

PERSONALITY AND  
INDIVIDUAL DIFFERENCES

PERGAMON

Personality and Individual Differences □ (□□□□) □-□

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# A performance comparison of motivational self-believers and self-doubters in competitive and individualistic goal situations<sup>☆</sup>

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Received 7 August 2001; received in revised form 12 February 2002; accepted 10 March 2002

## Abstract

This study compared the performance of students lacking belief in their self-regulatory capability to complete a course-related, item-writing, extra-credit task (*self-doubters*) to those possessing self-confidence (*self-believers*), or in-between (*self-unsure*), in *competitive* and *individualistic* goal situations. In the competitive situation, only a fixed percentage of students could receive grade bonuses, while any student who exceeded preset criteria could in the individualistic one. One hundred and twenty-six students were classified by tertiles as self-doubters, self-believers, and self-unsure based on self-confidence ratings for writing test questions on assigned chapters. Self-believers earned significantly more extra-credit points than self-doubters overall. A significant interaction reflected self-doubters doing considerably worse and the self-unsure doing better in the competitive situation than the individualistic one, while self-believers performed equally in either situation. Self-doubters appeared more productive in the situation where preset evaluation criteria assured a payoff for effort expended. © 2002 Published by Elsevier Science Ltd.

*Keywords:* Self-belief style; Self-regulation; Competition

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\* Paper given at 10th biennial meeting of International Society for the Study of Individual Differences, Edinburgh, Scotland, UK, July 2001.

## 1. Introduction

Self-regulation refers to the exercise of influence over one's own behavior (Bandura, 1986), or, "...self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" (Zimmerman, 2000, p. 14). In other words, the purpose of self-regulation is to help oneself achieve desirable consequences, such as succeeding in school (Zimmerman, 1994), losing weight, or ceasing to smoke or drink alcohol. People self-regulate their learning by monitoring, directing and controlling their actions in order to acquire information and expertise (Paris & Paris, 2001). In order to self-regulate, a person must exercise autonomy and self-control.

Tuckman and Sexton (1990, 1991) have identified a self-regulated performance situation as one in which outcomes are maximized as a function of how much autonomy and self-control a person exercises. Such a situation is characterized by the following conditions: (1) amount of effort to apply to the performance is up to the performer, (2) amount of effort applied rather than skill is the major source of influence over the performance achieved, and (3) amount of payoff is linked to amount of performance. Self-regulation, thus, is seen as a reflection of motivation, rather than ability.

Self-regulation is accomplished by the application of self-directive capabilities, that is, one's ability to exercise autonomy and self-control (Bandura, 1986). Hence, the greater these self-directive capabilities, the greater the likelihood that a person will self-regulate. For example, a person who is able to make herself study is more likely to study than someone who is not able to exercise this influence over self. Bandura (1986, 1997) has shown that these self-directive capabilities are highly influenced by people's belief in their possession of them, and labeled this belief self-efficacy. Self-efficacy, according to Bandura (1986, p. 391) is "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances." Self-efficacy as an explanatory construct for self-initiated, goal-directed behavior is the basis for self-efficacy theory. The theory essentially proposes that people who believe they can do something will be more likely to do it and do it well than people who lack this belief or believe the opposite (Bandura, 1986).

Zimmerman (1989) cites considerable work of his and his associates that shows that the use of self-regulated learning strategies is influenced by the belief of people in their capability (perceived self-efficacy) for carrying out these learning strategies. Zimmerman (1998) has extended this view to the domain of academic studying. In its general form, the essential variable is *self-regulatory belief*, or the amount of self-confidence people have in their capability to complete a task (what Bandura, 1986 calls self-regulatory efficacy). The more strongly a person believes that he can study, for example, the more likely he is to study. Someone lacking this belief, on the other hand, would be likely to study less. Considerable evidence to support this claim has been collected by Bandura (1986, 1997) and others.

While theorists like Bandura (1986, 1997) and Zimmerman (1998) have regarded the belief underlying the capability to self-regulate as a context-specific process, Sexton and Tuckman (1991) and Sexton, Tuckman, and Crehan (1992) have discovered it to have sufficient stability and predictiveness across time and situations to be regarded as an individual difference measure or belief style. That is to say, self-beliefs about one's ability to initiate goal-directed behavior in particular domains (e.g., academic, social) stabilize over time as one exercises this ability and

1 experiences the results. Accordingly, Tuckman and Sexton (1992a) have distinguished between  
2 three groups: (1) *self-believers*—those high in their belief that they can self-regulate on a particu-  
3 lar task, (2) *self-unsure*—those in the middle, and (3) *self-doubters*—those low in their belief.  
4 They have shown that these different self-regulatory belief styles are self-fulfilling, and hence  
5 valid, in that high self-believers not only meet, but exceed, their own high performance expectations,  
6 while self-doubters fail to even meet their low ones (Tuckman & Sexton, 1990).

7 In addition, a reasonably strong relationship has been shown between self-regulation and pro-  
8 crastination tendency, not surprisingly, given that procrastination is often defined as task avoid-  
9 ance (Ferrari, Johnson, & McCown, 1995). Ferrari (2001) demonstrated that chronic  
10 procrastinators are less effective than non-procrastinators at regulating their performance speed  
11 and accuracy when working under pressure. Tuckman (1993) reports a correlation of  $-0.42$   
12 between self-regulation beliefs and scores on the Tuckman Procrastination Scale (Tuckman,  
13 1991). Moreover, the self-regulated performance task used in the present study, and in prior  
14 studies (described earlier and later) involving self-regulation belief styles, is one where lack of  
15 performance is likely to be the result of continually putting off doing the task. (This task is  
16 described under Section 2).

17 Studies done to identify environmental variables that influence self-regulated performance have  
18 consistently found a moderating effect of self-regulation belief style. Tuckman (1990) found that  
19 while group outcomes had no effect on the performance of self-believers, it enhanced perfor-  
20 mance among the self-unsure, while depressing it among self-doubters. Goal setting, on the other  
21 hand, enhanced the performance of self-doubters, while depressing it for self-unsure, yet had no  
22 effect on self-believers (Tuckman, 1990). Tuckman (1992) found planning to enhance the perfor-  
23 mance of self-doubters while not affecting the performance of self-believers. Finally, Tuckman  
24 and Sexton (1992b) found that the performance of self-believers in a competitive situation was  
25 higher when they did not receive feedback about their own relative position than when they did,  
26 exactly the reverse of self-doubters and self-unsure.

27 While the earlier studies have shown that external conditions, interacting with self-regulatory  
28 beliefs, can contribute to an increase in task performance, it is also possible that certain external  
29 conditions can have the opposite effect. Ames (1984) showed that one of those counterproductive  
30 external conditions was competition, causing fifth and sixth-graders to question their ability and  
31 so reduce their inclination to expend effort. Effert and Ferrari (1989) found that undergraduates  
32 who tended toward decisional procrastination with regard to certain tasks also showed less  
33 competitiveness in those tasks.

34 The purpose of this study was to compare the effect of competitive and individualistic goal  
35 situations on the task performance of students of the three self-regulation belief styles. Johnson  
36 and Johnson (1994) define a *competitive goal situation* as one where participants' goal achieve-  
37 ments are negatively related, that is, as one does better, others must do worse. This is accom-  
38 plished by evaluating participants on the basis of how their performance compares with the  
39 performance of others. In an *individualistic goal situation*, the goal achievements of participants  
40 are unrelated. This is accomplished by using the same criterion to evaluate each participant  
41 (Johnson & Johnson, 1994).

42 Williams, Frank, and Lester (2000) have shown that competitive anxiety in an athletic situation  
43 is predicted by self-confidence. In competitive athletic situations, they found that as self-con-  
44 fidence went down, anxiety went up. Those lacking in self-confidence are likely, therefore, to see

1 competitive situations as anxiety-provoking and avoid them when possible (something difficult,  
2 however, for an athlete to do). Competitive situations also occur in academic settings, where the  
3 possibility of avoidance is easier.

4 It was hypothesized that performance, regardless of goal situation, would be greatest for self-  
5 believers and least for self-doubters, replicating prior findings that support the validity of the self-  
6 regulation belief concept and its application to individual differences. It was further hypothesized  
7 that self-doubters would perform worse in the competitive situation than in the individualistic  
8 situation because the consequences of the competitive situation were less under their control, that  
9 is, less amenable to self-regulation. In the competitive situation, one's outcome depends in part  
10 on the performance of others, something that cannot be controlled at all, while in the individua-  
11 listic situation, one's performance depends entirely on oneself, something that can be controlled  
12 (although often poorly in the case of self-doubters). Among those with the least confidence in  
13 their ability to regulate themselves, more regulation is expected to be applied where it can assu-  
14 redly do one some good than where it cannot. Engagement in task situations where it will not do  
15 as much good can be expected to be avoided.

## 17 2. Method

### 19 2.1. Participants

21 One hundred and twenty-six junior and senior education majors in a large state university in the  
22 US, enrolled in two equal-sized sections of a required course in Educational Psychology. In each  
23 section, ages ranged from 19 to 25, with a mean age of 21. All but four in each section were  
24 female, and all but three in each were white. The two sections were given at the same time but on  
25 different days, and taught by the same instructor using the same textbook, syllabus, and instruc-  
26 tional procedure and activities. The course covered the topics of test construction and learning  
27 theory. As a basic psychology or "foundation" course, Educational Psychology was regarded as a  
28 general education requirement for prospective teachers.

### 30 2.2. Task

32 Included in the course on a regular basis was a procedure for allowing students to earn extra  
33 credit toward their final grade called the Voluntary Homework System or VHS (Tuckman, 1990;  
34 Tuckman & Sexton, 1990). Students were given the opportunity to write and submit test items on  
35 work covered in that week's instruction. Completion items were worth one point each, multiple-  
36 choice items measuring knowledge were worth two points each, and multiple-choice items mea-  
37 suring comprehension were worth three points each. Point values reflected the amount of effort  
38 required to write each type of item. Items were loosely screened for acceptability and, where  
39 needed, were returned for correction. VHS extended over 10 weeks of a 15-week course, and the  
40 points earned each week were cumulative.

41 Systematic variation in a number of the procedures associated with VHS occurred from term to  
42 term, to make possible the determination of the influence of different variables on the outcomes  
43 of the system. However, students were given a description of the system only as it would be  
44

1 implemented for their class. Moreover, since course scheduling was done by cohort, reducing the  
2 likelihood that students from different course sections would be in other courses together, the  
3 probability of students in different classes comparing their experiences was minimized.

### 4 5 2.3. Independent variable: goal situation

6  
7 To help motivate the production of test items for VHS in each of the two classes, grade bonuses  
8 were awarded based on final, cumulative number of points earned. In one class (the *competitive*  
9 *goal situation*), double grade bonuses were awarded to the top third point scorers (e.g. a C  
10 becomes a B-), single bonuses to the middle third (e.g. a C becomes a C+), and no bonuses to  
11 the bottom third—regardless of how many items they wrote. In this situation, bonuses were based  
12 on relative rather than absolute performance.

13 In the other class (the *individualistic goal situation*), preset criteria were used for determining  
14 grade bonuses and were announced to students at the beginning of the 10-week period. Two  
15 obtain a double bonus, 450 points were required while a single bonus required 300 points. (These  
16 levels were based on the performance in past classes using the relative basis for assigning bonuses,  
17 and represented the average number of points that were earned by the top 10% in each bonus  
18 category.) Any number of students could obtain one of the two bonuses.

### 19 20 2.4. Moderator variable: level of self-regulatory belief

21  
22 At the start of each week, students were asked the number of points they felt capable of earning  
23 that week (the maximum number being 75, based on writing 25 three-point items), and how  
24 confident they were in that estimate (on a nine-point scale). As recommended by Bandura (1977,  
25 1986), the product of estimated items and confidence (with a range of 0–675) was taken as a  
26 measure of self-regulatory belief. The weekly measure of self-regulatory belief, averaged across  
27 the first 2 weeks, was used for classifying students into self-believers (highest third), self-unsure  
28 (middle third), and self-doubters (lowest third).

29 The validity of the measure as used in this study is based on the following: (1) Tuckman (1993)  
30 found it to load on the same factor as measures of general self-efficacy and self-regulation as  
31 measured by Pintrich and De Groot's (1990) *Motivated Strategies for Learning Questionnaire*; (2)  
32 Sexton et al. (1992) found it to be related to initial performance on the VHS task. Supporting the  
33 measure's reliability was a test-retest correlation of 0.80 obtained in this study between week 1  
34 and week 2 self-regulatory belief scores.

### 35 36 2.5. Control variables (internal validity)

37  
38 To control for students' motivation, they were also initially asked on a nine-point scale how  
39 important it was for them to obtain a bonus. The measures of self-regulatory belief and outcome  
40 importance obtained at the start of week 1, before any test item production took place, were used  
41 to establish the initial equivalence of the two classes. This demonstration of adequate control for  
42 selection bias was necessary to justify the appropriate use of a quasi-experimental design (Tuck-  
43 man, 1999). (History bias was controlled for by matching of content, instructor, and activities  
44 across the two classes.)

A comparison of the two classes on initial self-regulatory belief revealed no difference (means of 368 and 375 respectively,  $F=0.05$ ). No difference was obtained as well on outcome importance (means of 7.9 and 8.1 respectively,  $F=0.10$ ). Hence, the classes to be compared were considered to be of initial equivalence on self-regulatory belief and motivation.

### 2.6. Dependent variable: task performance

The final, cumulative number of points earned in the VHS task served as the dependent variable. Prior research (Tuckman, 1993) has shown this measure to be independent of academic aptitude as well as of performance on the course final exam.

## 3. Results

The  $2 \times 3$  analysis of variance of total VHS points earned by goal situation (competitive versus individualistic) and level of self-regulatory belief (self-believers versus self-unsure versus self-doubters) yielded the following results: (1) for goal situation,  $F=0.51$ ,  $df=1/120$ ,  $P>0.10$ ; (2) for self-regulatory belief level,  $F=4.43$ ,  $df=2/120$ ,  $P<0.01$ ; (3) for the interaction,  $F=3.05$ ,  $df=2/120$ ,  $P<0.05$ . The overall significant main effect of self-regulatory belief level, based on self-believers having the highest performance, self-unsure the middle, and self-doubters the lowest supports hypothesis one, and replicates prior findings indicating that the self-regulatory belief concept is predictive of actual performance.

The insignificant main effect for goal situation, based on students in the two goal situations performing about the same, regardless of the type of evaluation criterion, contrasts sharply with the significant interaction reflecting the differential effect of goal situation across the three self-regulatory belief groups. Means and standard deviations on total points earned for self-believers, self-unsure, and self-doubters across the competitive and individualistic situations are shown in Table 1. While goal situation had no effect on self-believers' performance, it did affect the other two groups, and oppositely so. As hypothesized, self-doubters did worse in the competitive goal situation than in the individualistic one, the difference of 97 points being significant ( $P<0.05$ , using the least significant difference approach). Self-unsure students, on the other hand, earned 52 more points in the competitive goal situation than in the individualistic one, the difference approaching significance ( $P<0.10$ ). These differences can be seen in Fig. 1.

Table 1

Means (and standard deviations) of bonus points earned as a function of goal situation and level of self-regulatory belief

Self belief	Situation		
	Competitive	Individualistic	Combined
Self-believers	289 (160)	309 (177)	299 (168)
Self-unsure	258 (150)	206 (163)	232 (156)
Self-doubters	141 (139)	238 (171)	189 (155)
Combined	231 (150)	256 (170)	



1 self-doubters could anticipate the possibility of investing effort in the task without receiving  
2 anything in return.

3 The nature and certainty of the consequences of their behavior seem to be a highly important  
4 factor in self-doubting students deciding whether or not to self-regulate. However, even with the  
5 possibility of earning guaranteed rewards in the individualistic goal situation, self-doubters still  
6 earned 71 fewer points on average than self-believers, this despite the fact that a number of them  
7 faced the distinct possibility of not passing the course (due to low grades on exams) without a  
8 bonus. Of course, contrast this with the 148 point average differential between self-doubters and  
9 self-believers in the competitive situation, with approximately the same number of self-doubters  
10 facing the same fate.

11 By comparison, students of middle or average self-regulatory belief (the self-unsure) performed  
12 best when relative criteria (as in the competitive goal situation) were used for evaluating their  
13 output. The difference produced an effect size of 0.32, considered small, but meaningful, by  
14 Cohen (1990). This may have occurred because there was so little tendency for low performers,  
15 basically the self-doubters, to perform in the competitive relative (and perhaps threatening) eval-  
16 uation system that the cutoff score for getting a single bonus turned out to be relatively low.  
17 Thus, moderate performers, basically the self-unsure, could gain this bonus without producing  
18 excessive numbers of test items. In fact, in the competitive goal situation class, the cutoff between  
19 no bonus and a single bonus ended up being 79 points in comparison to the 300 point preset  
20 criterion in the individualistic goal situation. It would suggest that the self-unsure are resourceful,  
21 if nothing else.

22 The findings are remarkably consistent with past findings on other external variables as they  
23 affect students at the three different self-regulatory belief levels. As in past studies, self-believers  
24 seem least affected by performance conditions. These students appear to be “internally pro-  
25 grammed” to regulate their own productivity and do so under a variety of conditions (Bandura,  
26 1986). However, self-unsure and self-doubters are both affected by external conditions, yet very  
27 differently. Self-doubters appear to require great structure and certainty regarding both planning  
28 for and the payoff value of the work they produce before they will produce any, while the self-  
29 unsure seem to be most motivated by relativity and the involvement of other people, and  
30 seemingly react by trying to maintain their place in the distribution.

31 Some design issues are worthy of consideration, particularly as regards the balance between  
32 internal and external validity. The external validity of research designs for the study of motiva-  
33 tion is an important factor. Motivation is often difficult to simulate in a laboratory. This study  
34 looked at “real,” consequential behavior by “real” students in a “real” class, rather than creating  
35 scenarios for students to read, and asking them how they would react. This necessitated the use of  
36 a quasi-experimental design and sampling limitations, which affect internal validity. It would be  
37 useful to replicate these results.

38 From a practical perspective, the major personality implication of this study is that people  
39 should try to gauge their overall self-regulatory belief level and, where possible, choose their goal  
40 situation accordingly. Self-doubters, in particular, would do well to seek performance situations  
41 with well-defined evaluation criteria, or alternatively, to set their own. Parents, teachers, and  
42 trainers would be advised to provide well-defined evaluation criteria, as well, and to apply them  
43 in a consistent fashion. In this way, students who choose to compete can still attempt to outperform  
44 others, while self-doubters can use the criteria to guide their expenditure of effort.

1 From a theoretical perspective, the major personality implication of this study is that self-reg-  
2 ulation, perhaps the most popular motivational concept in today's literature, is more than just  
3 situation-based, but includes basic trait aspects as well. Beliefs about oneself and one's cap-  
4 abilities, as this study showed, then interact with situational conditions to affect performance.  
5 Further research is needed to extend the concept of self-regulatory belief as a performance pre-  
6 dictor and useful individual difference construct. Additional work is needed to determine the  
7 extent to which this construct can be generalized across tasks and situations, and to further  
8 determine the role that this belief plays in procrastination.

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