* and *learning goal orientation*, respectively.

to less favourable feedback reactions when comparative rather than task-referenced feedback is provided. PAp goals may have beneficial effects on feedback reactions when task-referenced feedback is delivered that is based on an absolute standard. Task-referenced feedback provides individuals with information about their own level of task performance regardless of other individuals' performances. As such feedback has instrumental value for performance improvement without making interpersonal comparisons, this type of feedback may downplay the self-presentational concerns that may cause the negative attitudes towards feedback among individuals endorsing performance goals.

Thus, we propose and test the notion that PAp goals may produce favourable feedback reactions when task-referenced rather than comparative feedback is provided. In addition, we provide new evidence for the importance of studying feedback reactions as a mediating process variable by which achievement goals exert their influence on task performance. Specifically, as feedback reactions are assumed to play a key role in improving task performance after feedback (e.g., Kinicki, Prussia, Wu, & McKee-Ryan, 2004; Kuvaas, 2006), we test a mediated moderation model predicting that the interaction between achievement goals and feedback type will indirectly affect task performance through its effect on feedback reactions. In addressing this issue, we intend to contribute to the literature by creating knowledge about the differential effects of PAp goals on feedback reactions in the feedback process. As favourable responses towards feedback facilitate its utilization for performance improvement, a comprehensive understanding of how PAp goals can bring about positive feedback reactions is important for both theory development and practical interventions.

Achievement goals and feedback interventions

Most studies examining the role of achievement goals in feedback interventions have focused on their effects on feedback-seeking behaviour. Meta-analytic results show that MAP goals lead to more frequent feedback seeking, whereas the reverse is true for PAV goals (Payne *et al.*, 2007). Indeed, for individuals who pursue mastery goals and approach situations with a desire for learning and development, feedback has diagnostic value providing usable information for developing competence. Individuals pursuing PAV goals, in contrast, want to avoid failure, especially failure relative to others. For them, feedback might reveal that they did not attain their other-referenced standards, an outcome that they will try to avoid, or react negatively to.

In a meta-analysis by Payne *et al.* (2007), PAp goals showed no association with feedback seeking ($\rho = -.01$). Some scholars have argued that PAp goals are detrimental to feedback processes. This may originate from the fact that these goals are aimed at achieving superior competence relative to others. As such, they may focus individuals on conveying a positive image to others, rather than processing the feedback that is provided (Kanfer & Ackerman, 1989). There is also some evidence that PAp goals are related to anxiety, which could interfere with openness towards feedback (Chen, Gully, Whiteman, & Kilcullen, 2000). In contrast, others have argued that PAp goals may lead to favourable attitudes towards feedback as feedback may be instrumental for enhancing performance and thus, also for outperforming others in the long run (Kaplan & Maehr, 2007).

To date, there are only a few studies that have directly examined the role of achievement goals in relation to individuals' reactions to feedback. First, Brett and Atwater (2001) found that individuals' MAP goals were positively related to the

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perceived usefulness of multisource feedback after a feedback discussion with a facilitator, whereas PAv goals were negatively related to feedback reactions. PAp goals were not significantly related to feedback reactions. A longitudinal study by Cron, Slocum, VandeWalle, and Fu (2005) focused on the influence of undergraduates' achievement goals on negative emotional reactions to performance feedback. Their results showed that, after the first exam, students' MAp goals and PAp goals were not related to the intensity of negative emotional reactions to feedback. In contrast, PAv goals were positively related to the intensity of negative emotional reactions. Third, Colquitt and Simmering (1998) found that, both before and after feedback, MAp goals were positively related to motivation to learn whereas performance goals were negatively related to motivation to learn during a management course.

Overall, the results of these feedback studies echo the main findings within the achievement goal domain: positive effects for MAp goals but negative effects for PAv goals. PAp goal effects in feedback situations sometimes seem to follow those of MAp goals and sometimes those of PAv goals.

Performance-approach goals and feedback type

The inconsistent effects of PAp goals can be better understood on the basis of their 'hybrid' nature. On the one hand, they share the 'approach' characteristics with MAp goals. Individuals with PAp goals tend to set approach goals, put in effort and persist towards these goals with the aim of outperforming others. Thus, similar to individuals pursuing MAp goals, feedback may aid these individuals in obtaining their goals. On the other hand, pursuing PAp goals is a vulnerable form of regulation as they share the concern of self-presentation and fear of failure with PAv goals (Elliot & Church, 1997). Self-presentation concerns may lead to a maladaptive response pattern characterized by enhanced attention to conveying a positive image to others instead of processing the feedback received. Performance strivings indeed are linked to self-presentation, self-validation, and self-protection concerns (Elliot, 1999; Elliot & Moller, 2003). Thus, considering the hybrid nature of PAp goals, it can be suggested that the effects of PAp goals during feedback interventions may depend on the relative magnitude of the approach and performance strivings.

We propose that *type of feedback* may be one of the salient cues in the achievement context that determine whether the approach or performance striving of PAp goals will emerge. If individuals with PAp goals receive task-referenced feedback that provides them with information about their own level of task performance regardless of other individuals' performances, they may focus on the instrumental value of the feedback for improving performance and demonstrating competence. Such task-referenced feedback provides a psychologically safe environment minimizing self-presentational concerns and instigating more openness to feedback. Thus, task-referenced feedback can be expected to activate the 'approach' component of PAp goals, leading PAp individuals to pay more attention to the feedback itself rather than possible social consequences.

In contrast, providing comparative (also called normative) feedback may be detrimental for people pursuing PAp goals. Comparative feedback provides individuals with information on their performance level in comparison to others. Such interpersonal standards emphasize external evaluation and the possibility of failure and thus, elicit self-presentation concerns. Research indicates that feedback

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interventions focusing on interpersonal standards produce negative affective reactions (e.g., anxiety, despair, threats to self-concept, lowered self-efficacy) that may interfere with the focus on the task at hand (DeNisi & Kluger, 2000; Marsh & Roche, 1997). Therefore, comparative feedback with interpersonal standards or social comparisons can be expected to activate the 'performance' component of PAp goals, leading PAp individuals to focus on self-presentation concerns and to discard the feedback.

The rationale above accords with previous research showing that the relative activation of performance and approach components of PAp goals depends on situational characteristics, such as experienced uncertainty (Darnon *et al.*, 2007), and performance contingencies (Elliot *et al.*, 2005). We aim to extend this line of research by examining the effects of PAp goals on feedback reactions after task-referenced versus comparative feedback was received. A considerable amount of organizational feedback interventions rely exclusively on comparative feedback (DeNisi & Kluger, 2000). If being confronted with comparative feedback leads to unfavourable reactions for individuals pursuing PAp goals, then one might argue that feedback interventions lose their potential as developmental instruments, at least for a considerable group of employees.

In empirical work on achievement goals, some studies measure existing achievement goals by asking participants to provide their goal preferences whereas other studies impose achievement goals on individuals. In the present research, we use an experimental design to examine the causal effects of achievement goals on individuals' reactions on feedback. Assigning achievement goals provides a stronger basis for causal inference than simply asking participants to indicate their preferences for the different types of achievement goals. Individuals' goal preferences may reflect personality and situational characteristics that are not accounted for in the analysis. Specifically, in the current study, we experimentally examined the effects of PAp goals relative to MAp goals in a realistic career assessment setting using a diverse employee sample. We used MAp goals as an anchor to evaluate the effects of PAp goals because the former goals have yielded a consistent pattern of beneficial effects in feedback research. We believe that both PAp goals and MAp goals are congruent with the current context. In the present study, participants volunteered to complete a work simulation task with the aim of obtaining rather than avoiding feedback about their work-related skills. In this context, we provided individuals with either task-referenced or comparative feedback (see Method, for further details). On the basis of the arguments previously developed, we expected that type of feedback (task-referenced vs. comparative) moderates the effects of approach goals (performance vs. mastery) on feedback reactions. Specifically, *Hypothesis 1* states:

Hypothesis 1: Individuals who pursue PAp goals and receive comparative feedback will react more unfavourably to feedback than PAp goal individuals who receive task-referenced feedback, and MAp goal individuals who receive either comparative or task-referenced feedback.

Feedback reactions and performance

Ilgen, Fisher, and Taylor's (1979) feedback process model has served as foundation of almost all later feedback models (e.g., Ilgen & Davis, 2000; Kinicki *et al.*, 2004; Taylor, Fisher, & Ilgen, 1984). This model posits that it is of key importance to gain a better understanding of the intermediate psychological processes that are taking place between an individual's reception of a feedback message and his/her subsequent behavioural response to the feedback. Thus, Ilgen *et al.* (1979) proposed that the effect of feedback interventions on the feedback recipient's response is mediated by the initial reactions of

the feedback recipient. Only when employees react positively, they are likely to change their behaviour in response to the feedback message. In line with this model, various studies have shown that favourable feedback reactions lead to improved job performance (Brett & Atwater, 2001; Kinicki *et al.*, 2004; Kuvaas, 2006; O'Reilly & Anderson, 1980). The relationship between feedback reactions and performance is based on the self-consistency theory of Korman (1970, p. 32): 'Individuals will be motivated to perform on a task or a job in a manner which is consistent with the self-image with which they approach the task or job situation'. Accordingly, we expect participants to respond to feedback interventions in a way that is consistent with their initial reaction to the feedback. A feedback intervention that instigates a favourable reaction is more likely to engender a positive behavioural response to the feedback message, whereas the opposite tendency occurs when individuals believe feedback is an inaccurate portrayal of their performance.

Hypothesis 2: The more favourable feedback reactions, the more participants will improve their task performance.

In line with these mediation models of the feedback process (e.g., Kinicki *et al.*, 2004), we expect that the interaction between achievement goals and feedback type (Hypothesis 1) will affect task performance through its effect on feedback reactions (Hypothesis 2). As we have no strong reasons to expect that this interaction will have a *direct* effect on task performance, we expect only an indirect effect. In terms of a recent framework for testing mediated moderation (Edwards & Lambert, 2007), the model tested is a *first-stage moderation model* without an interaction variable as depicted in Figure 1.

Hypothesis 3: The interaction effect of achievement goals and feedback type will indirectly affect task performance through its effect on feedback reactions.

Method

Participants and procedure

The sample consisted of 939 employees from different organizations (58% male, 42% female). Their age ranged from 16 to 60 years ($M = 35.5$ years, $SD = 9.7$).

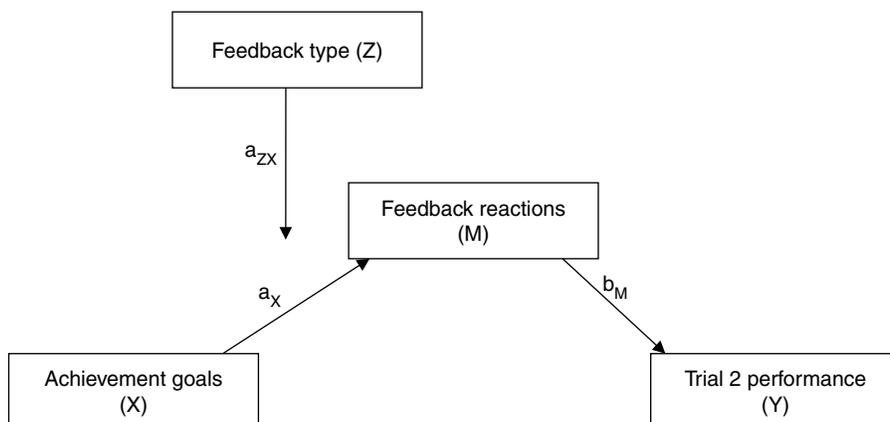


Figure 1. Hypothesized first-stage moderation model effects.

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Mean working experience was 12.8 years ($SD = 9.8$) in their company and 5.3 years ($SD = 5.7$) in their current position. The majority (73.1%) held, at least, a bachelor degree and 29.9% had earned an advanced or professional degree.

A work simulation task was posted on the website of a Belgian governmental service for employment and vocational training. This website contains various freely available links with on-line courses and self-assessment instruments for work-related skills (e.g., application skills, teamwork skills, computer knowledge, financial courses, and negotiation skills). Given its official and free content, the website is frequently and spontaneously visited by applicants and employees looking for training and coaching in various work-related competencies. The work simulation task was advertised as an instrument that enabled employees to obtain a better picture of their work-related skills (e.g., decisiveness, information management, coordinating, and problem awareness). Given that this instrument was effectively used by the governmental agency as a career assessment tool on their website, there was no cover story to 'lure' participants into taking part in the field experiment. People who chose to do so were genuinely interested in feedback about their work-related skills and agreed to take part in an experiment in exchange for feedback. Upon completion of a short questionnaire measuring demographic variables, people received a random identifier that gave access to the webpage with the web-based work simulation.

Given the problems typically associated with the use of web-based data collection, the data obtained were carefully screened. As recommended by Stanton and Rogelberg (2001), the following precautions were taken: first, only individuals that entirely completed the work simulation and all measures were included. Furthermore, responses mismatching a master list with valid identifiers were discarded. Finally, when multiple identical responses were detected in the data, all data in the multiple-response group were dropped.

Task

Work simulations are frequently used in organizations for development purposes as they offer employees meaningful feedback to improve their work-related behaviour. We used a work simulation that was previously used to study feedback mechanisms and achievement goals in other employee samples (Anseel & Lievens, 2006; Anseel, Lievens, & Schollaert, 2009; Van Yperen, Elliot, & Anseel, 2009). The work simulation consists of 10 memos and letters addressed to a General Manager of a hypothetical paint manufacturing plant. The exercise simulates, as closely as possible, the key features of an actual e-mail software program (e.g., the opportunity to read and respond to e-mails, ongoing access to organizational charts, appointment calendars). The e-mails cover a broad range of problems, including union difficulties, logistic issues, machine breakdown, dealing with city officials, and employee absenteeism. Participants received a careful and thorough set of instructions on the nature of the task and how to complete it.

For each e-mail message, participants were provided with four response options to the message, and they were asked to evaluate the effectiveness of each option on a 1 (*very ineffective*) to 5 (*very effective*) scale. These responses were then scored on four work-related skills (problem awareness, coordinating, information management, and decisiveness). After completing the work simulation, participants immediately received genuine informative feedback about their work-related skills. A short feedback report was presented, including their feedback scores (see below) on the four work-related

skills and a brief explanatory text. These texts outlined in general terms the behaviour of individuals who tend to score very high on these work-related skills. An example of the feedback report is included in Appendix.

As it was our aim to examine whether performance on the web-based work simulation task improved in relation to feedback reactions, participants also completed an alternate version of the work simulation task that could be used to assess performance improvement. This alternate version was developed on the basis of a cloning procedure (Lievens & Anseel, 2007). Various tests of the equivalency of these two alternate versions in other samples showed there were no significant differences between the overall task scores across the alternate forms (Cohen's $d = 0.03$).

Design and experimental manipulations

To test Hypothesis 1, we conducted a 2 (Achievement goal: Mastery-approach vs. Performance-approach) \times 2 (Type of feedback: Comparative vs. Task-referenced) factorial design with feedback reactions as a dependent variable. To test Hypothesis 2, we regressed Trial 2 Task Performance on feedback reactions while controlling for Trial 1 Task Performance. Mediated moderation was tested using procedures outlined by Edwards and Lambert (2007) with achievement goals as independent variable, feedback type as moderator in the relation between achievement goals and feedback reactions, feedback reactions as mediator and task performance as dependent variable. Using bootstrapping procedures and controlling for Trial 1 Performance, we tested whether the indirect effect of achievement goals through feedback reactions on Trial 2 Task Performance was different for feedback type.

After completing Trial 1, participants were reminded that they were going to work on Trial 2. They were told that before starting the second trial they would receive feedback about their performance on Trial 1. However, before receiving feedback they received one of two achievement goal instructions. More specifically, participants were asked to adopt a specific goal when completing Trial 2. Then, one of the two approach goals was presented (see also, Van Yperen, 2003): a learning or MAP goal, grounded in an *intrapersonal* standard (To do better than in Trial 1), or a performance goal, which is grounded in an *interpersonal* standard (To do better than most other participants in Trial 2). Following this manipulation, the participants elaborated on the goal that was assigned to them in order to intensify the achievement goal manipulation. Specifically, participants were asked to type what they would think and how they would feel if had reached their assigned goal (Van Yperen *et al.*, 2009). After listing their goal-relevant thoughts and feelings, the goal manipulation was again presented, and then participants received feedback about their performance on Trial 1. Goal manipulations were provided only after completing Trial 1 to avoid that goal manipulations would affect Trial 1 Performance and thus, would also affect the feedback score participants would receive.

After the achievement goal manipulation, participants were randomly assigned to one of two feedback type conditions. In the task-referenced feedback report, the feedback scores ranged from 1 to 20 indicating how many response options the participants solved effectively. We chose the 1–20 scale as this is consistent with the college grades that students typically receive in this country. Specifically, it is generally accepted that 16 is a very good score (*summa cum laude*), 14 is a good score (*cum laude*), and 12–10 means just passing the test. Thus, our scoring system provided an easily interpretable task-referenced score to participants, indicating how well they

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did (e.g., responses effectively solved) on this work simulation. There were no other anchors provided as this scale makes use of implicit 'cultural' anchoring, as described above. Participants in the comparative feedback condition, instead, received a normative score for each managerial skill comparing their performance to other participants that had previously taken the test. For instance, participants received the following score for coordinating: 'You scored in the 70% percentile for the competency coordinating. This means that you scored better on this competency than 70% of individuals taking this test before you'. This score was accompanied by exactly the same expert texts as in the task-referenced conditions (see also Appendix). It is important to note that these percentile scores were computed on the basis of the actual scores that were collected during previous studies with this instrument in other, similar samples. Thus, given that this instrument is used in a real career assessment setting, no bogus feedback could be provided. Both the task-referenced and comparative feedback scores were genuine and provided the best picture of the participants' work-related skills that we were able to give on the basis of their performance on Trial 1.

We believe that in designing our feedback system, we were able to ensure that participants received real and genuine feedback on their managerial skills, and at the same time this feedback had diagnostic value so that participants could learn from it. Therefore, the feedback report consisted of a score that was variable, depending on prior performance and thus, was different for each participant. However, providing only outcome feedback by feeding back raw scores may not be very diagnostic. Therefore, in addition to this outcome feedback, all participants (in both the feedback conditions) received a short standardized text describing how an expert behaves on this specific performance dimension. This was the same for all participants regardless of condition (see also, Anseel *et al.*, 2009). By combining outcome feedback with guiding expert information, we aimed to create a feedback report that was diagnostic in signalling incorrect behaviour and constructive when trying to enhance performance. For instance, when participants got a score of 4/20 or lower than 50% of other participants, they are probably aware they are doing something wrong. The expert description then provided them with diagnostic, remedial feedback on how to improve their performance.

After completing the measures of feedback reactions, participants completed Trial 2 of the work simulation. When they had completed Trial 2, participants were asked to complete a manipulation check. Then, participants were provided with full feedback about their scores on both versions of the assessment instrument.

Measures

Feedback reactions

Participants completed five feedback items on a seven-point scale after they had received feedback on all competencies. Theoretical work in the feedback domain suggests that the construct of feedback reactions covers at least three different aspects (Anderson & Jones, 2000; Swann & Schroeder, 1995): affective reactions, cognitive reactions, and conative reactions. Due to practical constraints, we had to use a short five-item measure wherein we tried to cover each of the aspects of the feedback reactions construct. Thus, the items assessed participants' perceptions of the accuracy of the feedback message (cognitive), the usefulness of the feedback for improvement (conative), and their overall satisfaction with feedback (affective). Each of the items has been used in previous feedback research (Keeping & Levy, 2000; Kinicki *et al.*, 2004;

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Korsgaard, 1996; Tonidandel *et al.*, 2002). The items were ‘The feedback I received was an accurate evaluation of my performance’, ‘I believe the feedback received was correct’, ‘The feedback I received helped me learn how I can improve my performance’, ‘Overall, I was satisfied with the feedback I received’, ‘I felt quite good with the performance feedback I received’. An exploratory factor analysis showed that all items loaded on one factor. Internal consistency for this scale was .82.

Manipulation checks

To check the goal manipulation, participants were asked (see also, Van Yperen, 2003): ‘Before you started with Trial 2 of the work simulation, a specific goal was recommended for you to pursue during Trial 2. Which specific goal was recommended?’ Next, participants indicated the achievement goal that they were recommended to pursue. To check the feedback type manipulation, participants were asked: ‘Before you started with Trial 2, you received feedback on your performance on Trial 1. What was your feedback score?’ Next, participants could type their answer in a text box. In addition, the participants had to indicate on a five-point scale the extent to which they found their assigned goals attainable (*not at all to very*).

Results

Manipulation check and preliminary analyses

Inspection of the manipulation checks revealed that 27.3% ($N = 256$) did not report the correct manipulation (i.e., the exact feedback score they had received or the exact goal they had to pursue). This substantial proportion of the participants for which the manipulations were not successful can be explained by the web-based setting in which these participants completed the work simulation. In web-based research, participants feel less obliged to follow instructions and pay less attention to the information provided (Stanton & Rogelberg, 2001). This is one of the main drawbacks of using web-based research strategies. To counter this problem, we excluded all participants that did not accurately respond to the manipulation checks from further analyses.² Hence, the final sample consisted of 683 participants.

To check whether goal attainability was similar across conditions, we conducted a 2 (Achievement goal: Mastery-approach vs. Performance-approach) \times 2 (Type of feedback: Comparative vs. Task-referenced) ANOVA with goal attainability as a dependent variable. There were no significant main effects of achievement goal, $F(1, 679) = 0.92$, $p > .05$, $\eta^2 = .00$ and feedback type, $F(1, 679) = 3.57$, $p > .05$, $\eta^2 = .01$ nor a significant achievement goal by feedback type interaction effect, $F(1, 679) = 2.14$, $p > .05$, $\eta^2 = .00$.

To test whether the feedback score participants obtained potentially affected goal attainability differently across conditions, we conducted a hierarchical regression with feedback scores in the first step, the two-way interaction effects between the experimental manipulations and feedback scores in the second step and the three-way interaction effect between the manipulations and feedback scores in the third step. Results showed a significant main effect of feedback scores, $F(3, 679) = 22.41$, $p < .01$,

²Analyses using all participants yielded exactly the same results.

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$R^2 = .09$ on goal attainability. The higher participants' feedback scores after Trial 1, the more attainable they perceived their goal ($b = 0.29, p < .01$). However, the two-way interaction effects, $F(2, 677) = 0.99, R^2 = .00, p > .05$, nor the three-way interaction effect, $F(1, 676) = 2.36, p > .05, R^2 = .00$, added additional variance. Thus, the relationship between feedback scores and goal attainability was the same across conditions.

Descriptive statistics and correlations are reported in Table 1. As can be seen, performances on Trial 1 (T1) and Trial 2 (T2) were significantly correlated ($r = .53, p < .01$). Feedback reactions ($r = .35, p < .01$) were correlated with T1 performance, demonstrating that employees reacted more favourable to higher performance feedback scores as is commonly observed in the feedback literature (e.g., Bell & Arthur, 2008; Woo, Sims, Rupp, & Gibbons, 2008). Results further showed that there were no significant differences in T1 performance across the four conditions supporting the random assignment of participants to conditions.

Table 1. Means, standard deviations, and correlations

	M	SD	1	2	3	4	5
1. Age	34.81	9.66					
2. Educational level	4.47	1.28	-.15**				
3. Experience	12.14	9.66	.95**	-.28**			
4. Trial 1	13.47	1.20	.07	.06	.11**		
5. Trial 2	14.48	1.32	.12**	.09*	.12**	.53**	
6. Feedback reactions	5.04	1.06	.06	-.10**	.08*	.35**	.28**

Note. $N = 683$; * $p < .05$; ** $p < .01$.

Tests of hypotheses

Hypothesis 1 predicted an interaction effect between approach goals and feedback type such that participants pursuing PAp goals who received comparative feedback would show more unfavourable feedback reactions than participants in the other three experimental conditions. To test this hypothesis, we conducted a 2 (Achievement goal: Mastery-approach vs. Performance-approach) \times 2 (Type of feedback: Comparative vs. Task-referenced) ANOVA with feedback reactions as a dependent variable. We included T1 performance scores as covariates. The main effects of achievement goal, $F(1, 677) = 9.81, p < .01, \eta^2 = .02$ and feedback type, $F(1, 677) = 19.70, p < .01, \eta^2 = .03$ were qualified by a significant achievement goal by feedback type interaction effect, $F(1, 677) = 5.59, p < .05, \eta^2 = .01$. As can be seen in Figure 2, Hypothesis 1 was supported. Planned comparisons showed that feedback reactions in the PAp/comparative feedback condition were significantly lower than feedback reactions in the PAp/task-referenced feedback condition ($p < .01$). In terms of effect size, the difference between the two PAp goal conditions was $d = 0.56$, which constitutes a moderate effect size. Feedback reactions in the PAp/comparative feedback condition were also lower than in the two MAP conditions ($p < .01$), whereas there were no significant differences between these two conditions ($p > .05$).

Hypothesis 2 predicted feedback reactions would affect Trial 2 performance when controlling for Trial 1 performance. By including Trial 1 performance scores in the first step of the regression analyses, we examined the effects of feedback reactions on that

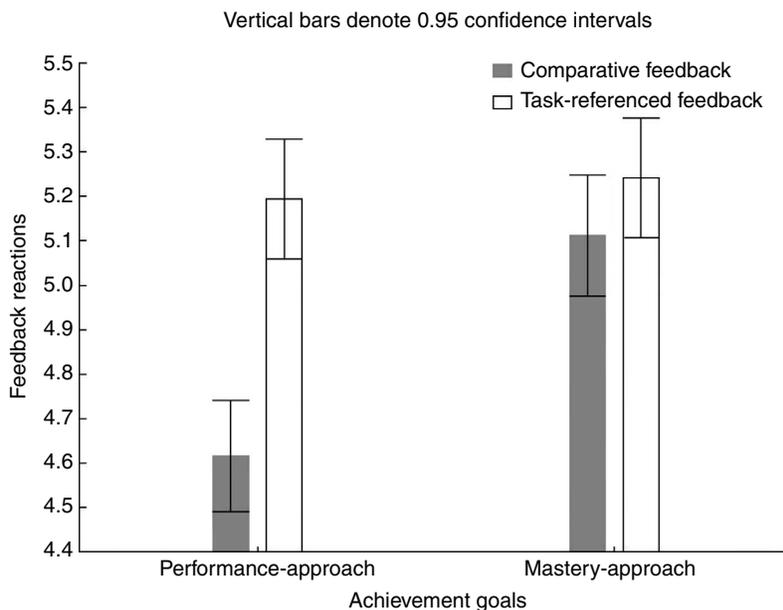


Figure 2. Effect of achievement goals and feedback type on feedback reactions.

part of Trial 2 performance that is not predicted by Trial 1 performance (i.e., performance improvement, see also, Atwater & Brett, 2005). Results showed that feedback reactions were a significant predictor of Trial 2 performance ($b = 0.13$, $\Delta R^2 = .01$, $p < .01$) when controlling for Trial 1 performance. Thus, Hypothesis 2 was supported.

Hypothesis 3 predicted an indirect effect from the interaction effect between achievement goals and feedback type on Trial 2 performance through the mediator, feedback reactions. We again controlled for Trial 1 performance in all analyses as this variable influences both the mediator (feedback reactions) and the dependent variable (T2 performance). To test this mediated moderation, we used the procedures and the macro described in Edwards and Lambert (2007) for testing a Stage 1 moderation model with feedback type as the moderator. Our hypothesis only concerned the test whether the indirect effect from achievement goal on Trial 2 performance through feedback reactions was significantly different for the two levels of the moderator feedback type. Edwards and Lambert (2007) developed a bootstrapping procedure to test the difference between indirect effects at the different levels of the moderator. All continuous variables were mean centred prior to analysis. Results of the mediated moderation analysis are reported in Table 2. The upper part of the table presents the results of the first step of the analysis wherein the mediator (feedback reactions) is regressed on the main and interaction effects of achievement goal and feedback type. Next, we proceeded by regressing the dependent variable (T2 Performance) on the main and interaction effects of achievement goal and feedback type, and the main effect of the mediator (feedback reactions). As can be seen in the lower part of Table 2, there was no direct effect of the main or interaction effects of achievement goal and feedback type on Trial 2 performance. However, the mediator, feedback reactions, significantly predicted Trial 2 performance. As noted by Edwards and Lambert (2007), a mediated moderation model does not necessarily imply a direct effect of the interaction on the

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Table 2. Coefficient estimates of the first-stage moderation model

Predictor	Mediator variable model (DV = feedback reactions)			
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Trial 1 performance (control)	0.30	.03	9.70	.00
Achievement goal (a_X)	0.45	.11	4.21	.00
Feedback type (a_Z)	0.54	.10	5.26	.00
Goal \times feedback type (a_{XZ})	-0.39	.15	-2.57	.01
	Dependent variable model (DV = Trial 2 performance)			
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Trial 1 performance (control)	0.55	.04	14.46	.00
Achievement goals (b_X)	0.05	.13	0.39	.70
Feedback type (b_Z)	0.09	.12	0.71	.48
Feedback reactions (b_M)	0.12	.04	2.64	.01
Goal \times feedback type (b_{ZX})	0.04	.17	0.21	.84

Note. $N = 683$. Entries are unstandardized final-step coefficients. The mediator variable model tests the following equation, $M = a_0 + a_X X + a_Z Z + a_{XZ} XZ + e_M$. The dependent variable model tests the following equation, $Y = b_0 + b_X X + b_M M + b_Z Z + b_{XZ} XZ + e_Y$. The term $b_{MZ} MZ$ was not included in these models, as the first-stage moderation model does not include an interaction between the moderator, achievement goals, and the mediator, feedback reactions, in predicting the dependent variable (Edwards & Lambert, 2007).

dependent variable. Therefore, we tested the indirect effects from achievement goal to Trial 2 performance for task-referenced and comparative feedback separately. As can be seen in Table 3, the indirect effect of achievement goal on Trial 2 performance was stronger for comparative feedback than for task-referenced feedback. This is evidenced by a significant difference between the two indirect effects ($p < .05$). As both direct effects were similar for the PAP and MAP goals, not only the indirect effects, but also

Table 3. Analysis of simple effects

Moderator variable	Stage		Effect		
	First	Second	Direct	Indirect	Total
Comparative feedback	.54**	.12**	.09	.06**	.15
Task-referenced feedback	.14	.12**	.09	.01	.10
Difference	.40**	.00	.00	.05**	.05**

Note. $N = 683$. Table entries are the results of the simple effects analysis of a first-stage moderation model with feedback type as a moderator variable. For rows labelled Comparative feedback and Task-referenced feedback in the left panel, entries are simple effects for the different paths from achievement goals (independent variable) to feedback reactions (mediator) computed using coefficient estimates from Table 2. Given that we test a first-stage moderated model, simple effects for the second stage were the same for comparative and task-referenced feedback. For the right panel, we tested the indirect effects from achievement goal to Trial 2 performance for task-referenced and comparative feedback separately, given that there were no differences in direct effects (see Table 2). Tests of differences for the indirect and total effect were based on bias-corrected confidence intervals derived from bootstrap estimates; ** $p < .01$.

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the total effects were significantly different ($p < .01$). This result indicates that the interaction effect between achievement goals and feedback type indirectly affected Trial 2 performance with lower Trial 2 performance scores for PAp goals combined with comparative feedback.

Finally, in an exploratory sense, we examined whether the achievement goal and feedback manipulations interacted with feedback scores. Although achievement goal theory seems to suggest that individuals pursuing PAp goals would respond more favourable to higher feedback scores and less favourable to lower feedback scores than individuals pursuing MAp goals (Ilgen & Davis, 2000), previous research did not report meaningful interactions between achievement goals and feedback scores in predicting feedback reactions (Brett & Atwater, 2001). We explored possible moderating effects by feedback scores by conducting a hierarchical regression analysis with feedback reactions as a dependent variable. In the first step, we included the main effects of achievement goals, feedback type, and feedback scores (which is equal to the T1 scores). In the second step, we included the three two-way interaction terms and in the third and final step we included the three-way interaction term. In line with previous research, the set of two-way interaction effects ($\Delta R^2 = .01, p > .05$) and the three-way interaction term ($\Delta R^2 = .00, p > .05$) did not explain any significant additional variance in feedback reactions. Apparently, whether people received low or high feedback scores made little difference for the observed effects of achievement goals as also found by Brett and Atwater (2001).

Discussion

The aim of this study was to address the inconsistent effects of PAp goals on feedback reactions. We hypothesized that PAp goals should lead to favourable feedback reactions when task-referenced feedback rather than comparative feedback is provided. The results of our study support our basic proposition. We found that PAp goals yielded equally favourable feedback reactions as MAp goals when *task-referenced* feedback was provided. However, when participants received *comparative* feedback, PAp goals led to more unfavourable feedback reactions than MAp goals. Furthermore, as feedback reactions were predictive of performance improvement, we found support for a mediated moderation model: the interaction effects of achievement goals and feedback type indirectly affected task performance through feedback reactions. Although significant, the effect sizes for the indirect effects on performance appeared quite modest. However, the current findings provide an incremental step in research identifying the conditions under which the effects of PAp goals may turn out to be positive or negative. Specifically, our results suggest that type of feedback might be one of the situational characteristics that may partly explain previous inconsistent results regarding the effects of PAp goals on reactions. At first sight, the current results seem to challenge previous assumptions that PAp goals particularly stimulate interest in self-validating feedback instead of self-improvement feedback (e.g., Janssen & Prins, 2007). However, it should be noted that previous research has looked at the effects of achievement goals on feedback-seeking behaviour, whereas the current study examined achievement goal effects on feedback reactions and performance. Our results suggest that the type of feedback that individuals seek might not always offer the best medicine to remedy performance deficiencies. Seeking feedback and responding to feedback seem to be two different processes.

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Our results do not only contribute to the achievement goal literature but may also bring more insight to current theories of feedback interventions. One of the key implications of the feedback intervention theory (FIT; Kluger & DeNisi, 1996) is that comparative feedback is detrimental for the effectiveness of feedback interventions as it directs attention to meta-task processes (e.g., comparisons to others), away from the task at hand. The findings of the present study may add some new insight to the predictions of FIT. Comparative feedback may have negative effects especially for employees with PAp goals. Our findings showed that, for employees pursuing a MAp goal, there were no significant differences in feedback reactions between the comparative feedback and the task-referenced feedback conditions. Thus, it may be that the focus on learning and development induced by mastery goals compensates for the potential detrimental effect of comparative feedback. Results of a recent study even suggest that employees endorsing MAp goals show *most* performance improvement when they receive comparative feedback (Chen & Mathieu, 2008). In contrast, employees with performance goals may be more vulnerable for the meta-task information inherent in comparative feedback and, accordingly, react negatively to this type of feedback. Thus, the general recommendation from FIT not to give comparative feedback may need some refinement if further research confirms our findings that comparative feedback is problematic mostly for employees pursuing PAp goals.

Practical implications

Practically speaking, our conclusion that PAp goals may sometimes be an adaptive form of self-regulation for feedback interventions is consistent with developments in educational psychology. Indeed, on the basis of their initial findings several educational researchers cautioned against performance goals in educational practice and recommended to exclusively promote mastery goals in school policies (e.g., Ames, 1992; Maehr & Midgley, 1991). In the mid-nineties, a revised perspective on achievement goals emerged (Elliot, 1999) in which it is acknowledged that PAp goals may also have positive effects on learning and performance in educational contexts. In the organizational sciences, similar managerial recommendations have been made to exclusively stimulate mastery goals, and even to use the pursuit of mastery goals as a selection criterion in organizations. Obviously, this should not imply that PAp goals should be completely eschewed in organizations. Instead, on the basis of the resulting feedback reactions, it seems that both MAp and PAp goals may be beneficial strivings during the feedback process and thus, organizations and managers may want to stimulate both goals. Our findings highlight the importance of designing feedback and development programmes that include well-aligned design features and fit individuals' attributes. Specifically, while employees' mastery goals may also need to be supplemented by incorporating task-referenced feedback, task-referenced feedback may be particularly beneficial in complementary situations that emphasize performance goals (i.e., programmes which encourage employees to perform well and not merely acquire new knowledge or skill sets). Providing employees with feedback is a key psychological principle used in a wide range of human resource and performance management instruments (e.g., developmental assessment centres, multi-source/360° feedback, training, selection, performance appraisal, management education, computer-adaptive testing, and coaching). Thus, our study suggests that in these settings managers and practitioners need to strike a balance between encouraging learning and encouraging performance, as too much emphasis on comparative performance (both in

goal inducement and in feedback style) may be detrimental to employees' reactions and, to a lesser degree, rate of performance improvement. Of course, from a practical point of view, it is not always possible to customize feedback messages to employees' different approach goals. For instance, equal treatment and procedures for all employees are important aspects of many performance management approaches in large organizations. The current results will be especially helpful in the developmental programmes that typically follow performance appraisal, such as in feedback coaching sessions or training programmes that offer more opportunities to fit individual attributes (see Kozlowski *et al.*, 2001).

Limitations

We believe a number of limitations deserve specific attention as some caution is needed when interpreting the results. First, due to the on-line research setting, we had no control over self-selection and participant drop-out. By assigning participants randomly to one of the four experimental conditions, we tried to counter this potential limitation. However, it might be that due to the sampling strategy using a freely available on-line work simulation, a disproportionate number of employees pursuing mastery goals might have participated in the current study. Therefore, more research examining these issues in other samples is needed. Second, special attention is needed for the context wherein our experiment was set up. Our study was situated in a career assessment context. This context provided a realistic and meaningful setting to give participants task-referenced and comparative feedback and examine their reactions to the feedback. However, this career assessment setting has a number of characteristics that may bring the instrumental value of feedback to the forefront and thus, are congruent with the positive 'approach' component of PAP goals. For instance, in contrast to performance appraisal feedback that is often directly linked to incentives or other rewards, career assessment feedback may have no direct financial or organizational consequences that potentially lead to less self-presentation concerns. Feedback is also mostly provided in private. As such, there is no audience to demonstrate competence to and there are few chances of revealing deficiencies to others. Furthermore, the web-based context lacked some elements that are often part of other feedback interventions (e.g., multiple dynamic foci embedded in a social context, social comparison processes, personal preferences for tasks and jobs), which may limit the generalizability of the results. It should be noted that, even in this career assessment context, we found that PAP goals led to less favourable reactions after comparative feedback than after task-referenced feedback, supporting our arguments regarding the impact of individuals' achievement goals. However, it is clear that more research is needed to examine interactions between achievement goals and feedback type in other contexts such as performance appraisal, 360° feedback, assessment and development centres, and training. Such studies may be very helpful for practitioners when designing feedback reports tailored to the specific characteristics of the feedback intervention and context.

Third, we manipulated employees' achievement goals so that they pursued one dominant goal. However, pursuing a dominant achievement goal does not necessarily imply that people do not simultaneously or alternately pursue multiple goals. Similarly, in experimental settings, individuals may consider their personally adopted achievement goals important as well. In any case, in experimental research, the distinct effects of achievement goals imposed on the participants are well-established (e.g., Chen & Mathieu, 2008; Senko & Harackiewicz, 2005). Future research may

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examine the effects of multiple goals, also including PAv and mastery-avoidance goals that were not addressed in the current study, on feedback type on feedback reactions.

Fourth, we confined ourselves to one type of feedback reactions and objectively measured task performance as dependent variables. Future research may include additional outcomes and responses to feedback such as the depth of feedback processing, the attributions feedback recipients make, and changes in self-esteem, self-efficacy, goal setting, effort, and job performance after receiving feedback.

Conclusion

In recent years, the achievement goal approach has become an important motivational framework for explaining achievement outcomes in organizations. The present research clarifies the role of PAp goals in feedback reactions. Relative to MAp goal individuals, PAp goal individuals responded more negatively to comparative, or normative, feedback but not to task-referenced feedback. These interactive effects indirectly affected task performance through their effect on feedback reactions. At a broad level, these findings contribute to a better understanding of the functioning of PAp goals in employees and suggest that for PAp goal individuals, it is particularly important that task-referenced feedback is provided rather than comparative feedback.

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Appendix

Example of feedback report for 'Coordinating' skills

Coordinating

Definition. This score indicates whether you are able to organize the activities of your co-workers and are able to allocate the necessary resources for these activities

Expert. People who score high on this skill typically give specific instructions to their co-workers. They schedule appointments and meetings to promote the productive use of time. They emphasize efficiency by establishing efficient work routines and by integrating multiple tasks

Your score. 15/20
