

Running head: EFFECTS OF POSITIVE FEEDBACK

Is no praise good praise? Effects of positive feedback on children's and university students'  
responses to subsequent failures

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## Abstract

### *Background:*

According to Dweck and colleagues (e.g., Kamins & Dweck, 1999; Mueller & Dweck, 1986), praise can be delivered using person (“you are clever”) or process terms (“you worked hard”). Research suggests that giving people process praise after success can help them deal better with subsequent failures because it attributes outcomes to effort rather than fixed ability. However, research has thus far inadequately addressed how these types of praise compare to receiving no evaluative feedback.

### *Aim:*

The aim of the present research was to examine the effects of person and process praise compared to a control group where only objective outcome feedback was given.

### *Samples:*

In Study 1, 145 British school children aged 9-11 years took part. In Study 2, participants were 114 British university students.

### *Method:*

In both studies, participants read three scenarios and were asked to imagine themselves as the main character. In each scenario, they succeeded in an educational task and received either person, process or no praise. Participants then read two scenarios where they failed at a task. Following each scenario participants evaluated their performance, affect and persistence.

### *Results:*

After one failure, participants who received person praise reacted most negatively on all dependent measures. However, those in the process condition did not differ significantly from those in the control group.

### *Conclusions:*

These findings suggest that process feedback may not be inherently positive; instead person feedback seems particularly detrimental.

Is no praise good praise? Effects of positive feedback on children's and university students' responses to subsequent failures

Researchers have identified two different patterns of reactions to educational setbacks. First, people can display a *helpless* response where they attribute their failures to a lack of ability and show lowered affect and persistence. In contrast, people can display a *mastery-oriented* pattern where they focus on their effort when faced with difficulty and instead maintain their level of affect and persistence on the task (Diener & Dweck, 1978, 1980; Dweck, 1999; Dweck & Leggett, 1988; Ames & Archer, 1981; Weiner, 1985). Whether people display an adaptive or maladaptive coping pattern is largely dependent on feedback (e.g., Kamins & Dweck, 1999; Dweck, 1999; Henderlong & Lepper, 2002; Henderlong Corpus & Lepper, 2007). Specifically, how people are praised for their successes affects how they deal with later setbacks, influencing perceptions of performance, general affect and motivation to engage in future tasks (Henderson & Dweck, 1990; Heyman, Dweck & Cain, 1992; Heyman & Dweck, 1998; Kamins & Dweck, 1999). The focus of the current research is on how different types of praise following successes can elicit positive and negative responses to educational setbacks. We also examine how different types of praise compare to receiving objective performance feedback alone. Finally, we aim to provide some insight into the extent to which the positive effects of praise last over time.

### *Feedback*

Research has shown that feedback is one of the top ten influences on learning (Hattie, 2009). However, different forms of feedback can have strikingly different consequences. For example, following a meta-analysis of 131 studies, Kluger and DeNisi (1996) found wide variability in the effects of feedback, with some types of feedback having a positive influence on learning, some having a negative influence, and some having no influence at all. In part, this is because feedback can be delivered on a number of different levels. Specifically, feedback can be delivered concerning four different aspects of the situation: *task*, *process*, *self-regulation* and *self* (Hattie, 2009). *Task* feedback involves basic performance feedback, such as giving a result or

explaining what was correct. *Process* feedback provides information on how the task was completed, such as providing alternative methods. *Self-regulation* feedback aims to make the learner more aware of the learning processes and to help them to take responsibility for their learning. Finally, *self* feedback includes direct praise and criticism of the person, and often directs attention away from the task, processes, or self-regulation (Hattie, in press).

This final level of feedback – specifically praise – is of particular interest in the current research. The importance of studying praise in educational contexts is underscored by Hyland and Hyland (2006) who noted that almost half of the feedback delivered by teachers is praise. However, responses to praise have also been found to be mixed. In some studies praise has led to improved performance (O’Leary & O’Leary, 1977), in others debilitated performance (Mueller & Dweck, 1998) and in some it has had no effect (Beaman & Wheldall, 2000).

### *Praise*

Researchers have attempted to disentangle the complex effects of praise. In an influential body of research, Dweck and colleagues have argued that praise can be distinguished between comments that are aimed at evaluating a person’s traits or the person as a whole (e.g., “You are a clever girl”), and comments that focus on the person’s effort or strategies (e.g., “You found a good way to do it”; Kamins & Dweck, 1999, Dweck, 1999). Kamins and Dweck (1999) showed that praising a child in *person* terms after they succeed leads to helpless responses to subsequent failures more than when the feedback relates to the concrete *process* through which the success was reached. They argued that person praise leads children to interpret their achievements in trait terms and encourages a fixed mindset of success more so than process praise which focuses more on effort and behaviour. Following person praise, failures may signal that outcomes are due to poor ability or negative traits, thus undermining performance evaluations, affect, motivation and leading to a helpless response.

Extending these findings, Cimpian, Arce, Markman & Dweck (2007) found that evenly matched statements either worded in person (e.g., “You are a good drawer”) or process terms

(e.g., “You did a good job drawing”) had similar effects. Here, children dealt poorly with their later failures after being praised in person terms – they were more likely to denigrate their skills, feel unhappy, avoid repairing their mistakes and quit the task altogether. In contrast, children who were told that they had done a good job had less extreme reactions to their failures and showed better strategies for correcting their mistakes and persisting with the task. Similar results were revealed for the communication of criticism. In particular, Kamins and Dweck (1999) demonstrated that person criticism, in contrast to process criticism, led to helpless responses. In general, children in groups who received person feedback were more likely to feel bad, show lowered motivation and were less likely to persist with their tasks than those in the process feedback groups. In fact, children in the person feedback groups also more strongly endorsed the belief that ‘badness’ is stable over time and that it can be diagnosed from one failure. Kamins and Dweck argued that person feedback can therefore foster a sense of contingent self-worth and create a helpless pattern of responses to failures (see also Burhans & Dweck, 1995).

These findings are striking because the differences in the wording of the feedback are generally so small (e.g., “You are a good drawer” versus “You did a good job drawing”) that the person giving the feedback may not even notice the difference. Further, even if teachers do notice the difference, they may not be aware that the different forms of feedback have contrasting implications. They may therefore be likely to use these contrasting forms of feedback interchangeably with potentially negative consequences for learners’ motivation, self-esteem and future persistence on tasks. So, in the long term, person-related feedback on a learner’s educational performance, however positively intended, may not have favourable outcomes for the learner or their educational environment and these outcomes may persist beyond childhood and even through to higher education. Based on these findings, it is therefore unsurprising that the education sector strongly promotes process-related praise (rather than person-related) in interventions to improve students’ performance (Rathvon, 2008).

However, despite all we know about the positive effects of process compared to person-related feedback, a surprising gap exists in the current literature. Specifically, to date it is unclear whether person praise predicts worse outcomes after failure, or if process praise predicts better outcomes, than receiving objective performance feedback alone. Much of the literature has focused on the comparisons between person and process praise but it is as yet unknown if, or how educational outcomes following one of these types of praise are different to outcomes following objective feedback about one's performance. Hattie and Timperley (2007) argued that basic feedback about the performance itself (e.g., "You got 5/5") may be sufficient to predict positive learning outcomes and certain types of praise may even dilute the effectiveness of performance feedback. If indeed objective performance feedback is as effective as process feedback, this may have important implications for the delivery of feedback in educational settings. The strategic use of positive reinforcement is a central feature of most school-based behavioural interventions (Kazdin, 1982; Martens, Witt, Daly & Vollmer., 1999). Indeed, teachers are encouraged to use praise to motivate children. However, if process praise adds little to objective information then perhaps it is not necessary to encourage educational practitioners to use this type of feedback.

Further, in previous research there has been some debate as to what constitutes a control group when comparing the effects of different types of feedback. Control groups vary from students being told "That's a really high score" (Kamins & Dweck, 1999) to students being ignored (Anderson, Manoogian & Reznick, 1976) with many levels in between. Thus, control groups vary widely and have led researchers to conflicting inferences. For example, it is unsurprising that Anderson et al (1976) found that praise had a positive effect on learners. Children in a control group, who were ignored, understandably responded more negatively to their successes and failures than children who had received feedback and therefore attention. In Kamins and Dweck's (1999) work, children in the control group who were told "That's a really high score" did not respond as positively to failure as children who had received process praise. Children in the control condition did however respond better than those who had received person

praise. This led Kamins and Dweck to infer that process praise led to positive outcomes for learners and person praise to negative outcomes. However, in their study the control group received positive feedback, which could be viewed as a different type of praise. Therefore, this control group might not provide a good baseline. A strong control group is important as it makes it possible to infer whether process praise is really beneficial or person praise is truly damaging. In the current research, we therefore include a control group which allows us to systematically compare the effects of person, process and no praise.

Finally, we examine the extent to which any effects of praise last over time. Specifically, previous work has demonstrated that process praise, compared to person praise, has a positive influence on responses to a single failure. Often measures of performance, affect and persistence are only taken following one failure (Mueller & Dweck, 1998). In addition, Kamins and Dweck (1999) argued that while one failure may be viewed as unlucky or caused by chance and therefore ignored by children, two failures may be viewed more seriously. We therefore examine here if the different types of praise have contrasting effects that last beyond one single episode of failure at a task or if following repeated failures a helpless response returns.

### *The current research*

In this paper, we report the results of two experiments examining the effects of person and process-related praise on how people deal with subsequent failures. The first study is an investigation with school children aged 9-11 as participants. In the second study, we gathered responses from a university student sample. Participants were asked to read and imagine themselves in three scenarios, each depicting an educational accomplishment. Following each success scenario, participants were given objective performance feedback (e.g., “You got 5 out of 5 correct”), followed by either person (e.g., “You are clever”) or process praise (e.g., “You found a good way to do it”). Crucially however, we also included a control condition where only the objective performance feedback was given. After reading these scenarios, participants were asked to record their perceived performance, affect and the extent to which they would like to

persist with the task. Participants were then asked to read and imagine themselves in two more scenarios, both depicting an educational failure such as failing a test. Following these scenarios participants received no feedback. After each scenario, they were asked again to record their perceived performance, affect and the extent to which they would like to persist with the task. In line with previous research (Kamins & Dweck, 1999, Mueller & Dweck, 1998), we predicted that, after successes, participants would report high levels of perceived performance, affect and persistence regardless of the type of praise given. However, following failure, we predicted that participants who had received person feedback would report lower levels of perceived performance, affect and persistence than those who had received process feedback. Including a control group allows us to examine clearly whether process praise elicits more positive outcomes than objective feedback, or if person praise is inherently detrimental.

## Experiment 1

### Method

#### *Participants and design*

One hundred and forty five British school children ( $M = 9$  years 8 months; 66 girls and 79 boys) participated in a short break from classroom activities. They were randomly divided into three experimental groups: person praise, process praise and no further feedback. The dependent measures were perceived performance, affect and persistence.

#### *Materials and procedure*

Children were given a questionnaire where they were asked to imagine themselves as the child depicted in five written scenarios based on everyday school situations. For example, the following scenario presents a child performing a maths test:

One day you were given some very difficult problems in maths. You had never done them before but you listened carefully to your teacher Mrs Billington as she explained how to do them. After showing the class some examples on the board she gave everyone five problems to practice on. You got out your calculator and

started to do the sums. You found them quite hard but wanted to show Mrs Billington that you had listened carefully to her and that you could do the problems well. You worked very hard on the problems, taking your time and thinking very carefully so as not to make any mistakes. When you got your work back, you saw that you got all 5 out of 5 correct.

The first three scenarios described successes as above, followed with objective performance feedback as shown in the example (e.g., “You got all 5 out of 5 correct”) and after each scenario children received person (e.g., “You’re really clever”, “You’re really good at Maths”), process (e.g., “You worked really hard at this”, “You found a good way to do it”) or no further feedback depending on the experimental condition. The final two scenarios depicted failures (e.g., “You only got 3 out of 10 correct”) and following these children received no feedback.

After each scenario, children answered three questions on a five-point ‘smiley-face’ scale ranging from a frown for a negative response, up to a smile for a positive response (questions for the maths example):

1. How well did you do in your maths test? (*perceived performance*)
2. How did your performance in your maths test make you feel? (*affect*)
3. Would you like to do another maths test? (*persistence*)

After completing the measures, the children were thanked and debriefed.

## Results

We first compared children’s perceived performance, affect and persistence across the three successes and found that responses on all dependent measures were consistently positive across the scenarios. As expected there were no significant differences between the person, praise and control conditions after the successes (see Figure 1).

After one failure however, children showed differences in all dependent measures across the process, praise and control conditions (perceived performance:  $F(2, 142) = 2.98, p = .054, \eta^2 = .04$ , affect:  $F(2, 142) = 4.37, p = .014, \eta^2 = .06$ , persistence:  $F(2, 142) = 3.89, p = .023, \eta^2 =$

.05 – see Figure 2a). As expected, these effects were due to less positive reactions to failure after receiving person than process praise (perceived performance:  $F(1, 93) = 5.25, p = .024, \eta^2 = .05$ , affect:  $F(1, 93) = 7.26, p = .008, \eta^2 = .07$ , persistence:  $F(1, 93) = 7.03, p = .009, \eta^2 = .07$ ), and differences between the person and control conditions (perceived performance:  $F(1, 94) = 3.98, p = .049, \eta^2 = .04$ , affect:  $F(1, 94) = 6.26, p = .041, \eta^2 = .06$ , but not significantly for persistence:  $F(1, 94) = 1.35, p = .247, \eta^2 = .04$ ). Crucially however, there were no differences between the process and control conditions for any of the measures (perceived performance:  $F(1, 97) = 0.20, p = .654, \eta^2 = .002$ , affect:  $F(1, 97) = 0.14, p = .710, \eta^2 = .001$ , persistence:  $F(1, 97) = 2.825, p = .096, \eta^2 = .02$ ).

Therefore, consistent with earlier findings, praising a child's success in person terms led to helpless responses to failure more than when the feedback was given in process terms (Kamins & Dweck, 1999). However, results suggest that the positive effects of process praise may contribute little more than objective performance feedback (cf. Hattie & Timperley, 2007).

Further, results demonstrated that perceived performance:  $t(144) = 36.58, p < .001, d = 1.42$ , affect:  $t(144) = 40.18, p < .001, d = 1.23$  and persistence:  $t(144) = 19.75, p < .001, d = 0.36$ , predictably decreased overall after one failure. Despite the effects of the different types of praise after one failure, perceived performance,  $F(2, 142) = 1.94, p = .148, \eta^2 = .03$ , affect,  $F(2, 142) = 1.92, p = .150, \eta^2 = .03$ , and persistence,  $F(2, 142) = 0.02, p = .092, \eta^2 < .001$ , were not enhanced by process or objective performance feedback once the children had experienced their *second* failure (see Figure 1b). All children showed a helpless response irrespective of the type of praise they had received in the first phase of the experiment. This suggests that process praise and objective feedback may buffer a child against one failure, but that after a second failure, a helpless response occurs irrespective of feedback.

To replicate and extend these findings, we conducted a second experiment with a sample of university undergraduate students. It is important to investigate how feedback is received at different stages in the educational process and to date very few studies have examined how

university students deal with different types of feedback on their performance (Barker, 1992; Good, 1987; Hancock, 2000). Those that have been carried out with older students show similar effects to those in younger children – process praise produces more positive outcomes than person praise. We therefore expect the same to occur in the case of undergraduate students, but again we include a control condition to test the effects of person and process praise relative to a baseline measure where only objective performance feedback is given. We also again investigate the extent to which the effects of different kinds of praise extend beyond one failure. Therefore, in Experiment 2, university students participated in a conceptually similar experiment to the school children in Experiment 1 with the scenarios slightly adapted to suit the university setting.

## Experiment 2

### Method

#### *Participants and design*

One hundred and fourteen social science undergraduate students at the University of Kent (age  $M = 21$  years, 6 months; 74 females and 39 males) took part on a voluntary basis. They were randomly divided into three experimental groups as in Experiment 1: person praise, process praise and no further feedback. Again, the dependent measures were perceived performance, affect and persistence.

#### *Materials and procedure*

The students were given a questionnaire where, as in Experiment 1, they were asked to imagine themselves as the student depicted in five written scenarios based on everyday university situations. For example, the following scenario describes a student giving a class oral presentation:

As part of the assessed work for one of your modules you had been asked to give a 20 minute presentation to the rest of the class and answer questions about your talk. The presentation was worth 60% of the overall marks for the module. It was therefore very important that you performed well. In the first seminar of the term

your tutor gave you the topics and you chose the one you would most like to present. You had never given an academic presentation before so you needed to research how this was done. You had to choose the most important points to include in your talk. You spent time preparing and practising your talk. At the end of the seminar you were given written feedback about your talk. You saw that you had got 80%.

As in Experiment 1, the first three scenarios described successes and the students received objective performance feedback (e.g., “You saw that you had got 80%”) as above. Following each scenario students received person (e.g., “You are a strong student”, “You are good at this”), process (e.g., “You worked hard at this”, “You found a good way to do it”) or no further feedback, depending on the experimental condition. The feedback was written to be consistent with the wording given to children in Experiment 1, but each case was slightly modified to be valid for adult participants. As in Experiment 1, the final two scenarios depicted failures (e.g., “You saw that you had only got 40%”) and following these students received no feedback.

After each scenario, the students answered three questions on a five-point scale ranging from 1 for a negative response, up to 6 for a positive response in a similar fashion to the school children in Experiment 1 (questions for the oral presentation example):

1. How well did you do in your presentation? (*perceived performance*)
2. How did your performance in your presentation make you feel? (*affect*)
3. Would you like to do another presentation? (*persistence*)

After completing the measures, the participants were thanked and debriefed.

### Results and discussion

As in Experiment 1, we first compared the students’ perceived performance, affect and persistence across the three successes. Again, we found that responses on all dependent measures were consistently positive across the scenarios. As expected there were no significant differences between the person, praise and control conditions after the success trials (see Figure 3).

After one failure however, students showed a very similar pattern to the school children with differences in perceived performance and affect across conditions (perceived performance:  $F(2, 112) = 8.94, p < .001, \eta^2 = .14$ , affect:  $F(2, 112) = 3.84, p = 0.02, \eta^2 = .064$  see Figure 4a). As for the school children and as expected, these effects were due to less positive reactions to failure after receiving person than process praise (perceived performance:  $F(1, 77) = 15.61, p < .001, \eta^2 = .17$ , affect:  $F(1, 77) = 6.11, p = .016, \eta^2 = .07$ ), and differences between the person and control conditions (perceived performance:  $F(1, 74) = 9.51, p = .014, \eta^2 = .04$ , affect:  $F(1, 74) = 5.71, p = .019, \eta^2 = .072$ ). Contrary to Experiment 1, university students' levels of persistence were not affected by the type of feedback they had received  $F(2, 112) = .66, p = .521, \eta^2 = .01$ ). Crucially however, there were no differences between, the process and control conditions for any of the measures (perceived performance:  $F(1, 73) = 1.66, p = .201, \eta^2 = .022$ , affect:  $F(1, 73) = 0.23, p = .637, \eta^2 = .003$ , persistence:  $F(1, 73) = 1.26, p = .265, \eta^2 = .02$ ). This replicates our findings from Experiment 1 and suggests that, as for children, while praising in process terms provides more favourable outcomes than person praise, the positive effects of process praise again may contribute little more than objective performance feedback.

Further, as in Experiment 1, perceived performance:  $t(114) = 3.20, p = .002, d = 0.278$  and affect:  $t(114) = 2.33, p = .022, d = .162$ , predictably decreased overall after one failure. Again, despite the effects of the different types of praise after one failure, perceived performance,  $F(2, 112) = 0.068, p = .934, \eta^2 = .001$  and affect,  $F(2, 112) = .395, p = .675, \eta^2 = .007$  were not enhanced by process or objective performance feedback once the students experienced a second failure (see Figure 4b). Again, after a second failure all students showed a helpless response irrespective of the type of praise they had received in the first phase of the study.

### General discussion

Our results suggest that, consistent with earlier findings, when students are succeeding they respond equally positively to person, process and no feedback. Participants in both studies were pleased with their performance, showed positive affect and showed intentions to persist.

However, we found differences between the feedback conditions when they began to fail. Specifically, praising successes in person terms led to helpless responses to failure more than when the feedback was given in process terms, again replicating previous work (Kamins & Dweck, 1999). However, our results uniquely suggest that the positive effects of process praise may contribute little more than objective performance feedback.

According to Dweck (2006), process praise leads to a mastery response because it encourages learners to adopt a growth mindset in which they cultivate their abilities and learn through application. However, our findings suggest that objective feedback on performance may be sufficient to encourage this growth mindset in comparison to person praise. Process praise may not necessarily contribute more to encourage this mindset. Instead, person-related praise appears to be particularly detrimental. When delivering feedback, teachers may therefore be advised to avoid comments that are worded in person terms, and instead opt for process-related feedback, but may not necessarily need to go out of their way to provide evaluative comments on a learner's performance. A simple "10 out of 10" may be enough to encourage a positive response in the face of a subsequent failure. Our findings therefore suggest that expedient and objective feedback can have equally positive educational outcomes as praise that is worded in terms of effort. Future research may explore the underlying psychological processes that make objective feedback as effective as process-related feedback.

Future research should also examine the long-term effects of the different types of feedback. Much of the research to date (e.g., Dweck, 1999; Kamins & Dweck, 1999; Mueller & Dweck, 1998) has focused on discrete, singular events or a small handful of events on which to judge outcomes. However, learners are often required to cope with repeated failures. As we have shown here, after more than one failure participants tended to show a helpless response regardless of the feedback they received after their successes. Pessimistically, it is possible that repeated failure is enough to lead people to make attributions about their abilities. On the other hand, it is possible that subtle linguistic feedback offers the key to preventing this helpless

response. Specifically, no research to our knowledge has tested the utility of feedback intended to ‘repair’ the responses of learners who are struggling to cope with failure. It is likely that process-related feedback, focusing on the processes underlying the negative events, would help buffer learners against the effects of persistent failures.

It is entirely plausible too that subtle linguistic feedback can have longer-term effects than are currently known or are able to be seen with current research methodologies. For instance, if a learner is constantly referred to in trait terms then this may have significant and lasting consequences following failure that may not be evident based on observations from single feedback events. Future research may therefore examine the effects of continued and persistent person and process feedback on performance, affect and persistence. Further, repeated use of trait terms may signal bias or a specific motive on the part of the feedback-giver that may not necessarily be the case for single feedback episodes (cf. Douglas & Sutton, 2006; 2010). Given the importance of feedback being a fair and accurate representation of a learner’s performance (Hattie, in press) the effects of subtle linguistic feedback should be investigated as they occur in real settings rather than isolated experimental examples.

Research on educational feedback may also benefit from considering other subtle linguistic variations in feedback. For example, “You wrote that story well” and “You are a good writer” lie at the two poles of the linguistic category model as proposed by Semin and Fiedler (1988; see also Wigboldus & Douglas, 2007). To date, researchers have not examined the different effects of delivering feedback in the form of other linguistic categories such as interpretative action verbs (e.g., “you arranged that story well”) or state verbs (e.g., “you like writing”). It is possible that positive and negative outcomes only occur when researchers contrast the extreme adjectives and discrete verbs, or it may be the case that feedback has less positive outcomes as it becomes more abstract or person-related along a continuum. Other forms of verbs may also enable students and teachers to infer goals and motives of feedback-givers (Douglas &

Sutton, 2006; 2010). Future research may therefore examine different linguistic variations in feedback as they are used and interpreted in educational settings.

There may also be ways to combine these possibilities for future research with more general concerns about the linguistic framing of educational feedback. First, the way that a person deals with feedback may also depend on their pre-existing understanding of intelligence and ability. Dweck and colleagues have argued that there are two general ways in which people understand intelligence and ability. First, *entity theorists* believe that intelligence is like a trait – people have a certain amount of intelligence and it cannot be changed (Mueller & Dweck, 1998). In contrast, *incremental theorists* believe that that intelligence is something that can be cultivated through learning. This does not mean that people holding this theory deny individual differences in knowledge and how quickly people learn – it simply means that they believe everyone, with effort, can increase their intellectual abilities (Mueller & Dweck, 1998). As such, to a person holding an incremental theory, effort is viewed positively because it means that they are stretching their abilities and learning new things. It may therefore be the case that process-related praise is more effective for people who hold an incremental theory of intelligence. In contrast, for a person holding an entity theory, effort illustrates poor ability and as such is damaging to the self concept. From this perspective, if a person is intelligent then they should not need to try hard. It may therefore be the case that person-related feedback is more effective on people holding an entity theory of intelligence than those who hold an incremental theory. Future research could disentangle these possibilities and examine the likelihood that subtle linguistic feedback is best ‘tailored’ to learners’ existing theory of intelligence. The extent to which theories of intelligence are malleable may also play a part in the tailoring of feedback.

In sum, subtle differences in the wording of praise can influence people’s interpretation of their abilities, traits and motivations. Giving the most objective form of performance feedback may be sufficient to make learners feel positive, but after more than one failure they appear to display a helpless response regardless of how they were praised for their successes. This suggests

that the effects of feedback may be more transitory than previously expected. It also suggests the need for further research examining how educational practitioners can encourage a mastery response in the face of repeated failure.

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## Figure captions

*Figure 1.* Children's ratings of perceived performance, affect and persistence after three successes as a function of the type of praise.

*Figure 2.* Children's ratings of perceived performance, affect and persistence after failures 1 and 2 as a function of the type of praise.

(a) Failure 1

(b) Failure 2

*Figure 3.* University students' ratings of perceived performance, affect and persistence after three successes as a function of the type of praise.

*Figure 4.* University students' ratings of perceived performance, affect and persistence after failures 1 and 2 as a function of the type of praise.

(a) Failure 1

(b) Failure 2

Figure 1

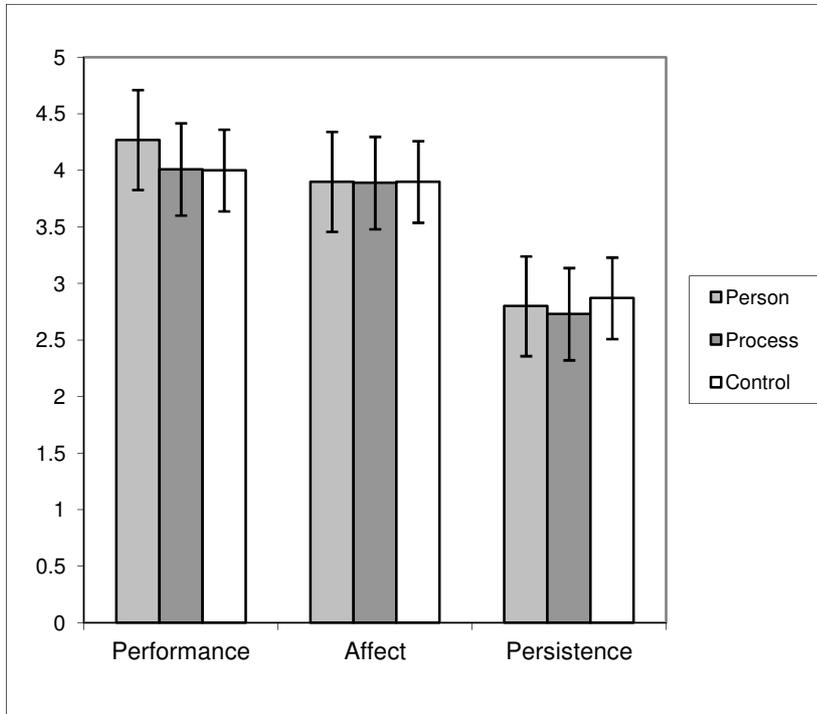
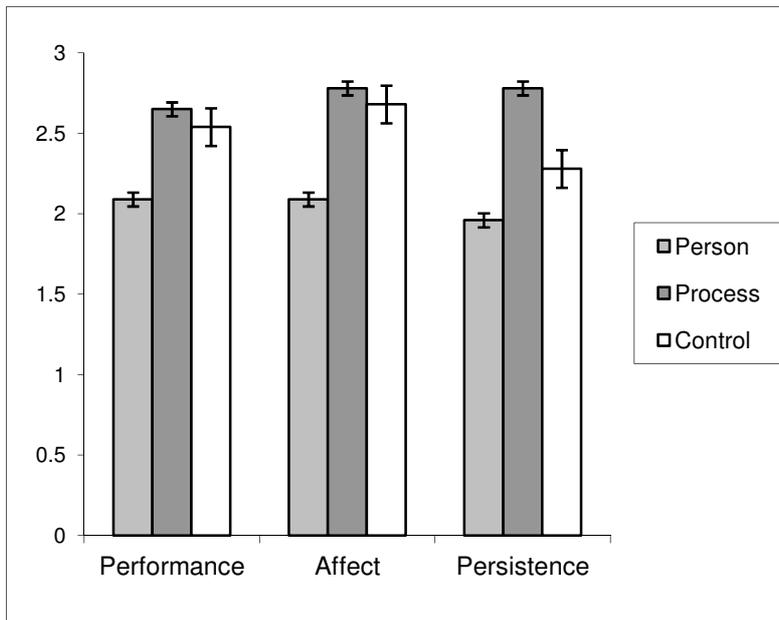


Figure 2

(a)



(b)

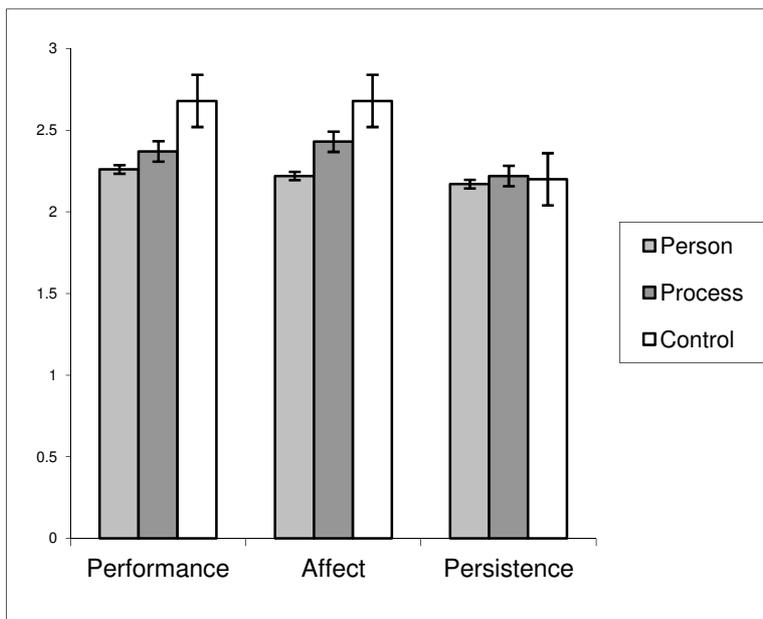


Figure 3

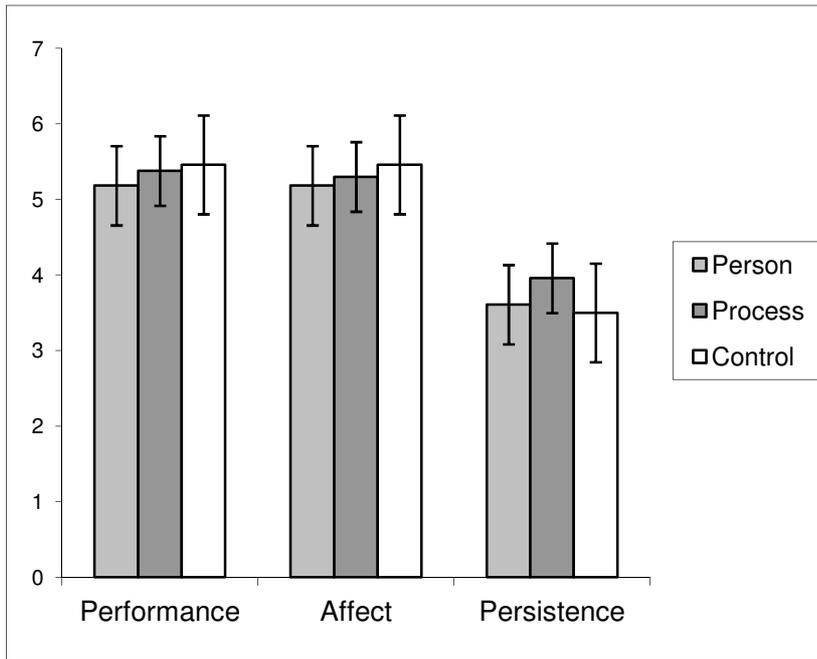
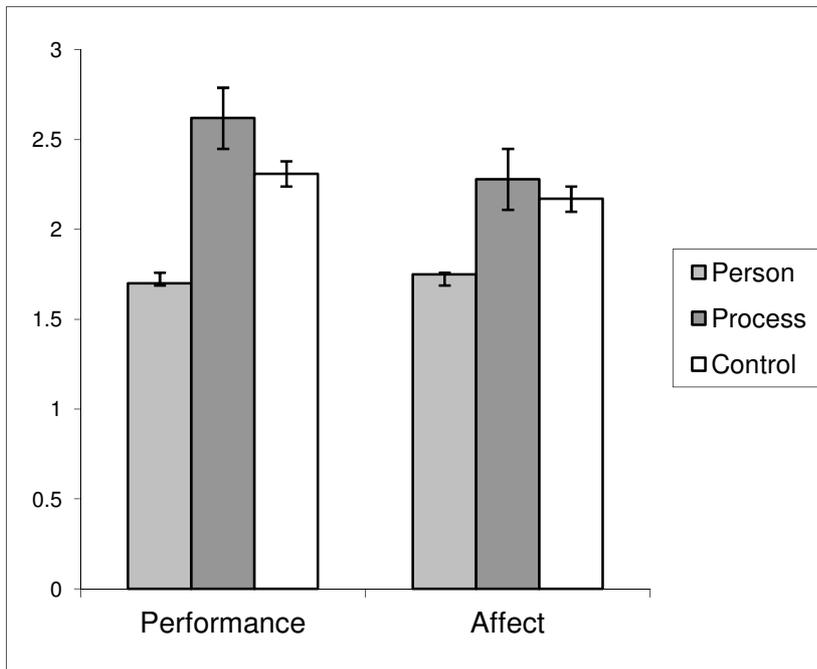


Figure 4

(a)



(b)

