

# [Liiterature review for functional behavioral assessment](https://assignbuster.com/liiterature-review-for-functional-behavioral-assessment/)

Running head: FUNCTIONAL BEHAVIORAL ASSESSMENT Literature Review for Functional Behavioral Assessment Timothy L. Steeley Missouri State University Literature Review for Functional Behavioral Assessment Roberts, Marshall, Nelson and Albers (2001) conducted a study to examine whether curriculum-based assessment (CBA) procedures which are defined as, a direct means of measuring the student’s performance utilizing the student’s own curriculum, could be integrated into a functional behavioral assessment (FBA) in order to identify antecedent events that cause off-task behavior within the regular classroom. There were a total of three male student participants of the study, consisting of one (1) first grader and two (2) fourth graders. The setting occurred in the regular education classroom. Each participant was selected by their general education classroom teacher based on the students’ level of off-task behavior. This study utilized a multi-element design in order to conduct a two-phase FBA. The objective of the design was to monitor changes in the off-task behavior of the students in the study. Phase one encompassed teacher interviews, academic assessments, and a descriptive analysis. Phase two encompassed an antecedent manipulation of phase in which the difficulty level of academic activities were systematically manipulated in order to determine events that may elicit the off-task classroom behaviors for each student. The dependent variable in the study focused on the frequency of the students’ off-task behavior which was defined as inappropriate movements and/or vocalizations and/or physical aggression. The inappropriate movements included students being out of their seats, running around in the classroom and/or fidgeting in their seats during lessons. The inappropriate vocalizations included students’ calling out and arguing during class and inappropriate aggression which included, hitting, kicking and/or pushing other students. The primary objective of the first phase was to conduct a descriptive analysis FBA in order to generate hypotheses related to the function of the off-task classroom behavior. In addition, instructional and frustration level academic materials were identified and developed for each student in order to be utilized in the second phase of the study. The objective in the second phase was to manipulate antecedent events related to the off-task behavior. During the second phase the researchers systematically manipulated the two instructional levels in order to assess whether students' off-task classroom behaviors were escape-motivated. All observations where conducted in the students’ regular education classroom and the data collectors were located at the back of the classrooms in order to ensure that they interfere with classroom interactions. During the first phase data was collected on each student’s mathematics curricular materials utilized in the classroom, each student's current level of functioning related to that curriculum. Next, data was collected on the nature of the each student's off-task classroom behaviors during instruction, and antecedents and consequences of off-task behavior utilizing an (A-B-C analysis). The researchers also utilized the Functional Analysis Interview form developed by O'Neill, Horner, Albin, Storey, and Sprague (1990) and additional questions in order to determine the specific curricular variables necessary to conduct the CBA and/or that might be affecting each student's behavior. The mathematics curriculum was utilized to construct CBA probes. This data was utilized to develop instructional and frustration level tasks for each student. Each math probe was administered in 2-minute lengths. The time of day used when the highest level of off-task behavior was determined by, the description of the off-task classroom behaviors during instruction and the A-B-C analysis. This data was utilized by the researchers to determine when to conduct observations during the FBA.     The instructional level academic were defined by the researchers as activities and materials that were neither too difficult nor too easy based on the students’ skill sets and frustration level activities and materials were defined as those task that were outside the students’ skills sets. The researchers initially, three CBA probes, which consisted of the current curriculum materials, were administered to each student. Each probe was administered for a total of 2 minutes to determine the fluency and error rates as measures of each student's skill performance in mathematics. Based on the student's performance, additional probes with easier and more difficult material were administered until frustration and instructional levels were identified.     Next, the descriptive analysis FBA consisting of direct observations and an A-B-C analysis were simultaneously conducted for each student during academic and nonacademic activities associated with high rates of off-task classroom behaviors to ensure the function of the behavior was escape-motivated. The direct observations were used to develop hypotheses about the function of off-task classroom behavior and its functional relationship with frustration and instructional level academic activities. A series of 27 observations was conducted during independent seatwork time in the general education classroom to examine the antecedent and consequent conditions associated with each occurrence as well as the percentage of off-task classroom behaviors. Antecedent conditions consisted of academic versus nonacademic activities, whereas consequent conditions consisted of escape, teacher attention, or peer attention during the descriptive analysis. Every time the student engaged in off-task behaviors, the observer recorded the antecedent (i. e., academic, nonacademic, instructional, or frustrational) and consequent conditions (i. e., escape, peer attention, or teacher attention) in order to complete the A-B-C analysis. The relationship between the antecedent and consequent conditions was used to develop a hypothesis regarding the function of the off-task classroom behavior.      Phase 2. Consistent with the primary purpose of this study and to validate the hypotheses developed during descriptive analysis FBA, the difficulty of academic activities was systematically manipulated during the functional assessment. The hypothesis was examined for each student by directly manipulating the curricular variables that appeared to be related to the occurrence of the off-task classroom behaviors while holding all other environmental conditions and variables constant to the greatest degree possible (Mace, Lalli, & Pinter-Lalli, 1991). During this phase, the teacher randomly selected a modified CBA packet to be completed by the student during independent seatwork time (FN2). All observation sessions (n = 22) were approximately 15 to 20 minutes in length. Specifically, the difficulty of academic activities was manipulated by presenting frustrational and instructional level academic activities, while changes in off-task classroom behaviors and academic performance were monitored.     Interobserver/rater agreement. Interobserver agreement was calculated on the off-task classroom behaviors and interrater agreement was calculated on CBA measures for approximately 33% of all sessions across the study. Specifically, interobserver/rater agreement was determined by the number of agreements divided by agreements plus disagreements and multiplied by 100% (House, House, & Campbell, 1981). Mean interobserver agreement for off-task classroom behaviors was 93% (range = 90% to 100%) across all sessions whereas mean interrater agreement was 92% (range = 89% to 100%) for mathematics. Two independent observers also recorded the student's response before and after each off-task behavior to complete the A-B-C analysis. The mean interrater reliability for the function of off-task behaviors during the A-B-C analysis was 95% (range = 92% to 100%).   A multi-element design with random assignment of conditions across time (Kazdin, 1982) was used to determine if CBA procedures could be used to identify antecedent events that occasion off-task behavior in a general education classroom. The results are organized into two sections. The first section presents the results of the descriptive analysis in which the percentage of off-task behaviors were observed during academic and nonacademic task conditions. The second section presents the results of the antecedent manipulation in which the hypothesized function of the off-task behaviors was systematically examined. During this latter phase, the differential effects of instructional, frustrational, and nonacademic tasks on off-task behaviors were observed. DISCUSSION Collectively, the FBA literature has greatly advanced our understanding of how to change problem behaviors. This literature has affected our theoretical and practical understanding of behavior. In turn, these empirical findings have served as a foundation for conducting behavioral assessments and interventions within our school systems. Although we have learned a great deal about FBA since the early 1980s, it is imperative that we continue to explore new avenues and approaches to FBA (Carr & Durand, 1985; Ervin, DuPaul, Kern, & Friman, 1998; Horner & Day, 1991; Iwata et al., 1982; Mace & Shea, 1990; Parrish, Iwata, Dorsey, Bunck, & Slifer, 1985). The results of this study expand the existing literature by examining whether the use of CBA procedures could be incorporated in the FBA process to identify antecedent events that occasion off-task classroom behaviors. Based on the findings, two major conclusions that build upon the existing FBA literature are highlighted. First, CBA measures provide an alternative methodology to analogue procedures for determining events that are related to the function of off-task behaviors in classroom settings. These measures provide a method to (a) determine instructional and frustrational level curriculum materials specific to each student, (b) systematically manipulate curriculum materials during an FBA, and (c) determine the accompanying effects on student behaviors. In other words, students' off-task classroom behaviors consistently resulted in escape from academically difficult activities. CBA procedures were used systematically to manipulate antecedent conditions related to off-task classroom behaviors believed to be motivated by escape from academic activities that were difficult relative to the student's skills.      Second, a functional relationship between frustrational and instructional level academic activities and off-task classroom behaviors in the classroom setting was established for each student. Collateral effects existed between the difficulty of the curriculum and off-task classroom behaviors. When given curriculum materials that were too difficult relative to the students' skill level, the percentage of off-task classroom behaviors increased. Conversely, fewer off-task classroom behaviors were observed when students were working on instructional level academic activities. These data indicate the need to go beyond assessing off-task classroom behaviors in isolation but rather to consider the influence of academic variables on these behaviors within the classroom settings. These findings are consistent with previous research and suggest that academic difficulty may be a crucial factor when designing interventions for off-task classroom behaviors (Center et al., 1982; Daly et al., 1997; Weeks & Gaylord-Ross, 1981). Furthermore, it appears that assessing and remediating off-task classroom behaviors should include the simultaneous examination of both academic and behavior problems in a general education classroom. The conclusions of this study are particularly relevant to the IDEA '97 amendments, which require educators to conduct a functional behavioral assessment with students who exhibit significant behavior problems within the schools. Although there is a great deal of literature regarding the FBA process, there are some issues that require additional investigation. These issues can be summarized as follows:     \* Does FBA work in " real-world" conditions?     \* What types of information and analysis procedures are the most useful for developing effective interventions?     \* Are there other approaches to functional behavioral assessment and intervention development?     \* What are the long-term effects of interventions designed based on the information from FBA (Ervin et al., this issue; Nelson et al., 1999)? The present findings suggest that CBA procedures can be used during an FBA to address these questions. CBA offers an alternative approach to analogue and functional procedures used during an FBA. These procedures are useful for developing effective interventions in " real-world" conditions and monitoring the long-term effectiveness of FBA. Although the use of CBA during a functional analysis appears to be a practical and effective approach to determine antecedent events that occasion off-task classroom behaviors, clearly more research is needed. To address the limitations of this study, future researchers should examine the effect of these procedures on larger samples of students with varying educational needs, employ longer phases in which more data are collected, examine the procedural integrity of these procedures, and investigate the effects of these procedures in different classroom settings and across academic content areas. Additionally, educators should focus on examining the long-term effect of interventions derived from this alternative assessment methodology on student behaviors and academic performance in naturalistic classroom settings. Noted that the increase in the number of severe disabilities and difficult behaviors that are occurring in today’s classrooms, having a tool for data collection and analysis is critical. The functional behavior assessment, or FBA, is one of these tools that educators can use to help define the function of and plan interventions for difficult behaviors. Choosing the right interventions is crucial, and can be difficult without a systematic approach to analysis. In essence, a functional behavioral analysis offers systematic procedures to define a behavior’s purpose i. e. a student may attempt to escape an academic task that is at a frustration level for them by getting out of their seat during class. This is achieved by identifying and analyzing the events that occurred right before and after the behavior in question. Once these events have been outlined and sufficient data collected through an functional analysis, a positive behavior intervention plan can be laid out to address the problem. The first step in the functional behavior assessment is to develop a definition of what the exact problem behavior is. This includes laying out what happens within the context where the behavior occurs, what type of curriculum is being used and the events that occur before and after the behavior happens. Then, if the behavior occurs within an academic context, the professional will give the child a curriculum based assessment (CBA). This assessment is made from the classroom curriculum and is used to find the student’s instructional and frustration level of work and the possible relationship between it and the problem behavior being exhibited. A key part of the FBA process is an A-B-C analysis, or Antecedent-Behavior-Consequence. During this data collection period, the observers who are collecting data on a chosen behavior, such as off-task behavior, documents its occurrence at set intervals during an established time period. This data includes recording of both the antecedent event (what happened before the behavior) and the consequence (what occurred after the behavior). This information is then used to define a hypothesis as to what the function of the behavior may be, or what the connection is between the antecedent and the consequences. Brooks (2003) noted that when data is being collected, measures have to be put in place to ensure that is accurate. This study investigates whether a functional relationship exists between self-monitoring with self-recruited reinforcement and an increase in both on-task behavior and assignment completion. The study further assesses whether self-monitoring with self-recruited reinforcement is associated with generalization of performance gains to untrained settings. Training in self-management procedures included systematic instruction of behavior and general case programming to promote generalization of skills. An ABCAC design was used to assess the effects of self-management procedures in the training setting, and a multiple-baseline-across-settings design was used to assess generalization effects. The results demonstrated that a functional relationship existed between self-monitoring with self-recruited reinforcement and an increase in on-task behavior and assignment completion. Generalization of self-management skills to novel school contexts varied. The role of self-management procedures in promoting generalization is discussed. Students who display off-task and disruptive behavior need efficient and effective support strategies thatincrease academic engagement in a targeted classroom and generalize performance gains across all educational settings. The combined application of self-management procedures and general case programming (Albin & Horner, 1988; Engelmann & Carnine, 1982; Horner, Sprague, & Wilcox, 1982) holds promise for achieving generalized performance. Self-management procedures include self-monitoring, self-evaluation, self-delivered prompts, self-delivered rewards, and self-recruited rewards as efficient strategies for improving student competence (Hughes, 1992; Hughes, Harner, Killian, & Niharos, 1995; Hughes, Hugo, & Blatt, 1996; Hughes, Korinek, & Gorman, 1991; Mank & Horner, 1998). If a student is taught to use these procedures across trained and untrained contexts, the effects may be extended to classrooms and educational settings beyond those where the initial training was provided. Teaching students to control their own behavior has become a reality. Self-management is an efficient and frequently used instructional strategy when designing individualized support for students in managing their behavior (Hughes et al., 1991; Todd, Horner, & Sugai, 1999). Self-management is the process by which the person who performs a target (undesirable) behavior uses self-managed behaviors to increasedesirable behaviors (Todd, Horner, & Sugai, 1999). For those students requiring individualized programs, self-management plans provide the prompts needed for a student to complete a task or routine independently (Craft, Alber, & Heward, 1998). Self-management applies to all areas such as completing homework or a task, monitoring appropriate behavior, and recording events (Hughes et al., 1991; Kanfer & Karoly, 1982; Shimabukuro, Prater, Jenkins, & Edelen-Smith, 1999). Using a combination of self-management strategies produces more resilient behavior change than using any one feature in isolation, and it facilitates durable interventions (Alberto & Troutman, 1999; Todd, Horner,& Sugai, 1999). The essence of self-management strategies is independent use of appropriate skills across contexts, people, and materials. Generalization of treatment gains is a desired outcome of these types of interventions and must be programmed into the treatment package (Smith, Young, West, Morgan, & Rhode, 1988; Stokes & Baer, 1977). The term general case programming refers to instruction of relevant skills and use of those skills in untrained settings and this type of instruction may offer an important foundation for extending the impact of self-management training (Horner et al., 1982; Stokes & Baer, 1977). Incorporating team-based, data-driven, and function-based support that is driven by generalized self-managed behaviors is an effective model for individualized behavior support planning (Todd, Horner, & Sugai, 1999). The study reported here illustrates the effectiveness of a self-management intervention based on functional assessment results in increasing the rates of on-task behavior and assignment completion for a fourth-grade student with a developmental disability. Specifically, the study examined (a) the effects of self-monitoring and self-recruited reinforcement on on-task behavior and work completion and (b) the transfer of self-management skills to additional classroom settings and/or contexts. Features of the function-based support planning included integration of functional assessment, competing behavior pathway logic (O'Neill et al., 1997), and general case programming. The study was conducted in the context of a formal behavior support plan developed by a local school team. The team, referred to as an action team (Todd, Horner, Sugai, & Colvin, 1999), included Hannah's special education teacher, her mother, the behavior specialist, and Hannah's fourth-grade teacher. The school's action team conducted and reviewed the results of a functional behavioral assessment (FBA), used the hypothesis statement from the FBA to develop a competing behavior pathway (O'Neill et al., 1997), defined the positive alternative behaviors, developed a behavior support plan and accompanying instructional plans, allocated instructional time, and met regularly to monitor student progress. Instruction for teaching specific skills (positive alternative behaviors), as defined by the competing behavior pathway, was organized around aself-management system that included self-monitoring with self-recruited teacher attention and the application of teaching the concept of being " on task." The present study was designed to assess both the effects of self-management training on workcompletion and on-task behavior and the effects of general case instruction in promoting performance across untrained contexts. The following research questions were addressed: 1. Does a functional relationship exist between use of self-monitoring with self-recruited reinforcement and an increase in on-task behavior and work completion? 2. Will the introduction of a discriminative stimulus for self-management behavior in an untrained setting result in (a) a transfer of self-management skills to that setting and (b) an increase in on-task behavior in that setting? Method PARTICIPANT Hannah (a pseudonym chosen by her mother), was a 10-year-old girl diagnosed with Down syndrome and mild mental retardation. Hannah's Individualized Educational Program (IEP) specified specialized instruction for 1 hour and 45 minutes daily in reading, math, and written language. In addition, she received 2. 5 hours of speech therapy each week. Communication and language goals included articulation, sentence structure, question asking, and comprehension. Behavioral goals included arriving to class on time, being prepared with necessary materials, following directions the first time, participating in classroom activities, using appropriate voice volume, initiating work and remaining on-task, and interacting appropriately with peers. Hannah attended a resource room for most of her academic instruction (reading, math, language arts, and group activities) and participated in general education classes for additional instructional opportunities to practice mastered academic, communication, and social skills. Academically, her reading rate averaged 37 words per minute with 80% accuracy; she copied one and two syllable words and 3- to 5-word sentences, added single digit numbers with 75% accuracy, and could tell time in quarter-hour increments. Hannah was selected for this study based on (a) teacher nomination, (b) a disproportionally high rate of office discipline referrals for patting others, and (c) parent request. An FBA interview with direct observations (O'Neill et al., 1997) identified high rates of off-task behavior (making faces at or talking to peers, drawing pictures during work time, playing with objects, refusing to work) as a significant problem. Stimulus conditions included independent work time and group instruction with two or more peers present, unsupervised transitions from one location to another, and recess. Off-task behaviors included failure to complete multistep tasks without multiple teacher prompts and a poor accuracy rate. The common correction procedure for an off-task behavior was verbal reprimand followed by time-out and loss of recess when teacher directions were ignored. Direct observation data supported the hypothesis that Hannah's off-task behaviors were maintained by peer and adult attention (see Note 1). SETTINGS During the baseline and intervention phases of the study, Hannah's off-task behavior was assessed in three classroom contexts: (a) seatwork in a typical fourth-grade class of 27 students and one teacher, (b) seatwork in a resource room serving 12 students supported by one teacher and two assistants, and (c) group instruction in the resource room. The fourth-grade and resource classrooms were located in a public elementary school in an urban community with an enrollment of approximately 480 students. The school had a school-wide effective behavior support plan in which all teachers taught expected social behaviors and corrected displays of inappropriate behaviors (Horner, Sugai, Lewis-Palmer, & Todd, 2001; Lewis & Sugai, 1996; Todd, Horner, Sugai, & Sprague, 1999). Data were collected during seatwork tasks in the fourth-grade classroom, during seatwork in a resource room, and during group instruction in the resource room. Seatwork was defined as a pencil-and-paper task (completing worksheets) or a task with manipulatives (e. g., arranging cubes into groups of 10s and 1s) done independently at the desk or within a small group (no more than 4 students). Group instruction occurred only in the resource room and was defined as a whole-group activity led by one teacher. MEASUREMENT The dependent variables for this study were academic engagement (on task) and work completion. Academic engagement for seatwork was defined as keeping eyes on work, keeping pencil in hand, and working on the assignment quietly. During group instruction, academic engagement was defined as keeping eyes on speaker, keeping hands free of materials, and following group directions. Academic engagement was measured during 5-minute probes. One or two 5-minute probes were conducted per day during seatwork in each of the two settings and during group instruction in the resource room. At least 2 minutes elapsed between probes. Data collection began after the first 2 minutes of the 20-minute period. Data were collected by trained observers who independently monitored Hannah's behavior while maintaining at least a 3-meter distance. Data collectors listened to a prerecorded cassette tape of audio prompts signaling when to record data through a single-bud earphone attached to a minicassette recorder. A 5-minute segment of tape began with the word start and numbered the 10-second intervals from 1 to 30. At the end of each 10-second interval, the data collector recorded Hannah's behavior for the prior interval. Hannah was coded as academically engaged for a 10-second interval if she was oriented toward the task/ instructor, engaged in assigned activities, and not engaged in disruptive or inappropriate behaviors. The criterion for academic engagement was very stringent. When Hannah looked away from her work or the speaker during group instruction for just a brief second, her behavior was recorded as not academically engaged. Work completion was defined as finishing a seatwork assignment by the end of the class period. At the end of each class period, data collectors circled " yes" or " no" in response to the question " Workcompleted?" at the bottom of the data sheet. Work completion was only monitored in the fourth-grade class. Seatwork assignments consisted of a variety of tasks Hannah could complete independently or with minimal teacher instruction. INTEROBSERVER AGREEMENT Interobserver agreement was assessed by having two data collectors independently record academicengagement and work completion for 25% of observed sessions and class periods. Both observers listened to the same observation tape via a two-pronged adapter. Agreement for academic engagement was calculated by dividing the number of intervals in which observers agreed by the total number of intervals per session. Interobserver agreement averaged 94% in sessions throughout the study. Observer agreement for work completion was rated independently at the end of the class period and was 100% across all class periods. DESIGN AND PROCEDURE The study addressed two research questions. The primary question was as follows: Would use of self-monitoring and self-recruited reinforcement result in an increase in academic engagement and assignment completion? This research question was assessed through an ABCAC withdrawal design. The secondary question was as follows: Would the skills learned in one setting transfer to untrained settings? A three-series multiple-baseline design across settings was used to assess this question. Prior to designing a behavior support plan for Hannah, the action team was established (Todd, Horner, Sugai, &: Colvin, 1999). The team reviewed the functional assessment data and used O'Neill and colleagues' (1997) competing behavior pathway model to create a self-management intervention that matched the functional assessment hypothesis (Crone & Horner, 1999-2000; O'Neill et al., 1997; Sugai, Lewis-Palmer, & Hagan-Burke, 1999-2000). The self-management plan incorporated contextual fit variables with the school setting and the values of all the team members (Albin, Lucyshyn, Horner, & Flannery, 1996; Horner, Sugai, Todd, & Lewis-Palmer, 1999-2000; Todd, Horner, Vanater, & Schneider, 1997). Two IEP objectives were specified and included an increase in academic engagement and independent work completion. The study employed three phases: baseline, instruction, and self-management. Baseline 1 During Baseline 1, no changes were made to the student's schedule, expectations for performance, or reinforcement schedule. Data were collected one or two times daily in fourth grade and once a day in the resource room, as previously described. Instruction for Self-Management Skills Instruction in the use of the self-management skills consisted of teaching (a) on-task behavior as a noncompararive concept (Engelmann & Carnine, 1982), (b) operation of a personal cassette player, (c) self-monitoring of on-task behavior, and (d) self-recruitment of teacher attention. Teaching sequences for labeling on task, self-monitoring, and self-recruitment of feedback included sampling the full range of examples, contexts, and responses (Engelmann & Carnine, 1982; Horner et al., 1982). Instructional objectives for meeting the IEP goals were defined in two areas: (a) cassette player operation and (b) accurate self-evaluation of on-task behavior. By using the general case programming logic, relevant examples for instruction were defined. Thirty-minute instructional sessions occurred until a minimum of 90% accuracy for two out of three consecutive sessions was met for each objective. Criteria were met at the completion of 12 30-minute instructional sessions. Instructional sessions occurred in a variety of contexts, including the library, a classroom, and a teacher's office. Instructional sessions did not occur in the resource room or the fourth-grade classroom and did not include the same materials for instruction as required in those settings. Instructional sessions did include the teaching of discriminations for being on task during simulated seatwork and group-instruction activities and included role-play of academic engagement. Operating the cassette recorder was taught as a motor routine through a task analysis (Alberto & Troutman, 1999). Examples used in instruction sampled the range of responses classified as on-task behavior and were sequenced to demonstrate maximal and minimal differences between positive and negative examples. The criteria by which Hannah evaluated her academic engagement followed the criteria used for measurement. Two long-term objectives were developed to teach the needed skills (see Note 2). The overall goal was for Hannah to initiate use of the self-management system during an activity when the picture of the cassette player appeared on her daily schedule and to use the system to manage her behavior during the activity. When Hannah met the criteria defined in the short-term objective (perform the behavior with 90% accuracy or better for two out of three consecutive sessions), she began using the picture schedule and self-management system during seatwork activities in fourth grade. Self-Management 1 (SM1) As a result of the functional assessment hypothesis statement, Hannah was taught positive alternative skills for appropriately obtaining peer and teacher attention. Specifically, the self-management system required Hannah to use a combination of skills and routines learned during specially designed instructional lessons that taught the relevant discrimination and motor skills to self-monitor and self-record her on-task behavior and to self-recruit attention from adults and peers. To recruit teacher attention, Hannah was taught to use the previously printed hand icon placed at every sixth checkpoint as a prompt to raise her hand to recruit teacher attention. The teacher would provide a variety of responses, including a ‘ thumbs up,’ a star on the hand icon, or an encouraging pat on the back. At the end of each class period, Hannah was given opportunities to share work with and comment to her peers. The self-management system consisted of a personal cassette player with headphones, a signaling cassette, and a self-monitoring card. Each side of a 60-minute signaling cassette was divided into 30 intervals based on a variable interval average 1-minute (with 30-s to 2-min intervals) schedule. The signaling cassette was blank except for an audible " now" prompt at the end of each random interval. The self-monitoring card was a half-page divided into two columns and four rows. Every sixth cell was filled with the hand icon to prompt Hannah to recruit adult attention. Seatwork in the fourth-grade classroom was the first task and context in which the self-management system was used. When Hannah arrived, she sat down at her desk, put on the headphones, pushed play, and began her work. After she heard each prompt (" now"), Hannah marked either a "+" or a " 0" on the self-monitoring card. A"+" was marked if Hannah judged herself to be academically engaged the entire interval. If Hannah judged herself to have been off task or engaged in inappropriate behavior (talking to peers, playing with objects, or not working quietly) at any time during the interval, she recorded a " 0." Accuracy was randomly checked but not measured. The team was initially more concerned about Hannah's use of the system. Inaccurate ratings did not become an issue. When Hannah recorded accurately, she was acknowledged for accurate rating of her behavior rather than reprimanded for being off task. At every sixth interval on the self-management card, a picture of a hand prompted Hannah to raise her hand to recruit teacher attention. At this time, a teacher approached Hannah and praised her for being on task and working hard. The teacher then wrote a "+" on the picture of the hand prompt on Hannah's card and encouraged Hannah to keep working. At the end of the period, Hannah self-recruited attention from her teacher and peers by showing them her +s on her self-monitoring card and the work she completed. The +s she earned on her card were tallied and put in a " bank." When Hannah had earned a specified number of +s, she " spent" them for a special activity with a peer. A list of activities from which she could choose was compiled based on the results of student, parent, and teacher interviews and ongoing action team meetings. Baseline 2 (BL2) and Self-Management 2 (SM2) A return to baseline conditions occurred after SM1 to establish experimental control of the use of the self-management system. The SM2 phase was a direct replication of SM1. Results Results assessing the effects of self-management instruction on academic engagement and work completion are provided in Figures 1 and 2. Figure 1 summarizes the proportion of observation intervals per session in which Hannah was academically engaged, and Figure 2 documents the cumulative assignment completion across phases. The top series of Figure 1 allows assessment of the effects of teaching and implementing self-monitoring plus self-recruitment of reinforcement on academic engagement and work completion during seatwork in the fourth-grade classroom. Baseline data indicated a low (M = 11%), stable level of on-task behavior in the fourth-grade class, and the results documented in Figure 2 indicate that there were no instances of work completion. [FIGURES 1-2 OMITTED] Upon meeting the short-term objectives defined for skill mastery, self-monitoring, and self-recruited reinforcement, procedures were implemented during fourth-grade seatwork (SM1). During the 9 days of SM1, Hannah demonstrated an average of 77% academic engagement and completed all her assignments. When self-management procedures were withdrawn (BL2), Hannah refused to work and engaged in crying and pouting. After 3 minutes of this process, Hannah's level of problem behavior reached a point where her teachers terminated the session per procedures defined in the protocol. The self-management system was reintroduced for 12 days in the SM2 phase. During this final phase, Hannah's on-task behavior returned to a high, stable level (M = 77%), and she again completed her assignment on each of the observation days. To examine if the effects observed during the ABCAC reversal were relevant to untrained settings, the self-management procedures were introduced in two untrained contexts: resource room-seatwork and resource room-group instruction. Baseline data for both resource room contexts are provided in Figure 1. Hannah's baseline performance averaged 35% academically engaged during seatwork in the resource room, with a small but increasing trend across the phase (first five sessions M = 25%; last five sessions M = 45%). Hannah performed at 20% academically engaged during baseline in the resource room group instruction, with a range from 0% to 70%, but with a stable trend across the phase. When self-management procedures were introduced for the resource room seatwork, Hannah's academic engagement increased to a mean of 73%. When the same procedures were introduced in the resource room group instruction, there was no increase in academically engaged responding. Her mean level of academic engagement across the five resource room group instruction sessions was 11%, a 45% reduction from baseline. Discussion Even though single-subject research limits external validity, this study adds to the existing literature documenting the effectiveness of team-based individualized behavior support plans and the success of self-management interventions (Chalfant, Pysch, & Moultrie, 1979; Dalton, Martella, & Marchand-Martella, 1999; Hieneman & Dunlap, 2000; Lentz, Allen, & Ehrhardt, 1996; Smith & Heflin, 2001; Todd et al., 1997; Vandercook & York, 1990). Functional assessment results in this study targeted self-managed academic engagement as the positive alternative behavior necessary for Hannah. Specifically, the self-management intervention package was associated with an increase in the rates of academically engaged behavior and work completion in a fourth-grade classroom. In addition, the study provided an examination of the application of defining and teaching a skill (being on task) as it applied to generalized self-managed behaviors. The instructional plan included relevant examples for teaching the range of response requirements for self-managed behavior across settings, activities, and teachers. As defined, seatwork activities required busy hands with a written product as an outcome. Hannah was to be quiet during seatwork except when asking for help after raising a hand. Group-instruction activities required the hands to be on the lap and quiet (no fiddling). Interactive discussions, raising the hand to talk, waiting a turn, and talking (and remembering what to say) were also relevant characteristics of group-instruction activities. Using the general case instruction guidelines, on-task simulations were systematically defined, sequenced, taught, practiced, and monitored. As a result of the research design, however, the self-management system was implemented in one setting for one activity at a time. Even though Hannah used her self-management system for the whole period, academic engagement was reported for 5-minute probe sessions (see Figure 1). Hannah's teachers chose the sequence of settings and activities. Hannah initially practiced and received specific feedback for academically engaged behavior during seatwork activities only. These skills generalized across settings. The same effects did not occur for group instruction, however. Even though the 12 instructional sessions included simulations during group-instruction activities, Hannah did not use the self-management system during group instruction for the first 30 sessions (15-20 school days) of the implementation of the self-management system. We can only speculate that with Hannah's learning history, the latency period between being taught the on-task skills for group instruction and actually monitoring the use of those behaviors was too long for generalization to occur. Even though Hannah was taught the necessary skills and met criteria on the instructional objectives, she did not generalize academically engaged behavior to group-instruction activities. Further study is needed to understand the instructional requirements necessary to teach generalized self-management skills that produce gains that (a) generalize to untrained settings and (b) maintain over time. The professionals doing direct observations used a strategy called inter-rater or inter-observer reliability agreement to do this. Brooks notes that whenever you use humans as a part of your measurement procedure, you have to establish procedures to ensure that the data collected is reliable or consistent. The best way to determine whether two observers are being consistent in their observations is to establish inter-rater reliability outside of the context of the measurement in your study. The reason is to ensure that if you use data from your study to establish reliability, and you find that reliability is low, you're kind of stuck therefore the best procedure would be to conduct a pilot study. Also during the study it, you may want to reestablish inter-rater reliability from time to time to assure that your raters aren't changing. Trochim (2006) noted that there are two major ways to actually estimate inter-rater reliability. One method is utilized if a study consists of measurements of categories. During this type of study the raters are checking off which category each observation falls in then they calculate the percent of agreement between the raters. For example, in one study required 100 observations that were being rated by two raters. For each observation, the rater could check one of two categories. Once the observations are completed then the raters can compare their observations with one another. In this example the two raters had check the same category on 90% of the 100 observations. In this example, the percent of agreement would have been 90%. Studies that require continuous observations also require an inter-rater or inter-observer reliability. During these types of studies the raters are required to calculate the correlation between the ratings of the two observers. For example, the raters might be rating the overall level of activity in a classroom on a 1-to-7 scale. You could have them give their rating at regular time intervals (e. g., every 30 seconds). The correlation between these ratings would give you an estimate of the reliability or consistency between the raters. Brooks, Todd, Tofflemoyer, and Horner (2003) noted that once the analysis of data has been completed, the positive behavior intervention plan, positive behavior support plan, is laid out. This plan has the primary purpose of providing the student with alternate behaviors that serve the same purpose as the inappropriate one. For example, a student may be given different skills that allow him to get a teacher's attention in an appropriate manner. This too may also be taught self-management strategies for monitoring their own behavior. McElrath, Agnew, Axelrod and Bloh (2007) noted that the functional behavior assessment as a whole brings to light patterns that are present within the context of the classroom that not only influence the behavior but also work to maintain it over time. This shows that there is a relationship between the behavior's function and the subsequent intervention that helps to reduce it. Within these patterns, the teacher can see how old certain variables within the classroom increase the frequency the behavior or reduce it. For example, if the difficulty level of academic work is changed, it can affect the occurrence of an off task behavior. In a study conducted by Moore, Anderson and Kumar (2005) on escaped-maintained behavior in a general education classroom, the FBA was used in tandem with a CBA to find the relationship between the difficulty of academic material and escape related behaviors. The researchers utilized a single subject design on a 6-year-old first grade student. The student exhibited a high-frequency of problem behavior when faced with difficulties during the math lesson. The student displayed the following problem behaviors: not complying with teacher requests, talking out of turn, being out of his seat, disrupting the class and using classroom supplies appropriately. The observations were done during a 20 minute time period using a partial-interval time-sampling method. The observers would watch the student for a total of 10 seconds, then record the observation during the next 5 seconds. They also utilized an A-B-C analysis to record the antecedents and consequences to the problem behavior. A CBA was given to the student, which involved three assessments that were 2-minutes each in length and which were created from classroom curriculum materials. A Functional Analysis Interview was done with the teacher to receive further information on the student's level of math skill and behavior exhibited. An alternating treatment design was used to implement the chosen intervention. The intervention used by the teacher involved changing the difficulty level of the math lesson. The teacher took the lesson and broke it down into smaller sections, giving a new set of instructions for each section. This was an alternate to the original lesson in which the student received one set of instructions at the beginning. When the intervention was put into place, the off task behavior would occur during 14. 5% of the observed occurrences. This is in contrast to the rate of off task behavior observed on days when the intervention was not used, which was 51. 9%. The teacher discovered that the intervention was successful in reducing the students off task behavior. The researchers found that using a functional behavior assessment was very successful in confirming the function of an aversive behavior and in planning behavioral interventions. They showed that the FBA could be used in conjunction with a CBA in order to find the possible relationship between the difficulty of an academic task and off task behavior. Recommended further research should be completed on functional behavioral assessments, with special emphasis being given to the assessment of antecedent events, or those that occur before the behavior. The aim of this study was to examine the effects of an instructional adaptation (reduction of task duration) on off-task behavior in a general education classroom. The intervention was chosen following a functional behavioral assessment, which suggested that much of the off-task behavior was escape-maintained, and a curriculum-based assessment, which showed an appropriate curriculum/performance match. An alternating-treatments design was used to assess the impact of the intervention. Results revealed that the reduction of task duration was effective in decreasing the level of escape-maintained off-task behavior during independent work in mathematics. Attention-maintained off-task behavior was not affected. Implications of these findings for both assessment and intervention planning are discussed. Disruptive classroom behavior is a major factor contributing to teacher stress and discontent and significantly affects teachers' capacity to maintain a productive and orderly learning environment (Hawe, Tuck, Manthei, Adair, & Moore, 2000). Most teachers deal on a daily basis with disruptions arising from student behaviors such as talking out of turn, not following instructions, and not interacting properly with peers and in the process lose valuable teaching and learning time (Corrie, 1997). Furthermore, recurrent inappropriate classroom behavior has been shown to compromise students' ability to learn socially acceptable and positive classroom and interpersonal behavioral skills (Kern, Childs, Dunlap, Clarke, & Falk, 1994; Kern, Delaney, Clarke, Dunlap, & Childs, 2001) and to be predictive of present and future academic underachievement (Cobb, 1972; Horn & Packard, 1985; Malecki & Elliott, 2002). Throughout the past 20 years there has been a marked increase in the direct and indirect assessment and analysis of problem behavior in school settings to determine the function of disruptive behavior and to develop more targeted interventions based on these assessments (Lewis & Sugai, 1996; Umbreit, 1996). As Conroy and Stichter (2003) observed, in the last decade a particular focus has been placed on antecedent events in this literature, in part due to the positive and essentially nonaversive nature of antecedent-focused interventions (see also Smith & Iwata [1997] and Wilder & Carr [1998] for reviews of the antecedent research literature). Curricular expectations are antecedent events that play an important part in any student's school day and, where mismatched with current student skill levels, have been shown to be associated with the occurrence of undesirable classroom behavior. Weeks and Gaylord-Ross (1981) reported one of the earliest studies showing a relationship between task difficulty and problem behavior, illustrating that the difficulty of a task can function as an antecedent variable occasioning escape-maintained behavior. Other researchers have subsequently demonstrated a functional relationship between changes in curriculum difficulty level and disruptive behavior (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991; Ferro, Foster-Johnson, & Dunlap, 1996; Kern et al., 1994; Roberts, Marshall, Nelson, & Albers, 2001). Typically these researchers have simply altered task difficulty, making the task less demanding for an individual. Overall, these studies have shown that significantly lower amounts of off-task behavior are evident in no-demand or low-demand situations, compared to situations with greater task demand. However, merely manipulating the difficulty level of academic content may not always be either appropriate or desirable. Presenting students with easier tasks may be effective in managing such escape-maintained behavior, thereby making students more accessible to instruction, but undue simplification of academic content is unlikely to always adequately address students' educational requirements. As Winett and Winkler (1972) noted many years ago, interventions that aim to remediate students' behavioral problems may simply reduce the targeted disruptive behavior and not improve their learning opportunity. It is important that students are provided with ample opportunity to acquire new skills and expand their behavioral repertoires. Escape-maintained disruptive behavior in the classroom may not be merely a result of presenting students with tasks that are too difficult relative to their existing skills. Students may display inappropriate behavior to escape from a task that is within their behavior repertoire but that has other aversive properties. Researchers have shown that a range of instructional dimensions, including task duration (Dunlap et al., 1991; Kern et al., 1994), task sequencing (McCurdy, Skinner, Grantham, Watson, & Hindman, 2001) and momentum (Mace et al., 1988; Nevin, 1996), student preference (Cole & Levinson, 2002; Cooper et al., 1992; Dunlap et al., 1994; Dyer, Dunlap, & Winterling, 1990; Kern et al., 2001), reinforcement rate (Smith & Iwata, 1997), a distracting environment, and the presence of competing activities or reinforcement (Munk & Repp, 1994), have the potential to affect student behavior and academic performance. In class-based functional assessments, emphasis should be given to ensuring an appropriate instructional match between the curriculum (and/or instructional materials and methods) and the existing level of students' academic skills, with a view to developing effective interventions that target both behavioral and learning needs. Traditional norm-referenced tests are unsuitable for this purpose (Shapiro & Eckert, 1993). However, interesting recent developments in curriculum-based assessment (CBA) procedures directly link assessment to the curriculum and instruction (Blakenship, 1985; Shapiro, 1990). CBA consists of a direct evaluation of student performance, on materials that are being taught in the classroom, thereby providing a measure of the goodness of fit of instructional expectations and students' performance capability. Roberts et al. (2001) suggested that CBA could usefully be incorporated into functional behavioral assessment (FBA) procedures to assess student performance levels and simultaneously generate hypotheses regarding the function of specific disruptive behaviors in the classroom. The present study builds on the work of Roberts et al. (2001), who used FBA and CBA in conjunction, in a general education classroom, to address the behavior needs of typical students. Our study extends the work of Roberts et al. by considering aspects of instruction additional to difficulty level. This was done by incorporating CBA into the FBA process and examining the effect of an instructional adaptation where (a) an FBA indicated that the off-task behavior was escape-maintained and (b) CBA indicated that curriculum material was set at an appropriate level. Method Prior to commencement, this study was approved by the University of Auckland Human Participants Ethics Committee (Ref 2002/151). Informed consent was obtained from the participant, his parents, the teacher, and the school principal. PARTICIPANT AND SETTING The participant of the present study was a &year-old boy attending Grade 1 at an urban, co-educational elementary school. He was selected from a general education classroom based on teacher nomination for demonstrating high levels of inappropriate classroom behavior and emerging mathematics skill deficiencies. Data collection was conducted in the participant's classroom during mathematics lessons. The classroom contained 27 students seated in groups, with 5 to 8 students in each group. A typical mathematics lesson in this classroom was approximately 45 min in length and occurred between 1: 30 p. m. and 2: 15 p. m. In the first 10 to 17 min, the teacher instructed the class as a whole, using verbal activities such as counting, number games, or songs. Whole-class time was followed by either an independent or a small-group work session, which generally lasted the rest of the lesson. During this time the students were assigned mathematics tasks that were to be completed individually or, sometimes, with a partner. On some days the students were given a free-choice activity, usually consisting of mathematics games, in the last 10 min of the lesson. OBSERVATIONAL PROCEDURE Data were collected four times a week. The participant was observed for a total of 20 min each day: 10 min during whole-class work and 10 min during independent work. A partial-interval time-sampling procedure, where the behavior was monitored for 10 s and recorded during the next 5 s, was used to record occurrences of off-task behavior. A conservative observational procedure was adopted in which any occurrence of off-task behavior during a 10-s interval resulted in the participant being recorded as off task for that interval. In addition, an ABC analysis was undertaken whereby the antecedents and the consequences of all observed inappropriate behaviors were noted. One or two observers were present during each lesson. Data were not collected on days in which either the regular teacher or the primary observer was absent. The primary dependent variable for this study was occurrence of off-task behavior, which was operationally defined based on information derived from (a) a functional assessment interview with the teacher and (b) direct observation during mathematics lessons. Off-task behavior was defined as a single, generic behavior category that included looking around (looking around for more than 5 s of the observation interval), noncompliance (failure by student to respond to teacher request within 7 s of the request), inappropriate talk (a verbalization that was not appropriate, e. g., giggling, talking not related to the situation, swearing), out of seat (leaving seat when not requested), inappropriate use of materials (using materials in a way they were not intended to be used (e. g., drumming on the table), or disruptive behavior (e. g., pulling on clothes, resting head on desk, physically touching or poking another student). Prior to any formal observations, the researcher was present in the classroom for 5 days, during which time pre-baseline observations were undertaken to trial the operational definition of off-task behavior and to provide opportunity for the participant, his teacher, and the other pupils in the classroom to become familiar with the researcher, thereby reducing reactivity and expectancy effects (Kazdin, 1982). The results of the CBA and FBA were used in the development of the intervention (see next section). FUNCTIONAL AND CURRICULUM-BASED ASSESSMENT A CBA involving three separate 2-minute assessment probes using current curriculum materials was carried out to determine whether these materials were appropriately matched to the participant's academic skill level. These probes assessed his performance in number skills, sequencing, and one-digit addition. The rate of digits correct per minute was calculated and this result compared to the criteria established by Deno and Mirkin (cited in Shapiro, 1990). A descriptive functional behavioral assessment, which involved an interview with the teacher and a review of the participant's worksheets and mathematics books, was carried out. The teacher interview was based on the Functional Analysis Interview form (O'Neill et al., 1990) and was used to gather information about the mathematics curriculum being used in the classroom, the participant's current skill level, the nature of his inappropriate behavior, and the antecedents and consequences of inappropriate behavior during mathematics. A series of six baseline observations was carried out during both whole-class and independent seatwork time as the next step in our functional assessment. These data provided a measure of the percentage of time intervals containing off-task behavior in both settings. In addition, analysis of the observed consequences to the participant's off-task behavior (operationally dichotomized as " elicited teacher attention" or as " escaped the set task in the next 30 seconds") led to the development of hypotheses regarding the function of the behavior and the variables controlling it. EXPERIMENTAL DESIGN An alternating-treatments design (ATD; Kazdin, 1982) enabled direct and temporally contiguous comparison of the differential effects of two different treatment conditions (the intervention condition described next and a continuation of the instructional procedure in place in baseline) relative to each other, as well as comparison of performance under the experimental treatment condition to that observed in the baseline data. Treatment conditions were randomly assigned to days by flipping a coin. The intervention phase was carried out for 9 days, followed by a further 3 days of observation under an optimal-treatment-only condition. INTERVENTION During independent work time in mathematics, the children were typically assigned one of two types of activities. On some days the students were required to complete a series of similar exercises (e. g., complete a worksheet of sums). On other days they were instructed to complete a sequence of tasks (e. g., copy over the appropriate shapes, then color them, cut them out, and glue them into their workbooks). In both cases, the tasks assigned during independent work time usually took 13 to 15 min to complete. The intervention involved a reduction in task duration. To accomplish this, the researchers manipulated the daily mathematics tasks assigned by the teacher. On each day of the experimental intervention, the third author divided each task into three or four short steps that the teacher could easily implement, for example, cutting a worksheet containing 15 sums into three pieces, each containing 5 sums, or giving the participant a specific instruction as his first step (e. g., " I want you to copy these shapes. When you have finished that, I will tell you the next step"). Upon completion of each step, the teacher gave the participant instructions regarding what to do next. In this way, instead of receiving a single instruction at the beginning of an extended episode of seatwork, the participant now received three or four instructions during that time. The student was still required to complete the same work as the other students in the class. TREATMENT ACCEPTABILITY On completion of the study, the social validity of the intervention was assessed through a structured interview with the teacher that included four open-response questions regarding (a) treatment effectiveness, (b) whether the teacher found the additional tasks reasonable to complete while teaching this class, (c) possible side effects from the intervention on the student's behavior, and (d) the acceptability of the intervention in terms of the time and effort required. INTEROBSERVER AGREEMENT A secondary observer collected data during four sessions: two baseline sessions, and one session each during the ATD intervention phase and the final optimal-treatment-only phase. On these occasions both observers carried out observations simultaneously but independently. The results of the paired observations were compared to establish a measure of interobserver agreement. Interobserver agreement was calculated using the total agreement procedure, dividing the number of agreements (interval by interval judgment, on and off task) for each session by the number of agreements plus disagreements for the session, multiplied by 100. The mean total interobserver agreement was 81. 2% (range 77. 2% to 84. 6%). Results RESULTS OF FBA AND CBA Results of the CBA The CBA showed that the participant was able to perform number skills, sequencing, and 1-digit addition at an instructional level of 15 digits correct per minute with no more than three errors. These results suggest that he was able to perform the required tasks and that there was an acceptable level of curriculum/performance match. Functional Assessment Interview The classroom teacher reported that during independent seatwork and whole-class work in mathematics, the participant engaged in high levels of off-task behavior, such as talking to others, not complying with requests, calling out, looking around, leaving his seat, and other disruptive behaviors (e. g., using materials inappropriately, resting head on desk). The teacher did not identify any consistent pattern in either the antecedents or consequences of the off-task behavior. Direct Observations. Analysis of the distribution of off-task behavior across the mathematics lessons showed a differential response pattern under whole-class and individual seatwork conditions. Figure 1 shows the frequency of the participant's off-task classroom behavior in the two conditions during the Baseline/FBA. These data indicated that, overall, the participant engaged in more off-task behavior during independent work time than during whole-class work