

*DIFFERENTIAL EFFECTS OF SEATING ARRANGEMENTS ON  
DISRUPTIVE BEHAVIOR OF FIFTH GRADE STUDENTS DURING  
INDEPENDENT SEATWORK*

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We investigated teacher versus student seat selection in the context of group and individual seating arrangements. Disruptive behavior during group seating occurred at twice the rate when students chose their seats than when the teacher chose. During individual seating, disruptive behavior occurred more than three times as often when the students chose their seats. The results are discussed in relation to choice and the matching law.

*Key words:* antecedent interventions, classroom management, elementary students, general education, seating arrangements

Student seating is one of the easiest, most cost-effective classroom management tactics available to teachers. As an antecedent intervention, seating arrangements may help to minimize or eliminate problem behavior without the need for consequence interventions (e.g., differential reinforcement or punishment). For example, Krantz and Risley (1977) showed that simply seating students away from others was nearly as effective in increasing on-task behavior as the systematic use of differential reinforcement and delivery of tangible rewards. Wheldall and Lam (1987) found that on-task behavior doubled when students were seated individually rather than in groups.

Although research on seating arrangements suggests that students behave more appropriately when they sit individually (for a review, see Wannarka & Ruhl, 2008), the role of student choice on seat selection has not been investigated. Offering students choices seems to be ethically responsible and may be an important component of a comprehensive classroom management system (Cosden, Gannon, & Haring, 1995; Dunlap et al., 1994). However, allowing students to choose their seats might occasion more or less disruptive behavior, depending on where the students are seated. Completing

schoolwork is a potentially high-effort response with potentially low-rate and poor-quality reinforcers, which often are delayed. Schoolwork also is in competition with disruptive behavior, which is a potentially low-effort response that can gain immediate access to a high-quality reinforcer (i.e., peer attention). Thus, it might not be in the best interest of the student or teacher to allow students to choose their own seats or to sit in close proximity to each other during independent seatwork. The purpose of this research was to examine classroom disruptive behavior during student-versus teacher-selected seating arrangements in the context of group and individual seating arrangements during independent seatwork.

## METHOD

### *Setting and Participants*

We collected data during independent seatwork for reading comprehension (i.e., students were to read passages and answer written questions). Participants included 21 fifth-grade students (ages 10 and 11 years) from a parochial elementary school in the southeast United States. There were 10 boys and 11 girls. Two of the students received special education services. Class attendance averaged 20 students per day (range, 18 to 21). The teacher in the classroom was the second author of this study

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and was completing the research requirements for a MS degree.

### *Response Measurement and Interobserver Agreement*

*Disruptive behavior* was defined as talking without permission or touching another student. Talking without permission was recorded when a student verbally addressed a peer or the teacher without first raising his or her hand and getting the teacher's permission. Touching another student was recorded when a student placed any body part on another student that resulted in the other student saying something, moving away, or ceasing his or her work. One observation was conducted per day, typically in the middle of the day before lunch.

Each session ranged from 7 min to 16 min ( $M = 12$  min,  $SD = 0.42$  s), depending on how long the teacher estimated it should take all the students to complete the assignment. It was important to make sure the length of time in each session was proportional to completing the task because if students finished early they would be more likely to disrupt other students. Each observation period was divided into 1-min intervals. Each time a student emitted a target behavior, a tally mark was placed in a cell on the data-collection sheet that corresponded to the student's name and the minute of the observation period. At the end of the observation period, the tally marks were totaled and individual student data were added to calculate a rate of disruptive behavior for the entire class (i.e., total number of disruptions divided by total minutes of observation). To investigate potential differences in the clustering of disruptive behavior by seating arrangement (group vs. individual), we calculated conditional probabilities by adding the number of intervals with disruptive behavior given a preceding disruptive behavior (intervals with disruptive behavior that were either preceded by disruptive behavior or contained multiple disruptive behaviors) and dividing by the total number of intervals with disruptive behavior.

The second author served as the primary observer. A second trained observer independently collected data during 28% of the sessions spaced across all phases of the study. Interobserver agreement was calculated using exact count per interval (number of intervals with exact agreement divided by number of total intervals multiplied by 100%). Agreement ranged from 95% to 100%, with a mean of 98%. To test for procedural integrity, the secondary observer checked seating arrangements, counted the pods of desks, or checked for rows. Procedural integrity was counted as occurring if the desks were in the correct placement for the condition, the students were seated in the correct seats, and if the teacher said to the entire class, "Class, we need to work quietly," when students emitted target behaviors more than once per minute. Procedural integrity checks were conducted across 30% of the sessions, and integrity was 100%.

### *Design and Procedure*

We used a reversal design. During teacher-assigned seating arrangements, the teacher selected a specific seat for each student at the beginning of each week. Once the teacher selected the seat, the student was not moved for that week. However, students may have been placed in different seating arrangements during the next teacher-selection phase. Decisions regarding seating arrangements were based on observations conducted prior to the study. Specifically, the teacher sat students who were easily distracted away from windows and the door. Students who had a history of difficulty paying attention were placed closest to the teacher. The teacher also took into account students who had a history of being disruptive when seated together and did not sit those students near each other. During student-selected seating arrangements, students were allowed to choose their own seats at the beginning of the week. Once students selected their seats, they were not allowed to move to another seat for the week.

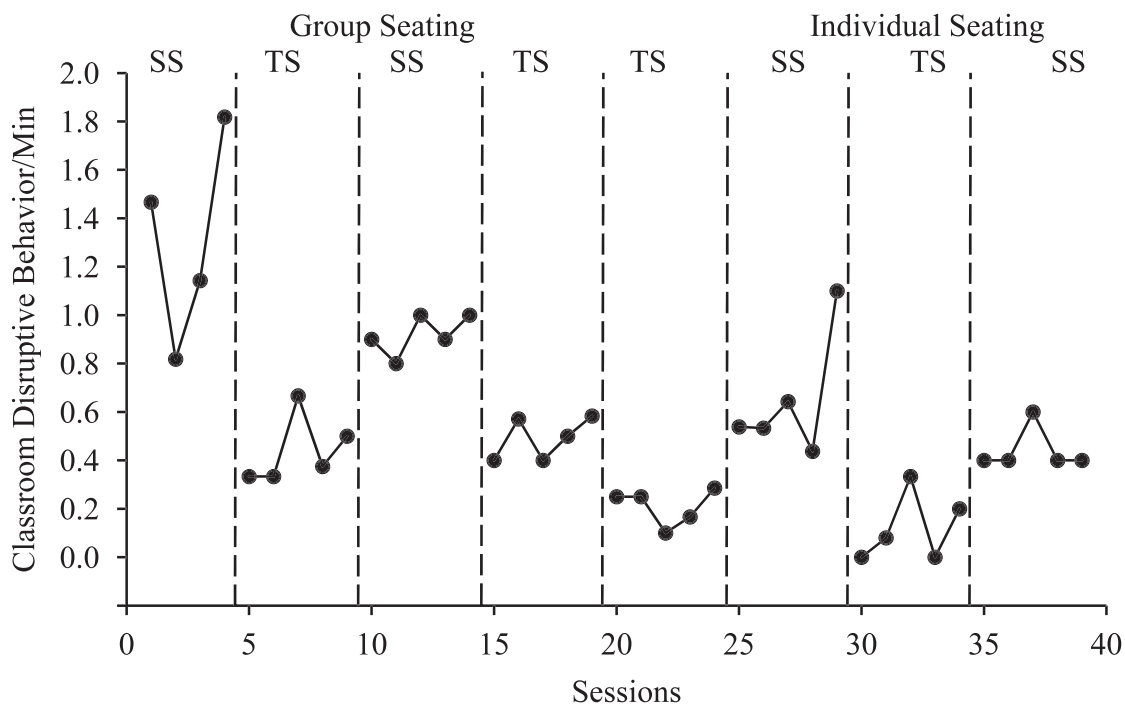


Figure 1. Responses per minute of classroom disruptive behavior during group and individual seating arrangements. SS = student selection; TS = teacher selection.

During the group condition, students were seated in four groups of four students per cluster and one group of five students per cluster. During the individual seating condition, students were seated individually and in four rows of four students per row and one row of five students.

At the start of each session, the teacher informed the students how much time they had to complete the assignment and started a timer. If more than one disruptive behavior was observed in any single minute, the teacher said, "Class, we need to work quietly." No other consequences were delivered. Students were required to work independently and were not allowed to leave their seats.

## RESULTS AND DISCUSSION

Figure 1 depicts the rates of disruptive behavior emitted across conditions. During group seating when students chose seats, disruptive behavior ranged from 0.82 to 1.82 per

minute ( $M = 1.31$  per minute,  $SD = 0.37$ ) during the first phase and 0.8 to 1.0 per minute ( $M = 0.92$  per minute,  $SD = 0.07$ ) in the second. When the teacher chose student seats, disruptive behavior ranged from 0.33 to 0.67 per minute ( $M = 0.44$  per minute,  $SD = 0.13$ ) in the first phase and 0.40 to 0.58 per minute ( $M = 0.49$  per minute,  $SD = 0.08$ ) in the second. During individual seating arrangements when the teacher chose students' seats, disruptive behavior ranged from 0.1 to 0.29 per minute ( $M = 0.21$  per minute,  $SD = 0.07$ ) in the first phase and 0 to 0.33 per minute ( $M = 0.12$  per minute,  $SD = 0.13$ ) in the second. When the students chose their seats, disruptive behavior ranged from 0.44 to 1.1 per minute ( $M = 0.65$  per minute,  $SD = 0.23$ ) in the first phase and 0.4 to 0.6 per minute ( $M = 0.44$ ,  $SD = 0.08$ ) in the second.

Within and across group and individual seating conditions, disruptive behavior occurred

less often when the teacher selected the students' seats. In the group seating arrangement, disruptive behavior occurred on average more than twice as often during student seat selection ( $M = 1.12$  per minute) than during teacher seat selection ( $M = 0.47$  per minute). In the individual seating arrangement, disruptive behavior occurred on average more than three times as often during student seat selection ( $M = 0.55$  per minute) than during teacher seat selection ( $M = 0.17$  per minute).

The probability that intervals with disruption were preceded by disruptive behavior or contained multiple disruptive behaviors was .47 during the group seating condition when students selected their own seats; it was .20 when the teacher selected the students' seats. When students were sitting in rows and students selected their own seats, the probability that disruptive behavior was preceded by disruptive behavior or contained multiple disruptive behaviors was .10; when the teacher selected the students' seats, it was .05. Anecdotally, it appeared that when one student in the group emitted a target behavior, other students in the group were likely to respond. Disruptive behavior during group seating tended to be clustered. When students were seated in rows, disruptive behavior tended to be isolated. That is, the disruptive behavior of one student did not usually evoke as much disruptive behavior from other students.

Our results are consistent with those of most studies on group versus individual seating arrangements and suggest that teachers may manage inappropriate behavior more effectively during independent seatwork by seating their students in rows. Further, our results suggest that providing students with choices for seating may not produce the positive outcomes demonstrated in other studies on task or reinforcer choice (Cosden *et al.*, 1995; Dunlap *et al.*, 1994). In fact, providing choices in this study resulted in increases in disruptive behavior in both group and individual seating arrange-

ments. However, if one considers the results from a matching law perspective and seating a student next to any individual student as the opportunities for reinforcement, then the two seat-selection procedures should produce different results. When students self-select seating, it is likely that they choose to sit next to other students who will interact socially. Thus, the self-selection arrangement may set the occasion for more dense reinforcement and higher quality reinforcement for disruptive behavior than appropriate behavior. Our results are consistent with previous research on the matching law in applied settings. For example, Borrero and Vollmer (2002) showed that the proportional rate of problem behavior relative to appropriate behavior approximately matched the proportional rate of reinforcement for problem behavior for three participants during functional analyses. Further, Borrero *et al.* (2007) demonstrated that vocal responses and eye contact roughly matched the rates of reinforcement for those behaviors during small-group discussions in a college class.

Despite the potential to explain our results in the context of the matching law, procedural refinements would be necessary to draw firm conclusions. Taking preintervention data on the frequency of reinforced talking or touching by students would help to establish true rates of reinforcement that could be plotted to investigate matching during subsequent student seating manipulations. Further, like many studies on choice, the consequence of the choice was confounded with choice making. It is not clear if similar results would have been obtained if the seat assignments during the teacher selection condition were yoked to those in the previous student selection condition.

We also caution that our sample may not be representative of a typical group of fifth graders. We conducted the study in a private school with a mostly homogeneous group of students who were relatively well behaved. Future research should test the generality of these findings with

more diverse populations. Further, our results did not show meaningful differences in the amount or quality of completed work during the different seating conditions (these data are available from the corresponding author). However, the work we chose seemed relatively easy, in that most of the students completed all assignments with high accuracy during most of the sessions. Although research suggests that independent practice activities should be at a student's instructional level (90% accuracy) and not at frustration level (below 90% accuracy) (Blevins, 2001), introducing more difficult schoolwork within the seating and choice arrangements may produce different results with regard to work completion and accuracy.

The limitations notwithstanding, our data support the use of teacher-assigned seating arrangements and provide further support for seating students in rows for independent seatwork. Such arrangements may prevent problem behaviors and allow teachers to spend more time teaching and facilitating learning.

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