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A teacher of young children may be able to xercise control over her pupils' behavior by temporarily associating herself with tangible means of reinforcement. This study investigates whether contingent (C) or noncontingent (NC) tangible reinforcement is more effective. Four Head Start and four middle class children were used as subjects. Their task was to name picture cards of animals. A first the subjects received only social reinforcement. In the C condition the child was given the card if he named it, and under the NC condition he was just given some cards at the beginning of the task. On the basis of the quantity of nonattending behavior during each condition, it was determined that there was no significant difference in the responses of the two groups of children, though the middle class group consistently responded less. The C condition appeared to be the most effective of the three in minimizing pupil inattention. Both forms of tangible reinforcement enhanced the teacher's control. (WD)

The University of Kansas Head Start Research and Evaluation Center

X.

"Enhancement of the Social Reinforcing Value of a Preschool Teacher."

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Enhancement of the Social Reinforcement Effectiveness of a Teacher of Head Start and Middle-Class Preschool Children.[1]

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ABSTRACT

Running head: Enhancement of the Social Reinforcement. . .

The central purpose of this study was to investigate two methods of enhancing the social reinforcing value of a preschool teacher (1) by associating her social reinforcement with noncontingent tangible reinforcers and (2) by associating her social reinforcement with contingent tangible reinforcers. Ss from both Head Start and Middle-class preschool populations were tested. The 'sign made it possible to compare contingency and noncontingency as reinforcement methods and as treatment of social reinforcement effectiveness. No differences were found between the groups in the amount of inattending behavior observed during a picture naming task under any of the conditions. Contingency and noncontingency both reduced the amount of inattending behavior significantly, and the effect generalized to the tests under social reinforcement. Social reinforcement alone did not significantly reduce the inattending behavior. Examination of individual data reveals an advantage of contingency both as a condition of teaching and as a treatment of social reinforcement effectiveness.

Enhancement of the Social Reinforcement Effectiveness of a Teacher of Head Start and Middle-Class Preschool Children.

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INTRODUCTION

Teachers of young children typically rely upon social reinforcement to control behavior --- both learning and any other behavior that occurs in the classroom. By social reinforcement is meant any use of gesture, eye contact, smiling, frowning, vocal expression, or ignoring of the child to influence his behavior. Teachers frequently encounter children for whom these procedures appear to be relatively ineffective. Some children seem not to care whether teacher is "happy" or "unhappy" with them. They are uninfluenced by the "good" and the "no". It has been hypothesized that a disporportionate number of such children might belong to the Head Start population.

The reasons for the hypothesis vary from the differences between the cultures from which the child and the teacher come to a failure of the child's environment to associate"social reinforcers" as known by middle class children with tangible reinforcement. Whatever the reason, if the teacher is not able to reinforce a child socially, that child is not in a position to learn from her unless she (1) uses tangible reinforcers, or (2) changes her ability to use social reinforcers with him. The second procedure seems best suited to classroom use.

The teacher's first task is to put the child into contact with the learning situation. That is, to get him to pay attention to it. McCoy and Zigler, (1965) found that grade school children played a relatively uninteresting game longer with a person who had previously provided interesting art materials than with a person who was a stranger, but not as long as with a person who not only provided the art materials but also interacted freely with the child. This suggests that a teacher might enhance her ability to use social reinforcement by temporarily associating herself with tangible materials that are reinforcing.

This study asks the question whether she will be more effective after dispensing tangible reinforcers contingent upon some response of the child or if she will be just as effective if she merely establishes herself as the source of such material, by giving them noncontingently. Both Head Start and Middle Class preschool children were included in the study to investigate whether there were differences between the two populations in response patterns.

A measure of attending behavior was selected as the dependent variable in order to avoid problems associated with differences in intelligence and speed of learning. As it developed, the scores of attending were uniformly high and it was the inattending behaviors of evasion, avoidance and escape that varied.

Procedure

Subjects were eight children, four from a Head Start population and four middle class children from a University Laboratory Preschool, designated as HS and MC. There were three girls and one boy in each group, two whites and two negros in the HS group and three whites and one negro in the MC group. Teachers were asked to suggest children whom they judged to be low in attending to teachers.

A white college student acted as teacher (E) and a white male student recorded the children's responses.

Each child was tested four consecutive days per week for a ten minute teaching session. The task was to name picture cards of animals, birds, insects, and fish.

Responses recorded were, Attention (A), Body Escape (F), Vocal Escape (V), and Crying (C). Responses were recorded at 10 second intervals during each ten minute test period. Attention consisted of looking at the teacher, the materials, or of responding vocally to the task, correctly or incorrectly. As noted above, the scores were uniformly high and were not useful in the analysis. Crying never occured, but Body Escape and Vocal Escape appeared to yield a measure of the child's evasion, avoidance or attempted escape from the task. Body escape consisted of turning away from the cards, repeated body movements, such as leg swinging or getting up from the chair. Vocal escape included talking about something irrelevant, repeating the last correct response, repeating what the teacher said or repeating the same response, such as "I don't know" or "It's a bear." Body escape and vocal escape scores were totaled for the analysis as each child typically used one or the other, almost exclusively.

The experiment lasted five weeks. The first week was a baseline period during which all children were tested daily under social reinforcement. That is the teacher told the child he was doing very well, and gave him appropriate compliments about his successes, first in matching cards then in matching and naming the cards. During the succeeding weeks, the children were given one of three treatments for three days, followed by a test day of social reinforcement. The treatments were Social reinforcement, (S) Contingent tangible reinforcement, (C) and Noncontingent tangible reinforcement, (NC). Social reinforcement was the same as the baseline, that is the teacher behaved just as she had during baseline. Contingent reinforcement condition consisted of giving the child the card to keep when he successfully named it in addition to using social reinforcement as before. That is, social and material reinforcement were being paired in an attempt to enhance the social reinforcement. In the Noncontingent condition, the teacher gave the child a few cards at the start of the session. Contingent children were always tested first and an equal number of cards were given to the Noncontingent children. After he had the cards, the teacher offered to help him learn the names and proceded as under Social reinforcement. In this case, social reinforcement was being paired with receiving the cards as a free gift from the teacher.

The teacher would use one of the three treatments for the first three days of the week. On the fourth day she would not give any cards, but use only social reinforcement. After a three day rest, a new treatment period was begun. Thus, the teacher spent three days establishing herself as the kind of person who reinforces socially, or contingently, or noncontingently. The fourth day was a test of her enhancement as a social reinforcer designated hereafter as S-Soc, NC-Soc, depending upon the treatment preceding the test.

The cards used were available commercially in two sizes. It seemed advisable to use the small "pulpil cards" on tangible reinforcement days and the larger "teacher cards" on social reinforcement days so that the children would not have an expectation of taking home cards and be disappointed. At least one child made the discrimination. On a social reinforcement day he asked when he could play with the little cards again.

The last week consisted of two days of treatment, the social test and a final day of Contingent reinforcement so the children would have cards to take home on the last day.

Results and Discussion

After the first two weeks there was so little difference in attending scores (A) that these were not used. The combined daily F and V scores gave total inattention scores for each child. Scores represent the number of 10 second intervals of inattention during a 10 minute test. Six scores were calculated for each child, the baseline score under social reinforcement (S), which was a mean of the first four days of the experiment; the mean of all the scores under noncontingent reinforcement, (NC); the mean of all scores under contingent reinforcement (C); three means of the test day scores, following social reinforcement treatment (S-Soc), following noncontingent treatment, (NC-Soc) and following contingent treatment (C-Soc).

Means for MC children were lower in every condition than for HS children. However, an analysis of variance (summary, Table 2) indicated that there was no significant difference between the groups, Head Start vs. Middle Class in the inattending behavior that was measured. There was a significant difference, however, in the treatments. A comparison of each test and treatment mean with the baseline score indicated that there was no difference between the baseline and S-Soc scores. That is, social reinforcement alone did not significantly alter the inattending behavior. All other treatments and tests were significantly below baseline, (NC at .05; NC-Soc, C, and C-Soc at .01).

These findings at first appear to be contrary to those of Terrell, Durkin, and Weisley (1959) and Zigler and de Labry, who reported that middle class children perform discrimination and concept-switching tasks more readily under intangible than under tangible reinforcement while lower-class children perform better under tangible reinforcement. Two differences in procedure could account for the children in the present study failing to show significant differences, (1) the use of inattention as the measure instead of learning and (2) the younger age of the subjects.

Inattention as a measure is similar to McCoy and Zigler's length of time playing a game. They did not compare middle class and lower-class children, but did find that use of material reinforcers by the

experimenter increased the time spent playing a game by school age children. The present study supports this finding for preschool children.

Terrell, et. al. used an informational light as the intangible reinforcer. The light would not be equivalent to social reinforcement used in the present study.

All three of the above studies used school age children as subjects. It may be that the younger children of middle and lower class respond much alike to social and to tangible reinforcers but that the usual environmental circumstances teach middle class children to increase in responsiveness to social reinforcement as opposed to tangible reinforcement and lower class children to respond in the opposite way. A planned program of intervention by Head Start teachers to associate tangible and social reinforcement could reverse the trend for the lower class children.

A second way of looking at the data is presented in Table 3.

Insert Table 3 about here

In this table, means of the first three days of each week were calculated and listed in sequence with the test scores following each. It can be noted that most of the children improved in that inattention scores were lower at the end of the study than at the beginning. However, there is not a smooth progression for any of the children, indicating that the treatments had differing effects.

To examine the effect of treatment for each child, scores for each treatment (S, NC, and C) and each test (S-Soc, NC-Soc, and C-Soc) were combined. Means of each child's combined scores were plotted along with his partner in the other group who had received the same order of treatments. These graphs appear in Figs. 1 to 4. Pairs A-W and C-Y behaved in a very similar manner. The other children behaved in ways

Insert Figs. 1 to 4 about here

that appear to reflect individual patterns of responding. Group membership, HS or MC, did not correlate with response pattern. There are 23 scores, of a possible 48, (eight children, six conditions) falling below 26 ten-second intervals of inattending behavior. Of these 23 scores, seven fall under C and six under C-Soc. Thus, thirteen of the lowest scores fall under contingency conditions while noncontingency accounts for eight and social alone accounts for two. The score, 26,was arbitrarily chosen for comparison because no scores fall between 26 and 32 so that no near scores were cut off. A similar effect can be seen at other levels.

There seems to be little doubt that the use of material reinforcers by a teacher reduces the inattentive behavior, not only during application, but that the effect generalizes to days when the teacher does not use tangible reinforcers. Thus, it appears that a teacher can enhance her effectiveness as a social reinforcer by temporary intermittant use of such simple tangible reinforcers as the picture cards used in this study.

Although the differences failed to reach significance for the group data, there appears to be a slight advantage for contingency both as a treatment for social reinforcing effectiveness and as a method in itself.

Therefore, the implications for teachers would be to pair social reinforcement temporarily with tangible reinforcers for children for whom social reinforcement alone seems to be relatively ineffective. Delivery of the reinforcers contingent upon a desired response from the child has sufficient advantage over noncontingency to make contingency the preferred method. For the children in this study, there were no significant differences between Head Start and Middle Class children, although scores for the MC children were consistently lower than for HS. Viewed with the findings of Terrell et. al. and Zigler and de Labry, the use of contingent tangible reinforcers to enhance social reinforcement seems more important for Head Start children than for Middle Class children as the latter will probably come under social reinforcement control anyway. On the other hand, it is hard to justify leaving such matters to chance for any child.

Figure 1-4

Each child's score under each condition of treatment and test were combined and the means plotted for comparison. Connecting lines are to facilitate comparison and do not imply sequence. See table 3 for sequence of treatment for each pair.

FOOTNOTES

1. The research reported herein was performed pursuant to a contract with the office of Economic Opportunity, Executive Office of the President, Washington, D.C., 20506. The opinions expressed herein are those of the author and should not be construed as representing the opinion or policy of any agency of the United States Government.

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TABLE 1

Soc Baseline	S-Soc	NC	NC-Soc	C	C-Soc
M. SD	M SD	M SD	M SD	M SD	M SD
HS 47.35 15.8	46.25 23.8	36.15 17.	30.75 18.	22.5 19.3	21.65 19.7
MC 33.67 29.9	34.67 33.	20.58 19.9	15.65 29.3	14.40 15.6	18.20 23.3

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TABLE 2

Summary of Analysis of Variance

Source	df	Ss	MS	F	
I	1	38939.56	3893.56		
Between Ss					
A	1	1519.31	1519.31	2.65	ns
SA′ (error)	6	3427.34	571.22		
Within Ss	5	3924.32	784.86	7.844	.01
b_1 S-Soc	1			.001	ns
b_2 NC	1			5.90	.05
b_3 NC-Soc	1			12.00	.01
b_4 C	1			19.47	.01
b_5 C-Soc	1			16.97	.01
AB	5	222.09	44.42	.44	ns
B′ (error)	30	3001.62	100.05		

TABLE 3

Sequence of treatment means and test scores for pairs of children receiving the same order of treatment.

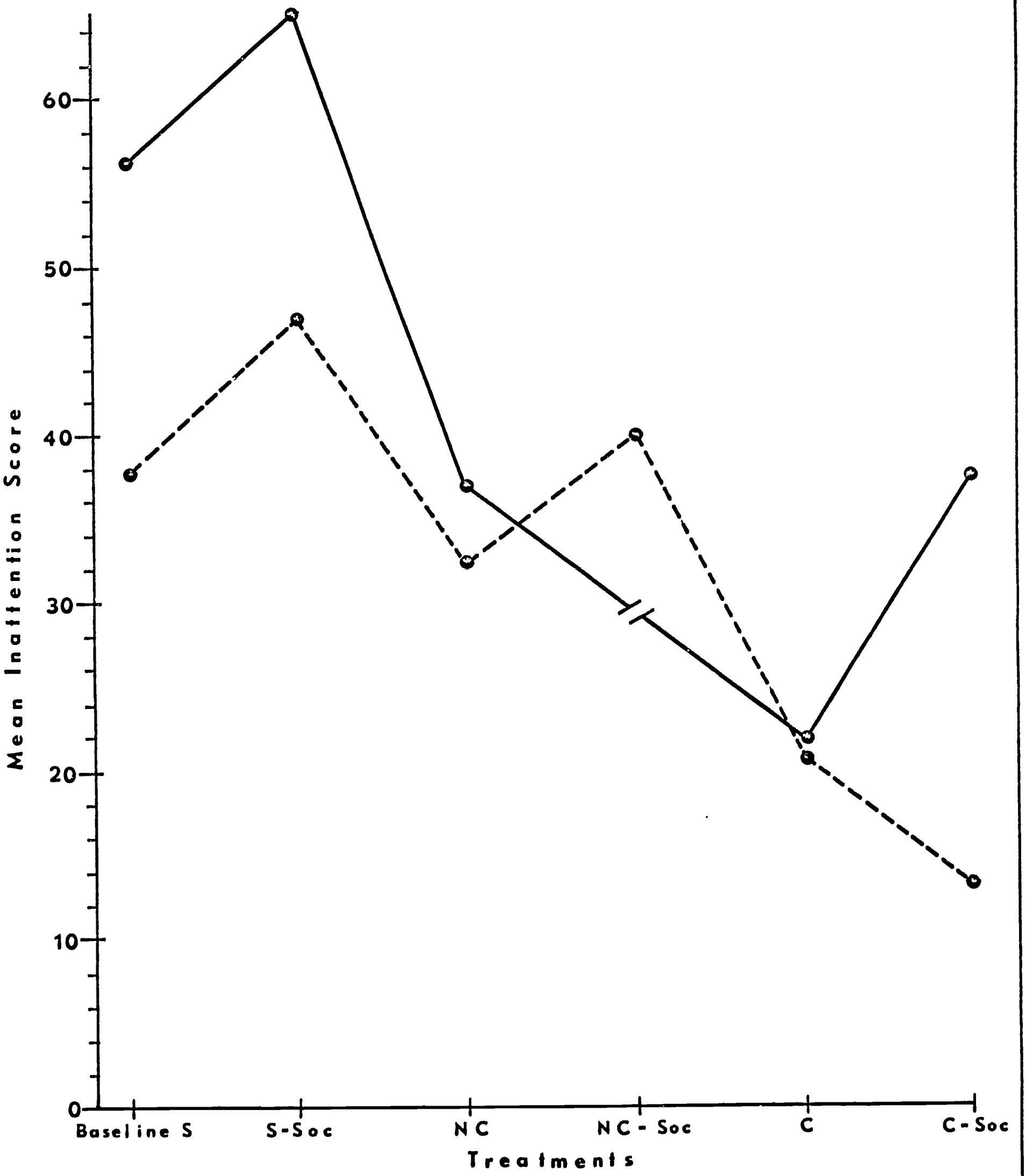
Week		A(HS)	W(MC)
1	S	56.3	52
	S-Soc	47.	56.
2	S	47.3	35.3
	S-Soc	49.	38.
3	C	25.	29.
	C-Soc	20.	21.
4	NC	23.	21.3
	NC-Soc	17.	10.
5	C	17.5	7.
	C-Soc	19.	17.
	C	9.	5.

Week		B(HS)	X(MC)
1	S	37.	37.5
	S-Soc	31.	38.
2	C	29.	27.3
	C-Soc	38.	45.
3	NC	60.6	19.
	NC-Soc	48.	7.
4	C	43.	14.
	C-Soc	19.	32.
5	NC	21.5	18.5
	NC-Soc	38.	16.
	C	No data	19.

Week		C(HS)	Y(MC)
1	S	40.7	10.7
	S-Soc	44.	13.
2	S	28.	9.3
	S-Soc	31.	6.
3	NC	36.	5.5
	NC-Soc	32.	1.
4	C	12.	.3
	C-Soc	7.	2.
5	C	9.	S 1.
	C-Soc	14.	S-Soc 1.
	C	12.	C 0

Week		D(HS)	Z(MC)
1	S	53.3	34.6
	S-Soc	65.	47.
2	NC	37.	32.3
	NC-Soc	55.	40.
3	C	30.	33.7
	C-Soc	No data	19.
4	C	23.3	14.7
	C-Soc	36.	11.
5	C	18.5	15.5
	C-Soc	39.	10.
	C	11.	11.

Means of Treatment and Test Scores for Pair D - Z



Treatment order for pair D-Z

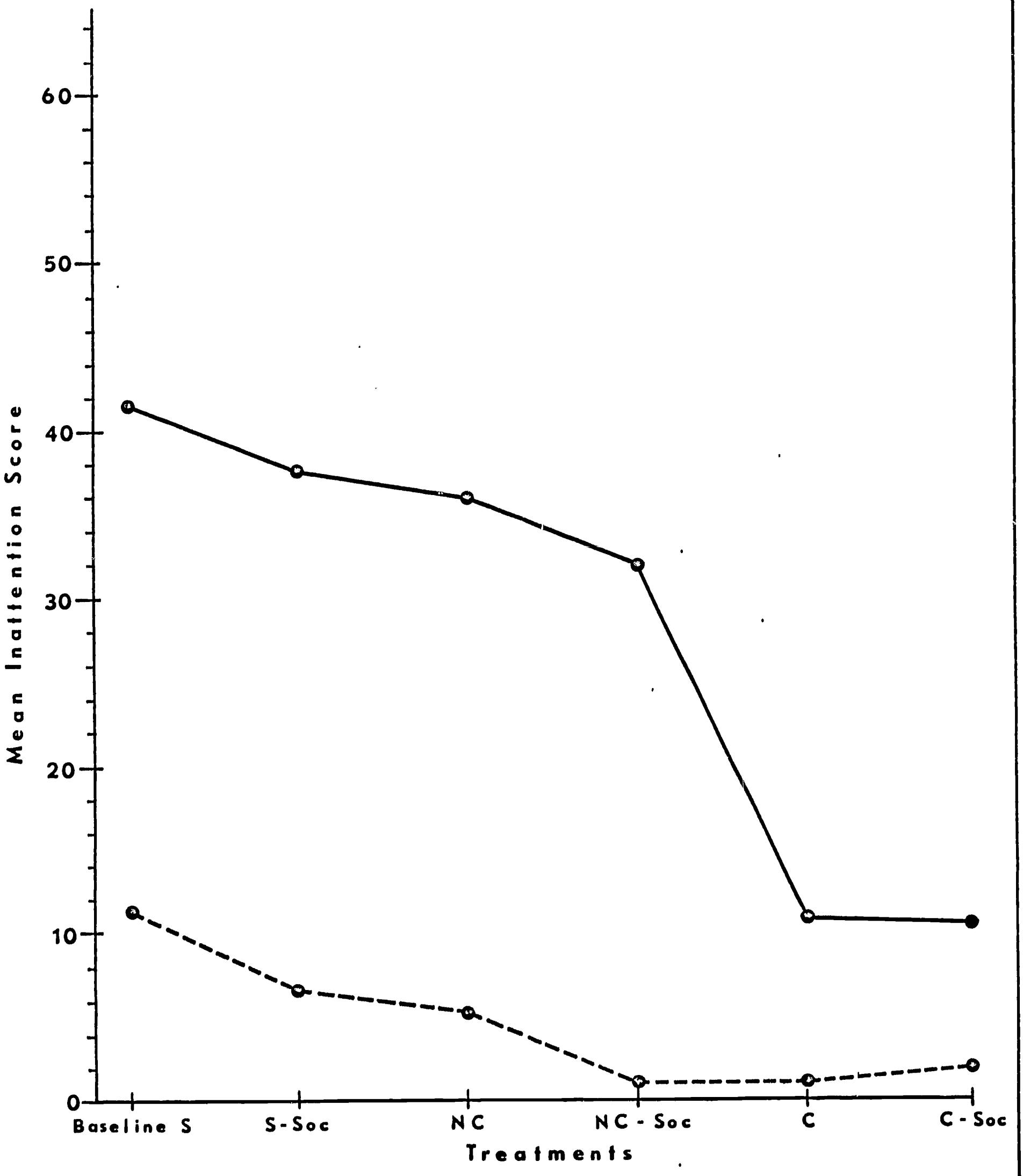
Week 1, S Baseline	Week 4, N
2. N	5. N
3. C	

(Note, D-HS in NC-Soc: No Data)

D-H S ——

Z-MC - - - -

Means of Treatment and Test Scores for Pair C - Y



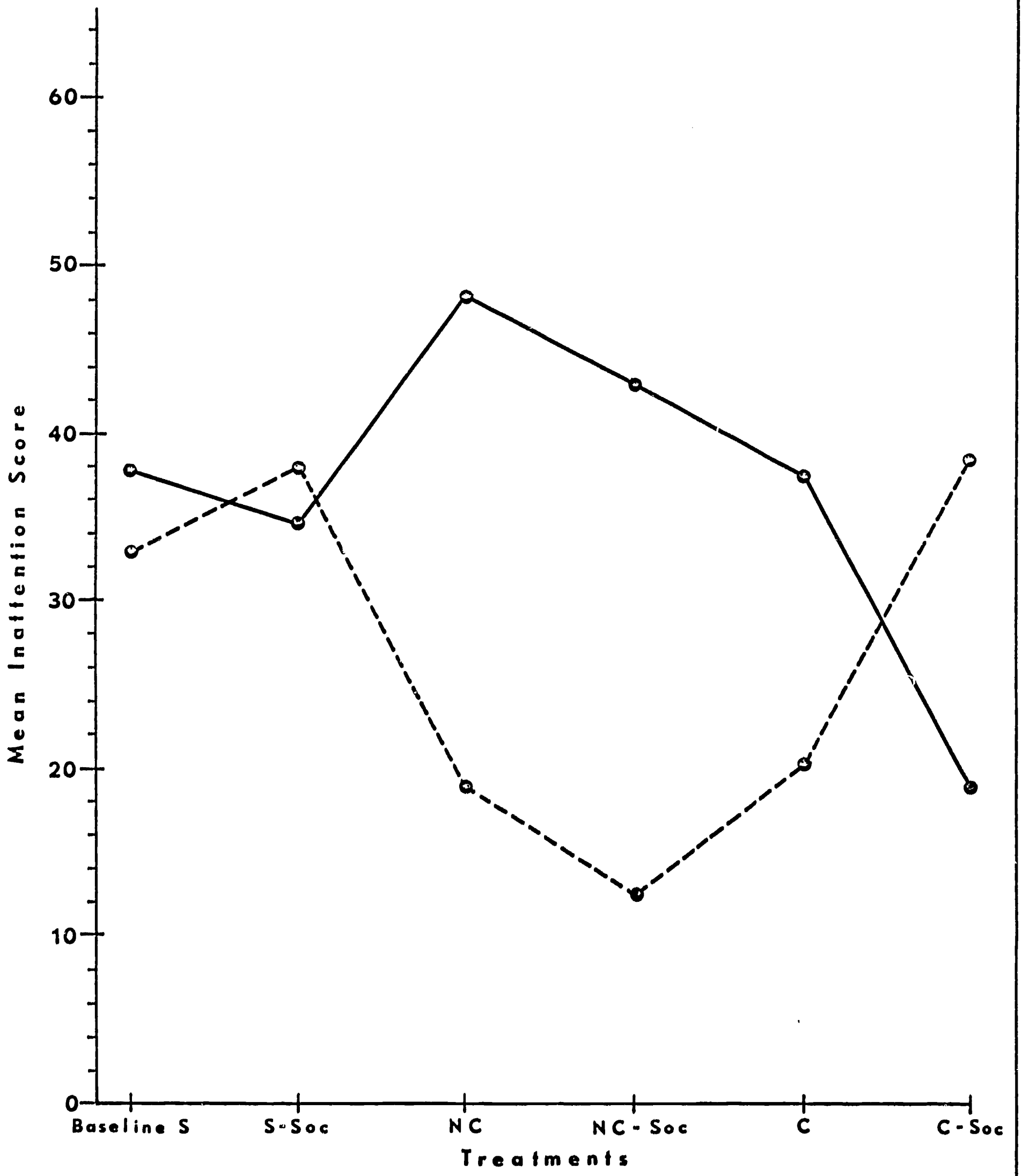
Treatment order for pair C Y

Week 1. S Baseline	Week 4. C
2. S	5. C for C-HS,
3. N	S for Y-MC

C-H S ——

Y-M C - - - -

Means of Treatment and Test Scores for Pair B - X



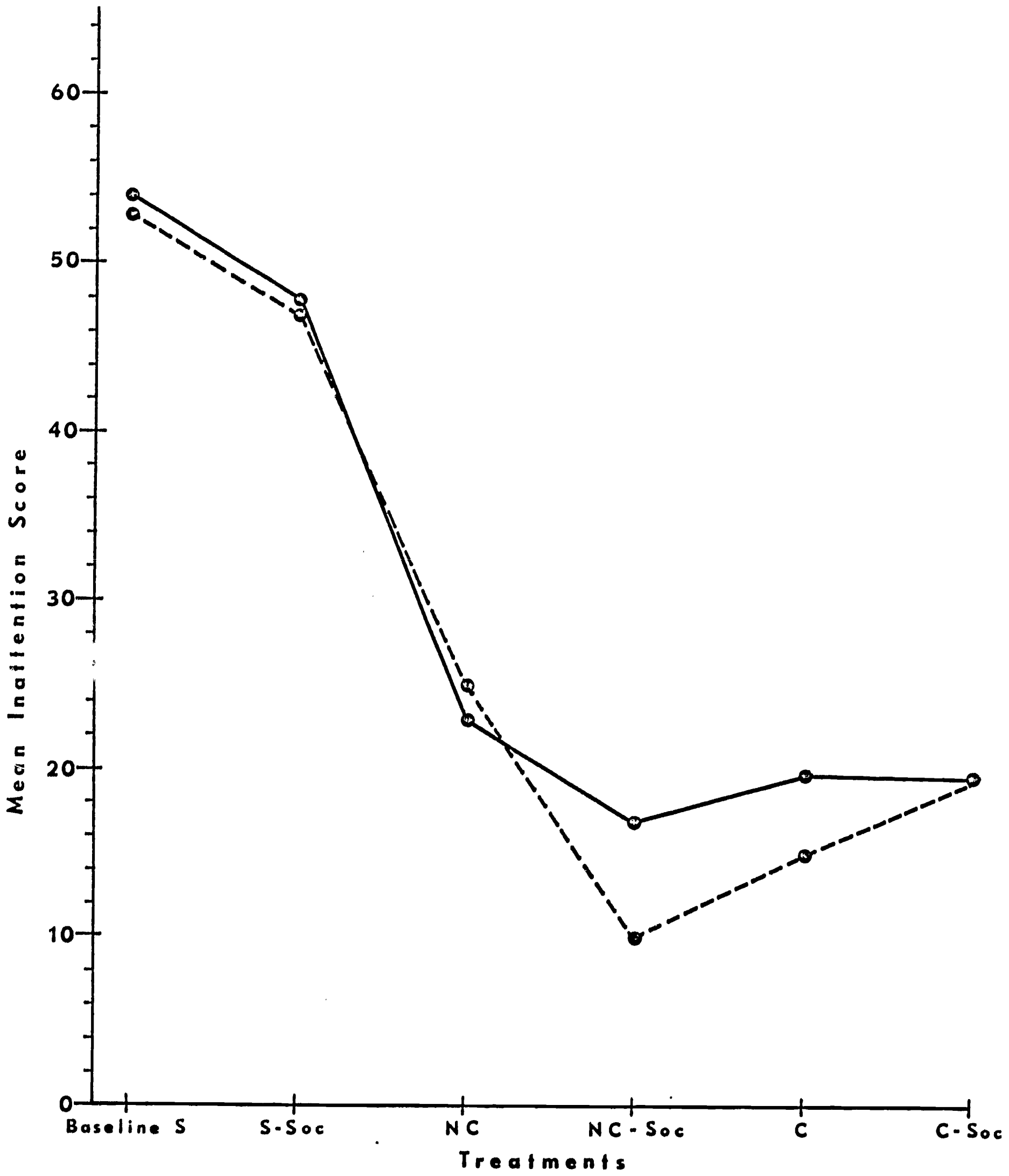
Treatment order for pair B-X

Week 1. S, Baseline	Week 4. C
2. C	5. N
3. N	

B-H S ——

X-MC - - - -

Means of Treatment and Test Scores for Pair A - W



Treatment order for pair A-W

Week 1. S, Baseline	Week 4. N
2. S	5. C
3. C	

A-H S ——
W-M C - - - -