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Effects of person versus process praise on student motivation: stability and change in emerging adulthood

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Effects of person versus process praise on student motivation: stability and change in emerging adulthood

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This study examined the effects of person praise and process praise on college students' motivation and how these effects change as students progress through their undergraduate years. Hundred and eleven college students worked on three puzzle tasks and received either person praise, process praise, or no praise. Following subsequent failure, students reported on their intrinsic motivation, perceived competence, performance attributions and contingent self-worth. Results indicated that process praise enhances intrinsic motivation and perceived competence more than person praise, and that these effects vary as students advance toward their degree. While person praise decreased motivation for sophomores and juniors, process praise increased motivation for seniors; freshmen reported no significant differences in their motivation. Implications for classroom practice and the need for research that considers developmental differences within college samples are discussed.

Keywords: praise; motivation; attribution; emerging adulthood; college students

Introduction

Fostering and maintaining students' interest and motivation in school is one of the key goals of educators and researchers alike. One important theme of research in this area concerns how extrinsic rewards and evaluative feedback in the classroom affect students' intrinsic motivation to learn (e.g. Deci, Koestner, & Ryan, 1999; Sansone & Harackiewicz, 2000). Praise, for example, can affect motivation differentially depending on the message it communicates to students and in turn, the causal attributions they make for both successes and failures. Indeed, praise that focuses on learners' efforts and strategies encourages more challenge-seeking and resilience than praise that focuses on learners' traits or abilities (Henderlong & Lepper, 2002; Kamins & Dweck, 1999; Mueller & Dweck, 1998). Most of the work on this topic, however, has focused exclusively on child populations and only one study to date has examined this issue with adolescents or adults (see Koestner, Zuckerman, & Koestner, 1987). Given that the college years are frequently thought to be an important and unique time of exploration and change in one's personal and educational trajectories, it is crucial to understand how common classroom practices affect students throughout their undergraduate experience.

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The current research sought to investigate how varying the attributional focus of praise affects motivation in emerging adulthood. Additionally, we examined how undergraduates' motivational reactions to different types of praise change during the college years. Specifically, we examined the effects of 'person praise' (e.g. 'you're good at this') and 'process praise' (e.g. 'you're using a good strategy') on college students' motivation, and compared these effects among students at different stages of their college careers.

Praise and motivation: the role of attributions

Given the convenience and immediacy of praising a student for success, praise can be a pragmatic and fruitful way to promote motivation in school contexts. Indeed, effectively administered praise can increase intrinsic motivation (Corpus & Lepper, 2007; Deci, et al., 1999; Harackiewicz, 1979), academic performance (Elawar & Corno, 1985; Hancock, 2002; Miller, Brickman, & Bolen, 1975; Schunk, 1983) and self-efficacy (Schunk, 1983), as well as decrease behavioural problems in the classroom (Madsen, Becker, & Thomas, 1968; O'Leary and O'Leary, 1977). However, a growing body of research challenges the purely beneficial effects of praising a student for success, indicating that praise may just as easily lead to decreases in motivational outcomes and task interest or have no observable influence depending on the context in which it is given and the message that it communicates (Brophy, 1981; Corpus, Ogle, & Love-Geiger, 2006; Deci et al., 1999; Henderlong & Lepper, 2002; Meyer, Bachmann, Biermann, Hempelmann, Ploger, & Spiller, 1979). With regard to the latter, both theory and research have shown that the attributional focus of a praise statement may hold significant value in determining how a student's motivation is affected (e.g. Barker & Graham, 1987; Graham, 1991; Stipek, 2002; Toland & Boyle, 2008).

Several studies have now investigated how praise influences motivation when the attributional message within is directed at the whole person or at some aspect of the underlying process (Cimpian, Arce, Markman, & Dweck, 2007; Corpus & Lepper, 2007; Kamins & Dweck, 1999; Mueller & Dweck, 1998). *Process praise* focuses on generally controllable and temporally unstable attributes such as the use of good strategies or effort, whereas *person praise* comments on the ability or more stable, often uncontrollable traits within the person such as intelligence. Indeed, experimental evidence demonstrates that praising a child for outstanding ability may lead that child to attribute her success to internal, stable and unchangeable causes. While not problematic under conditions of success, once this child encounters challenging obstacles, she will still hold those internal, stable attributions and develop helpless coping strategies and a sense of self-worth contingent on external measures of success. A child praised for hard work, on the other hand, will be more likely to see success as a result of controllable effort and will later continue to try harder when setbacks eventually do arise (Kamins & Dweck, 1999; Mueller & Dweck, 1998).

Kamins and Dweck (1999) demonstrated these assertions with an experimental paradigm in which kindergarteners participated in role-playing success tasks and were then given either person or process praise. Following this hypothetic success, the children were then given a task that involved a setback to simulate failure and were asked a number of questions about their hypothetical reactions. While there were no effects of the different kinds of praise on any dependent measures before

the setbacks, after experiencing failure, children who had received process praise endorsed a mastery orientation and showed more positive ratings of self-assessment, affect and persistence, compared to those who had received person praise. Conversely, those who received person praise subsequently endorsed beliefs associated with patterns of helplessness and contingent self-worth. Mueller and Dweck (1998) found a similar pattern of results with fourth- and fifth-grade children who received feedback for their performance on a puzzle-solving task.

Corpus and Lepper (2007) designed a related set of experiments, this time including a neutral baseline condition alongside the different forms of praise. These studies sought to clarify the absolute effects of person and process praise—i.e. whether person praise actually causes harm or whether it is merely less beneficial than process praise. In a first study, fourth- and fifth-grade students worked on a task and received either process praise, person praise, or no praise. After then failing at the task, girls who had received process praise showed enhanced motivation, whereas those who had received person praise showed decreased motivation compared to receiving no praise. These findings support the view that both process and person praise impact motivation in an absolute sense, at least for girls. In a similar procedure using preschool students, both boys and girls showed increases in motivation following all forms of praise relative to receiving no praise, implicating age as an important moderator of the effects of praise on motivation. Indeed, accumulated experience in an environment where teacher feedback is given on a regular basis may change the way that students interpret and are influenced by praise (e.g. Dweck, Davidson, Nelson, & Enna, 1978). Despite this logical assumption, no research has yet replicated these findings with students beyond primary school.

Interestingly, the one study conducted with college students using a similar paradigm did examine the effects of ability versus effort praise for a successful performance but found a pattern opposite to that described above. Namely, students praised for ability showed enhanced performance and spent more time on subsequent puzzles compared to those who received effort praise or no praise (Koestner et al., 1987). It may be the case that college students react more positively than children to ability praise over effort praise due to more time spent in a performance-oriented learning environment (Deci et al., 1999) or due to the belief that effort and ability are inversely related, which commonly develops in adolescence (Barker & Graham, 1987; Meyer et al., 1979). However, these seemingly incongruent results between college students and children may be artifactual. That is, Koestner et al. did not include a failure phase in which their college students' performance dropped—an inevitable occurrence in the real world that is likely to reveal negative effects of ability attributions and positive effects of effort attributions (e.g. Dweck, 1999) for college students and children alike.

As such, the first goal of the present research was to elucidate these ambiguities with an experimental design that evaluated the effects of receiving person and process praise relative to no praise on college student motivation before and after experiencing subsequent failure. Does person praise have the same potential for harm among a college population? Addressing this question would inform motivational theory regarding developmental differences in attributional processing. It would also have clear practical implications regarding best practices for instruction at the collegiate level. The second goal of this research was to examine how the effects of praise on motivation may be moderated by college students' progression toward their degrees: Do person and process praise impact motivation in the same

way for freshmen and seniors alike? This second question arises in part from the recent research on emerging adulthood.

Motivation in emerging adulthood

Most motivation research assumes college students to be a stable group representative of the adult population, but developmentalists have recently categorised the ages from 18 to 25 as a unique period of *emerging adulthood* that is conceptually and empirically distinct from both adolescence and young adulthood (Arnett, 2000; Arnett & Tanner, 2006). This stage in the life course is characterised by instability in love, work and education, newly experienced independence previously unoffered by adolescence, and possibilities for self-exploration not yet constrained by the roles required of adulthood (Arnett, 2000). Given that college students are advancing through a novel and challenging learning environment during such an important period of transition, it is crucial to consider how their motivational processes may change over the college years.

Along these lines, self-regulatory skills must be developed during emerging adulthood given that individuals have to adjust to increases in autonomy paralleled by decreases in social guidance and control (Arnett & Tanner, 2006). While little research has been conducted on motivational changes during this time, there are documented increases in self-esteem (Galambos, Barker, & Krahn, 2006; Hoffman & Baldwin, 2002; O'Malley and Bachman, 1983) and stability of personality traits (Roberts & DelVecchio, 2000; Stein, Newcomb, & Bentler, 1986) but decreases in mastery goal orientation and expected interest and enjoyment of classes (Fryer & Elliot, 2007; Lieberman & Remedios, 2007; Senko & Harackiewicz, 2005). Given these changes in motivational adjustment and life transitioning, there is reason to believe that college students' reactions to external feedback are also transforming as they progress through these transitory years, both as a symptom of and perhaps contributor to these changes.

Although no experimental research has yet addressed changes in motivation according to the specific constructs of person and process praise during college, one study has looked into similar changes in preferences for praise across the undergraduate years. Stapleton-Vitale (1984) asked college students (ages 18–25) to rate their preferences for praise or for encouragement. In this study, praise was defined as 'a verbal reward expressing judgment upon one's completed task which recognizes the actor and focuses on personal gain' while encouragement is 'a verbal reward given during the performance or upon completion of a task which recognizes the act and focuses on one's assets and contributions' (p. 11). Interestingly, these two descriptions resemble person and process praise, respectively. Results indicated that sophomores, juniors and seniors all had a significantly greater preference for encouragement than did freshmen. Given the similarity between these concepts, the current research may follow a similar pattern of results according to age, such that underclassmen (freshmen and sophomores) will rely less on process praise than upperclassmen (juniors and seniors).

An alternative hypothesis is that seniors will be more receptive to praise and thus react more positively than freshmen or underclassmen more generally, who may be more receptive to negative feedback. This hypothesis can be derived from the self-verification theory, which states that individuals seek confirmation of their existing beliefs about themselves in order to maintain a predictable and controllable

self-concept (Swann, Pelham, & Krull, 1989). Those with higher self-esteem are more likely to seek out positive evaluation to confirm their positive self-concept while those with lower self-esteem are often more attuned to negative feedback to confirm beliefs about the unappealing aspects of themselves (Pettit & Joiner, 2001). Since self-esteem is thought to increase during college, one might predict that seniors will be more receptive to praise and thus react more positively than freshmen or underclassmen, who may be more receptive to negative feedback compared to their older peers.

Current research

The present research investigated how the attributional focus of praise affects motivation in an emerging adult population, and how these effects vary at different stages of development towards an undergraduate degree. Specifically, we examined the post-failure effects of person praise and process praise on college students' intrinsic motivation, contingent self-worth, perceived competence and performance attributions and compared these effects across underclassmen and upperclassmen using a laboratory paradigm. Consistent with the findings for primary school children, we expect process praise to enhance intrinsic motivation, perceived competence and process attributions and to reduce feelings of contingent self-worth more than person praise. Since research thus far could lead us to predict contradictory patterns of change, no specific hypothesis was made regarding the exploratory question of developmental change during college.

Methods

Participants

A total of 111 undergraduates (51 females, 60 males) from a small liberal arts college in the Pacific Northwest participated in the current study. Participants were randomly assigned to one of the three experimental groups: person praise ($n = 35$), process praise ($n = 37$) and a no praise control condition ($n = 38$). Each condition was balanced in gender and class year. Recruitment occurred during the first few weeks of the spring semester.

Procedure

Approval was obtained from the Human Subjects Research Committee of Reed College. Participants were told that the study was examining how music affects task performance to mask the true purpose of the study. They were informed that further instructions would be in writing so as to not interfere with their listening and to create an atmosphere most like a high school classroom, in which teachers give homework feedback and directions in written form. Such a cover story allowed for the feedback to be administered more objectively in writing in order to minimise experimenter expectancy effects that might arise from verbal praise.

Written instructions told participants that they would work on three hidden figures puzzles while listening to a corresponding 90-second song during each puzzle. They were given written performance feedback after each puzzle, followed by a short questionnaire about the music to maintain the cover story. All three songs

were instrumental pieces performed by the same artist and used in counterbalanced order across the three trials. In order to further ensure that the music did not influence the study, the songs were also pilot tested by a convenience sample ($n = 10$), who rated how enjoyable and how distracting each song was on a 7-point Likert-type scale while working on hidden figures puzzles. One-way ANOVAs indicated that there were no statistically significant differences between the songs on the dimensions of enjoyment [$F(2, 30) = .079$, *ns*] or distractibility [$F(2, 30) = .60$, *ns*].

The puzzles used during the experiment were drawings by the artist Al Hirschfeld containing the word 'Nina' embedded in the sketches. These puzzles have previously been shown to be intrinsically motivating (e.g. Harackiewicz, 1979; Ryan, 1982). Participants were asked to find and circle as many 'Ninas' as possible during a given song. All participants received their true score (number of Ninas found) along with an alleged average score and total number of Ninas possible, which were in reality standardised fabrications to indicate the desired degree of success or failure on each trial. After the first puzzle, participants were told that they found two more Ninas than average and two fewer than the maximum. After the second puzzle, they were told that they found three more than the average for that puzzle and one less than the maximum possible. Scores on the first two trials were followed by a line of written feedback, either person praise, process praise, or no praise according to randomly assigned condition (determined by a random number generator):

Process praise: 'Great! It seems like you put a lot of effort into these!; 'Excellent! You must be using some really effective strategies!'
Person praise: 'Great! You're really good at these!'; 'Excellent! You must have a natural talent!'

The third puzzle was a failure induction in which participants were told that they completed two fewer than average and four less than the maximum. No praise followed this last puzzle trial, only descriptive feedback (i.e. 'You didn't do as well on this last one'). In fact, the third puzzle was also selected to be objectively more difficult than the puzzles worked on in the other two trials given that there were only 8 possible 'Ninas' to be found, in comparison to 12 and 13 possible 'Ninas' in the first and second puzzles, respectively. A longer questionnaire assessing intrinsic motivation, perceived competence, contingent self-worth and performance attributions followed the last trial. At the end of the procedure, participants were probed for suspicions about the true nature of the study, and then asked to repeat the feedback that they received after each puzzle to ensure that they had read and remembered the praise given. They were then fully debriefed and thanked.

Measures

Consistent with previous use of these scales (e.g. Plant & Ryan, 1985; Ryan, 1982), participants responded to all items using a 7-point Likert-type scale (from *Not at all true* to *Very true*).

Self-reported intrinsic motivation

After each puzzle was completed, participants filled out a short questionnaire with one item assessing intrinsic motivation (I enjoyed working on this puzzle) taken

from the interest and enjoyment subscale of the Intrinsic Motivation Inventory (IMI; Ryan, 1982) as well as three items assessing perceptions of the music to maintain believability of the cover story. After the third puzzle and accompanying failure induction, self-reported intrinsic motivation was again measured using six items from the interest and enjoyment subscale of the IMI (e.g. 'This task did not hold my attention at all'.) (α = .84).

Perceived competence

Three items from the IMI (Ryan, 1982) assessed perceived competence. Questions included 'I think I did pretty well at this task, compared to other students'; 'This was a task that I couldn't do very well'. (reverse scored); and 'I am satisfied with my performance at this task' (α = .64).

Contingent self-worth

Contingent self-worth was measured using the five-item academic competence sub-scale of the Contingencies of Self-Worth Scale developed by Crocker, Luhtanen, Cooper, and Bouvrette (2003). Example items included 'It was important to me to do well at this task.'; 'My opinion of myself is not tied to my performance' (α = .75).

Performance attributions

Performance attributions were examined using a self-report measure adopted from Koestner, Zuckerman, and Olsson (1990). In this measure, participants rated the extent to which a number of separate factors (ability, task difficulty, music, effort, intelligence and strategy) affected (i.e. either helped or hindered) their performance. Several of these factors (music, strategy and intelligence) were not included in the original measure but were added for the purpose of this study.

Behavioural intrinsic motivation proxy

As a proxy for using a behavioural measure of intrinsic motivation, participants were asked at the end of the questionnaire to write down their email address on a separate piece of paper if they would like to: (a) take home any extra puzzles; or (b) have their own scored puzzles returned with an answer key after the experiment was over.

Results

Preliminary analyses

Preliminary analyses were conducted to ensure that the tasks were appropriately difficult, that participants paid attention to the feedback they received, and that there were no effects of the order in which the music was played or the gender of the participants. As expected, participants performed well on the first (M = 7.57, SD = 2.60) and second (M = 8.34, SD = 1.69) puzzles—the success phase—and relatively poorly on the third puzzle (M = 3.27, SD = 1.62)—the failure phase.

    To check that participants were not suspicious of the true purpose of the experiment, they were asked to report any thoughts that they had about the aims or ideas behind the study. Responses to the suspicion check revealed that the majority of participants (86%) had no correct suspicions. Those who did not pass the suspicion check ($n = 15$) were excluded from further analyses. Additionally, a series of 3×3 (Feedback condition × Music order) analyses of variance (ANOVA) confirmed that the ordering of music had no significant effects on any of the dependent variables (all Fs < 1.9, *ns*). A series of 2×3 (Gender × Feedback condition) ANOVAs showed no effects of gender on any dependent variables, except when reported otherwise below.

    Finally, preliminary analyses revealed that sophomores and juniors reacted similarly to praise while freshmen and senior formed distinct groups, so all subsequent analyses present sophomores and juniors grouped together. For the questions of central interest, then, a series of 3×3 (Feedback condition × Class group) analyses of variance (ANOVA) were conducted to examine the effects of praise on participants' responses to the self-report measures of intrinsic motivation, perceived competence, contingent self-worth, and performance attributions.

Self-reported intrinsic motivation

For the one-item measure of intrinsic motivation recorded after completion of each puzzle, there were no effects for the first two success puzzles, Fs(4, 96) < 1.89, *ns*, but a significant interaction between feedback condition and year in school for the third failure puzzle, $F(4, 96) = 4.20$, $p < 005$, $\eta_{p}^{2} = .16$. Seniors reported more enjoyment in the person and process praise conditions than they did in the control condition. Other classes reported similar levels of enjoyment across all conditions. Means and standard deviations by condition and year in school are reported in Table 1.

    For the composite measure of self-reported intrinsic motivation that followed the third more difficult puzzle, the predicted main effect of feedback condition was significant, $F(2, 96) = 3.31$, $p < .05$, $\eta_{p}^{2} = .07$. Students who received process praise

Table 1. Descriptive statistics for self-reported intrinsic motivation following failure by condition and class year.

	Control M (SD)	Person praise M (SD)	Process praise M (SD)	Total M (SD)
One item measure				
Freshmen	4.78 (.93)$_a$	4.18 (1.08)$_a$	4.62 (1.19)$_a$	4.54 (1.07)
Sophomore/junior	5.29 (1.38)$_a$	4.75 (1.28)$_a$	4.14 (1.46)$_a$	4.86 (1.41)
Senior	3.82 (1.83)$_a$	5.67 (1.41)$_b$	5.40 (1.08)$_b$	4.90 (1.67)
Total	4.68(1.49)$_a$	4.82 (1.36)$_a$	4.77 (1.28)$_a$	4.75 (1.38)
Composite measure				
Freshmen	5.35 (.85)$_a$	5.09 (.66)$_a$	5.53 (.77)$_a$	5.34 (.77)
Sophomore/junior	5.56 (.84)$_a$	4.50 (.80)$_b$	5.12 (.99)$_{ab}$	5.16 (.95)
Senior	4.83 (1.28)$_a$	5.43 (.86)$_a^{†}$	6.18 (.79)$_b$	5.46 (1.14)
Total	5.28 (1.01)$_{ab}$	5.03 (.83)$_a$	5.65 (.90)$_b$	5.32 (.95)

Notes: Means (*M*) that do not share subscripts across each row differ significantly ($p < .05$; Tukey contrasts). Standard deviation (*SD*) presented in parenthesis.
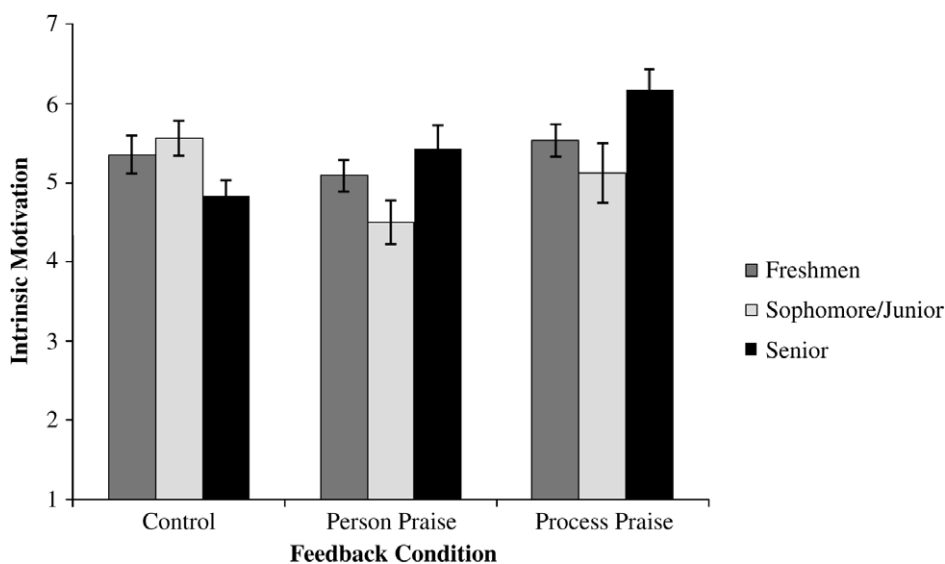†Person versus process was significant at the $p < .10$ level.

Figure 1.   Mean self-reported intrinsic motivation by feedback condition and school year.

reported more intrinsic motivation than those who received person praise, with participants in the control condition falling in the middle. This main effect was qualified by a significant interaction between feedback condition and year in school, $F(4, 96) = 3.53$, $p < .01$, $\eta_p^2 = .14$. While person praise seemed to be less motivating than process praise at each grade level, the extent to which students were motivated by either type of praise depended on their year in school. For freshmen, intrinsic motivation was largely unaffected by the type of feedback received, while sophomores and juniors reported significantly greater intrinsic motivation after receiving no praise or process praise compared to receiving person praise. Seniors reported greater intrinsic motivation after process praise than after person praise or no praise. A graphical representation of this relationship is presented in Figure 1 (see Table 1 for means and standard deviations by condition and year in school).

Behavioural intrinsic motivation

The two questions serving as a proxy for behavioural measures of intrinsic motivation at the end of the experiment were intended to capture the same construct and were moderately correlated ($r = .50$) so were therefore averaged together to form a composite measure of behavioural motivation. There were no main effects of praise on behavioural motivation, $F(2, 96) = .04$, *ns*, although an interaction between condition and gender approached significance, $F(2, 96) = 2.34$, $p < 10$, $\eta_p^2 = .05$. This trend suggested that females demonstrated more intrinsic motivation on the behavioural measure ($M = .53$, $SD = .44$) than males ($M = .20$, $SD = .32$), only after receiving process praise.

Perceived competence

A 3 × 3 factorial ANOVA revealed a main effect of feedback condition on perceived competence, $F(2, 95) = 4.43$, $p < .05$, $\eta_p^2 = .09$. Students perceived their

Table 2.   Descriptive statistics for perceived competence by condition and class year.

	Control *M* (*SD*)	Person praise *M* (*SD*)	Process praise *M* (*SD*)	Total *M* (*SD*)
Freshmen	4.87(.83)$_a$	4.73(.63)$_a$	4.92(.58)$_a$	4.85(.68)
Sophomore/junior	4.67(.90)$_a$	4.50(.85)$_a$	5.06(.77)$_a$	4.70(.85)
Senior	4.03(.89)$_a$	4.74(.52)$_b$	5.30(.79)$_b$	4.67(.91)
Total	4.55(.92)$_a$	4.67(.65)$_{ab}$	5.08(.69)$_b$	4.75(.81)

Notes: Means (*M*) that do not share subscripts across each row differ significantly ($p < .05$; Tukey contrasts). Standard deviation (*SD*) presented in parenthesis.

competence at the puzzle tasks to be higher in the process praise condition, than in the control condition, while the perceived competence of those who received person praise fell in between these two means. Additionally, there was an interaction between feedback condition and class year that approached significance, $F(4, 95) = 2.19$, $p = .08$, $\eta_p^2 = .09$. Seniors who received person praise or process praise tended to report higher perceived competence than seniors in the control condition while lower classmen did not show differences according to condition (see Table 2 for means and standard deviations).

Contingent self-worth

While no significant main effects were found for feedback condition, $F(2, 96) = .37$, *ns*, there was an interaction effect between feedback condition and gender, $F(2, 96) = 5.79$, $p < .005$, $\eta_p^2 = .11$. Female participants reported higher levels of maladaptive contingent self-worth in the person praise ($M = 5.60$, $SD = 1.12$) and control ($M = 5.65$, $SD = .74$) conditions than in the process praise condition ($M = 5.09$, $SD = .55$). Men, however, showed the opposite pattern, reporting less contingent self-worth in the person praise ($M = 4.99$, $SD = .98$) and control conditions ($M = 5.25$, $SD = .72$) and greater contingent self-worth in the process praise condition ($M = 5.81$, $SD = .76$).

Performance attributions

The dimensions of ability and intelligence attributions were both theoretically related and moderately positively correlated ($r = .52$) and therefore averaged together to form an index of 'person' attributions. Likewise, ratings of strategy and effort attributions were averaged together to form an index of 'process' attributions ($r = .44$). No significant effects were found for feedback condition on person, $F(2, 94) = 1.75$, *ns*, or process attributions, $F(2, 96) = .15$, *ns*.

Discussion

The results of this study showed that process praise enhances intrinsic motivation more than person praise for college students, and that these effects vary as students progress through their undergraduate years. While person praise decreased motivation for sophomores and juniors, process praise increased motivation for seniors. Interestingly, freshmen reported no significant differences in their motivation after receiving the different forms of feedback. Process praise also increased students'

perceived competence for a task, and for women, decreased feelings of contingent self-worth.

Person versus process praise in college

This is the first study to replicate in a college sample the finding from research with children that process praise is more motivating than person praise (Corpus & Lepper, 2007; Kamins & Dweck, 1999; Mueller & Dweck, 1998). While students tend to show few motivational differences after receiving person or process praise under conditions of success, all age groups beyond preschool appear to be more positively affected by process praise than person praise after encountering failure. This pattern of outcomes fits into the broader scope of attribution theory. When students experience setbacks, those who attribute their behaviour to uncontrollable, stable causes will adopt more helpless coping strategies while those who see their behaviour as controllable are more likely to see the setback as a chance for improvement and thus remain motivated. As such, it is surprising that praise showed no effects on performance attributions in the present study. Considering that the predicted effects on motivation and perceived competence were supported by these results, it is conceivable that the particular measure used to assess performance attributions did not appropriately capture students' beliefs about the sources of their success and failure. A more clearly defined measure would be useful in the future.

While the benefits of process praise over person praise are in line with a large body of research with children, results of the present study must be integrated with the existing research on college students' reactions to praise. To reconcile Koestner and colleagues (1987) seemingly contradictory finding that effort praise is less motivating than ability praise within a college population, several possibilities should be considered. First, the current study included a failure experience that Koestner et al. (1987) did not. Similar to previous research (Corpus & Lepper, 2007; Kamins & Dweck, 1999), process praise was found to be more motivating only after a failure phase. Examining how the longer lasting effects of effort praise are generalised and maintained across success and failure situations is important to consider in college as well as elementary school, since both environments provide students with inevitable academic setbacks. Additionally, it may be the case that focusing on effort alone (as in the Koestner et al. study) can be somewhat discouraging to college students, who at times encounter difficulties that require a change of behaviour or a new approach to the problem in order to succeed. In such an environment, focusing on the use of effective strategies in addition to effort (as in the present study) might provide students with more diverse and realistic methods of overcoming difficulties rather than relying only on brute effort and persistence. Future research might distinguish between the effects of these two types of process praise in a college setting.

An exploration of developmental differences

The exploratory analyses based on students' stage in their undergraduate career may be interesting to first consider in light of research on students' beliefs about the relationship between effort and ability. Recent research by Lam, Yim, and Ng (2008) revealed that effort praise led to greater intrinsic motivation only when

students believed effort and ability to be positively related, but not when they believed them to be inversely related. That is, the more students endorsed the view that expending more effort was an indication of greater ability, as opposed to believing that having to work harder indicated less ability, the more they evaluated themselves as smart, successful and intrinsically motivated after receiving effort praise. It is plausible that as students gain more experience in a challenging college environment where effort is increasingly imperative to success apart from initial ability level, they may be more inclined to endorse the positive rule over the inverse rule. This could potentially account for the finding that seniors showed the strongest positive reaction to process praise. Further research should address this possible mechanism underlying changing reactions to praise during college.

It is also interesting that freshmen were the only group who remained relatively unaffected by the feedback manipulation. Considering how much research is conducted with students from introductory psychology classes, which very often consist of mostly freshmen, it is possible that certain effects of praise or related constructs have been overlooked or misconstrued. It may be the case that many freshmen are coming directly out of high school environments where they were likely commended for advanced achievement. Upon entering a new and challenging environment that calls into question their academic competence, they may have a less firmly established self-concept, and thus do not internalise either type of praise as genuine or meaningful. This possibility fits with our predictions regarding self-verification theory, namely that seniors with ostensibly higher self-esteem would be more receptive to positive feedback than those with lower self-esteem, in this case underclassmen. More generally, this study highlights the need to consider the extent to which freshmen in college can be used as a representative sample of all college students or adults as they stand at a crucial period of transition in emerging adulthood.

Somewhat unexpected was the finding that person praise undermined intrinsic motivation most for sophomores and juniors compared to their peers of different years. Perhaps this finding is indicative of the commonly experienced apathy and disengagement from academic life often labelled the 'sophomore slump'. Sophomores must cope with an increasing workload without the same level of excitement, novelty, or institutions of social and academic support that their first year supplies (Sanchez-Leguelinel, 2008). Although freshmen and seniors are usually provided with many programs designed to support their process of transition to and from college, sophomores are expected to take on greater autonomy while afforded fewer services that are directed toward the unique obstacles of these years (Schaller, 2005). There may also be fewer opportunities for personal interaction with professors, as more energy is given to seniors, despite external pressures to choose a major and solidify education goals (Sanchez-Leguelinel, 2008). Acknowledging and understanding the distinctive developmental changes and issues that arise at different stages in one's college career could not only help to explain changes in motivational reactions to feedback, but could also be crucial for maintaining systems of support that meet the needs of students beyond their first year.

Gender differences

The finding that process praise led to lower contingent self-worth for women but not men fits with previous research showing that girls tend to benefit more from

effort praise than their male counterparts, displaying more intrinsic motivation and feelings of competence (Corpus & Lepper, 2007; Koestner, Zimmerman, & Koestner, 1989). Additionally, Crocker and Wolfe (2001) revealed that women in a college sample were more likely to base their self-worth on school competence and approval from others than were men. Given the replication of this normative trend in the present data, it is possible that process praise can act as a buffer for some of the maladaptive tendencies that develop in college for women especially. Indeed, the behavioural measure of intrinsic motivation also showed a marginally significant interaction of gender and praise condition, suggesting that process praise was particularly beneficial for women. A larger sample might have revealed a clearer pattern of gender differences across condition and year in school.

Limitations

These results should not be too hastily applied to classroom practices without first considering some important limitations. Participants in this study may not have been a representative sample of how a general population of college students might react to praise as they progress through college, both as a result of the specific learning environment and the limited demographic diversity of the school. A larger university setting with a more diverse populace and different educational values may demonstrate a unique pattern of change. Also important to keep in mind is the cross-sectional nature of this data. While this study provides us with a crucial first step to understanding changes in praise during emerging adulthood, future longitudinal research is needed to grasp better the developmental shifts in motivation and effects of praise. Future research should also assess the effects of praise on motivation in a real world environment in which other extrinsic factors (grades, peers, etc.) influence intrinsic motivation simultaneously.

Conclusions

Despite these limitations, this study highlights the often overlooked importance of the shifting and malleable motivation of emerging adults as they progress through the years of higher education. While the current research was conducted in a laboratory setting examining a few isolated instances of praise, it is likely that these forms of feedback can have a large cumulative effect when given at several points during the year. If two brief statements of praise can change a student's interest, enjoyment, feelings of competence and degree of contingent self-worth depending on minor differences in verbal content, one can imagine the impact that continuous differences of praise may bring in a real classroom setting. Even in a higher education environment, teachers should be aware of the message that praise communicates to their students. By focusing on controllable processes instead of underlying personal traits, educators have the potential to positively influence student motivation in meaningful and lasting ways during a critical period of educational and life transition.

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