THE EFFECTS OF MASTERY VERSUS SOCIAL-COMPARISON PRAISE ON STUDENTS' PERSISTENCE: A ROLE OF FIXED VERSUS GROWTH MINDSET

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Abstract

The purpose of this study was to determine the effects of fixed versus growth mindset and mastery versus social-comparison praise on students' persistence at calligraphy classes. In this study, a factorial design was conducted. The subjects were 40 Iranian students who were randomly assigned to one of the four experimental equal sized groups by giving them a particular set of instructions. In the first step, mindset was manipulated in the instructions and then subjects got three easy home works followed by praise. The first and third groups were provided mastery feedback, the second and forth groups got social-comparison praise. Then, all subjects were provided by ten difficult home works. The subjects were asked to do as many as home works they like during two weeks or give them up. Two-ways ANOVA analyses of the resulting data showed the growth mindset-mastery praised group (group 3) exhibited the most persistence. The fixed mindset-social comparison praised group (group 2) demonstrated the least persistence. The growth mindset-social comparison praised group (group 1) and the fixed mindset-mastery praised group (group 4) exhibited significantly more persistence than group 2, but less than group 3. The findings highlight that mindset can moderate the affect of praise on students' persistence.

Keywords: Mindset; mastery praise; social-comparison praise; persistence; calligraphy

1. Introduction

Social comparison is a psychological process that is widely prevalent, particularly so in educational settings [1]. In Festinger's [2] social comparison theory, he noted that people engage in social comparison as a means to reduce ambiguity and accurately evaluate their own qualities and abilities. However, controversy exists over whether providing children with social-comparison praise have beneficial impact on their motivation and performance [3]. Some studies have demonstrated that students who received social-comparison praise (e.g., "you're doing better than most students" or "you're performance is amongst the best we've had") demonstrated greater motivation compared to no-praise or other control groups [4, 5, 6]. Sarafino, Russo, Barker, Consentino and Titus [7] found that students who received social-comparison voluntarily engaged in the task more so than those who received feedback that they performed similar to others. Though these studies demonstrate the possible positive influence of social-comparison praise, they have been criticized for inadequate control groups [8]. For example, a control group given feedback that they are average may be seen as negative, rather than neutral. In addition, most social-comparison studies do not examine motivation or behavior following a subsequent unsuccessful task [8].

Beyond methodology, the primary criticism to social-comparison praise is that it teaches children to evaluate themselves on the basis of the performance of others, and may therefore lead to maladaptive coping in situations in which one is outperformed by others individuals [3]. Social-comparison praise has been hypothesized to decrease intrinsic motivation for the praised children because they may then view their behaviors as externally controlled [9]. Contrastingly, it is suggested that praise that focused on a child's competence (mastery) rather than social comparison may be important for fostering motivation [10]. This area is relatively understudied, though some interesting findings have emerged. In a study of adults, Koestner, Zuckerman, and Olsson [11] found that gender moderated the influence of social-comparison and mastery praise, where women

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were more intrinsically motivated following mastery praise, while men were more motivated following social-comparison praise. In a study of children, Henderlong Corpus, Ogle & Love-Geiger [8] found that social-comparison praise lead to decreased motivation following ambiguous feedback for all children, and also decreased motivation following positive feedback for girls only. Thus, mastery praise may be more conducive than social-comparison to fostering intrinsic motivation, particularly for females [8]. In this study we are interested in exam if mindset moderates the influence of social-comparison and mastery praise on students' persistence.

Dweck [12] proposed that "Mindset" refers to implicit theories that individuals hold regarding the nature of intelligent behavior; to the degree that individuals attribute intelligence to fixed traits, they hold a "fixed" theory of intelligence (that is, a fixed mindset), and to the degree that they attribute intelligence to learning, effort, training, and practice, they hold a "growth" theory of intelligence (that is, a growth mindset). The terms fixed and growth mindset replaced the earlier terms for entity and incremental theories of intelligence. The implicit theories that people hold for the nature and causes of ability have a number of implications, particularly for motivation to practice and learn. In her earlier research, Dweck [13] identified "entity" and "incremental" theorists, based on whether individuals attributed success in tasks that required intelligent behavior to having sufficient native aptitude (entity) versus having practiced a skill and improving performance over time (incremental). Eventually, she proposed a theory of "mindset" to integrate a number of related ideas that she had developed over the years.

Individuals with a *fixed* mindset tend to be interested only in feedback on their success in activities to the degree that it serves to evaluate their underlying ability. They are not using the feedback to learn, since they do not believe that their success depends on their effort to learn. Rather, they believe that success depends on the level of innate ability that they have. Therefore, they dread failure, because it suggests constraints or limits that they will not be able to overcome. A *growth* mindset, on the other hand, attributes success to learning. Therefore, the individual is not terrified of failure, because it only signals the need to pay attention, invest effort, apply time to practice, and master the new learning opportunity. They are confident that after such effort they will be able to learn the skill or knowledge, and then to improve their performance [14].

Messages to children can influence the development of mindset. If parents or teachers constantly seem to attribute success to inborn or innate abilities, children will come to develop a fixed mindset ("Johnny failed the math test because he is low on math ability"). Praise of a child's performance can be particularly likely to produce a fixed mindset when it attributes the success to the child's intelligence (implying aptitude or fixed traits). However, if parents or teachers attribute success to effort and practice, children will be more likely to developed a growth mindset ("Johnny failed the math test because he did not do his homework, but he will pass the next one because I will make sure he puts in the time and practices"). Praise of a child's efforts to practice, or attributions of success that reference the prior practice in which the child engaged, can spur the child to develop a growth mindset [14].

Dweck [15] suggests that entity beliefs can lead us to make more rigid judgements and can limit the paths we choose to take. These beliefs are held to be an important part of people's motivational systems. They are held to influence the goals that people pursue, the level of interest that they maintain and the effort that they invest as well as predict their behaviour after setbacks.

Research has shown that incremental theorists set goals focused on learning, employ mastery-oriented strategies to reach these goals, and report greater confidence and expectations when evaluating the potential for success. In contrast, research has shown that entity theorists set goals focused on performance, employ helpless-oriented strategies in the face of challenges to goal pursuits, and report feeling vulnerable and anxious when evaluating past and future performance [16, 17, 18]. Many researchers have primed implicit theories [19], and temporarily changed them in both one-shot laboratory experiments [20] and longer-term interventions [21, 22].

A myriad of empirical research has indicated that learners' mindsets may be malleable and that it is possible that a mindset can be promoted via interventions that explicitly teach students about

mindset theory and include information on the brain's malleability both at school [23, 24, 25, 26]. Mega et al. [27] write that students who believe that intelligence can be increased may use different strategies to control and regulate their learning. However, students who believe intelligence is fixed may reduce their level of strategy use. Mega et al. [27] continue to argue that a belief in the fixed nature of abilities may undermine a student's long term academic success by fostering avoidance of difficult yet necessary tasks. The current study tested the impact of praise (social comparison vs mastery) and mindset (fixed vs growth) on students' persistence at calligraphy classes. We expected that both fixed mindset and social comparison would reduce persistence in calligraphy classes, in contrast to growth mindset and mastery praise. Finally, we investigated whether an interaction effect between mindset and praise would emerge.

2. Method
2.1. Participants
This study was conducted using a field empirical method with a factorial design. 40 Iranian calligraphy students randomized into 4 experimental same saized group (n=10), (see the table 1).

Table 1. A factorial design (2*2)

		Mindset	
		Fixed	Growth
Praise	**Mastery**	Group 1: n=10	Group 3: n=10
	Social-comparison	Group 2: n=10	Group 4: n=10

2.2. Measures
Mindset. The Persian version of 'Mindset Questionnaire, Version Two' [20] was employed to examine growth and fixed mindset. Mindset were assessed through 8 items responses were made on 6-point scales (1 = Disagree A Lot to 5 = Agree A Lot). According to Wang and Koh [21], these two dimensions of mindset yielded satisfactory internal consistency (Cronbach's alpha coefficients were both .78).

Persistence. The number of home works that students had done in 2nd step was used to measure students' persistence.

2.3. Procedure
The experiment took place during the participants' regular classes, which increases its ecological validity. All subjects were provided with a set of written text about an Iranian great calligrapher "Miremad" biography (about two pages). A research assistant who was unfamiliar with the theoretical purpose of the study randomly assigned the subjects to one of the two conditions (growth vs fixed) by giving them a particular set of texts. The text sets were of the same length so that anyone looking at them casually would not suspect there were differences among them. The participants read their assigned set of texts. Mindset was manipulated in the biography texts. The fixed mindset was operationalized by using explicitly entity language such as: ''Miremad knew that innate talent is the most important factor'', ''he was brilliant inborn'', ''nobody ever could be same as him and he will stay the best calligrapher for all the times''. In the growth mindset condition, wording such as ''Miremad knew that effort is the most important factor'', ''he was brilliant because of his endeavor'' and ''anybody could be same as him just needs for effort'' were used instead. Then, to examine whether the mindset manipulations produced the intended effect, we used the mindset scale.

In the next step, all subjects were asked to do three easy calligraphy home works in three days (one home works per day). All subjects did home works well. Groups 1 and 3 were provided by

mastery praise, "You've really learned how to write these!"; "You've really become an expert at these!" Groups 2 and 4 were provided by social-comparison praise, "That's among the best work I've seen from someone your age! Most students don't do as well as that!". The teacher wrote feedbacks in the blow pages.

In the final step, all subjects were provided with ten home works (obviously, more difficult than first ones). The subjects were asked to do as many as home works they like during two weeks, if not, they are free to give them up. After the experiment, participants were thanked and debriefed on the purpose of the research.

3. Results

The data collected were analyzed in two parts. Initially, descriptive statistics were computed. In addition, the technique of two-ways analysis of variance (ANOVA) was employed.

Table 1 presents the means and standard deviations for the dependent variable, persistence, in the different experimental conditions.

Table 2. The persistence means
and standard deviations of the four experimental conditions (N= 40)

		Mindset	
		Fixed	**Growth**
Praise	**Mastery**	M= 6.34 SD= 2.13	M= 9.45 SD= .93
	Social-comparison	M= 2.23 SD= 1.18	M= 5.18 SD= 2.26

As Table 2 shows the least persistence was found in subjects of fixed-social-comparison group, and the most persistence was shown in subjects of growth-mastery group.

Persistence was investigated using the two-ways analysis of variance technique to determine the effect of main effects and interaction effect on the dependent variable (persistence). Table 3 shows the results of the analyses of variance. Significant differences were found for differences in dependent measure.

Table 3. two-ways analysis of variance

	SS	df	MS^2	F	P
SS_A	17.06	1	17.06	12.36	
SS_B	12.56	1	12.56	9.10	.01
SS_{AB}	37.25	1	37.25	26.99	
SS_{res}	49.84	36	1.38		
SS_T	116.71	39			

As reported in table 3 the F values were statistically significant about mindset (F=12.36), praise (F=9.10) and interaction (F=26.99) > F (1, 36) = 7.31, p < .01. Subsequently, because the F values were statistically significant, follow-up contrast analyses with the Tukey (HSD) test were performed for each of the independent variables, as reported in table 4.

$$HSD= 4.7 \sqrt{1.38/10} = 1.73$$

Table 4. Follow-up contrast analyses with Tukey test

	group 1 $\dot{X}_1=6.34$	group 2 $\dot{X}_2=2.23$	group 3 $\dot{X}_3=9.45$	group 4 $\dot{X}_4=5.18$
fixed-mastery: $\dot{X}_1=6.34$	-	4.11[*]	3.11[*]	1.16

fixed-social-comparison: $\dot{X}_2$=2.23	-	7.22[*]	2.95[*]
growth-mastery: group $\dot{X}_3$=9.45		-	4.27[*]
growth- social-comparison: $\dot{X}_4$=5.18			-

Results of Table 4 shows participants in group 3 shown significantly more persistence compared with participants in other groups. Participants in group 1 and 4 shown significantly more persistence compared with participants in group 2. No significant differences found between Group 1 and 4.

4. Discussion

The feedback teachers give students can influence their persistence in achievement motivation contexts in surprising ways. People's lay theories or mindset about their ability have important consequences for motivation and behavior, particularly [11]. In this study we were interested in exam if mindset (fixed vs growth) moderate the influence of social-comparison vs mastery praise on students persistence.

In this study, we divided the calligraphy students into four groups and asked them to work on calligraphy tasks. At first step, groups 1 and 3 (growth mindset groups), after succeeding initially, was praised for their mastery. The other groups (1and 4; fixed mindset groups), after succeeding, was praised for their performance in comparison other students, rather than mastery. When the initially easy task became harder, the groups reacted in very different ways. Students praised for social comparison preferred to give up the harder tasks, while students praised for mastery chose to progress to more challenging tasks. The growth mindset-mastery praised group (group 3) exhibited more persistence and challenge-seeking behavior. The fixed mindset-social comparison praised group (group 2) avoided challenge in favor of ensured success. The growth mindset-social comparison praised group (group 1) and the fixed mindset-mastery praised group (group 4) exhibited significantly more persistence than group 2, but less than group 3. The results supported the hypotheses and demonstrated fixed mindset and social comparison reduce persistence in calligraphy classes, in contrast to growth mindset and mastery praise, and mindset (fixed vs growth) moderate the influence of social-comparison vs mastery praise.

These findings are consistent with Khalkhali, Zolqadr, & Khalili [28], Yeager et al., [23]; Rattan, Savani, Chugh, & Dweck, [24]; Paunesku et al., [25]; Yeager et al., [26]. In a study of children, Henderlong Corpus, Ogle & Love-Geiger [8] found that social-comparison praise lead to decreased motivation following ambiguous feedback for all children, and also decreased motivation following positive feedback for girls only. It seems that mindset (fixed vs growth) and praise (social-comparison vs mastery) interaction is a better predictor of persistence. Such a finding is important to those concerned with students' persistence in competitions high difficult achievement situations.

In the current study, doing the 10 difficult calligraphy tasks in two weeks was a high level difficult task and could trigger mindset to play their roles. On other hand, social-comparison or mastery praises can influence mindset in amazing ways. When students are praised by social-comparison for having high ability, they come to attribute their success to a fixed (and unchangeable) quality of themselves; while students are praised by mastery believe that their performance is subject to improvement [3].

For fixed mindsets and social-comparison praised students having to try hard is a sign of low ability and confirms that they must not be very smart. Therefore, they are looking for a way to protect their self-worth despite their poor performance, and avoidance (low persistence) is an option. As was observed in this race, fixed mindset and social-comparison praised students (group 2) showed the least persistence in comparison with other groups. Group 3 (growth mindsets- mastery praise) showed the most persistence. These findings, however, did not appear for members of the first (fixed mindset-mastery praise) and forth (growth mindset- social-comparison praise) groups. Groups 1 and 4 showed significantly more persistence than group 2, and leas persistence than group

3. It sounds mastery praise can annul the negative effect of fixed mindset, and growth mindsets also can annul the negative effect of social-comparison praise.

5. Conclusion

Despite the limitations, the findings from the present study have important implications. They suggest that the type of praise (social-comparison vs mastery praise) that teacher uses to feedback to students about their performance could affects the students' persistence in high difficult achievement situation. Social-comparison praise for success actually led to less persistence and worse performance than mastery praise. Social-comparison praise lead to maladaptive coping in situations in which one is outperformed by others individuals. This effect, however, could be moderated by students' mindset about ability (fixed vs growth mindset). On the basis of Mindset theory [12], motivation sought by learners with a fixed or growth mindset are held to differ. It has been argued that those with fixed beliefs seek performance goals (for example, to achieve a certain grade or to out-perform others) and that those with growth beliefs adopt mastery goals and will seek out challenges. These different mindsets are said to lead to different responses to challenging tasks or to failure. For example, Dweck [12] notes that pupils with a fixed or mindset are more likely to exhibit a "helpless" response to challenge and attribute failure to a lack of ability or to factors outside of their control, such as bad luck or poor teaching, which, she notes, may lead to a reduction in effort and task avoidance. Those with a growth mindset, on the other hand, are said to be more likely to welcome challenge; they may view errors as opportunities for learning and tend to attribute failure to lack of effort, rather than lack of ability.

From a practical point of view, teachers are encouraged to use mastery praise as a feedback. By praising students for their effort and giving feedback about the process of learning, Teachers can send the message that working hard and thoughtfully leads to greater success. They also send the message that hard work and progress are what they value, not natural, effortless, mistake-free brilliance that involves no learning.

Teachers must be careful about mindset that they are encouraging in the classes. Growth mindset could be developed by: providing increased opportunities for student input, guidance in the form of clear expectations and useful feedback; facilitating students' problem solving, helping them to work to their full potential and show their competence; identifying a link between their behavior and desired outcomes; emphasizing and acknowledging the students' concerns about failure and about close and challenging competitions so that the students feel understood and accepted.

The current study is not without its limitations. First, Koestner, Zuckerman, and Olsson [11] found that gender moderated the influence of social-comparison and mastery praise, but gender was not included in the study. Second, just a single measure of persistence (behavioral observations) was used, it seems interview and questionnaires could give useful information about persistence. Third, the cross-sectional nature of the research design only allowed for a slice-in-time study. Fourth, we did not use control group as a standard comparison group. Hence, future research might examine whether the gender moderate praise and mindset's effects. Future studies can use self-report scales and interview to measure persistence. Moreover, they can use control group.

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