IMPACT OF ACHIEVEMENT GOALS, NORMATIVE FEEDBACK AND TASK REQUIREMENTS ON PERFORMANCE

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ABSTRACT

The impact of mastery versus performance goals on performance outcomes has been largely researched, but few studies in the achievement goal paradigm have analyzed how feedback influences this dynamics. Using an innovative methodology, our research investigated how positive versus negative normative feedback influences the effect of approach achievement goals on response rapidness and accuracy in a competition-framed task. We also analyzed how individuals execute the same task, when given only task specific indications, with no goal framing or normative feedback. Our results indicated that for the accuracy dimension, goal framing and feedback have a significant effect, with the valence of feedback differentially influencing mastery versus performance goals. Another important finding refers to the high accuracy level of participants who were only guided by task-specific demands, leading us to debate the role of achievement goals versus procedural goals on performance outcomes.

KEYWORDS: achievement goals, normative feedback, response accuracy and rapidness.

The impact of feedback upon performance has long been a subject of interest in research regarding determinants and contingencies which influence human motivation and performance (Bandura, 1996; Bandura & Simon, 1977; Locke &

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Bryan, 1966; Locke, 1967; Miller, 1965; Wright, 1996). As feedback offers valuable input on progress regarding task completion and evaluates the quality of individual actions (Kluger & DeNisi, 1996, 1998), its link with achievement goals represents a relevant matter. The importance of this relation is sustained by a host of studies that did not find a direct effect of feedback alone on performance and pointed out that outcome or process representations of what an individual strives for (his goals) are essential for the manner in which performance feedback is processed (Balcazar, Hopkins, & Suarez, 1986; Latham, Mitchell, & Dossett, 1978; Warner & Mills, 1980).

We believe this mechanism involves a two-way influence between feedback and goals. On the one hand, the feedback individuals receive can validate, modify or invalidate the goals they set for themselves or the goals that are set by other entities (parents, teachers, schools, employers, etc.). For instance, highly negative comparison feedback (e.g., “you were the worst in the class”) can annul a newly set mastery goal and transform it into a performance goal. On the other hand, high relevance goals can reduce the impact of negative feedback on performance or increase that of positive feedback, or simply facilitate the selection of relevant information from the feedback message, without attending to the negative valence (the experience of flow, see Csikszentmihalyi, Abuhamdeh, & Nakamura, 2005).

In real-life settings goal contents and processes do influence how feedback is processed, but multiple performance contingencies (previous experience with a task, emotional state, perceived importance of a task, existing social support in approaching the task) also contribute to this impact, amounting to a cumulative effect. Therefore, it is very difficult in such situations to determine the mechanisms through which each variable influences performance.

Feedback always points out one’s standing between a present level of performance and a desired/expected level of achievement, usually expressed through criterion standards of performance. Feedback can reflect a negative discrepancy (you did not reach the criterion standards), a positive standing (you surpassed the criterion standards) or informs individuals that they accomplished the requirements according to the criterion standards. A present level of performance can be variously defined through: (a) objective performance indicators – performance relevant process or outcome behaviors for which frequency, duration, or intensity can be recorded, thus indicating task progress; or (b) performance contingencies - perceived self-efficacy, outcome expectations, task interest or perceived difficulty. The expected level of performance can refer to self-esteem or ego involvement contingencies (Harackiewicz & Elliot, 1993; Rawsthorne and Elliot, 2003; Sansone, Sachau, & Weir, 1989), but most frequently reflects normative expectations which are considered as having higher relevance for competence development (Elliot, 1999; Senko & Harackiewicz, 2002). The role of performance feedback has been analyzed both from a discrepancy reduction (Carver & Scheier, 1998; Powers, 1973) and a discrepancy creation perspective.
Both approaches agree that the goals individuals hold are an important tool in processing and evaluating feedback.

**Normative comparison feedback**

As previously mentioned, performance feedback can refer to very complex dimensions of evaluation. In the present study we focus on normative comparison feedback, which we define as contrasting an individual’s performance (progress wise, during the task or overall standing, after task completion) against the performance of a normative group. This type of feedback makes use of social comparison mechanisms (Festinger, 1954; Suls & Wheeler, 2000, 2005) and we see it as having a major impact on choice, pursuit, maintenance, and action implementation of achievement goals. Individuals often use normative cues for self-evaluation, as from a social comparison perspective they encompass information with high diagnostic value for competence development and demonstration.

An important aspect we took into account in our research is derived from an observation Elliot and Moller (2003) made on the viability of using normative group comparisons in experimental research on achievement motivation: “in many instances, the ‘other’ that one strives against is simply a large, anonymous group of persons (e.g., standardized norms) that functionally represent abstract numbers rather than concrete individuals” (p. 345). An interesting question derives from this observation: how do individuals process such feedback when the comparison criterion, the “other” is clearly specified? In most ecological contexts people receive normative feedback that compares their performance to that of specific colleagues, students, teammates. We believe that the construction of an experimental setting where the “competitor” is clearly defined, so that comparison feedback relates individual performance directly to his performance, offers more detailed process information on the impact of feedback on achievement.

**How goals and feedback impact actual performance**

Though most theories agree that goals doubled by feedback have a higher impact on performance, the results of existing research rather focus on performance contingencies than on performance itself. Some studies point out that positive feedback, presented as progress or success in goal attainment, sustains high self-efficacy beliefs, supports self-set goals, and increases satisfaction (Jourden, 1991). Positive normative feedback is also associated with enhanced perceptions of competence and subsequent intrinsic motivation for the given task (Boggiano, Harackiewicz, Bessette, & Main, 1985; Harackiewicz, 1979). Negative feedback, conceptualized as failure in achieving certain standards is linked with a decrease in self-set goals, reduced task enjoyment and increasing negative dysfunctional emotional responses (Locke, Cartledge, & Knerr, 1970; Prussia & Kinicki, 1996).
On a different note, Kluger and DeNisi’s (1996) review on the effect of feedback interventions found no evidence that information about failure (negative feedback interventions) and information about success (positive feedback interventions) would have an average differential effect on performance. We next attempt to identify process statements regarding the impact of feedback on objective performance indicators.

The proponents of goal-setting theory, Locke and Latham (1990), postulate that “with respect to feedback, goals are a mediator; they are one of the key mechanisms by which feedback gets translated into action […]. With respect to goals, feedback is a moderator; goals regulate performance far more reliable when feedback is present than when it is absent” (p. 173). Nevertheless, the same authors acknowledge that not all types of feedback have a positive impact on performance (Locke & Latham, 1990, 2002), and a process aspect to be considered refers to whether individuals are allowed to reconsider the value of current goals and set new ones after they receive feedback. Goal-feedback interactions appear to be more beneficial for performance when individuals control goal change, but that would imply the existence of a reflection period, similar to a deliberative mindset proposed by Gollwitzer (1996), which would follow an initial implementation mindset, where a certain goal has proved to be ineffective from a feedback perspective. Such ideal conditions, where a renewed return to a deliberative mindset is possible are, we believe, rather scarce.

Achievement goal literature acknowledges the role of competence feedback on increasing or decreasing the impact of mastery versus performance goals on results, task persistence, task enjoyment and interest (Rawsthorne & Elliot, 1999; Ryan, Koestner, & Deci, 1991). Dweck and Leggett (1988) postulate that performance goals make individuals more vulnerable to failure feedback, while mastery goals are linked to higher persistence and task involvement for the same type of feedback. When debating the dynamics of instructional conditions, some school-based studies point out that progress feedback associated with a mastery goal leads to “the highest self-efficacy, motivated strategy use, and achievement” (Schunk & Ertmer, 2000, p. 641). There are very few research studies which investigate the impact of differential feedback on specific achievement goals, a notable exception being the research of Senko and Harackiewicz (2005), of particular interest being their second study.

Some authors consider that perceived progress toward goal attainment is of greater importance for performance than holding a mastery or performance goal (Locke & Latham, 2002). Zimmerman and Schunk (2004) debate this standing, arguing that at times progress towards goal achievement can be difficult to ascertain, due to ambiguous or subtle standards of task progress. In such situations a focus on process goals sustained by feedback rather than product goals seems to be more beneficial for performance in learning a new strategy (Schunk & Schwartz, 1993).
There is some inconsistency of feedback effects on goals and performance and a lack of strong theoretical assumptions on the hierarchy and mechanisms of their interaction. Little is actually known of how feedback affects performance and how achievement goals influence its processing (Kluger & DeNisi, 1996; Senko & Harackiewicz, 2005). Specific contingencies of normative feedback in interaction with achievement goals have not been closely investigated yet, and their joint effect on performance has not been systematically approached. The feedback individuals receive can influence their performance through impact on their achievement goals or without changes at goal level. For instance, when a student holding a mastery goal receives negative feedback regarding his results compared to his colleagues (normative feedback), he can keep on pursuing that task with the same mastery goal, with feedback directly influencing his actions (e.g., he changes strategies), but not impacting his goal. Hence, feedback affects performance through changes in achievement goals, but it can also have a direct effect, without goal mediation.

AIMS AND HYPOTHESES

Competence contexts with competition framing usually integrate feedback that compares one’s performance with the performances of others. When a student learns a new task in school, comparisons with colleagues are inevitable. In the present study we aimed at investigating how feedback comparing a participant’s performance to a competitor’s performance (“better than you” or “worse than you”) influences the impact of different achievement goal orientations on performance.

Firstly, we were interested in analyzing how normative feedback valence (positive versus negative) and achievement orientation (mastery versus performance) influence task performance, appraised in terms of response rapidness and response accuracy. We hypothesized that specific goal orientations have a differential impact on task performance. Mastery goals focus the individual on the task, framing performance expectations in terms of ability development. Few studies have analyzed the performance dynamics of mastery goals in competition contexts, but theoretical approaches sustain that such goals can short-circuit normative feedback, regardless of its valence. Hence, we expected that mastery goal participants have similar performances, regardless of the type of feedback provided. Performance goals, on the other hand, focus the individual on self-other comparisons, with positive feedback being more beneficial for performance outcomes than negative feedback, which is supposed to be detrimental to task results. We expected that for performance goals the valence of feedback leads to different patterns of task outcomes, positive feedback being linked with higher performance levels than negative feedback.

Secondly, we wanted to test how goal orientation and comparison feedback jointly influence performance levels, for the two task performance dimensions we
recorded: response rapidness and response accuracy. As previously discussed, theoretical tenets support the existence of an interaction effect between feedback and goal orientation on performance, without making specifications for different performance dimensions. Hence, our study comes to detail how such an effect manifests itself for each performance dimension.

Thirdly, as an exploratory pursuit, we examined the patterns of performance that activity execution based only on task requirements is associated with (no achievement goal is pre-assigned and no comparison feedback is given). We explored this aspect for both response accuracy and rapidness, compared to assigned achievement goal and feedback conditions. This pursuit will offer valuable information of the effects of purpose goals (in our study represented by achievement goals) versus task-specific or target goals on task performance.

**METHOD**

**Participants**

The sample consisted of 156 high-school students, ranging in age from 16 to 19 years, with a mean age of 17.2 years. They were 10th to 12th grade students from theoretical high-schools in Cluj-Napoca, Romania. Of the participants 45 were male and 111 female. Students were recruited in their school and took part in the study on a voluntary basis.

**Design and procedure**

We used a 2X2 factorial experimental design with the independent variables: type of goal orientation (mastery orientation versus performance/competitor orientation) and comparison performance feedback (“better than you” versus “worse than you”). The number of subjects in each experimental condition is presented in the table below:

<table>
<thead>
<tr>
<th>Feedback</th>
<th>Better than you</th>
<th>Worse than you</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal orientation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mastery orientation</td>
<td>G1 n=31</td>
<td>G2 n=31</td>
</tr>
<tr>
<td>Performance orientation</td>
<td>G3 n=30</td>
<td>G4 n=32</td>
</tr>
</tbody>
</table>

In order compare the experimental conditions to a base-line task requirements condition we introduced in our study a group where no goal orientation or comparison feedback was given. We wanted to analyze whether and how performance changes in a group where individuals are only presented with the
task demands, compared to the experimental groups where the task is complexly framed in terms of achievement orientations and normative feedback. In the baseline task requirements group (G5) we had 32 subjects (n=32).

Participants were randomly assigned to one of the five conditions, being informed that they were going to perform an activity as part of a study on student learning. The experimental procedure was conducted in the high-schools’ computer laboratories, in groups of maximum 6 participants, with spacing of at least 1.30 meters between participants.

**Organization of the activity and instructions**

The types of stimuli and organization of the procedure is based on the computerized task Oettingen, Bulgarella, Henderson, and Gollwitzer (2004) reported when analyzing the impact of a competitive motive on an already activated action goal. The stimuli are sets of parallel horizontal lines, which differ in length, width and distance from each other. These varying characteristics are randomly generated by the program. One set of lines appears at a time.

The experimental procedure comprised 2 phases; a process depiction of the experimental procedure is presented in Figure 1. The First Phase was a Training Phase, where no manipulation was present and on screen appeared only the participant’s set of lines. In the second phase, which we called the Intervention Phase, we introduced on the lower half of the screen the performance of the “competitor”, manipulating participants’ goal orientation and the comparison performance feedback they received.

The monitor screen was horizontally divided in two and the participant performed his task in the upper part; the lower part was empty in the Training Phase, while in the Intervention Phase it contained the competitor’s task. In the Training Phase we presented 5 sets of lines, while in the Second Phase there were 20 sets of parallel lines. The minimum number of lines in a set was 9 and the maximum 11; there never were 10 lines in a set. For the Training Phase, exposure time of a set was between 800-900 ms, while in the Intervention Phase we reduced it at values between 700-800 ms in order to control for habituation and over-learning effects.

For this experiment we introduced a standard time of three seconds a subject had to wait until the next set of lines was presented. After a set of lines disappeared from the screen (800-900 ms), the following message appeared in red in the upper left corner of the subject’s quadrant: “Push one of the keys to answer”. After the subject answered, in the upper right corner appeared in red the message “Your response has been recorded.” We introduced the latter element in order to control for very quick responses of the participants that would interfere in the Intervention Phase with them visualizing the comparison feedback; so, subjects were informed that their answer was recorded, but could not advance to the next set until the three seconds waiting time elapsed.
In the Training Phase, we explained to participants the mechanics of the task, describing the elements they were going to visualize on screen and the requirements of the task itself: push key A if they considered that there were more than 10 lines on the screen or key L if they thought there were less than 10 lines in a set. We aimed at getting participants accustomed to the elements and functionality of the task, in order to control in Phase 2 for high variability between subjects in response times, due to problems in understanding the requirements of the activity.

After the first phase ended, we informed participants that in the second phase the task was exactly the same, but this time, in the lower quadrant they would see what another student that performed this activity did. We explained that this other student was generally called “the competitor” and that they would visualize the task he performed, which was played out at the same time as the participant completed the task. Participants in the no-preset goal group were also presented with another student completing a similar task in the lower part of the screen, but this student was not labeled “competitor” and there were no normative feed-back messages.

In the Intervention Phase, after the participant’s set of lines disappeared, in 50% of cases the comparison feedback message “Better than you” or “Worse than you” appeared in red in the competitor’s quadrant. This message remained on screen for 3 seconds and participants could not advance to the next set until this period of time elapsed. For all feedback groups we predefined the same sets where a feedback message appeared. The procedure followed the process depicted below:

![Figure 1](image)

**Figure 1**
Process depiction of the experimental procedure

**Goal induction**

The induction of a specific goal orientation was similarly organized for all experimental groups. After the training phase ended, we introduced the goal orientation and the type of competence feedback. For goal orientation, we presented the activity as being related to “outperforming the competitor” (performance/competition orientation) versus “doing the activity better than in the first phase” (mastery orientation). We then asked participants to list three reasons why a competition orientation (for the performance orientation) or an ability development orientation (for the mastery orientation) is important in their everyday
activities. Subsequently, the experimenter verbally reinforced the goal orientations again.

The no pre-set goal, no-comparison feedback group was presented only with the description of the task.

**Comparison feedback**

When we introduced the “competitor”, we presented the comparison feedback as an evaluation of the participant’s performance for each set compared to the competitor’s performance. We differentially detailed a positive comparison feedback: “Whenever the competitor has lower performances compared to your performance for each set, the message “worse than you” appears in red in the competitor’s quadrant.” For the negative comparison feedback the instructions were similar, but each time the competitor had better performances than the participant the message “better than you” was displayed. As we discussed before, the feedback was a preprogrammed message, generated to appear in 50% of the sets, following the same programmed pattern for all experimental conditions.

**Measures**

**Response rapidness.** Response rapidness was recorded in seconds and milliseconds (e.g., 1.45 = 1 second and 45 milliseconds), as the interval between the moment the set appeared on screen and the moment when the participant pushed one of the designated keys (A or L).

**Response accuracy.** A participant’s response was coded as accurate when it was a correct approximation of the number of lines in a set (more than 10 or fewer than 10).

**Self-reported goals.** In order to investigate patterns of self-reported goals in the activity, we introduced for this study two open-ended items, one for each phase of the activity. After participants completed the computerized task, they were asked to list: “What was the most important aspect you focused on while pursuing each phase of the activity”.

**Results for intervention phase**

We analyzed the data using SPSS 17 for Windows. An alpha level of .05 was used for all statistical tests, if otherwise not specified; all computed values of eta squared (η²) are partial.
Descriptive data

For response rapidness (see Figure 2), a mastery goal with positive comparison feedback ($M = 2.83, SD = 1.39$) was associated with the slowest response rates of all five groups, followed by mastery goals with negative comparison feedback ($M = 2.20, SD = 1.21$). No significant differences were depicted between the two mastery groups, $t(60) = -1.88, p > .05$, hence indicating that for the rapidness dimension the type of comparison feedback does not have a relevant differential impact on mastery goals. Performance goals for both positive comparison feedback ($M = 1.79, SD = .42$) and negative comparison feedback ($M = 1.72, SD = .58$) had the most rapid response times. Assigned performance goals appeared to focus individuals on being quick, while mastery goals or no goal instructions did not center participants on answering the task with as much speed.

Response accuracy (see Figure 3) had the lowest values in the performance orientation with negative comparison feedback ($M = 11.16, SD = 2.56$), surprisingly followed by mastery goals with positive comparison feedback ($M = 12.35, SD = 2.57$). The mastery goal orientation with negative comparison feedback ($M = 14.16, SD = 2.14$) and the no pre-set goal/no feedback condition ($M = 14.66, SD = 3.72$) were associated with the most accurate responses. Independent sample $t$-tests indicated that the observed differential pattern in response accuracy in negative versus positive feedback for mastery goal groups was statistically significant, $t(60) = 3.00, p < .005$. Participants who were assigned a mastery goal and received positive feedback tended to respond less accurate compared to their mastery counterparts who were given negative feedback. This refines our initial assumption that mastery goals influence performance in a uniform manner, regardless of the type of feedback participants receive. Our results rather indicate that this is true for the response rapidness, but for accuracy individuals have different patterns of performance for different types of feedback. Also, as can be seen in Figure 3, for response accuracy participants in the mastery/negative feedback group had very close values to those in the performance/positive feedback and pre-set goal/no feedback group.
Analysis of Variance for goal orientation and competitor evaluation

In order to analyze the interaction effect between goal orientation and comparison feedback and their separate main effects, we computed Factorial Analyses of Variance, with response accuracy and respectively response rapidness as dependent variable and goal orientation and comparison feedback as independent variables.

We found a significant interaction between goal orientation and comparison feedback for response accuracy, $F(1, 151) = 16.43$, $p = .000$, $\eta^2 = .098$. For response rapidness we did not find a significant interaction effect, $F(1, 151) = 2.53$, $p = .113$, $\eta^2 = .017$. These results partially confirm our hypothesis that goal orientation and comparison feedback jointly influence performance levels. The level of response accuracy is reflected in the interaction between goal orientation and comparison feedback, while no such pattern was depicted for response rapidness.

There was a significant main effect of goal orientation for response rapidness, $F(1, 151) = 18.97$, $p = .000$, $\eta^2 = .112$. According to Scheffe tests, participants with a performance goal ($M = 1.75$) gave significantly more rapid responses compared to participants with a mastery goal ($M = 2.52$), $p = .000$. We found no significant main effect for response accuracy, $F(1, 151) = 3.47$, $p = .064$, $\eta^2 = .022$, though the $p$ value indicated a relevant tendency for the impact of goal
orientation on this dependent variable. Scheffe tests revealed that performance goals ($M = 12.27$) were associated with significantly reduced rates of accurate answers compared to no preset goal group ($M = 14.66$), $p = .001$. The no-preset goal condition was linked with the highest level of accurate responses, suggesting that when task requirements are clearly operationalized, an activity purpose orientation (achievement goals) can be detrimental in attaining high levels of performance on this dimension.

For comparison feedback there was a significant main effect for response rapidness, $F(1, 151) = 3.93$, $p = .049$, $\eta^2 = .025$. Scheffe tests did not reveal any significant differences between groups. No significant main effect was found for response accuracy, $F(1, 151) = .24$, $p = .620$, $\eta^2 = .002$. This indicated that there were no overall differences in how correct participants responded depending on comparison feedback. Post-hoc Scheffe pointed out significant differences between no feedback ($M = 14.66$) and negative comparison feedback ($M = 12.63$), at $p = .005$; when no feedback was given, participants tended to give more correct responses. Positive comparison feedback ($M = 12.90$) was also associated with less correct answers compared to when no comparison feedback was given ($M = 14.66$, $p = .019$). So, it appears that the lack of any feedback comparing the participant’s performance to the competitor performance was more beneficial for increased response accuracy. These findings provide valuable information on how task requirements guide performance in a highly structured activity.

### Analysis of self-reported goals

As we previously mentioned, after activity completion, we asked participants to list the main aspects they focused on while pursuing the task, from a goal perspective. Through this we aimed at tapping into idiosyncratic intentional representations of the task, investigating how participants processed and reportedly used the assigned achievement goals or how they constructed self-relevant goals when no achievement goal was pre-set.

A total of 122 goals were generated for each phase of the activity. For the Training Phase all participants reported procedural goals, closely related to the requirements of the task, to different degrees of specificity. In the Intervention Phase, the goals participants reported were closely related to the experimental manipulations. In Appendix 1 we present samples of self-generated goals, organized on the experimental conditions to which each participant had been exposed. We next analyzed how many of the goals participants include as a reference point for performance the competitor. We coded as competitor instances where it was referred to as: “the adversary” (3 situations), “the results of the computer” (3), “competition” (1), “opponent” (3), “the performance of the other” (1).

For the performance goal conditions participants’ comparison with the competitor appeared in 32 of the listed goals (from a total of 56 goals), which
indicated that the assigned goal was indeed actively used in completing the task. The interesting aspect resided in the fact that mastery goal participants also reported in 24 goals (from a total of 63 goals) that they paid attention to what the competitor was doing. We identified two main tendencies of approaching the comparison feedback for participants in both mastery and comparison groups: active processing of feedback valence (focus on whether the competitor is better or worse than him) or dismissal (ignore the competitor) of the feedback message. This strategy approach can be further investigated in the implementation intention paradigm, where a key aspect refers to ignoring versus processing/attending to distractors. Research in this paradigm tends to indicate that a focus on ignoring the distracters is more effective for task performance compared to attending to distracters (Brandstätter, Lengfelder, & Gollwitzer, 2001; Gollwitzer & Brandstätter, 1997; Gollwitzer & Schaal, 1998).

Analysis of the reported goals in the mastery condition leads us to propose that in a highly activated competition context people cannot hold an assigned mastery goal and rather opt for switching or simultaneously activating a performance goal, which is more adaptive. We believe that this is an important experimental finding for the dynamics of achievement goals, and future experimental studies should focus on this aspect, as it nuances the debate mastery – performance orientation in approaching an activity.

DISCUSSION

The impact of normative feedback and achievement goals upon performance

In light of the experimental results we analyze two possible explanations for the data patterns: an achievement goal switch hypothesis and a double goal hypothesis. Senko and Harackiewicz (2005) consider that goal switching is one of the mechanisms individuals employ in regulating goals when normative feedback is given, conceptualizing it as a change in the activated achievement goal, due to information on performance standing provided during an activity. People can start a task being assigned a mastery goal, but feedback comparing their results to those of others may determine them to switch to a performance goal, which is more adaptive and easier to pursue in this situation (Elliot & Church, 1997).

Pintrich, Conley, and Kempler (2003) point out that early performance feedback can influence competence perceptions, which in turn can impact on the intensity of achievement goals pursuit. Competition focused goals seem to be more “vulnerable” to changes in performance expectations due to negative feedback, compared to mastery goals (Dweck & Elliot, 1983). In our study we did find a difference in response accuracy for performance/competition goals with positive versus negative comparison feedback, a result which is supported by previous research (Rawsthorne & Elliot, 1999). We revealed a more poignant difference in mastery goals, where negative feedback was associated with higher response
accuracy than positive feedback. It can be that the comparison feedback “taints” and distorts both types of achievement goals, leading subjects to switch to an intentional orientation which is assessed as more adaptive.

Participants who received no comparison feedback displayed more accurate responses than those who received either positive or negative feedback. This finding suggests a negative impact of any type of comparison feedback on performance accuracy, when a task is simultaneously performed by participant and the competitor. We must note that to our knowledge no other studies have been conducted on verbal comparison feedback in an experimental context where the performance of a competitor is available in real-time to the subject.

We did not find a significant global main effect for positive versus negative normative feedback at the level of response accuracy, but more detailed analyses revealed a series of interesting aspects. When individuals were given a mastery goal and positive feedback they had less accurate and slower responses than those in the same goal condition that were given negative feedback. It appears that in this type of competition framed context mastery goals facilitate the accuracy dimension of performance when people are negatively evaluated. A possible explanation can be that negative feedback activated in participants an additional performance goal, therefore making them act on two simultaneously activated goals. This is just a supposition, only partially sustained by the self-reported goals at the end of the experimental procedure, which revealed that mastery goal participants also listed to have focused on the competitor’s performance standing. Our data would rather support this double goal hypothesis than the goal switch hypothesis because when examining the impact of negative feedback for mastery versus performance goals, mastery goals are related to higher levels of response accuracy. In fact, the level of accuracy associated to mastery goals when we gave negative feedback was very close to that of the baseline group, where no such feedback was provided.

Achievement goals and task-specific goals

Whenever an individual takes up a task, he often defines or receives an achievement goal, with orientation on the performance or mastery dimension. But each task has specific structural and functional dimensions, referring to what exactly the person has to do, how he is supposed to do it or when the best time for doing it is. All these task dimensions are best attended to when the individual sets procedural task goals, specifying process or outcome aspects that lead to its adequate completion, at a desired or imposed level of performance. Hence, we believe that achievement goals frame competence and lead to differential allocation of personal resources for goal implementation, but they are always backed up by specific task structure or functionality goals, which procedurally lead to the translation of a goal into action. Many times it is the context that guides our actions, through clear, operational task specifications, which leave little room for
personal achievement goals. This aspect has not yet been thoroughly integrated in the achievement goal literature. Our findings regarding the advantage of no-preset goal/no feedback group for response accuracy compared to the assigned achievement goal conditions indicate that in a highly structured task where structural requirements are clear, these very requirements better facilitate this performance dimension.

LIMITATIONS AND STRENGTHS

Complexity of feedback and achievement goals

The present study employed written comparison feedback, which focused on whether the competitor performed better or worse than the participant. This type of feedback was informative in that it framed the competitor’s performance compared to the participant and for each of the designated 10 items where the feedback message appeared, it pointed out the subject’s standing as opposed to the comparison criterion – the competitor.

One limitation of this approach stands in the fact that we used only comparison feedback, which could involve the same type of information processing mechanisms, with an exclusive focus on the comparison process, regardless of its positive or negative nature. For a more comprehensive outlook, feedback given to subjects can also focus on ability development aspects: (a) during the task, through process feedback – how his performance increased or decreased compared to his responses for previous set in that phase of the activity; (b) after completion of one phase of the task, through summative feedback – how much the subject improved his performance from the first set to the last set during a phase of the activity; how much better he did in the current phase compared to the previous phase. Such feedback could offer more information on how task-focused versus competition-focused goals modulate performance when information on proficiency and progress focuses on ability development, not on ability demonstration.

Another limitation of the present study relies in the use of only one type of feedback for a group of participants. This is a frequent limitation of most experimental studies which investigate the impact goals-feedback on performance markers. Still, in real-life settings individuals face a multitude of feedback messages, which can be contradictory, come from various sources (hence the importance of credibility of the source), have positive and negative valences, refer to the task but also to more global labels (e.g. global evaluations like “You are stupid” or “You are so intelligent”) and so on. While we acknowledge that experimental research cannot reconstruct the complexity of such contexts, a necessary aspect that could guide further research using the paradigm we developed, refers to providing subjects with more types of feedback messages.
during the pursuit of a task. These could encompass positive and negative aspects, social comparison and ability development dimensions.

**Use of false versus accurate comparison feedback**

In experimental settings accurate versus erroneous feedback has been used as persuasive influence (Bandura & Locke, 2003) to modulate the level of pain tolerance (Litt, 1988), use of problem solving strategies (Bouffard-Bouchard, 1990), perseverance in solving difficult problems (Jacobs, Prentice-Dunn, & Rogers, 1984) or physical effort in a competition (Weinberg, Gould, Yukelson, & Jackson, 1981).

The feedback messages we employed in the present study were false messages, which did not reflect the actual performance of the participants and were differentially attributed for each experimental condition. Most of the research studies on the achievement goal-feedback relationship use false performance feedback. This is in part due to time concerns related to the actual evaluation of performance and to attempts of keeping the participant involved in the activity, avoiding breaks that could interfere with the experimental manipulations. We believe that in some cases subjects can monitor their performance levels and detect that feedback messages do not reflect they real performance. When only one type of feedback is used in a manipulation, any type of feedback, this can lead subjects to disengage from the task, because in real-life setting one-dimensional, repetitive feedback is seldom present. With high difficulty tasks false negative feedback can often reduce task involvement, while positive feedback maintains task involvement, but does not influence performance levels. When low difficulty, simple tasks are presented, as in our study, a potential limit can be rapid strategy development in approaching the task, which determines detection of the bogus nature of given feedback. We tried to control that by defining feedback through global performance, not though specific accuracy or rapidness dimensions.

**IMPLICATIONS FOR FURTHER RESEARCH**

More detailed investigation of the relation achievement goals – task procedural goals could offer valuable insight into the processes and differential strategies individuals employ when they represent desired or feared outcomes in terms of development or demonstration of competence. We strongly believe that the future of this exhaustive line of research resides in: (1) identifying the mechanisms which underlie the impact of achievement goals on objective performance indicators, not only on performance contingencies and (2) investigating the manner in which mastery versus performance goals interact with task procedural goals in influencing performance.

An interesting aspect to be further analyzed refers to a differential focus on dimensions of performance, depending on the type of achievement goal one holds.
In a competitive context, do individuals choose to focus on rapidity rather than accuracy? Or do they evaluate *ab initio* one parameter as being the most relevant for performance, hence disregarding other indicators? In the experimental activity we designed, the “competitor” performs the same task, at the same time as the participant and the presence of the competitor is accessible in real-time to the participant. Competence in approaching this activity is strongly based on a normative standard – the competitor’s performance, an aspect both mastery goal and performance goal participants acknowledge when listing the goals they followed in the intervention phase of the experiment.

**REFERENCES**


Appendix

*Samples of self-generated goals for the Intervention Phase, for experimental groups*

<table>
<thead>
<tr>
<th>Group</th>
<th>Samples of self-generated goals</th>
</tr>
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</table>
| Mastery goal, negative feedback                 | • To get a better result than the last time I focused on doing better than the competitor.  
• Achievement in the contest.  
• Improving my (response) time, and therefore the results.  
• To defeat the competitor.                                                                                                                   |
| Mastery goal, positive feedback                 | • I waited for the computer to tell me that my competitor was weaker.  
• To watch what the competitor was doing.  
• I focused on giving as many correct answers as possible.  
• To pay attention at everything appearing on the screen.  
• To try and perform as well as possible, according to the instructions.                                                                                  |
| Performance goal, negative feedback             | • My answer to be better than the competitor’s.  
• The continuous and simultaneous observation of the other’s performance and the completion of the similar task.  
• To be better than the other and to answer correctly.  
• The desire to win. To be the best during the activity.                                                                                             |
| Performance goal, positive feedback             | • Confirmation that that competitor was weaker.  
• I tried to answer correctly in order to beat the competitor.  
• I was paying attention to the lines on the screen, but also to what the competitor was doing.  
• To observe the lines and answer faster than the competitor.  
• The result of the competitor.                                                                                                                                                           |
| No pre-set goal, no feedback                    | • The promptness of my action/answer.  
• To focus even more on my „picture”, ignoring the computer’s „picture” that looked completely different from mine.  
• To press the right key fast (in a short time).  
• To approximate the number of lines shown.  
• I focused on what was of interest for me, the upper part of the screen, without being influenced by the lower half - the competitor.     |