

THE EFFECT OF THE ELECTRONIC AUDITORY STIMULATION
EFFECT (EASe) PROGRAM ON 8-12 YEAR OLD CHILDREN WHO
EXHIBIT SENSORY PROCESSING DEFICITS

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ABSTRACT

Objective: Researchers investigated the effect of Electronic Auditory Stimulation Effect (EASe) games and music CD's on changes produced in auditory, visual, and vestibular function in 8-12 year old children who are adversely affected by deficits in their sensory processing.

Method: Participants from two occupational therapy clinic locations followed the 28 day study protocol that involved playing an EASe game for 30 minutes twice a day for 14 days, then switched to another EASe game for the remaining 14 days of the trial. Researchers analyzed six participant game score datasets by applying a single subject and small group design using the Semiparametric Ratio Estimator (SPRE) model.

Conclusion: The hypothesis that the use of Electronic Auditory Stimulation Effect (EASe) games for 28 days, twice a day for thirty minutes would significantly improve a child's visual attention skills, spatial organization skills and occupational performance at home, as measured by EASe game tracking scores was supported by the significant predicted outcomes calculated using the Semiparametric Ratio Estimator (SPRE).

Further studies on the EASe games' effect on children's sensory integrative abilities are justified based on a strong correlation between individual participant data and the mean data. Analysis using the SPRE allows for occupational therapists to make generalizations for similar populations when using EASe products as a therapeutic tool.

Implications

The EASe games serve as an appropriate therapeutic home program, as evidenced by the family reports and responses of the children in this study who were able and motivated to play these games independently. Some parents reported that they enjoyed the fact that the EASe games were easy for their children to use at home without the requirement of direct supervision.

Both EASe games, Fun House Treasure Hunt and Off Road Treasure Hunt, can be used as teaching tools for parents and therapists and to begin a conversation about coping strategies for children with sensory sensitivities such as defensiveness. It is recommended that children who have significant sensory and/or cognitive deficits begin playing EASe games under the supervision of an occupational therapist and progress to playing independently as the child becomes more accustomed to the program. When EASe games are used during a therapy session, an occupational therapist can provide the child with redirection, hand-over-hand assistance, or verbal cues for difficult aspects of the games.

These games, as analyzed by the Semiparametric Ratio Estimator (SPRE), can be used to determine a child's current and future potential progress. In this study, game scores were also analyzed to identify the number of days of treatment necessary for each participant to obtain the maximum benefit of modulation of auditory, visual, and vestibular sensory input provided in the EASe Off Road and Fun House games. As indicated by the SPRE analysis of game play using the Fun House game, child participants 1M and 1Q would reach a maximum benefit at Day 34 of intervention, and 1Y would reach a maximum benefit at Day 40. These results indicate that child participant 1Y requires six more days of playing the Fun House game before he/she can tolerate the modified music using the spatial organization, and visual tracking needed to complete the game levels.

When reviewing results of the mean of these three participants, the overall point at which one can expect a change in toleration of sensory input from the game is at Day 7, with the maximum benefit averaging at Day 27. This information is highly valuable for therapists, as it can be used to inform their practice and enables them to ascertain how much therapeutic intervention time or how many therapy sessions would produce the maximum benefit of sensory modulation for each child. These mean results produced by the SPRE analysis suggest that therapists will likely not see change in response to the EASe Fun House game until Day 7 of intervention, and that children should continue through at least 27 days of intervention using these products in order to receive maximum benefit. This analysis also provides quantitative information for setting realistic intervention timeframes for reimbursement of therapy services using these products.

When EASe games are used with children, the child is made aware that he/she can stop the game if the sensory input becomes overwhelming, e.g. the child experiences headache, nausea, or irritability. In such cases, children may return to game play at a later time, when the child feels ready to do so. If children can

learn to monitor their responses in their daily lives in the same way, this self-awareness skill can be of great use to them as they learn to manage sensory input. As a result, they will likely experience less emotional breakdowns, tantrums or other negative reactions in response to sensory overload, and will instead experience improved success in their occupations of learning, socializing, and playing (Dunn, 2001).

The Full Study will be presented at the AOTA conference in April 2013.