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Classroom Management and Negative Reinforcement

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Abstract

Of the four simple consequences for behavior, none is more misunderstood than negative reinforcement. A Negative Reinforcement Quiz administered to 233 student teachers from two universities revealed that the vast majority of respondents mistakenly viewed negative reinforcement as a synonym for punishment, and that believe that negative reinforcement is used to stop, not start, desired behaviors. Also, student teachers overwhelmingly stated that they would not consciously use negative reinforcement in the future. This paper documents that a misunderstanding exists concerning negative reinforcement; explains why the misunderstanding exists; and explores the consequences for classroom management if the misunderstanding is permitted to continue.

Classroom Management and Negative Reinforcement

Dr. Robert T. Tauber

Application of operant learning principles requires an understanding of the four simple consequences for behavior. None is more misunderstood than negative reinforcement. This paper attempts to document that negative reinforcement is misunderstood, attempts to explain why it is misunderstood, and explores the possible impact of this misunderstanding upon classroom management. Direction for action that will help eliminate the misunderstanding is offered.

Negative Reinforcement Quiz

In order to set the stage for a defense asserting that negative reinforcement is misunderstood, readers should take the following "quiz" before reading further.

1. If you were doing a crossword puzzle on the subject "behavior modification" and you were asked to come up with a word that means basically the same thing as NEGATIVE REINFORCEMENT, what word would you select?

   _____

2. When you supply negative reinforcement, it usually results in the other person:

   _____a. Stopping or decreasing a behavior that you want stopped or decreased.

   _____b. Starting or increasing a behavior that you want started or increased.

3. Do other people usually look forward to negative reinforcement being supplied on them?

_____a. Yes _____b. No

4. Assuming that you will "manage" others (family members, employees, etc.) in the future, do you anticipate regularly (consciously) supplying positive reinforcement to those you manage?

_____a. Yes _____b. No

Why?

5. Assuming that you will "manage" others (family members, employees, etc.) in the future, do you anticipate regularly (consciously) supplying negative reinforcement to those you manage?

_____a. Yes _____b. No

Why?

Analysis of "Quiz" Results

In applying operant conditioning principles, one's goal is to start (increase), to stop (decrease), or to maintain the behavior of others. There are no other choices. This goal is accomplished by supplying consequences in the appropriate quantity and frequency following the others' behavior. Although there are many examples of simple consequences, all fit into four main categories. These categories are defined by whether one supplies or removes a reward, OR supplies or removes an aversive

stimulus. These four categories are known, respectively, as positive reinforcement, time-out, punishment, and negative reinforcement.

When 233 elementary and sceondary student teachers from two universities were asked to cite another word that meant the same thing as negative reinforcement, approximately 70% incorrectly responded by answering "punishment." Given that negative reinforcement is defined as "removing an aversive stimulus" and punishment is defined as "supplying an aversive stimulus," it should be obvious that these terms are not synonymous. Twenty-seven percent responded with answers that meant the same thing as punishment such as "yell" and "embarrass." Sixteen percent responded with incorrect or too general answers such as "condescending," "reform," "discipline," and "ignoring," that could not be easily categorized. Only 7% gave a correct answer. See Table 1, "Synonym for Negative Reinforcement." These results reflect previous outcomes for audiences ranging from elementary and secondary school teachers in the United States to teachers and administrators on sabbatical in northern England (N = 500).

Respondents' confusion regarding negative reinforcement and punishment becomes more evident when one examines the reason for using the consequences in the first place. Table 2, "Consequence Grid," shows that punishment is supplied to stop behaviors, time-out is supplied to stop behaviors, and positive reinforcement is supplied to start behaviors. Two consequences stop behaviors and one consequence starts behaviors. If negative reinforcement is incorrectly seen as simply another word for punishment, then

negative reinforcement, too, would be supplied to stop behaviors. Three ways to stop behavior and only one way to start behavior is both lopsided and incorrect because negative reinforcement is used to start behaviors by removing aversive stimuli.

It may be helpful to present an example for each simple consequence, so that their differences can be clearly noted and also illustrate that trying to distinguish instances of positive and negative reinforcement results in ambiguous situations sometimes. "If you clean your room, you will be able to go outside and play," and "You will have to stay in the house, until you clean your room," represent positive and negative reinforcement statements, respectively. In the first statement, a reward is supplied by starting a behavior. In the second statement, an aversive stimulus (having to stay inside) is removed by starting a behavior. Negative reinforcement assumes that the other person is primarily motivated by a desire to get rid of the aversive stimulus (staying inside) and not primarily motivated by the desire to get a reward (go outside and play).

As with all supplied consequences, the effect of a consequence depends on how the recipient interprets it. For instance, do you take an aspirin when you have a headache to stop the pain or to feel better? Doing something to stop the pain would be self-applied negative reinforcement. Doing something to feel better would be self-applied positive reinforcement. In both cases, you were motivated to start a behavior--take an aspirin.

"Because you have continued bouncing the ball against the

house, you will no longer be able to play with your friends," and "If you continue bouncing the ball against the house, you will be paddled," are examples of the other two consequences, time-out and punishment. In the first statement, time-out, the child is having a reward (playing with friends) removed. The parent's goal is to stop a behavior. In the second statement, punishment, the child is having an aversive stimulus supplied (being paddled). Once again, the parent's goal is to stop a behavior.

When responding to the second question about the effect of supplying negative reinforcement, 66% incorrectly said it is used to stop behavior. Only 30% correctly said negative reinforcement is used to start behavior. See Table 3, "Effect of Supplying Negative Reinforcement." These results show further that the quiz-takers confused negative reinforcement for punishment and then answered question #2 with the definition of punishment in mind.

The third question asked whether people usually look forward to negative reinforcement. Eighty-three percent said "No"; 16% said "Yes." See Table 4, "Look Forward to Negative Reinforcement." One wonders why 83% of the respondents indicated that people do not look forward to removal of an aversive stimulus such as a headache, once again demonstrating a confusion of negative reinforcement and punishment.

The willingness of respondents to supply positive and negative reinforcement, respectively, in future efforts to manage others was surveyed in the fourth and fifth questions. Positive reinforcement (Question #4), with 98% saying "Yes," would be used

regularly in the future. See Table 5, "Use Plus Reinforcement in Future?" Thirty-nine percent of the respondents said they plan regularly to use negative reinforcement (question #5). See Table 6, "Use Negative Reinforcement in Future?" Although this figure of 39% may appear unexpectedly high, it is explained by the respondents' comments under "Why." The majority of respondents answering "Yes" did so because they believed that people (children, employees, etc.) had to be punished to be motivated! Again, punishment and negative reinforcement are incorrectly seen as being synonymous.

Although not asked of the 233 student teachers, other administrations of the Negative Reinforcement Quiz have asked respondents to create an example of negative reinforcement. If there was any doubt remaining that the concept was misunderstood, analyzing their attempts to create negative reinforcement statements removed any such doubt.

Why the Confusion over Negative Reinforcement?

One reason for the confusion concerns the word "negative." Too often people forget that the word "negative" in negative reinforcement simply indicates an action or a direction, not a value judgment. Positive refers to supplying something, whereas negative refers to removing something. Users overlook the fact that both positive reinforcement and negative reinforcement contain the key word reinforcement--something to which most people look forward. Receiving a reward (positive reinforcement) OR removing an aversive stimulus (negative reinforcement) are

both pleasant experiences. If we renamed negative reinforcement "that other kind of reinforcement," there would probably be less misunderstanding.

It is no wonder that negative reinforcement is used as a synonym for punishment--negative is seen as BAD and punishment is seen as BAD. Negative checkbook balances cause panic, and negative personnel evaluations produce dread. Webster's Ninth New Collegiate Dictionary (1983) defines the word negative as "lacking positive qualities," "marked by denial," "adverse," "unfavorable," and "opposing constructive treatment or development" (p. 791).

When it comes to negative and positive numbers, where it should be clear the two words only refer to direction on one side or the other of zero, the situation is no better. This anxiety over negative numbers causes us to report College Entrance Examination Board (SAT) scores as having a mean of 500, a standard deviation of 100, and a typical range of 200 through 800. In reality, SAT scores are simply z-scores with a mean of zero, a standard deviation of 1, and a range of -3 through +3. Just think of the panic among students and parents if students brought home SAT scores of -.3, -.5 or -1.6. Of course, when the negative sign, as well as the decimal, is removed by artificially multiplying by 100 and then adding 500, one has the more recognizable and less threatening scores of 470, 450, and 340, respectively.

The confusion concerning negative reinforcement has not been helped by the media. In the movie Ghost Busters, a parapsychologist (played by Bill Murray) tests two students'

powers of telepathy. The beautiful coed is told that she is correct in guessing the hidden numbers on cards even when she is wrong. In contrast, the male student is told that he is always incorrect, and receives an electric shock even when he is right. The parapsychologist mistakenly refers to these shocks as negative reinforcement. In truth, the student is receiving punishment, not negative reinforcement! Although the electric shocks may be considered as supplying negative reinforcers, negative reinforcers are not the same thing as negative reinforcement, the removal or avoidance of a negative reinforcer.

Although counterintuititive, obtaining negative results can be comforting, can be something to which one looks forward. Take the patient who has undergone various tests, the results of which might indicate the presence of a particular disease. Imagine the patient's relief when the results come back "negative"--no disease is present.

Negative Reinforcement in the Literature

The misunderstanding of negative reinforcement may be due, in part, to the category's relatively infrequent appearance in the literature. If this is true, then readers would have fewer opportunities to learn about this consequence. To test this assumption, three common indexes, Psychological Abstracts (1980-1985) and ERIC's (1966-1987) Resources in Education (fugitive literature documents) and Current Index to Journals in Education were reviewed for the number of citations to negative reinforcement, positive reinforcement, and punishment. Time-Out,

the fourth operant learning consequence, was omitted. A citation was any entry that included the term in the title of the article.

Table 7, "Negative Reinforcement, Positive Reinforcement, and Punishment Citations (Hand Search)," summarizes the results of a hand search of Psychological Abstracts. There were more than twice as many articles about positive reinforcement (180) and more than four times as many articles about punishment (362) than there were about negative reinforcement (80).

Table 8, "Negative Reinforcement, Positive Reinforcement, and Punishment Citations (DIALOG Search)," summarizes the results of an on-line DIALOG search of ERIC's RIE and CIJE. Keep in mind that users of ERIC are often educators who attempt to put theory into practice. With only 9 articles in CIJE and 3 in RIE on negative reinforcement, compared to 41 and 15, respectively, for positive reinforcement and 205 and 70 for punishment, it is little wonder that negative reinforcement is so misunderstood and ineffectively applied.

It is possible that my search overlooked those citations calling each consequence by another name. For example, avoidance and escape learning could be used for negative reinforcement, or token economy could be used for positive reinforcement. The point is that the relative occurance of the three consequences would probably not be much different from what was found using the common terms of negative reinforcement, positive reinforcement, and punishment. Further, those doing a search, especially practitioners, would be inclined to look first under these three more traditional labels.

Negative Reinforcement Treatment in Textbooks

Textbooks may also shortchange the treatment of negative reinforcement. In order to test this assumption, a random sampling of 20 psychology and educational psychology textbooks (1975 or later) in our library was reviewed. See Table 9, "Textbook Review." The review consisted of looking in the index to see if the terms negative reinforcement, positive reinforcement, and punishment were included and, if so, counting the number of pages devoted to their treatment. The review continued with a subjective evaluation of how the authors presented the concept of negative reinforcement (e.g., comparing it to positive reinforcement, distinguishing it from punishment).

In the texts reviewed, 38 pages were devoted to the concept of negative reinforcement, 63 were devoted to positive reinforcement, and 111 were devoted to punishment. Given that a student's first exposure to negative reinforcement would likely be class lecture supplemented by assigned textbook readings, one would have expected a more balanced treatment of the three consequences. Bootzin, Bower, Zajonc, and Hall (1986), following a short presentation of negative reinforcement, stated that ". . . this term can be confusing, so we will not use it again in this book" (p. 206).

A recent letter to selected textbook publishers sharing my findings on the quality of texts' coverage of negative reinforcement elicited a reply describing an encounter between a publisher's representative and a college professor (L. Carr, personal communication, May 28, 1987). As the story goes, the

professor picked up the new text for review and said, "Now for the acid test. Let's see if they (the authors) equate negative reinforcement with punishment." The textbook representative describes the sickening feeling that swept over her as she sat there thinking about a quick exit for the door. This story had a happy ending; her text passed his test with flying colors. Whether through inaccurate or inadequate treatment of negative reinforcement, other textbooks do not fare so well.

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Conclusion

The concept of negative reinforcement is often misunderstood and used as a synonym for punishment. Because knowledge of concepts precedes their application, persons who misunderstand negative reinforcement would apply it at the wrong times and for the wrong reasons. Keeping in mind that there are only four categories of simple consequences available for use in modifying another's behavior, one cannot afford to misunderstand, ignore, or misapply even one of them.

Part of the misunderstanding of negative reinforcement might involve the connotation of "negative" that people bring with them. Presenting learners with a consequence grid, where the relationship between giving or removing a reward or aversive stimulus AND where the mutual exclusivity of the four definitions is explained can go a long way toward reducing the confusion among consequences. Emphasizing that two consequences start behavior and two consequences stop behavior can also help. Requiring people to identify which consequences are being

demonstrated in instructor-presented examples and to create their own examples of each consequence also promotes learning.

Those instructors who teach educational psychology and/or methods courses and who are aware that so little literature is available concerning negative reinforcement may want to provide to students with selected articles on the topic. These same instructors may want to be more selective in choosing required texts--perhaps putting those under consideration to the "acid test."

Those faculty who work directly with student teachers, especially in the seminar that accompanies most student teaching experiences, have a final chance to see to it that these students understand and can effectively apply negative reinforcement. A natural time for introducing negative reinforcement would be as part of an overall discussion on classroom management.

References

Bootzin, R. R., Bower, G., Zajonc, R. B., & Hall, E. (1986). Psychology today: An introduction (6th ed.). New York: Random House.

Webster's ninth new collegiate dictionary. (1983). Springfield, MA: Merriam-Webster Inc.

Author Notes

I thank Tonya Deater for her library research work.

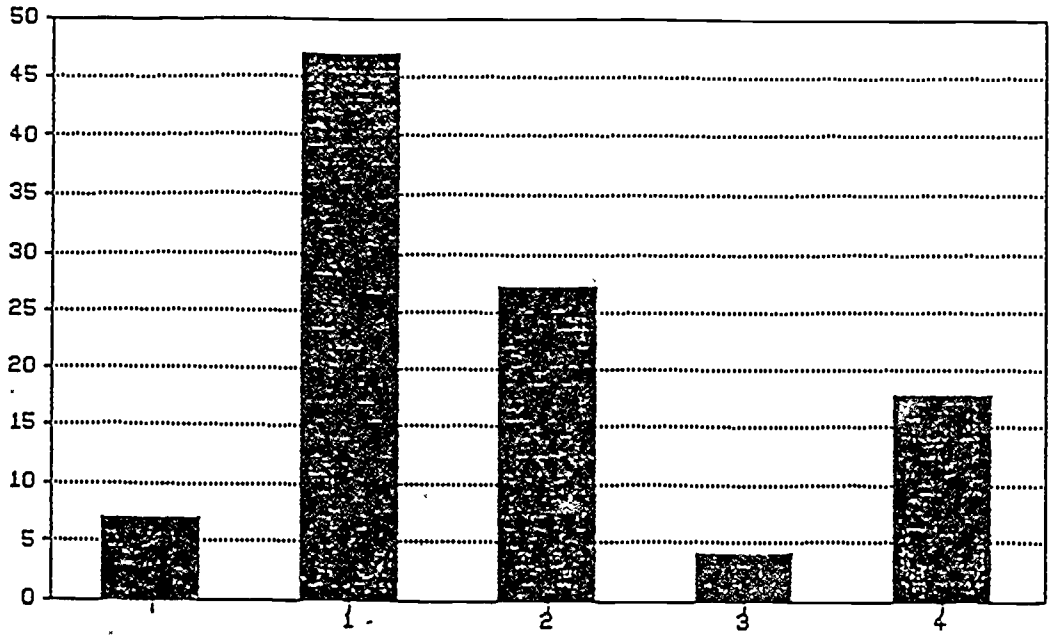
CONSEQUENCE GRID

	@@@@ SUPPLIES a Consequence	@@@@ REMOVES a Consequence
REWARD (Something valued by ****)		
AVERSIVE (Something that causes **** mental or physical dis-comfort)		

Key: @@@@ = boss, parent, spouse, teacher, etc.

**** = employee, friend, spouse, child, student, etc.

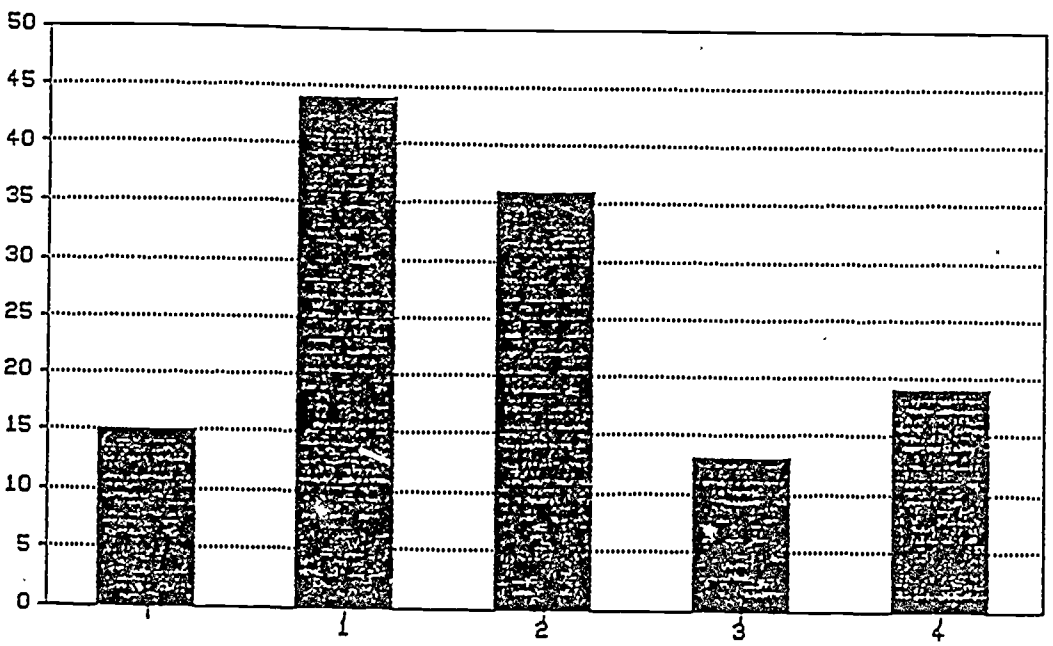
1=Punishment 2=Same 3=Correct 4=No Meaning



Synonym for Neg Reinf?

Stud Teach 1

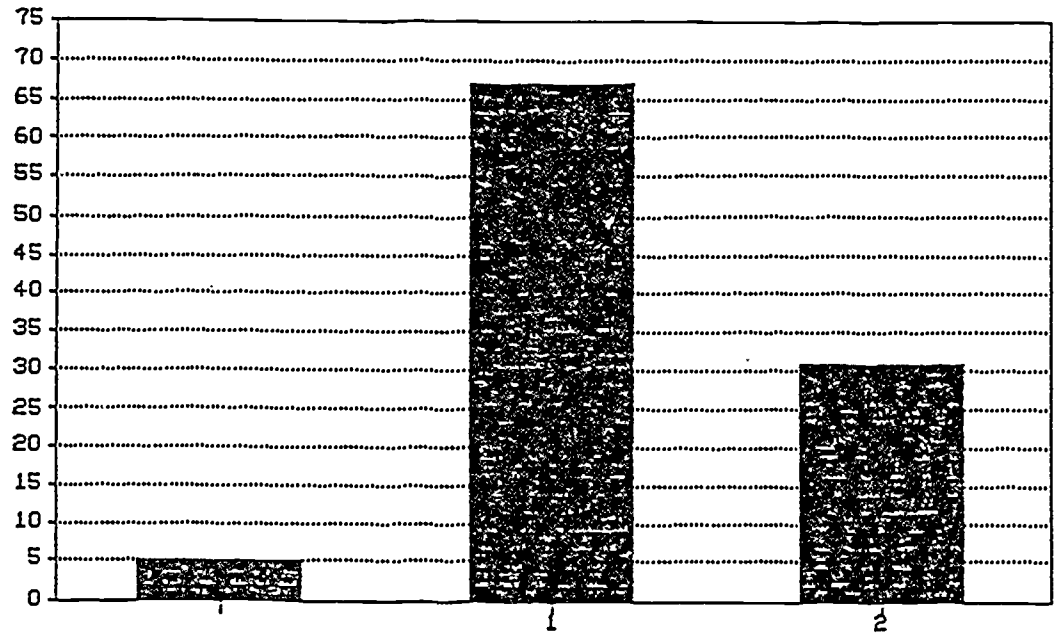
1=Punishment 2=Same 3=Correct 4=No Meaning



Synonym for Neg Reing?

Stud Teach 2

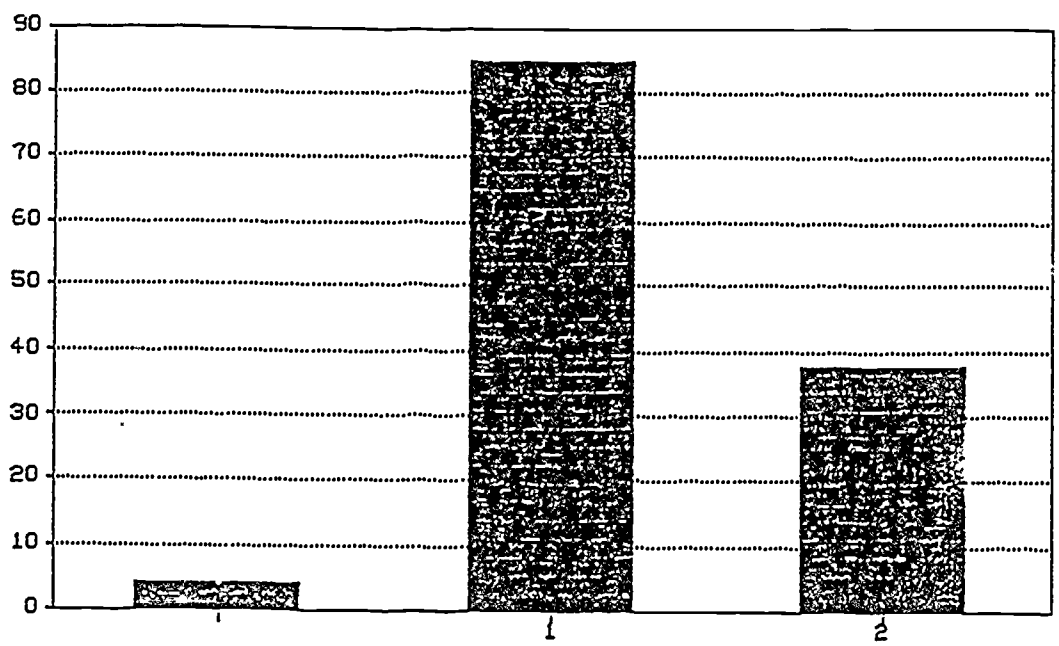
Does -R STOP (1) or START (2) behavior?



Effect of Supplying Neg Reinf?

Stud Teach 1

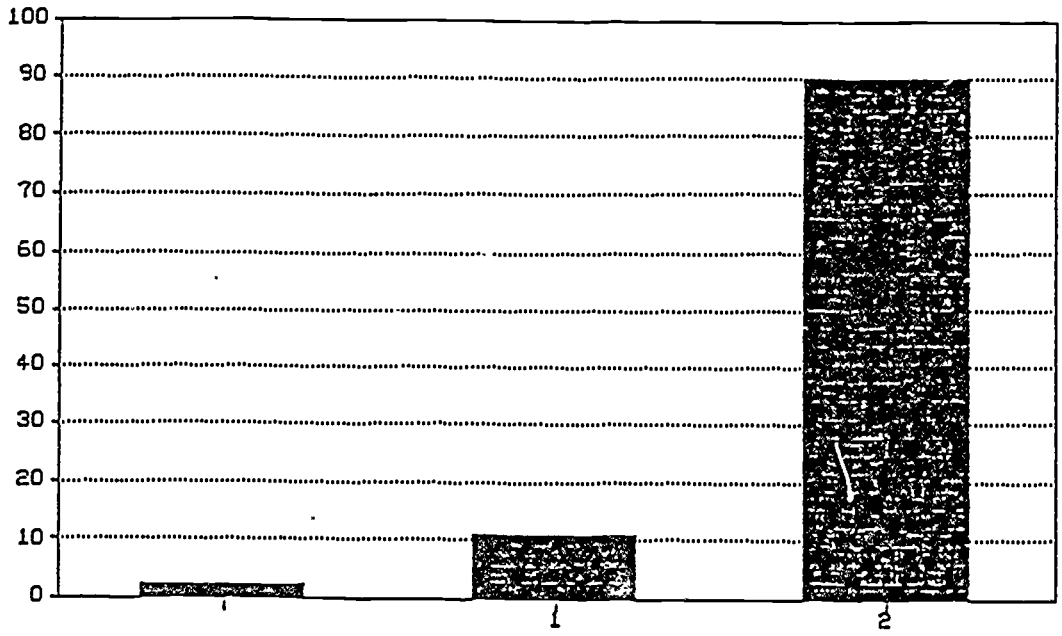
Does -R STOP (1) or START (2) behavior?



Effect of Supplying Neg Reinf?

Stud Teach 2

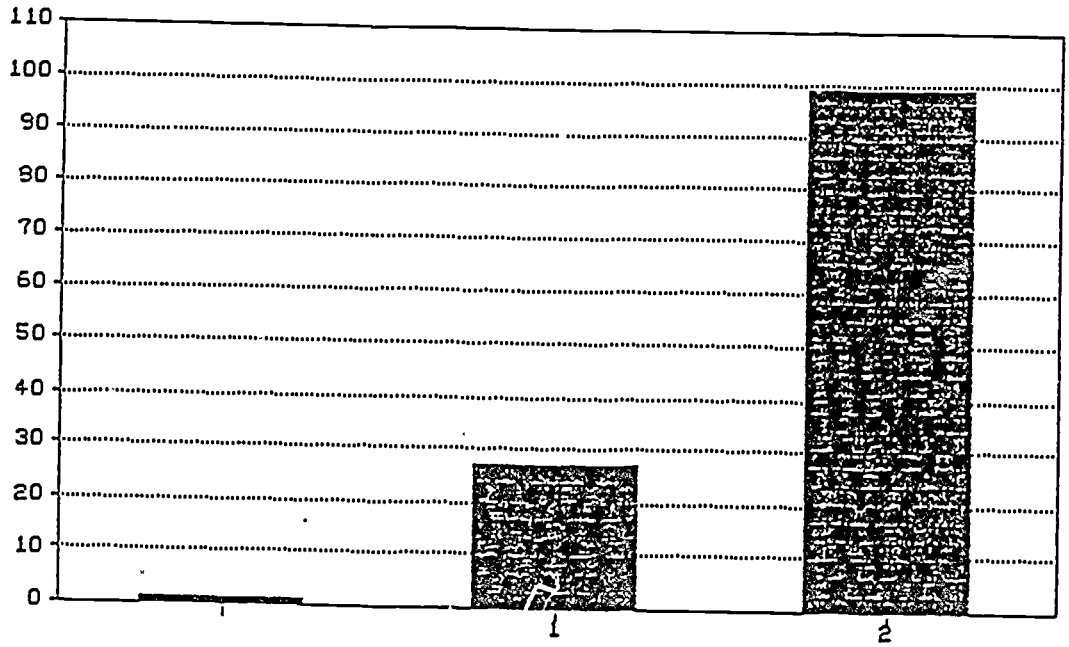
Do students look forward to -R? 1=Yes 2=No



Look Forward to Neg Reinf?

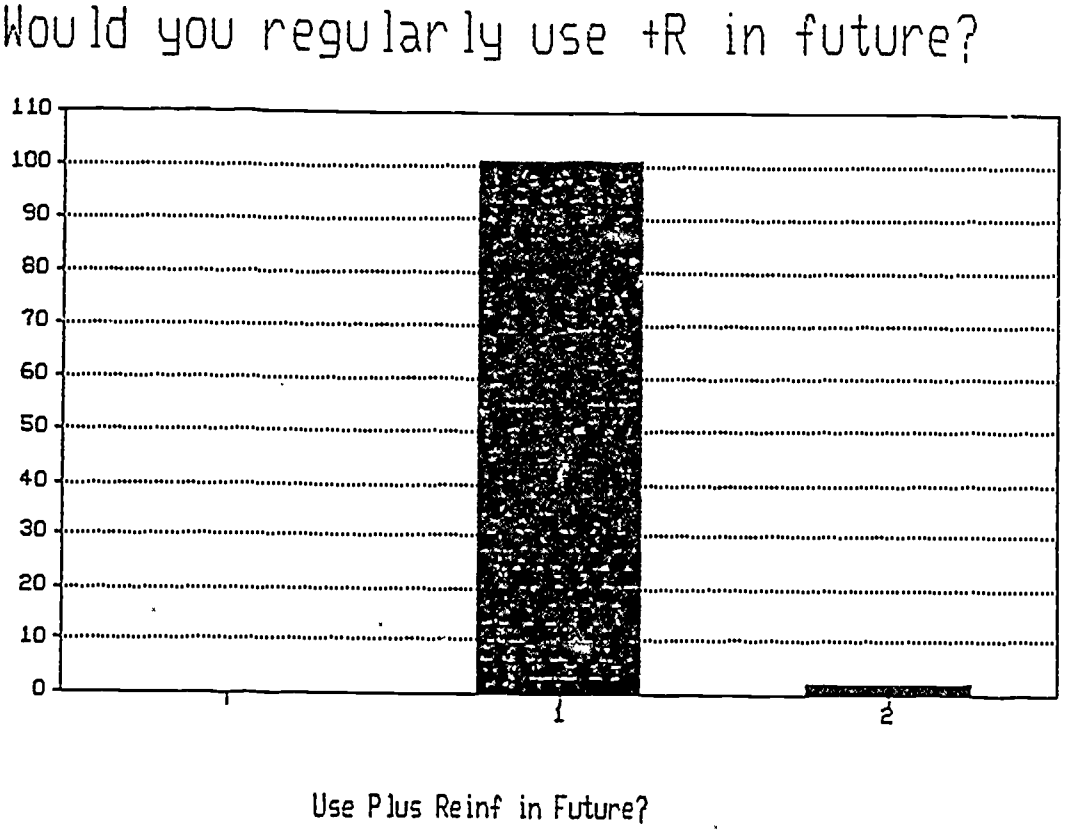
Stud Teach 1

Do students look forward to -R? 1=Yes 2=No



Look Foward to Neg Reinf?

Stud Teach 2


Would you regularly use +R in future?
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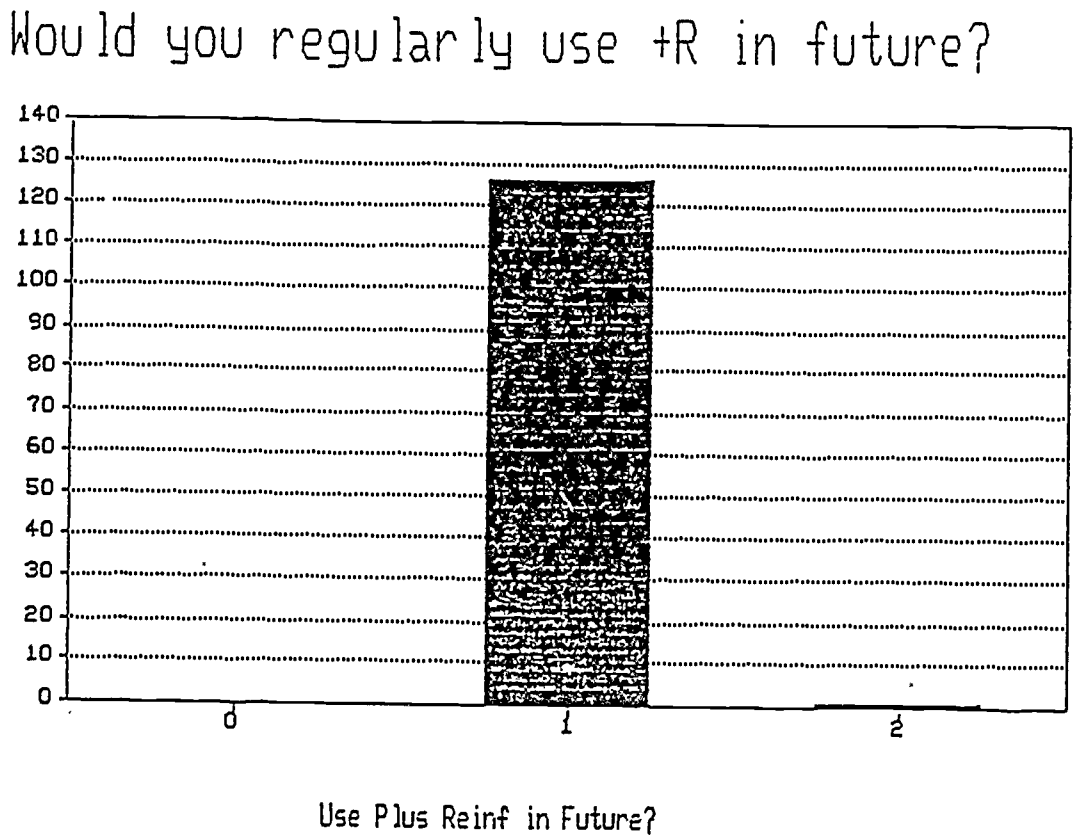
Use Plus Reinf in Future?
Stud Teach 1


Would you regularly use +R in future?
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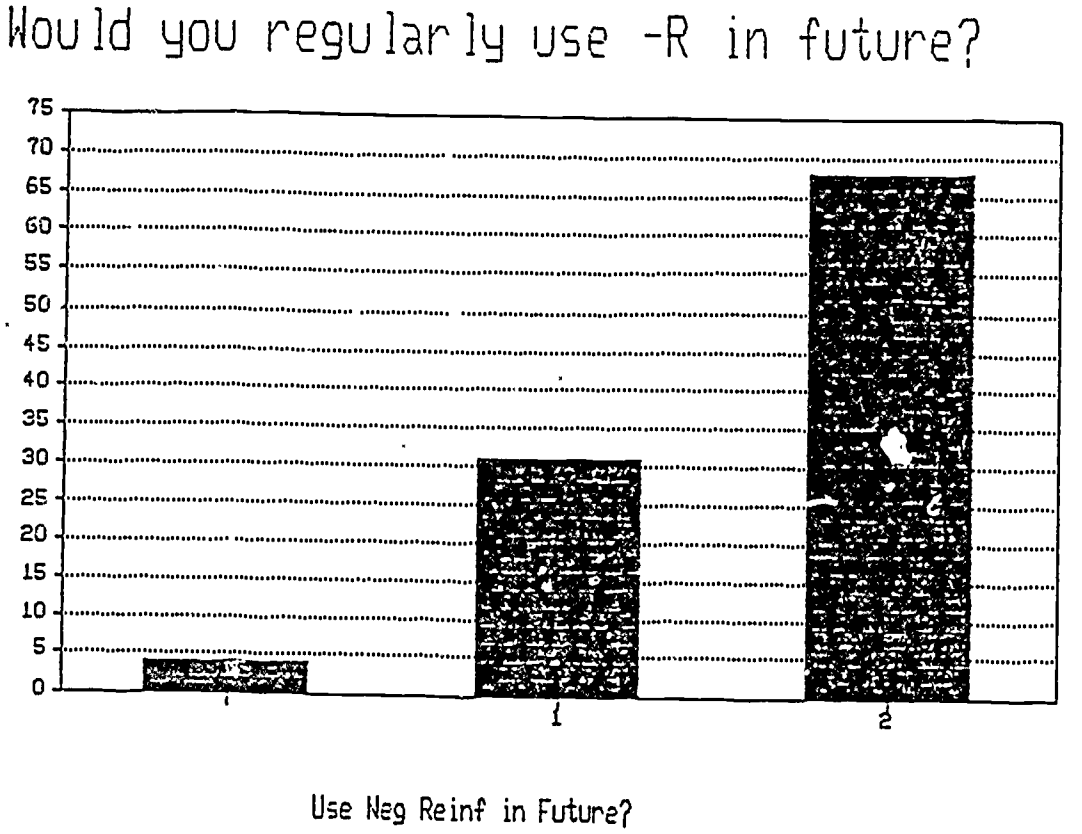
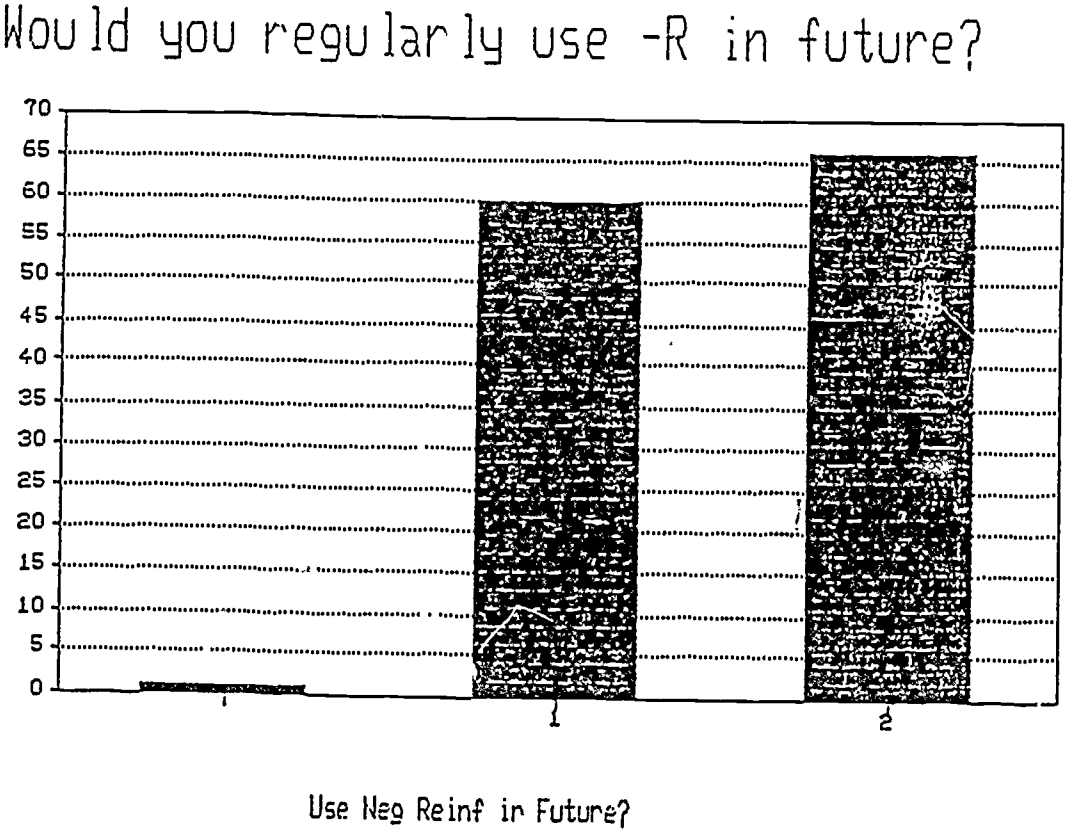
Use Plus Reinf in Future?
Stud Teach 2



Stud Teach 1



Stud Teach 2