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A REVIEW AND RESEARCH SUGGESTIONS FOR EMPIRICAL APPROACHES TO
EVALUATING REINFORCING EFFECTS OF PEER ATTENTION VS. TEACHER
ATTENTION IN THE GENERAL EDUCATION CLASSROOM

by

Shelley J. Green

B.S., Bradley University, 2000

A Research Paper

Submitted in Partial Fulfillment of the Requirements for the
Master of Science

Department of Behavior Analysis and Therapy

in the Graduate School

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RESEARCH PAPER APPROVAL

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Approved by:

Jonathan C. Baker

Graduate School
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AN ABSTRACT OF THE RESEARCH PAPER OF

SHELLEY J. GREEN, for the Master of Science degree in Behavior Analysis and Therapy at Southern Illinois University Carbondale

TITLE: A REVIEW AND RESEARCH SUGGESTIONS FOR EMPIRICAL APPROACHES TO EVALUATING REINFORCING EFFECTS OF PEER ATTENTION VS. TEACHER ATTENTION IN THE GENERAL EDUCATION CLASSROOM

MAJOR PROFESSOR: Dr. Jonathan Baker

Behavior management in the general education classroom can be difficult at times for educators. Attention is one reinforcer of children's behavior in the classroom and the child's behavior may be maintained by teacher attention or peer attention. If attention is implemented appropriately, peer or teacher attention may prove to be an effective reinforcer in maintaining appropriate behaviors in the classroom. Teacher attention is commonly used to maintain student performance (Broussard & Northup, 1997). Educators may not know which is more reinforcing to the typical student in the general education classroom - teacher attention or peer attention. However, evaluating the effectiveness of such a reinforcer involves evaluating the preference for an intervention, rather than a specific stimulus that can be arranged in a traditional stimulus preference assessment (Hagopian, Long, & Rush, 2004; Hanley, Iwata, & Lindberg, 1999). A modified concurrent-chains assessment can be used to determine the reinforcer preference of individuals (Hanley, 2010). This paper will summarize the use of a modified concurrent-chains assessment on typical students in the general education classroom in order to determine students' preference of peer attention vs. teacher attention.

Keywords: modified concurrent-chains assessment, typically developing, general education, classroom, reinforcing effect, peer attention, teacher attention, students, initial link, terminal link.

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CHAPTER 1

INTRODUCTION

Behavior management in the general education classroom can be difficult at times for educators. Classroom teachers often use arbitrary and trial-and-error methods to select items to function as reinforcers. These unsystematic methods may not result in accurate identification of stimuli that will function as reinforcers (Resetar & Noell, 2008).

Importance of Individualized, Student Oriented Approaches

Preference assessment. Reinforcing effects of specific stimuli vary among individuals and environments. To determine the reinforcing effects of specific stimuli in specific environments a preference assessment may be conducted on an individual. The preference assessment is an efficient procedure for identifying potential reinforcers from a large number of stimuli (Piazza, Fisher, Hagopian, Bowman, & Toole, 1996). The empirical research on systematic preference assessment has greatly advanced the field's understanding of how to identify the preferences of individuals (Lohrmann-O'Rourke, Browder, & Brown, 2000). Some of these methods include personal nomination, reinforcer surveys, single-stimulus (SS) presentation, paired-stimulus (PS) presentation, and multiple-stimulus (MS) preference assessments (Roane, Vollmer, Ringdahl, & Marcus, 1998). In the 1996 study by Piazza et al. they evaluated whether a choice assessment could be used to predict relative effectiveness of stimuli identified as high, middle, and low preference. The choice assessment appeared to predict relative reinforcer efficacy for the three categories of stimuli (high, middle, and low) with a reasonable degree of accuracy. A portion of the 1998 study by Roane et al. was to evaluate the a brief assessment for its ability to identify differentially preferred stimuli that functioned as reinforcers. The experiment

was effective in determining that the brief assessment was useful in identifying stimuli that functioned as differentially effective reinforcers.

Multiple interventions may be used to deliver the reinforcer but one intervention over another may be preferred by an individual. However, evaluating the effectiveness of such involves evaluating the preference for an intervention, rather than a specific stimulus that can be arranged in a traditional stimulus preference assessment (Hagopian, Long, & Rush, 2004) (Hanley, Iwata, & Lindberg, 1999).

Concurrent-chains procedures have been used many times in order to determine the preference of a specific reinforcement or schedule of reinforcement. In a typical concurrent-chains procedure two responses are simultaneously available and associated with identical but independent schedules of reinforcement during the initial link (Hanley, Piazza, Fisher, Contrucci, & Maglieri, 1997).

A modified concurrent-chains assessment can be used to determine the reinforcer preference of individuals (Hanley G. P., 2010). In a modified concurrent chains assessment an initial link is presented to an individual and results in access to a terminal link activity. The terminal link activity is usually a brief period of intervention. After several sessions resulting in exposure to the different relation between the initial link and the terminal link, the participant is then given the opportunity to choose the intervention he/she prefers.

Functional assessment. When students display problem behaviors that defy typical programs of classroom behavior management, it is important to gain an improved understanding of the behaviors in order to develop positive and effective interventions (Foster-Johnson & Glen, 1993). A functional assessment can be used to identify the type and source of reinforcement for challenging behaviors. Information is gathered regarding the student's behavior and the

classroom environment and then a hypothesis statement is formed regarding the purpose of the behavior and the way the behavior is associated with other events in the environment (Foster-Johnson & Glen, 1993). The possible reinforcement contingencies of behavior are attention, tangible, sensory, or escape. There are three types of functional assessments: functional (experimental) analysis, descriptive assessment, and indirect assessment. Recently, functional assessment and analysis procedures have been extended to school settings (e.g., Lalli, Browder, Mace, & Brown, 1993; Northup, et al., 1994) and to populations other than developmental disabilities (Broussard & Northup, 1995). Reimers, and Donn (1990) and Cooper et al. (1992) used brief functional analysis procedures to assess conduct problems for children of average intelligence and demonstrated that the children's behavior problems varied systematically with levels of parental and teacher attention and the difficulty of academic demands (Broussard & Northup, 1995).

Function based treatment. Once the function of the behavior is hypothesized from the implementation of a functional assessment, a specific function based treatment, or intervention, can be developed for the individual. The intervention developed based on the hypothesis statements from the functional assessment should 1) teach an alternative behavior and 2) modify events/circumstances associated with the problem behavior (Foster-Johnson & Glen, 1993). Interventions could include, but are not limited to, changing a student's curriculum, reducing the amount of the assignment, reducing the difficulty of the assignment, writing out instructions, moving the student's seat, having the student dictate the answers or giving additional assistance/attention. Dunlap et al. conducted a study that demonstrated the efficacy of a functional assessment process and a curriculum-based intervention that produced substantial and

durable reductions in a student's longstanding and severe behavior problems (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991).

The Role of Peer Attention and Teacher Attention on Student Behavior. Current literature suggests three variables as most often related to classroom disruptive behavior: teacher attention, peer attention, and , escape from academic demands (Broussard & Northup, 1995). The effects of teacher and peer attention have been demonstrated to be idiosyncratic across children and to function as both reinforcement and punishment (Broussard & Northup, 1995). Teacher attention is commonly used to maintain student performance (Broussard & Northup, 1997).

Various forms of attention may be differentially reinforcing and responsible for behavior maintenance (Kodak, Northup, & Kelley, 2007). The 2007 Kodak et al. study evaluated the influence of six different forms of attention by providing each form of attention contingent on problem behavior. The six forms of attention were reprimand, unrelated comments, physical, tickles, eye contact, and praise. The study showed that the contingent delivery of various types of attention have different effects on problem behavior.

A study done by Jones et al. in 2000 was done to evaluate the effects of NCR in a simulated classroom setting as a point of comparison to the contingent peer-attention condition (Jones, Drew, & Weber, 2000). The results indicated that problem behavior decreased during the non-contingent reinforcement (NCR) condition of peer attention.

A 1995 study by Northup, et al. was done to determine if teacher attention and peer attention are functionally equivalent (Northup, Broussard, Jones, George, Vollmer, & Herring, 1995). The results suggested that teacher and peer attention may not be functionally equivalent and that peer attention can function as a unique form of positive reinforcement.

The implications of these studies indicate that teacher and peer attention can be reinforcing to both positive behaviors and problematic behaviors in the general education classroom. When problematic behaviors occur within the classroom, the stimuli that need to be analyzed should be teacher and peer attention. The delivery of attention may need to be modified. Teacher and peer attention can be modified in the classroom by the teacher to be an effective reinforcer for problematic behavior. These studies indicate an intervention using teacher or peer attention can function as a reinforcer for positive behavior.

Two of the most readily available reinforcers in the general education classrooms are the attention of teachers and peers and can be used in all settings throughout the day. Future research should include the analysis of students' preference between teacher attention and peer attention in different situations in the general education classroom.

CHAPTER 2

IMPLICATIONS FOR FUTURE RESEARCH

One way to determine typical students' preference between teacher attention vs. peer attention would be to conduct a preference assessment using a modified concurrent-chains procedure. This study would consist of a Forced Choice session, a Baseline session, and a Free Choice session. The purpose of this study would be to determine which has a higher reinforce effect - teacher attention or peer attention - on typical children in an elementary general education classroom.

Considerations for Participants and Settings

For this study, a minimum of four typically developing elementary students known as the "participants" would be needed to participate. The students should be in 3rd or 4th grade general education classes. Two boys and two girls should be chosen for this study. Each student would participate in all sessions - Forced, Baseline, and Free Choice.

A fifth typically developing student known as the "typical peer" would be needed to implement the peer attention. The same typical peer should be used for all the participants. The typical peer would be needed during the Forced Choice session and possibly during the Baseline and Free Choice sessions, depending upon the choices made by the participants.

The researcher would need a private setting for the study. The participants should not have any distractions or be able to see anyone during the session except the researcher and the typical peer when appropriate. The area needs to have a student desk, a student chair, and a cushy comfortable chair.

Considerations for Materials

Materials needed would be pencils, a timer, math sheets, initial link cards, terminal link cards, and a simple game.

Math Sheets. The math sheets need to have simple single digit addition problems. Not all the math sheets would have the same number of problems. To ensure that there are enough of each math sheet for the study the following would be needed: 20 copies of a math sheet with 5 problems, 20 copies of a math sheet with 8 problems, 20 copies of a math sheet with 11 problems, 20 copies of a math sheet with 15 problems 20 copies of a math sheet with 20 problems, 20 copies of a math sheet with 25 problems, and 20 copies of a math sheet with 30 problems.

Initial Link Cards - The initial link cards should be 5" x 8 1/2". One card should be green, one card should be purple and one card should be orange. The researcher should write "Teacher" on the green card, "Friend" on the purple card and "Chair" on the orange card.

Terminal Link Cards - The terminal link cards should be 6" x 6". One card should be green, one card should be purple and one card should be orange. The researcher should write "Teacher" on the green card, "Friend" on the purple card and "Chair" on the orange card.

Game - The game should be a simple game that can be completed in 5 minutes or less and easily set up and removed. An example is Ladder Bingo.

Considerations for Target Responses

In this study to evaluate the reinforcing effect of peer attention vs. teacher attention in the general education classroom, only the target response of the four typically developing participants would be measured for each session. The researcher would log the target responses and place them in a table (See Table 1, for hypothetical Free Choice data).

Table 1

Sample Hypothetical Free Choice Data

Hannah - Free Choice				
Trial #	# of Math Problems	Teacher Green	Friend Purple	Chair Orange
1	5		X	
2	8	X		

Considerations for Data collection

Data needs to be collected during all three sessions - Forced Choice, Baseline, and Free Choice.

Forced choice session - During the forced choice/exposure session data needs to be collected to ensure that each participant is exposed to each condition twice (See Table 2, for hypothetical Forced Choice Data).

Table 2

Sample Hypothetical Forced Choice Data

Hannah - Forced Choice				
Trial #	# of Math Problems	Teacher Green	Friend Purple	Chair Orange
1	5	X		
2	5		X	
3	5			X
4	5	X		
5	5		X	
6	5			X

Baseline session - Data needs to be collect during this session so the researcher knows when to end the Baseline session and move on to the Free Choice session. The researcher should log each participant's selection of the initial link card. Once a participant chooses the same color of initial link card three times consecutively, baseline is established and the researcher should end this session (See Table 3, for hypothetical Baseline data).

Table 3

Sample Hypothetical Baseline Data

Hannah - Baseline				
Trial #	# of Math Problems	Teacher Green	Friend Purple	Chair Orange
1	5	X		
2	5		X	
3	5		X	
4	5		X	

Free choice session - The initial link during the free choice procedure is the dependent measure. Data should be collected for each trial and put into a table (See Table 4, for hypothetical Free Choice data). The number of math problems is increased until the participant chooses a different colored initial link card. At that point the Free Choice session is ended and the data collection for that participant is completed.

Table 4

Sample Hypothetical Free Choice Data

Sam - Forced Choice				
Trial #	# of Math Problems	Teacher Green	Friend Purple	Chair Orange
1	5		X	
2	8		X	
3	11		X	
4	15	X		

Use of video camera. In order to ensure accurate data collection by the researcher all trials should be video-taped. A second researcher need to review the video tapes and record data on all the trials. Recording needs to be done on all trials of all three sessions - Forced Choice, Baseline, and Free Choice.

Inter-observer agreement and procedural integrity. During the preference evaluation phase the primary dependent variable measure is the color of the card the participant chooses. Comparison of the data collected by the researcher and the second observer needs to be completed. Inter-observer agreement will be concluded when the observers agree on the color choice made by the participant during each trial. Inter-observer disagreement will be concluded if the observers do not agree on the color choice made by the participant. The number of agreements will need to be divided by the sum of agreements and disagreements and that number will then be multiplied by 100 to obtain a percentage for inter-observer agreement.

Considerations for Experimental Design

For this study a modified concurrent-chains procedure will be used. Each participant will be exposed to each condition two times during the Forced Choice Session and then will move on to the Baseline Session. The researcher will collect data on the initial link chosen by each participant and when the same initial link is chosen three consecutive times the researcher will move the participant to the third session - Free Choice. During the Free Choice Session the number of math problems required will increase until the participant chooses a different color initial link card. At that time the researcher will end the data collection for that participant.

Procedures for Studying Reinforcing Effects of Peer Attention vs. Teacher Attention

Detailed procedures for each session are summarized below.

Session 1: Forced Choice. A workstation consisting of a desk and a student chair needs to be placed in the area designated for the study. A cushy comfortable chair will also need placed in the area. The desk needs to have the three colored initial link cards placed equidistant from the participant upon it. The purple card needs to have "friend" written on it, the green card needs to have "teacher" written on it, and the orange card needs to have "chair" written on it. In front of each card needs to be an identical math sheet consisting of five single digit addition math problems.

The independent variable will be peer or teacher attention. If the purple card for peer attention is chosen and the math sheet is accurately completed, the participant will earn 5 minutes of peer attention and will play a game with the typical peer. If the green card for teacher attention is chosen and the math sheet is accurately completed, the participant will earn 5 minutes of teacher attention and will play the game with the teacher. If the orange card or control card is chosen and the math sheet is accurately completed, the participant will earn the comfy chair and can play the game alone for 5 minutes while sitting in the comfy chair. No peer or teacher reinforcement will be given during the control session.

Each participant will be seated at the desk and the three different colored initial link cards need to be laid equidistant from the participant upon the table. Below each card needs to be an identical math sheet consisting of five single digit addition math problems. The participant needs to be verbally prompted on which card he/she needs to choose.

If the participant is told to choose the purple peer card, the participant will need to touch the purple card and the researcher would remove all other materials from the desk leaving the purple initial link card and the corresponding math sheet. If the participant accurately completes

the math sheet then the typical peer needs to immediately come to the area, the desk needs to be cleared of the math sheet and initial link card. The purple 6" x 6" terminal link card needs to be placed on the desk along with the game. The timer needs to be set for 5 minutes and the peer and participant will be allowed to play the game until the timer beeps. When the timer beeps the peer immediately must leave the area and the purple terminal link card and the game will need removed from the desk.

If the participant is told to choose the green teacher card, the participant needs to touch the green card and the researcher will need to remove all other materials from the desk leaving the green initial link card and the corresponding math sheet. If the participant accurately completes the math sheet then the desk needs to be cleared of the math sheet and initial link card. The green 6" x 6" terminal link card needs to be placed on the desk along with the game. The researcher will sit down at the desk next to the participant. The timer will be set for 5 minutes and the researcher and participant will play the game until the timer beeps. When the timer beeps the researcher will stand up, stop talking with the participant, and the green terminal link card and the game needs to be removed from the desk.

If the participant is told to choose the orange chair card, the participant needs to touch the orange card and the researcher will need to remove all other materials from the desk leaving the orange initial link card and the corresponding math sheet. The participant will need to complete the math worksheet. Upon accurate completion of the worksheet, the participant can move to the comfy teacher. The desk will need cleared of the math sheet and initial link card. The orange 6" x 6" terminal link card needs placed on the desk along with the game. The timer needs to be set for 5 minutes and the participant was be allowed to play the game alone while sitting in the comfy chair until the timer beeps. No peer or teacher attention should be awarded during the control

session. When the timer beeps the participant needs to move back to the student chair and the orange terminal link card and the game need removed from the desk.

Each participant needs to be exposed to each forced choice condition twice before moving into the baseline phase. Data needs collected to ensure that each participant is exposed to each condition twice.

Session 2: Baseline. The Baseline Session need to be completed in the same area that the Forced Choice sessions are completed. No changes need to be made to the environment.

Each participant needs to be taken to the area and seated in the student chair at the desk. The initial link, the three 5" x 8 1/2" colored cards, need to be presented for the participant to choose from. Each card needs to be placed equidistant from the participant. Below each card was there needs to be an identical math sheet with five single digit addition math problems to complete. The participant needs to be verbally prompted to choose whichever card he/she prefers. Data needs collected on the color of card the student chooses.

If the participant chooses the purple peer card, the participant will need to touch the purple card and the researcher would remove all other materials from the desk leaving the purple initial link card and the corresponding math sheet. If the participant accurately completes the math sheet then the typical peer needs to immediately come to the area, the desk needs to be cleared of the math sheet and initial link card. The purple 6" x 6" terminal link card needs to be placed on the desk along with the game. The timer needs to be set for 5 minutes and the peer and participant will be allowed to play the game until the timer beeps. When the timer beeps the peer immediately must leave the area and the purple terminal link card and the game will need removed from the desk.

If the participant chooses the green teacher card, the participant needs to touch the green card and the researcher will need to remove all other materials from the desk leaving the green initial link card and the corresponding math sheet. If the participant accurately completes the math sheet then the desk needs to be cleared of the math sheet and initial link card. The green 6" x 6" terminal link card needs to be placed on the desk along with the game. The researcher will sit down at the desk next to the participant. The timer will be set for 5 minutes and the researcher and participant will play the game until the timer beeps. When the timer beeps the researcher will stand up, stop talking with the participant, and the green terminal link card and the game needs to be removed from the desk.

If the participant chooses the orange chair card, the participant needs to touch the orange card and the researcher will need to remove all other materials from the desk leaving the orange initial link card and the corresponding math sheet. The participant will need to complete the math worksheet. Upon accurate completion of the worksheet, the participant can move to the comfy teacher. The desk will need cleared of the math sheet and initial link card. The orange 6" x 6" terminal link card needs placed on the desk along with the game. The timer needs to be set for 5 minutes and the participant was be allowed to play the game alone while sitting in the comfy chair until the timer beeps. No peer or teacher attention should be awarded during the control session. When the timer beeps the participant needs to move back to the student chair and the orange terminal link card and the game need removed from the desk.

Once the participant chooses the same initial link three consecutive times, the participant should be moved to the Free Choice session.

Session 3: Free Choice. The sessions need to be completed in the same area that the Forced choice and Baseline sessions were completed. No changes should be made to the

environment. Each participant needs to be taken to the area and seated in the student chair at the desk. The initial link, the three 5" x 8 1/2" colored cards, need to be presented for the participant to choose from. Each card needs placed equidistant from the participant. Below each card needs to be an identical math sheet with five single digit addition math problems to complete. The participant should be verbally prompted to choose whichever card he/she prefers. Data will need collected on the color of card the student chooses.

If the participant chooses the purple peer card, the participant will need to touch the purple card and the researcher would remove all other materials from the desk leaving the purple initial link card and the corresponding math sheet. If the participant accurately completes the math sheet then the typical peer needs to immediately come to the area, the desk needs to be cleared of the math sheet and initial link card. The purple 6" x 6" terminal link card needs to be placed on the desk along with the game. The timer needs to be set for 5 minutes and the peer and participant will be allowed to play the game until the timer beeps. When the timer beeps the peer immediately must leave the area and the purple terminal link card and the game will need removed from the desk.

If the participant chooses the green teacher card, the participant needs to touch the green card and the researcher will need to remove all other materials from the desk leaving the green initial link card and the corresponding math sheet. If the participant accurately completes the math sheet then the desk needs to be cleared of the math sheet and initial link card. The green 6" x 6" terminal link card needs to be placed on the desk along with the game. The researcher will sit down at the desk next to the participant. The timer will be set for 5 minutes and the researcher and participant will play the game until the timer beeps. When the timer beeps the researcher will

stand up, stop talking with the participant, and the green terminal link card and the game needs to be removed from the desk.

If the participant chooses the orange chair card, the participant needs to touch the orange card and the researcher will need to remove all other materials from the desk leaving the orange initial link card and the corresponding math sheet. The participant will need to complete the math worksheet. Upon accurate completion of the worksheet, the participant can move to the comfy teacher. The desk will need cleared of the math sheet and initial link card. The orange 6" x 6" terminal link card needs placed on the desk along with the game. The timer needs to be set for 5 minutes and the participant was be allowed to play the game alone while sitting in the comfy chair until the timer beeps. No peer or teacher attention should be awarded during the control session. When the timer beeps the participant needs to move back to the student chair and the orange terminal link card and the game need removed from the desk.

Upon completion of the reinforcement, the participant needs to be allowed to choose from the initial links a second time. The second time the participant chooses, the array needs to be changed. The math sheet in front of the initial link previously chosen now needs to contained 8 math problems, while the other math sheets still need to contain 5 problems. This process continued with the number of math problems increasing to 8, 11, 15, 20, 25, 30 etc. until the participant chooses a different colored card. Once a different color card is chosen and the reinforcement is delivered, the study ends for that participant.

CHAPTER 3

SUMMARY

The purpose of this paper is to provide a framework for future research to determine students' preference of peer attention vs. teacher attention. Three different sessions should be completed for each participant - Forced Choice, Baseline, and Free Choice.

A Forced Choice phase needs implemented to expose all participants to the conditions connected to each initial link. Each participant needs exposed twice to each initial link.

In the Baseline phase the number of math problems to be completed remain constant. A baseline is established when the participant chooses the same initial link three consecutive times.

The Free Choice Session is included to compare the reinforcing effects of peer vs. teacher attention. Data would need collected on how many times the number of math problems to be completed can be increased before the participant will choose another initial link card. These data would show how effective if teacher attention or peer attentions is more effective and at what level the attention can be interchanged.

Other studies may be done on different grade levels to see if there is a significant change in the reinforcement value of peer attention vs. teacher attention as the children get older. A comparison of which type of attention is more reinforcing for boys vs. girls would also be a possible extension of this research.

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