

**Evidence Based Practice Day**  
Department of Rehabilitation Sciences, Recreation Therapy Program  
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**Behavior Management of Children and Adolescents with Traumatic Brain Injury through Antecedent Interventions within Applied Behavior Analysis**

**Search Terms:** Traumatic Brain Injury AND Pediatrics AND Antecedent management; Traumatic Brain Injury AND Adolescents AND Antecedent management; Traumatic Brain Injury AND Pediatrics AND positive behavior support; Traumatic Brain Injury AND Pediatrics AND applied behavior analysis; Head injury AND Pediatrics AND antecedent management; Head Injury AND Adolescents AND Antecedent management; Head injury AND Pediatrics AND positive behavior support; Head injury AND Pediatrics AND Applied behavior analysis; Acquired head injury AND Pediatrics AND Antecedent management; Acquired head injury, AND Adolescents AND Antecedent management; Acquired head injury AND Pediatrics AND positive behavior support; Acquired head injury AND Pediatrics AND Applied behavior analysis

**Years:** 2003-2013 (one exception from 1997)

**Databases:** Ebsco Host (all databases) and Pub Med





**Number of Articles:** Nine

**Summary of Research Findings**

Children and adolescents with Traumatic Brain Injuries (TBI) often exhibit difficulty managing their behaviors (Semrud-Clikeman, 2010). These behavioral problems are generally worse for children and adolescents than adults who experience TBI and cause difficulty in successful reintegration in the community (Silfer & Amari, 2009). Antecedent management (AM) is an emerging intervention used within Applied Behavioral Analysis, which turns these challenging behaviors into desired outcomes. AM focuses on eliminating and stabilizing behaviors by manipulating environmental factors (using certain behavioral techniques) so children can succeed in their surroundings (Laatsch, et al., (2007). Nine research articles regarding AM were reviewed, which consisted of six descriptive studies and three single subject case studies. Results from the descriptive studies concluded that AM application should include a collaborative interdisciplinary approach that includes the family (Ylviasker, Jacobs & Feeney, 2003; Ylviakser et al., 2005; Laatsch, et al., 2007). The synthesis of the three case studies yielded a four-phase approach in using AM described below (Garnder, Bird, Maguire, Carreiro & Abenaim, 2003; Pace, Dunn, Luisello, Cochran & Skowron, 2005; Silfer, et al., 1997). Although there is a need for future research on this approach in non-single case study designs methods, AM has been found to be an important component in regulating behavior for children and adolescents with TBI (Laatsch, et al., 2007).

**Knowledge Translation Plan**

Findings indicated that prior to the development of an antecedent management behavior plan (AMBP); a Functional Behavioral Assessment (FBA) must first be conducted (Garnder et al., 2003). The FBA is an observational assessment that tracks & records an undesired behavior (e.g. how many times and for how long does the behavior occur in a given situation; what in the environment, appears to trigger/suppress the behavior, etc.). Once baselines are determined, an AMBP is developed. Although AMBPs are individual tailored, a synthesis of the 3 single subject case studies, yielded a common pattern of the implementation of four phases: 1) Reduce things in the environment that trigger the problem behavior/s (e.g., reduce noise in the room) and add things to the environment that help to prevent the problem behavior from emerging, as well as manage the problem behavior when it appears (e.g. therapy schedule) (Garnder, et al., 2003; Pace, et al., 2005 & Silfer, et al., 1997). 2) Implement techniques that can be employed by the client or others to help prevent problem behaviors or manage problem behaviors when they appear; teach techniques to client/others (Garnder, et al., 2003); and, practice implementing techniques to help prevent/manage problem behaviors, with the goal of the client/other implementing such techniques with the least amount of assistance, 3) Implement techniques that help the client learn how to self-manage problem behaviors; therapist records preferred techniques chosen by the client (e.g., when becomes agitated, retreats to play a video game) (Pace, et al., 2005 & Silfer, et al., 1997) and 4) Use self-management techniques chosen by the client in phase 3 as a reward for self-managing one's behavior (e.g. can retreat and play a video game after visiting for 5 minutes with relatives) (Silfer, et al., 1997). A case study is provided below to further illustrate these phases. Please note that this is only a descriptive case study to illustrate the phases synthesized from the literature review. Different techniques and phases may be incorporated depending on the severity, age, and target behavior of the child. Similar to the RT assessment and documentation techniques, AM requires a systematic process to individually assesses each behavior, build guidelines for treatment, and continuously assess and adjust the treatment plan throughout rehabilitation (Semrud-Clickeman, 2010). Each phase builds off of one another and the complexity increases as the child enters the next stage (Gardner et al., 2003; Semrud-Clickeman, 2010). At the completion of all phases a child should be able to self-regulate and withstand an increase in daily activities without behavior interruption.

Phase	Purpose	Case Study Technique	Case Study Reasoning
Baseline 	Assessment to determine: <ul style="list-style-type: none"> <li>To identify specific problem behaviors</li> <li>To determine baselines for the behaviors (e.g., frequency)</li> <li>To determine the antecedents (or reasons) that trigger the problem behaviors (e.g., noisy environment)</li> </ul>	Functional Behavioral Assessment	Problem behaviors: Aggression & irritability Baselines: <ul style="list-style-type: none"> <li>Aggressive behaviors exhibited 5 times within 15 min RT session (throwing items, swinging at therapist)</li> <li>Exhibited irritable behaviors 8 times within 15 min RT session (tight facial expressions, loud grunting noises, flailing arms)</li> </ul> Antecedents to behaviors <ul style="list-style-type: none"> <li>Being asked to complete a task he doesn't want to do</li> <li>Having to move to a different activity (e.g., go to another therapy session)</li> </ul>
Phase 1 	-Reduce things in the environment that trigger the problem behaviors (e.g., reduce noise in the room)  -Add things to the environment that help to prevent the problem behavior from emerging, as well as manage the problem behavior when it appears (e.g., therapy schedule)	Hang daily schedule  Transition warnings	Increases structure & decreases unpredictability
Phase 2 	-Implement techniques that can be employed "by the client or others" to help prevent problem behaviors or manage problem behaviors when they appear. -Teach techniques to client/others (e.g., family). -Practice implementing techniques to help prevent/manage problem behaviors, with the goal of the client/others implementing such techniques with the least amount of assistance.	Relaxation techniques  Joint Compressions	Helps reduce stress & tension, as well as regain focus
Phase 3 	-Implement techniques that help the client learn how to self-manage problem behaviors. Not all real life environments will be able to be manipulated to prevent and manage problem behaviors (e.g., when agitated during play activity, take a break). -Therapist records preferred techniques chosen by the client (e.g., when becomes agitated, retreats to play a video game). This information is needed for the next Phase.	Beak option during activity	Enables decision making and empowerment through choice
Phase 4	Techniques utilized in Phase 3 (e.g., retreat to play a video game) may not be appropriate in all real life settings. Use self-management techniques chosen by the client in phase 3 as a "reward" for self-managing one's behavior (e.g., can retreat and play a video game after visiting for 5 minutes with relatives).	Operant contingency using a preferred activity after completion of task	Self-regulation within activities

## References

- Galvin, J., Froude, E., & McAleer, J. (2010). Children's participation in home, school and community life after acquired brain injury. *Australian Occupational Therapy Journal*, 57, 118-126.
- Gardner, R., Bird, F., Maguire, H., Carreiro, R., & Abenaim, N. (2003). Intensive positive behavior supports for adolescents with acquired brain injury. *J Head Trauma Rehabilitation*, 18(1), 52-74.
- Laatsch, L., Harrington, D., Hotz, G., Marcantuono, J., Mozzoni, M., Walsh, V., et al. (2007). An evidence-based review of cognitive and behavioral rehabilitation treatment studies in children with acquired brain injury. *J Head Trauma Rehabilitation*, 22(4), 258-256.
- Pace, G., Dunn, E., Luiselli, J., Cochran, C., & Skowron, J. (2005). Antecedent interventions in the management of maladaptive behaviours in a child with brain injury. *Brain Injury*, 19(5), 365-369.
- Semrud-Clickeman, M. (2010). Pediatric traumatic brain injury: Rehabilitation and transition to home and school. *Applied Neuropsychology*, 17, 116-122.
- Slifer, K., Tucker, C., Gerson, A., Seviars, R., Kane, A., Amari, A., et al. (1997). Antecedent management and compliance training improve adolescents participation in early brain injury rehabilitation. *Brain Injury*, 11, 877-889.
- Slifer, K., & Amari, A. (2009). Behavior management for children and adolescents with acquired brain injury. *Developmental Disabilities Research Reviews*, 15, 144-151.
- Ylviasker, M., Adelson, D., Willandino, L., Burnett, S., Glang, A., Feeney, T., et al. (2005). Rehabilitation and ongoing support after pediatric TBI. *J Head Trauma Rehabilitation*, 20(1), 95-109.
- Ylviasker, M., Jacobs, H., & Feeney, T. (2003). Positive supports for people who experience behavioral and cognitive disability after brain injury. *J Head Trauma Rehabilitation*, 18(1), 7-32.