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Effects of Performance Standards on Teaching Styles: Behavior of Controlling Teachers

Edward L. Deci, Nancy H. Spiegel, Richard M. Ryan, Richard Koestner, and Manette Kauffman
University of Rochester

Previous research has shown that when teachers are oriented toward controlling rather than supporting autonomy in their students, the students display lowered intrinsic motivation and self-esteem. The present study explored conditions that lead teachers to be more controlling versus more autonomy oriented with students. Impressing upon teachers that they are responsible for their students' performing up to standards leads them to be more controlling than teachers who were told that there were no performance standards for their students' learning. Teachers in the former condition talked more, were more critical of the students, gave more commands, and allowed less choice and autonomy.

Considerable research has detailed the processes through which external events can affect a person's intrinsic motivation. In reviewing the evidence, Deci and Ryan (1980) concluded that the central parameter mediating the effects of external events on intrinsic motivation is self-determination. In other words, the experience of choice seems to be a necessary condition for the maintenance or enhancement of intrinsic motivation. Events that pressure people toward specified outcomes, thereby denying them the experience of choice, have repeatedly been shown to undermine intrinsic motivation. These events are referred to by Deci and Ryan as *controlling*. In contrast, events that provide people with meaningful feedback in the context of choice have been shown to enhance intrinsic motivation; these events are referred to as *informational*. There are two important components of informational events (and thus of events that enhance intrinsic motivation): They must provide choice and they must contain meaningful feedback. By meaningful, we mean feedback that either signifies competence or is useful to people's becoming more competent. If the feedback implies incompetence, that is, if it implies that people cannot become competent, it will undermine intrinsic motivation.

Deci, Nezlek, and Sheinman (1981) and Deci, Schwartz, Sheinman, and Ryan (1981) have studied these processes in elementary school classrooms. They reasoned that teachers' styles differ and that these differences may determine whether teachers provide a primarily informational or a primarily controlling environment for their pupils. The researchers suggested a personality variable in teachers called "orientation toward control versus autonomy with children," which they proposed would capture the important differences in the teachers who are controlling versus informational and, thus, who diminish versus enhance the intrinsic motivation of their children.

Deci et al. (1981a, 1981b) reported results supporting their assertion. In classrooms in which teachers were autonomy oriented, both the intrinsic motivation and self-esteem of the children increased relative to that of the children in classrooms where the teachers were control oriented.

The studies just mentioned considered a personality variable in the teachers that affected whether their classrooms would be more informational or more controlling. Deci and Ryan (1982a, 1982b) have suggested that environmental variables will also

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Request for reprints should be sent to Edward L. Deci, Department of Psychology, University of Rochester, Rochester, New York 14627.

affect whether teachers create a classroom climate that is primarily informational or primarily controlling. When teachers are themselves pressured toward particular outcomes, they may in turn become more controlling with their students, which could decrease the intrinsic motivation and self-esteem of those students.

Deci and Ryan (in press) defined a controlling external event as any event that is experienced by the recipient as pressure toward a specific outcome. A study by Ryan, Mims, and Koestner (Note 1) found that subjects who were pressured by being told that it was important for them to "perform up to standards," tended to lose intrinsic motivation. Extrapolating from that study, we hypothesize that when teachers are told that they are responsible for their students' performing up to standards, the teachers themselves will experience this as pressure and respond by being more controlling with their students. If this hypothesis was supported, it would have considerable implications for educational systems, for it would suggest that the more school systems pressure their teachers to make the students perform up to standards, the more the teachers will be controlling rather than informational with their students, and hence the more the intrinsic motivation and self-esteem of the students will be undermined.

In addition to testing the above hypothesis, thereby beginning to explore the effects of situational factors on the degree of controllingness of teachers' behavior, the present study was designed to describe differences in the behavior and attitudes of teachers who were in the condition that stressed performance standards (i.e., the controlling condition) versus the condition that did not (i.e., the informational condition). To explore these issues, we created a laboratory situation in which subjects were given the task of teaching a student how to solve spatial relations puzzles. Subjects were given an experimental induction that either did or did not emphasize the importance of their students' performing up to standards. Their verbalizations were recorded while they were teaching and were subsequently analyzed on a variety of dimensions.

Whereas the Deci et al. (1981a, 1981b) studies employed actual teachers and students in elementary schools, the present study was done in a well-controlled laboratory setting. That procedure, of course, limits the generalizability of our results, but it allows for a more careful test of the hypothesis and a more precise comparison of the behavior of teachers given the controlling versus autonomy-oriented inductions.

Method

Overview

Subjects in this study were undergraduates from the University of Rochester who participated to fulfill an introductory psychology course requirement. When a subject arrived at the laboratory, the subject was seated in an experimental room and told that he or she would be participating in a study of the educational process. The subject was told that he or she would serve as a teacher and that we were interested in how well different types of students were able to learn to solve problems. The teacher was told that he or she would be teaching a student how to solve a spatial relations puzzle called SOMA. This involved seven puzzle pieces that could be combined to form a variety of different configurations. The subject was given the puzzle pieces, along with drawings of six different puzzle configurations and the solutions for those six configurations. The subject (to be called teacher) was then left alone for 15 minutes to become familiar enough with the puzzles to be able to teach them to a student.

Following that period, the experimenter returned to the teacher's room and gave the experimental induction. The teacher was told that he or she would spend 20 minutes teaching a student how to solve the puzzles. The student would be in a second room that was connected to the first by an intercom and a one-way window, although at this point the intercom was still off and drapes were covering the one-way window on both sides.

Subjects who were given the informational induction were told that, "Your role is to facilitate the student's learning how to work with the puzzles. There are no specific performance requirements; your job is simply to help the student learn to solve the puzzles." The subjects who were given the controlling induction were told that, "Your role is to ensure that the student learns to solve the puzzles. It is a teacher's responsibility to make sure that students perform up to standards. If, for example, your student were tested on the puzzles, he (or she) should be able to do well." The students were not actually tested; that phrase was used simply to help create the set of the teacher's being responsible for the student's learning.

Following the induction, the teacher was given a list of six hints for solving the puzzles. He or she was told to take a few minutes to look over the hints and get ready to teach. The experimenter then left to get the student set up in the next room. The student was seated at a table and given a set of the puzzle pieces and

a set of the six configurations. The student's set, of course, did not contain the solutions. It was explained that the student would be learning to solve these puzzles with the help of the teacher who would be speaking over the intercom and observing through the one-way window. The drapes were then opened on the student's side to show the window, and the experimenter said that the teaching session would begin in about a minute.

Table 1
Items Used as Dependent Measures in the Study

No.	Item
	Categories of utterances
1.	Personal comments such as self-disclosures.
2.	Filler comments; chatter.
3.	Questions asking student's wants, desires, etc. (e.g. Are you ready?).
4.	Controlling questions.
5.	Statements of "should," "have to," "must," "ought to," etc.
6.	Directives: "put," "take," "place," etc.
7.	Comments praising person.
8.	Comments praising performance.
9.	Criticisms; verbal punishments.
10.	Statements about deadlines.
11.	Responses to students' questions.
12.	Solutions or hints.
13.	Other types of controlling or directive statements.
14.	Other utterances not categorizable in 1 through 13.
	Objective information
1.	Number of hints given (maximum of 6).
2.	Number of solutions read to subject (maximum of 6).
3.	Actual time spent talking by teacher.
4.	Time at which they stopped working on puzzles (e.g., 17 min and 10 sec into the session).
5.	Number of puzzle configurations assembled with or without teacher's help. (This can exceed six if student assembled a puzzle more than once.)
6.	Number of puzzle configurations solved by student without help.
7.	Number of puzzle configurations that the teacher allowed student to work on for at least 1 minute without interference.
8.	Number of times student was called by his or her name.
9.	Time spent on introduction/orientation.
	Subjective information judged by raters on 9-point scales
1.	To what extent did the teacher seem involved and enthusiastic about teaching?
2.	To what extent did the teacher seem to be interested in the puzzle activity?
3.	To what extent did the teacher seem competent and at ease with the puzzles?
4.	To what extent did the teacher seem nervous and uncomfortable in the role of teacher?
5.	To what extent did the teacher seem controlling and demanding?
6.	To what extent did the teacher seem warm and supportive?
7.	To what extent did the teacher seem to be giving the student choice about what he or she was doing?
8.	To what extent did the teachers give the students enough time to work on the puzzles in their own way?
9.	To what extent did the teacher seem to be promoting conceptual learning (i.e., understanding) versus rote learning (i.e., memorization)?
10.	How much would you like to have this person as a teacher?
	Teacher questionnaire (all rated on 7-point scales)
1.	How much did you enjoy being the teacher?
2.	How effective did you feel as a teacher?
3.	How important was it for you that the student solve all seven puzzles?
4.	How interesting do you find the puzzles?
5.	How much did you like the student?
6.	How would you grade the student's performance? (A 7-point scale: A, A−, . . ., C+, C.)
7.	There is a possibility that we will be starting a very similar experiment some time later this year. We would be using the same kind of teaching activity. Although we would be unable to give you more experimental credit for participating, we would like to know if you would be willing to take part in that study. Please indicate your willingness on the scale below.

The experimenter returned to the teacher's room, reminded the teacher of his or her function as a teacher, told the teacher the name of the student, opened the drapes so the student was in full view, and turned on the microphone. The experimenter spoke into it and said to the student, "OK, we're ready to begin. I am leaving, so you and [teacher's name] will be here to work on the puzzle solving activity." The experimenter then left for the 20-minute period.

After 20 minutes the experimenter returned to the teacher's room and ended that part of the period by speaking into the microphone and indicating that the puzzle solving was over. Subsequent to that, the teacher completed a questionnaire while the student was being debriefed and dismissed. Finally, the teacher was debriefed and dismissed.

Subjects

There were 20 male and 20 female subjects who served as teachers. Ten of each were given the informational induction and 10 were given the controlling induction. The students were also naive subjects of the same sex as the teacher. The female pairs were run by a female experimenter and the male pairs by a male experimenter.

The decision to use actual subjects as students rather than experimental confederates was made after weighing the pros and cons. We reasoned that the use of a confederate would be likely to provide greater consistency in the behavior of the "student," but that this would further sacrifice realism. On this point, we opted for realism over consistency, since we had already sacrified some realism by being in the laboratory.

Dependent Measures

The voices of the teachers were tape recorded and later analyzed both by objective criteria and by subjective ratings. In order for the subjective raters not to be influenced by the students' responses, only the teachers' voices were recorded. The recording was done by hooking a tape recorder into the intercom system outside of the experimental room. The subjects did not know that their voices were being recorded. Trained raters listened to each tape and did the objective ratings. Every utterance by the teacher (a sentence, question, or comment) was classified as one of 14 types. These 14 categories appear in Table 1. The total of these 14 categories gives the total number of utterances during the 20-minute teaching period. In addition to classifications of each utterance into the various types, nine other pieces of information were obtained. These were determined by counting (for example, the number of hints out of the six available that the teacher read to the student) and by timing (for example, the total number of minutes and seconds that the teacher was actually talking). The nine items also appear in Table 1.

The subjective ratings were made by six raters. These raters knew nothing about the experiment, but they were given training in judging the 10 dimensions of interest. Each of them rated (on a 9-point scale) each of the 10 dimensions of concern for each of the students. The most important dimension was the degree to which the teacher was controlling and demanding, for that provided the primary test of the hypothesis. The 10 dimensions also appear in Table 1.

Finally, the teacher completed a questionnaire that assessed the teacher's feelings and perceptions about the teaching activity and the student. The items from this questionnaire also appear in Table 1.

Results and Discussion

The data from this experiment were subjected to 2 × 2 analyses of variance (ANOVAs; 10 subjects per cell) with sex of subject crossing the informational (no-performance-standards) versus controlling (performance-standards) inductions. The ANOVAs were performed on the 14 categories of utterances as well as on the total number of utterances, the 9 objective information items, the 10 categories of subjective ratings, and the 7 teacher-questionnaire items.

The subjective ratings were done by six judges. Before those data were analyzed, the interrater reliability was assessed. The average of all pair-wise reliability coefficients was .92, indicating very good agreement, so the responses of the six judges were combined to form the dependent measure on the subjective items.

To test the initial hypothesis, that the "performance standards" induction would lead teachers to be more controlling, the ratings of the judges on Number 5 of the subjective items were analyzed. There was no main effect for sex and no interaction; however, there was a very strong main effect for the experimental induction. Teachers who had been given the performance-standards induction were judged to be much more ($p < .001$) demanding and controlling ($M = 6.36$) than subjects in the no-performance-standards condition ($M = 3.35$). This, therefore, confirmed the hypothesis. The other data then served to describe the behavior of teachers who were judged to be more versus less controlling and demanding.

The clearest differences between teachers in the informational versus controlling experimental groups were that the controlling teachers talked much more and in a generally more controlling way (see Table 2). Controlling teachers made twice as many utterances in the 20-minute period as informational teachers (130 vs. 66); they spent slightly more than twice as many seconds

Table 2
Marginal Means and Standard Deviations Showing Significant Main Effects for the Informational Versus Controlling Conditions

Measure	Informational		Controlling	
	M	*SD*	*M*	*SD*
Utterances				
4. Controlling questions	4.65	3.17	7.63	5.49**
5. Should statements	1.90	1.91	5.74	5.47***
6. Directives such as "put"	13.25	16.89	45.47	27.25****
7. Praise of person	.00	.00	.21	.42**
8. Praise of performance	5.25	4.63	10.47	6.28***
9. Criticisms (verbal punishment)	1.75	2.10	4.26	3.59**
10. Deadline statements	.45	.76	.94	.78*
12. Solutions or hints	22.10	15.11	29.84	13.69*
13. Controls (leading statements)	5.65	6.14	15.05	6.59****
Total utterances	65.90	33.11	130.20	43.87****
Objective				
2. Solutions given	2.83	2.28	5.27	1.67***
3. Seconds spent talking	225.70	114.00	487.70	172.6****
5. Puzzles assembled	6.11	2.97	12.93	8.15***
6. Puzzles solved alone by student	2.06	2.29	.40	.83**
7. Number student tried alone	3.06	2.24	.53	1.13****
Subjective				
5. Teacher seemed demanding and controlling	3.35	1.74	6.36	2.16****
7. Gave student choice	6.82	1.73	3.06	2.23****
8. Gave student time to work alone	6.85	2.01	3.36	2.38****
9. Teacher promoted conceptual learning	6.13	1.30	3.83	1.90****
10. Like having this teacher	4.82	1.84	3.52	1.97**
Teacher questionnaire				
3. Important for student to solve all	4.28	2.02	5.60	1.35**
5. Did you like student?	5.28	.83	6.13	.64***

Note: Higher numbers mean more of the item descriptor.
* $p < .10$. ** $p < .05$. *** $p < .01$. **** $p < .001$.

talking (488 vs. 226); and they allowed students to work alone much less (.4 puzzles solved alone vs. 2.1; .5 puzzles tried alone for 1 minute vs. 3.1; rated as 3.4 on "give students time to work alone" vs. 6.9). All these differences were statistically significant.

Teachers in the controlling condition gave three times as many directives, made three times as many should-type statements, and asked nearly twice as many controlling questions. They made two-and-a-half times as many criticisms and were rated as giving students much less choice (3.1 vs. 6.8). All of these findings were highly significant, as shown in Table 2. It is also interesting to note that there tends to be greater variability in the behavior of teachers in the controlling condition, as indicated by larger standard deviations. In virtually all instances in which this was so, the means for the controlling group were much higher (e.g., twice as many utterances), so it is difficult to know if there is any theoretical significance to this result beyond the fact of the larger variances accompanying larger means.

The one apparent anomaly is that controlling teachers also praised performance more—something that is typically more informational. However, coupled with all the verbal criticisms, the praise may simply have been another way of controlling the students to remain involved with learning the puzzle solutions.

Controlling teachers rated that it was more important to them that their students solve all the puzzles. And in fact students of the controlling teachers assembled 12.9 puzzles in the 20 minutes (each puzzle about twice) versus 6.1 for the other group. Recall, however, that of the 12.9 that the students of controlling teachers solved, they solved only .4 by themselves. The typical pattern in the controlling group was for teachers to read the solutions to the students and have

the students practice putting them together.

Of course, no conclusion can be drawn from this about students' learning; that issue was not addressed by the study. Further, the issue of performance on the problems is a difficult one as well. The teachers in the controlling group were more instructional in that they tended to tell students how to do the puzzles and have the students assemble them. The students performed, but they did not "solve" the puzzles. There is no clear inference to be drawn about which condition led to better performance; we can say only that students of controlling teachers "assembled" more puzzles and students of informational teachers "solved" more puzzles.

The controlling teachers reported liking their students better, which is a bit of an anomaly. However, since (as was mentioned) it was very important to them for the students to complete the puzzles and the students did assemble twice as many, the liking may have resulted from the students' meeting their expectations.

In terms of males versus females, there were no differences in the utterances or the objective assessment of their teaching. However, the judges rated males as being more involved, more interested in the puzzles, more competent, less nervous, and more supportive (see Table 3). Consistent with this rating, males rated themselves as enjoying being the teacher more than females. It is probable that these sex differences were a function of the particular activity being taught. The spatial relations puzzle is an activity that is somewhat sex-typed toward male. Traditionally, males have done better at such activities (see Maccoby & Jacklin, 1974), and the experimenters in the present study reported that females often expressed initial displeasure when they saw the puzzles.

Table 3
Marginal Means and Standard Deviations Showing Significant Main Effects for Sex of Subject

Measure	Male		Female	
	M	*SD*	*M*	*SD*
Utterances	—	—	—	—
Objective	—	—	—	—
Subjective				
1. Teacher involved	6.95	1.27	5.62	1.62*
2. Teacher interested	6.98	1.07	5.56	1.54**
3. Teacher competent	6.85	1.07	5.63	1.61*
4. Teacher nervous	3.00	1.20	4.51	1.77**
6. Teacher supportive	6.49	1.49	4.81	1.67**
Teacher questionnaire				
1. Enjoy being teacher	5.43	1.09	4.47	1.17*

Note. Higher numbers refer to more of the item descriptor; Dashes signify no main effects.
* $p < .05$. ** $p < .01$.

Table 4
Cell Means Showing Significant Interactions for Sex by Treatment

Measure	Informational		Controlling	
	Males	Females	Males	Females
Utterances	—	—	—	—
Objective	—	—	—	—
Subjective				
1. Teacher involved**	7.3	4.7	6.4	6.6
2. Teacher interested**	7.4	4.8	6.4	6.8
3. Teacher competent*	7.3	5.0	6.3	6.4
10. Liking of teacher*	6.1	3.8	3.3	3.7
Teacher questionnaire	—	—	—	—

Note. Dashes indicate no interactions.
* $p < .05$. ** $p < .01$.

Finally, there were significant interactions between sex of subject and informational versus controlling inductions on four of the subjectively rated items—three of which are ones where there had been sex differences. Indeed, the interactions help to explicate the sex differences. As can be seen in Table 4, there were no sex differences in the controlling conditions; males and females were rated almost identically on involvement, interest, competence, and likeability. The clear differences were in the noncontrolling situations. Females were judged much worse on those dimensions in that condition. These results are quite consistent with the

"nature of the task" interpretation given above. In the controlling conditions, males and females alike tended simply to read the solutions and have students practice them. Thus, the fact of the task being somewhat sex-linked was not terribly relevant. But in the noncontrolling condition, where the teachers served as a resource and guide, their ease with the task would have made a big difference. Without using the structure of reading the solutions, their dis-ease with the activity would have made a big difference in the way they functioned as teachers in the less structured interchanges.

Summary and Conclusions

It has been well documented that informational environments—ones that provide meaningful feedback in the context of choice—tend to enhance intrinsic motivation relative to controlling environments—those that pressure people toward specific outcomes. In terms of classroom education, the environment is, to a large extent, formed by the teacher. Deci et al. (1981a, 1981b) found that the teacher-personality variable, "orientation toward control versus autonomy," was one important factor that determines whether the classroom environment will be more informational or more controlling for the students. Supplementing the previous work, the present study suggests that when teachers feel pressured by superiors they tend to become more controlling with their students. Further, one of the things that appears to make teachers feel pressured and therefore become more controlling is having it emphasized that they are responsible for their students' performing up to standards. When this occurs, teachers tend to lecture and explain more, and they give children less choice and less opportunity for autonomous learning. This behavior, in turn, is likely to have deleterious effects on the children's intrinsic motivation.

There remain two important questions in interpreting this study. First, do performance standards necessarily make teachers more controlling and thus necessarily undermine children's intrinsic motivation? And second, what is the relationship between the children's intrinsic motivation and learning?

In this study, the experimenter created pressure for one group of subjects by emphasizing what they *should* do in relation to their students. This imposition of standards was apparently perceived as controlling by the teacher subjects, for they in turn were controlling with their students. That does not, however, imply that teachers will necessarily be more controlling when they hold performance standards for their students. Indeed, teachers who have standards and expect their students to perform well may be among the best teachers, for they may communicate concern for their students. The point is that it may be possible for performance standards to be communicated either informationally or controllingly. Just as competence feedback can be delivered in either an informational or controlling manner (Ryan, 1982) and performance-contingent rewards can be administered in either an informational or controlling manner (Ryan et al., Note 1), so performance standards may also be communicated in either manner. This may be true for administrators communicating to teachers as well as for teachers communicating to students. In short, we are speculating that performance standards may not be inherently antagonistic to intrinsic motivation (of teachers and students), although when teachers or students experience them as pressure, they are likely to have the effect that was found in this study.

The final question relates students' intrinsic motivation to their learning. Assuming that controlling rewards and communications, including those involved with performance standards such as were evidenced in this study, undermine intrinsic motivation, is that necessarily bad for students' learning? Obviously, the next step in this research would be to explore the effects of teachers' controlling versus informational behavior on students' learning. In the present study, we did see that students assembled more puzzles with controlling teachers, although they solved fewer puzzles on their own. It is impossible to say which students learned more. There is, however, some evidence from other studies that is relevant here. A study by Benware and Deci (Note 2) found that an experimental induction that facilitated intrinsic motivation also facilitated conceptual learning, although the rote learning was unrelated to intrinsic mo-

tivation. In other studies reviewed by McGraw (1978), extrinsic rewards were shown to impair learning and problem solving. Assuming that rewards also undermined the subjects' intrinsic motivation, as has been so frequently found, then the studies reviewed by McGraw tend to support a positive relationship between intrinsic motivation and learning. Finally, deCharms (1976) found in a large field study in public schools that enhancing children's intrinsic motivation also improved their learning as measured by standardized tests. Thus, there is some evidence to suggest that controlling external environments impair learning, in other words, that intrinsic motivation improves learning; however, the question deserves considerably more attention.

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