

The background is a light green gradient with several white butterfly silhouettes scattered across it. The butterflies are of various sizes and orientations, some appearing as faint, semi-transparent shapes and others as more solid white outlines. The overall aesthetic is clean and soft.

# Evidence-Based Treatments for Autism Spectrum Disorders

# Behavioral Interventions

For children and adolescents 3–21 years

- Behavioral Interventions are alterations made to increase or decrease the occurrence of certain behaviors. They are divided in antecedent interventions that involve modifying the situational events that precede the occurrence of a specific behavior and consequent interventions that involve modifying the environment following the occurrence of a specific behavior.
- The behavioral interventions provide the largest amount of evidence-based studies for children and adolescents between 3-21 years old. The results show an increase in skills as higher cognitive functions, motor skills, academic, communication, interpersonal, learning readiness, personal responsibility, play and self-regulation. On the other hand, behavioral interventions decreased behaviors as sensory or emotional regulation, problem behaviors, and restricted, repetitive, nonfunctional patterns of behavior, interests and activity.
- Examples of behavioral interventions simple and combined are: Joint Attention Intervention, Differential Observing Response, Chaining, Imitation training, reinforcement schedule, Repeated Practice, Extinction + Reinforcement, Stimulus Fading + Positive Reinforcement, Preteaching + Prompting + Positive Reinforcement, Written Task Analysis + Social Scripts + Prompting + Self-Monitoring + Fading.

# Cognitive Behavioral Intervention Package (CBIP)

For children and adolescents 6–14 years

- The Cognitive Behavioral Intervention Package is modified cognitive behavioral intervention programs specifically for individuals with ASD. The modifications mostly include making adjustments to materials or the structure of the session.
- These interventions use some common strategies as: an educational component describing feelings, physical responses to emotions and prevalence of individuals with similar challenges, a cognitive restructuring component in which the therapist assist the individual in modifying cognitive distortions such as all or nothing or catastrophizing, development of scales to identify anxiety or distress, homework assignments requiring some type of recording of behavior or observations, parent sessions in which therapist and parents discuss progress and strategies to support the individual with ASD
- The studies show results from using these interventions for children and adolescents 6-14 years. They showed improvement in skills as higher cognitive functions and interpersonal, personal responsibility and placement, and a decrease in behaviors as sensory or emotional regulation and problem behaviors.

# Comprehensive Behavioral Treatment for Young Children (CBTYC)

For children 0–9 years

- Often described as Applied Behavior Analysis (ABA), Early Intensive Behavioral Intervention (EIBI) or behavioral inclusive programs.
- These programs involve intensive early behavioral interventions targeting essential skills associated with ASD (communication, social, academic skills). CBTYC interventions include the use of discrete trial teaching, errorless learning, shaping, modeling and others. The instructions are given in several settings (home, school, community).
- The studies show results in children up to 9 years old by increasing skills as play, academic readiness, communication, higher cognitive functions, interpersonal and personal responsibility and motor skills, and a decrease in general symptoms and problem behaviors.

# Language Training (Production)

For children 3–9 years

- This intervention targets the ability of the individual with autism spectrum disorder (ASD) to emit a verbal communication by making use of various strategies to elicit verbal communication from individuals with ASD.
- Individualized programs include modeling verbalizations for the individual with ASD to imitate, various prompting procedures including verbal, visual, gestural prompts, Cue-Pause-Point, using music as part of language training, reinforcement for display of targeted verbal response

# Modeling

For children and adolescents 3–18 years

- Modeling is used to show the person a correct way to do something so the person can imitate the model. Due to the fact that children learn based on observations, children are taught what behaviors should be imitated.
- There are two types of modeling: live and video.
- The live modeling is when a person demonstrates the target behavior in the presence of a child with ASD. Some guidelines regarding live modeling is to outline the target behavior, to ensure each individual modeling the behavior do it in a consistent manner, to obtain the child's attention prior to modeling, and to develop a plan when to fade and stop the modeling in order to encourage the child to independently display the target behavior.
- The video modeling is when a recorded person demonstrates the target behavior. This type works with children and adolescents interested in television, movies or in seeing themselves on a monitor. Some guidelines regarding video modeling is to make sure the child is paying attention to the video and to point them out important steps and features during the video.

# Naturalistic teaching strategies (NTS)

For children 0–9 years

- These interventions include child-directed strategies to teach them skills in the home, school and community that include using materials in the environment and naturally occurring activities as opportunities to increase adaptive skills.
- Some guidelines in using NTS is to observe what motivates the child and structure the teaching interactions around those activities, to use materials that children are most likely to encounter on a daily basis, to teach the skills in a variety of situations and settings, to provide consequences naturally found in the environment and have a direct relationship to the activity (for example food as reinforcer at lunch and toys during playtime) and provide loosely structured teaching sessions varying on the child's interest of the day.

# Parent Training Package

For children and adolescents 0–18 years

- This intervention includes training for the parents to implement the various strategies and highlight the parents and caregivers integral role in providing a therapeutic environment for their family members with ASD. The parent training includes in vivo individual training, group training, support groups with an educational component, and training manuals.
- The skills increased were interpersonal and play, and decrease in behavior were related to general symptoms, problem behaviors, and restrictive, repetitive and nonfunctional behavior, interest or activity.

# Peer Training Package

For children and adolescents 3–14 years

- Peer training facilitates skills development on children with Autism by training the peers on how to initiate and react to social interactions with those children. Usually this intervention has been use in school and community settings.
- Results show increase in skills such as learning readiness, communication and interpersonal interaction, and decrease in interest, activity, repetitive , nonfunctional or restrictive behaviors.

# Pivotal Response Treatment

For children 3–9 years

- This intervention is known also as Pivotal Response Training, Pivotal Response Teaching or the Natural Language Paradigm. It focuses on targeting behaviors related to motivation to engage in social communication, responsiveness to multiple cues, self-initiation and self-management.
- This intervention is implemented in the natural environment such as home, school or community and it involves the parents. Results show increase in interpersonal, learning readiness, communication and play skills.

# Schedules

For children 3–9 years

- Schedules can help in increasing the children's independence and helps them plan for upcoming activities. The schedules are used to identify activities to be used during a certain period and the order in which to be completed.
- This intervention helped with the increase of self-regulation.

# Scripting

For children and adolescents 3–14 years

- Scripting is used to provide guidance on how to use language to initiate or respond in certain situations.
- The intervention involves the use of oral and/or written script about a specific situation that will be used as a model and this script is practiced several times before the skill is used in the actual situation.
- Results show improvement in play, communication and interpersonal skills.

# Self Management

For adolescents 15-21 years

- This intervention includes strategies to promote independence with tasks when adult supervision is not needed, accepted or expected.
- The child is taught to evaluate and record their performance while completing the activity, monitor social behaviors and disruptive behaviors, and how to gain access to preferred items/activities when they do a job well.

# Social Skills Package

For adolescents 13-18 years

- This intervention is used to provide the individuals with ASD with the skills necessary in participating in social environments. It uses a wide range of abilities including providing appropriate eye contact, gestures, initiating or ending interaction and reciprocating information.
- Social Skills Package Interventions include the use of reinforcement, prompting and modeling.
- The intervention helped in the increase of communication, learning and play skills and in the decrease of general symptoms, problem behaviors, sensory or emotional regulations, and repetitive, restricted, nonfunctional patterns of behaviors, interests or activity

# Story-Based Interventions

For children and adolescents 3-14 years

- Story-based interventions are a simple way to teach individuals with autism spectrum disorder to manage challenging situations in a wide variety of settings.
- The story based interventions identify a target behavior and involve a written description of the situations under which specific behaviors are expected to occur.
- The most well-known story-based intervention is the social story.
- This intervention helped in the increase of the communication and learning readiness skills and in interpersonal and self-regulation, and in the decrease of the problem behaviors

# Emerging interventions

- Emerging Interventions are those for which one or more studies suggest they may produce favorable outcomes. However, additional high quality studies are needed that consistently show these interventions to be effective for individuals with ASD.
- The following are considered emerging interventions:
  - Augmentative and Alternative Communication Devices
  - Developmental Relationship-based Treatment
  - Exercise
  - Exposure Package
  - Functional Communication Training
  - Imitation-based Intervention
  - Initiation Training
  - Language Training (Production & Understanding)
  - Massage Therapy
  - Theory of Mind Training
  - Multi-component Package
  - Music Therapy
  - Picture Exchange Communication System
  - Reductive Package
  - Sign Instruction
  - Social Communication Intervention
  - Structured Teaching
  - Technology-based Intervention

# Unestablished interventions

- Unestablished Interventions are those for which there is little or no evidence in the scientific literature that allows us to draw firm conclusions about their effectiveness with individuals with ASD. There is no reason to assume these interventions are effective and there is no way to rule out the possibility these interventions are ineffective or harmful
- The following are considered unestablished interventions:
  - Animal-assisted Therapy
  - Auditory Integration Training
  - Concept Mapping
  - DIR/FloorTime
  - Facilitated Communication
  - Gluten-free/Casein-free diet
  - Movement-based Intervention
  - Sensory Intervention Package
  - Social Behavioral Learning Strategy
  - Social Cognition Intervention
  - SENSE Theatre Intervention
  - Social Thinking Intervention

# Interventions for Adults

## Behavioral Interventions

- These interventions target reducing the problem behavior and teach functional alternative behaviors or skills through the application of basic principles of behavior change.
- They include interventions typically described as antecedent interventions that involve the modification of situational events that typically precede the occurrence of a target behavior and consequent interventions that involve making changes to the environment following the occurrence of a targeted behavior.
- These interventions helped increase the communication, personal responsibility and self-regulation skills and decrease problem behaviors

# Interventions for Adults

- Emerging interventions for adults
  - Vocational Training
  
- Unestablished interventions for adults
  - Cognitive Behavioral Intervention Package
  - Modeling
  - Music Therapy
  - Sensory Integration Package

## Reference

- National Autism Center. (2015). *Findings and conclusions: National standards project, phase 2*. Randolph, MA: National Autism Center.