

USING CHOICE TO INCREASE ON-TASK BEHAVIOR IN INDIVIDUALS  
WITH TRAUMATIC BRAIN INJURY

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An ABA'B design was used to evaluate the effects of choice on task engagement for 3 adults who had been diagnosed with traumatic brain injury. A yoked-control condition, in which tasks that were selected by each participant were assigned subsequently to that participant by a trainer, was implemented to help distinguish between the effects of task preference and choice. The results for all 3 participants indicated that permitting individuals to choose from a list of tasks increased on-task behavior.

DESCRIPTORS: antecedent intervention, choice, motivating operations, traumatic brain injury

Results of a growing body of evidence suggest that interventions involving choice may increase on-task behavior (e.g., Bambara, Ager, & Koger, 1994; Kern, Mantegna, Vorndran, Bailin, & Hilt, 2001; Parsons, Reid, Reynolds, & Bumgarner, 1990) and decrease problem behavior (e.g., Dunlap et al., 1994; McComas, Hoch, Paone, & El-Roy, 2000; Vaughn & Horner, 1997) for individuals with developmental disabilities. For example, Kern et al. found that permitting 3 individuals to choose the order in which they completed a series of tasks decreased problem behavior and increased appropriate engagement. Kern et al. also found that when participants were assigned to complete tasks that they had previously selected, the same improvement was not observed. These results suggested that the opportunity to make choices altered the value of consequences for appropriate behavior, problem behavior, or both.

Although these interventions have been evaluated for persons with developmental disabilities, such interventions have yet to be

systematically extended to the behavior of individuals with traumatic brain injury (TBI). The purpose of the present study was to extend the literature by evaluating the effects of choice for increasing on-task behavior for adults with TBI.

## METHOD

### *Setting, Participants, and Materials*

The study was conducted in an inpatient hospital setting where rehabilitation services were provided to individuals with TBI. Participants were 3 adult women with varying levels of cognitive and physical impairment. Each participant's brain injury was the product of a motor vehicle accident. Amber was a 21-year-old woman who had been diagnosed with neurobehavioral issues stemming from an accident 7 years prior. She had been comatose for 3 months following the accident, after which she required extensive rehabilitation programs to relearn how to walk, write, and speak. Cara was a 27-year-old woman with neurobehavioral issues secondary to a TBI from an accident 12 years prior. Cara's neurobehavioral issues were described as withdrawal behaviors (i.e., preference for isolation) that were reflected in little or no attendance or participation in therapy groups. Rebecah was a 42-year-old woman with neurobehavioral issues

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secondary to TBI from an accident 15 years prior. She also had been diagnosed with a seizure disorder as well as speech and gross motor difficulties. Each participant was able to read and, according to the facility staff, displayed deficits with on-task behavior. Task lists were compiled by each participant's interdisciplinary team; tasks were chosen based on deficits observed in previous sessions of a self-initiation group that was intended to teach independent self-care skills. Tasks were targeted to increase already familiar organizational, leisure, and self-care skills specific to each individual's needs. Although not formally documented, each task required approximately 10 to 15 min to complete. Because sessions were conducted at various locations on hospital grounds, each participant was typically observed by a separate trainer. Sessions were always conducted on weekdays between 10:00 a.m. and 11:00 a.m.

#### *Target Behavior, Data Collection, and Interobserver Agreement*

*On-task behavior* was defined as physical contact with one or more objects in a manner that could result in completion of a task. Examples of on-task behavior included (a) gathering materials related to a task, (b) manipulating materials in a manner required to complete a task, and (c) requesting assistance with a task from staff or other participants. On-task behavior was recorded using a variation of a momentary time-sampling procedure in which the last 10 s of every 5-min interval were observed for the occurrence or nonoccurrence of on-task behavior during a 30-min period. To be scored as an occurrence, the behavior had to occur for the entire 10-s observation interval. This method of observation is a variation of the data-collection procedure reported by Ludwig (2004; as cited in Cooper, Heron, & Heward, 2007). To minimize the influence of systematic measurement error, the starting point of the 30-min period for each participant was chosen randomly before each session and began after a

participant received a task list (e.g., observations of 1 participant may have occurred from 10:05 a.m. to 10:35 a.m. and observations of another participant may have occurred from 10:20 a.m. to 10:50 a.m.). A second, independent observer scored 30% of the sessions. An agreement was counted when both observers scored a given interval with the occurrence of the target behavior for the entire interval. Interval-by-interval agreement was calculated by dividing the number of agreements by the number of agreements plus the number of disagreements and multiplying by 100%. Agreement scores were 94% or higher across participants.

#### *Experimental Design and Procedure*

The effects of choice on task engagement for each participant were evaluated using ABA'B withdrawal designs. In the task-assigned (baseline) and choice conditions, participants were asked to complete three tasks. During task-assigned sessions, participants were assigned randomly a list of three tasks to complete. Some of the tasks on each participant's list included doing laundry, vacuuming a room, making a bed, writing in a journal, walking on a treadmill, and dusting furniture (a complete list of the participants' tasks is available from the first author). Each participant was instructed (a) to complete the tasks in the order provided by the staff person, (b) to mark the task list following the completion of each task, and (c) to return the list to a staff person after completion of all three tasks. No additional prompts were provided. Verbal praise was delivered on an intermittent schedule for on-task behavior and was standard across all phases. The choice condition was identical to the task-assigned condition, except that each participant was asked to select three tasks from a list of nine and informed that she may switch the sequence of tasks at any time. To further evaluate the effects of choice, a yoked-control condition was implemented in which tasks that were selected by each participant during the first choice phase

were assigned to the same individual during the second task-assigned phase (Kern et al., 2001).

## RESULTS AND DISCUSSION

Figure 1 shows the results for all participants. For Rebecah, on-task behavior increased from the first task-assigned phase ( $M = 28\%$  of 10-s intervals) to the first choice phase ( $M = 78\%$ ), decreased during the second task-assigned phase ( $M = 33\%$ ), and immediately increased in the second choice phase ( $M = 100\%$ ). Rebecah refused to participate in Session 9. For Cara, on-task behavior also increased from the task-assigned phase ( $M = 48\%$ ) to the first choice phase ( $M = 60\%$ ), decreased during the second task-assigned phase ( $M = 28\%$ ), and increased in the second choice phase ( $M = 77\%$ ). Cara refused to participate in Session 7. Although Amber's on-task behavior was higher than the other 2 participants' behavior during the task-assigned phase ( $M = 60\%$ ), her on-task behavior increased during the first choice phase ( $M = 86\%$ ), decreased during the second task-assigned phase ( $M = 36\%$ ), and increased again during the second choice phase ( $M = 100\%$ ). Amber refused to participate in Session 13.

Overall, the results demonstrated that providing 3 individuals with TBI the opportunity to choose their tasks increased on-task engagement. The decreasing levels of on-task behavior that were observed during the yoked-control phase are consistent with the results from Kern et al. (2001) and suggest that the opportunity to choose the task, rather than preference for or difficulty of the task, produced the behavior change. As an antecedent intervention, it is possible that the opportunity to choose tasks, rather than being assigned tasks, altered the value of escaping or avoiding the task. That is, the opportunity to choose may have functioned as an abolishing operation (see Laraway, Snycerksi, Michael, & Poling, 2003) by altering the value of task termination as negative reinforcement. Note, however, that this account is speculative because other variables that may

have affected on-task behavior were not analyzed.

Although the specific mechanism of behavior change in this study is not clear, these results are consistent with previous studies (Bambara et al., 1994; Dunlap et al., 1994; Kern et al., 2001) and provide additional support for the use of choice for increasing on-task and compliant behavior. The present investigation also extends the literature on antecedent interventions by demonstrating the effects of choice making in adults with TBI. In the same vein, the results of this study suggest that intermittent praise, which was provided during task-assigned and choice phases, was not sufficient for increasing on-task behavior. Given the minimal effort required by trainers, the results provide further evidence to support choice-based procedures as cost- and time-efficient behavior-change procedures.

Some potential limitations to this study should also be noted. First, the procedures included handing each participant a list of tasks that she should complete on a daily basis. Although anecdotal reports suggested that all 3 participants suffered memory problems, we did not attempt to fade the task lists or to transfer evocative control to other stimuli. Future studies should examine the possibility of fading the task lists, or if needed, transferring stimulus control to a daily planner that could set the occasion for the appropriate behavior, promote generalization of on-task behavior to different environments, or both. A second potential limitation is that the choice procedure might have allowed the participants to bias responding toward less complicated or effortful tasks. However, the decreased levels of on-task behavior observed for each individual during the yoked-control condition suggested that task difficulty did not account for the observed behavior change. Similarly, the function of task avoidance (i.e., low levels of on-task behavior) was not evaluated for any of the participants. Future research should control for the level of

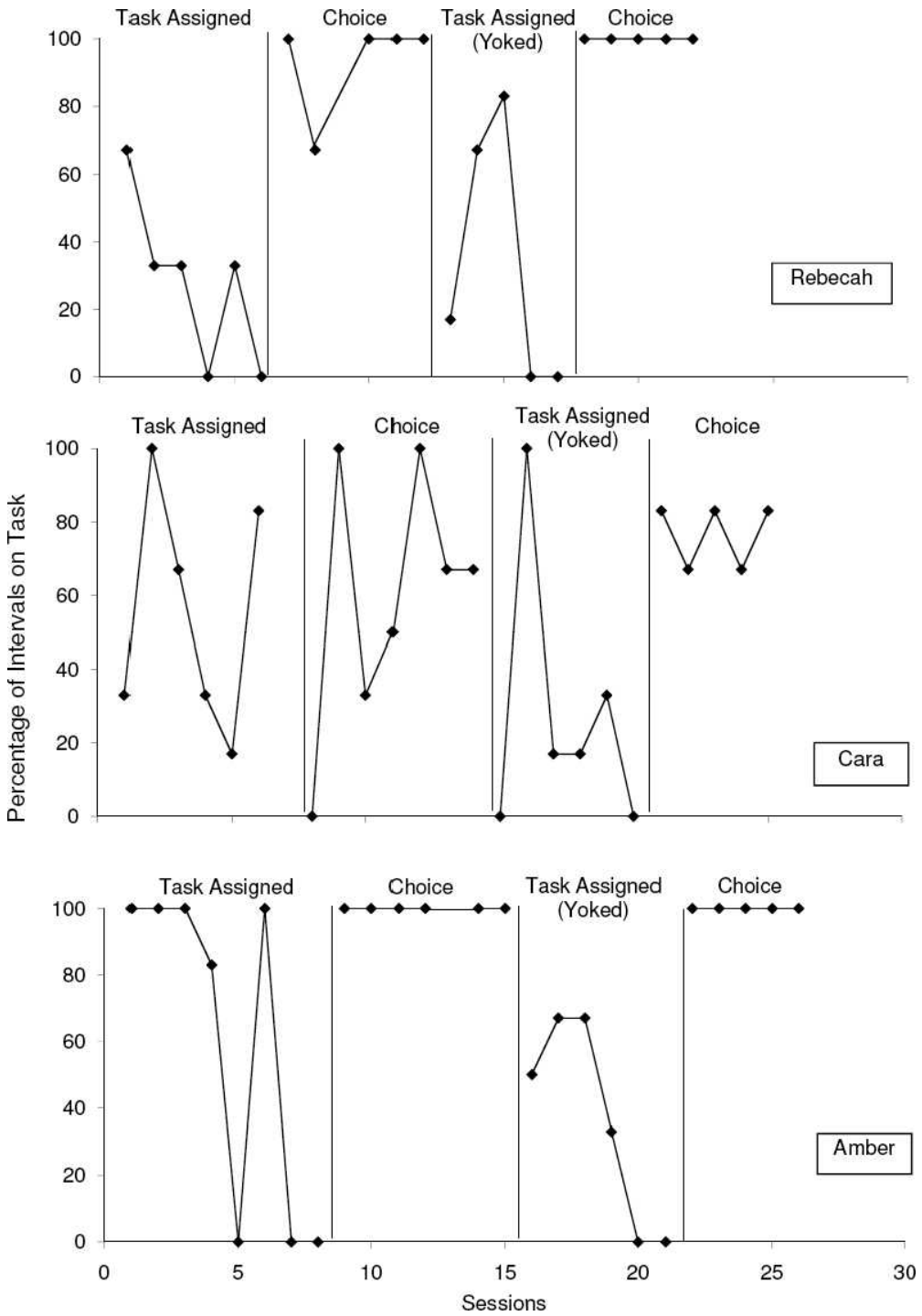


Figure 1. The percentage of intervals with on-task behavior for Rebecah (top), Cara (middle), and Amber (bottom) across task-assigned (baseline) and choice phases.

effort and complexity of tasks that are assigned and chosen when evaluating the effects of choice.

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