Implementing Garden-Based Intervention within Early Head Start

About US

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Learning Objectives

1. Participants will be able to understand the importance and impact of garden-based interventions in the Early Head Start population.

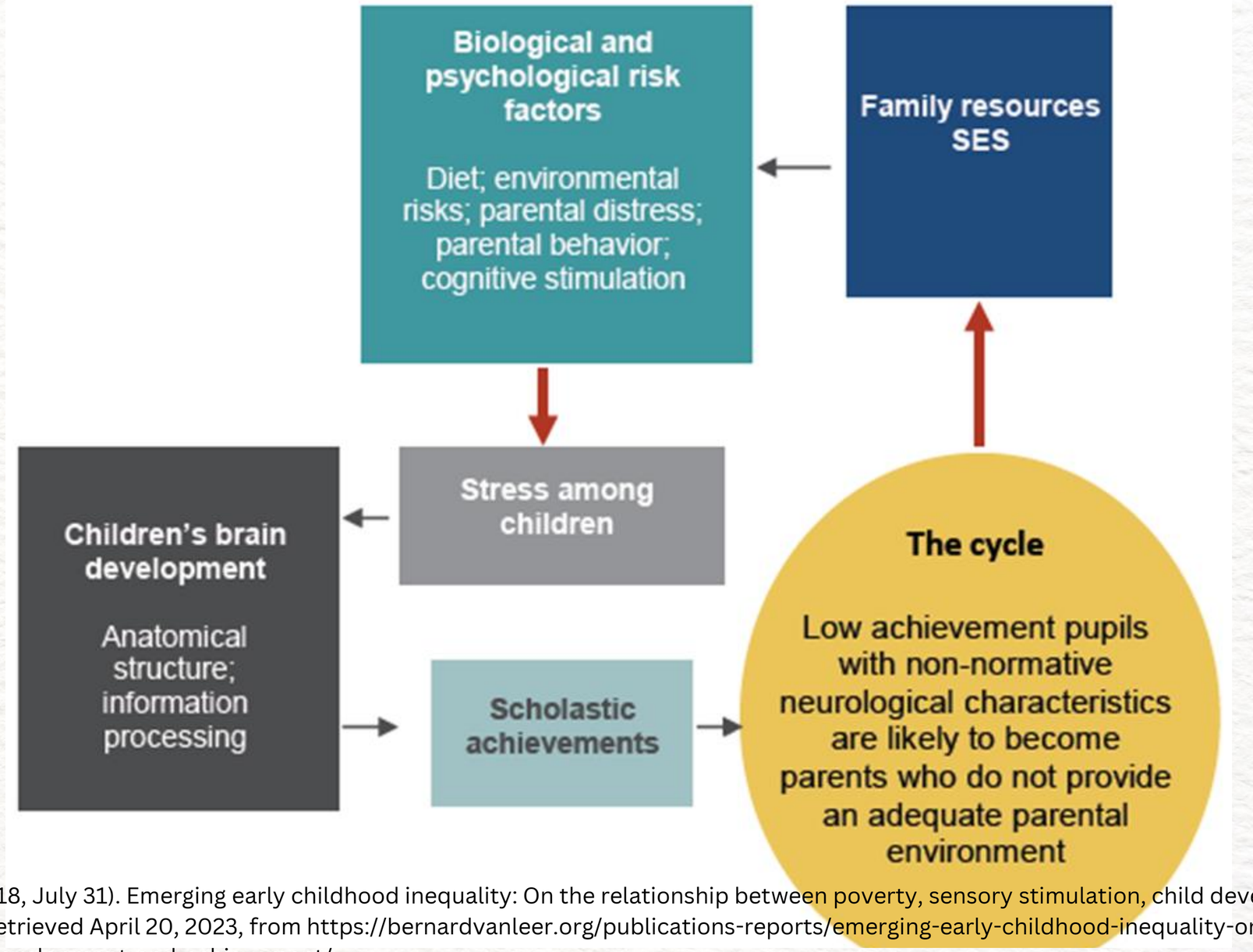
2. Participants will be able to develop a garden-based intervention plan.

3. Participants will be able to implement nature-based activities that target sensory, gross motor, fine motor, and feeding skills.

Early Head Start

Early Head Start is a federally funded preschool program for children ages 0-3. The population consists of families below the poverty line, homeless families, and foster care families.

Figure 4. The relationship between family socioeconomic background (poverty, distress, and stress) and child scholastic achievement



Shavit, Y., Friedman, I., Gal, J., & Vaknin, D. (2018, July 31). Emerging early childhood inequality: On the relationship between poverty, sensory stimulation, child development, and achievement. Bernard van Leer Foundation. Retrieved April 20, 2023, from https://bernardvanleer.org/publications-reports/emerging-early-childhood-inequality-on-the-relationship-between-poverty-sensory-stimulation-child-development-and-achievement/

Research has shown that these children have a **greater risk** in their **overall health and development due to limited exposure to play, sensory experiences, and participation in age-appropriate activities.** (Rybski and Israel, 2019).

Early Head Start

Motor Development

Sensory Processing

Adverse Childhood Experience/ Trauma

Motor Difficulties

- It is often taken for granted that children will learn gross motor skills as they mature, but some need to be challenged with age-appropriate activities in order to develop these skills. (Woodard R., & Yun J., 2001)

- Impoverished environments (lack of resources, toys, materials, etc.) can lead to poor fine motor skills (Liu T., et al., 2015).

Sensory Processing Difficulties

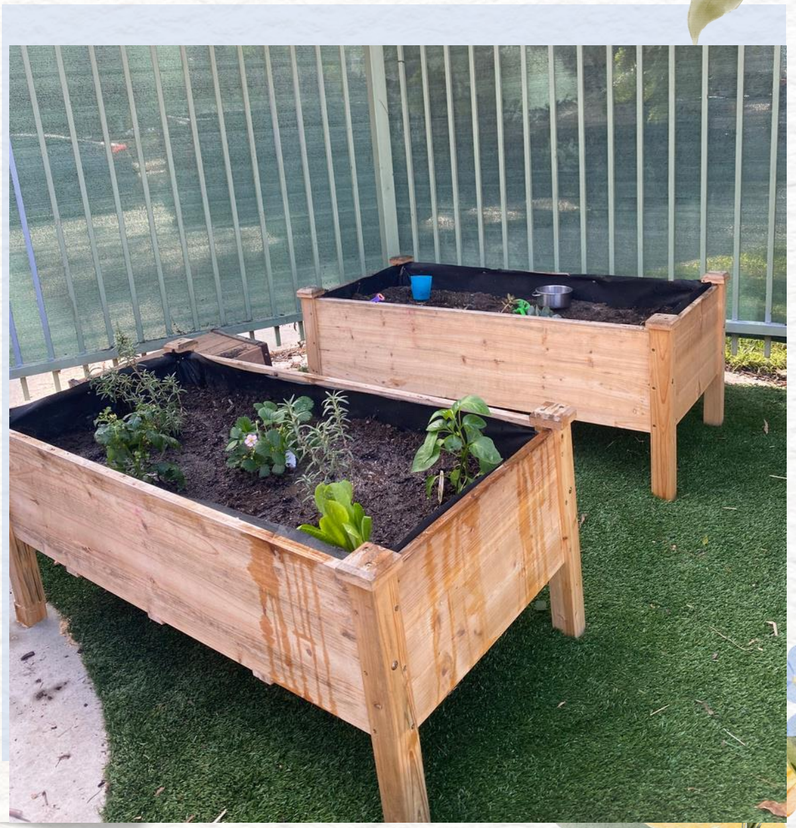
- 35.2% of 105 children in Head Start met the criteria for Sensory Modulation Disorder (SMD) (Reynolds et al., 2008)
- Living conditions and family environments associated with poverty can explain higher rates of SMD
- Children from low-income households were two-and-a-half to three times more likely to meet the criteria of Sensory Modulation Disorder. (Reynolds et al., 2008)
- Early childhood poverty may affect the supply of sensory stimulation which may impact brain development. (Shavit et al., 2018)
- Environmental harshness and unpredictability might impact child's sensory processing sensitivity. (Li et al., 2022)

Adverse Childhood Experiences/ Trauma

- Children living in non-parental care were 2.7 times more likely to have experienced one ACE and 30 times more likely to have experienced four or more ACEs compared to children living with two biological parents. (Lee, K, 2023)

- Foster children in particular are more at risk for experiencing ACEs (Bramlett & Radel, 2014).

Edible Garden Project



Background

- Project Development
- Role of OT in Head Start
- Aligning with the Head Start Early Learning Outcomes
- Nature-Based Interventions

PROJECT DEVELOPMENT

2022 (Spring)

Received grant to start gardening program in Early Head Start

2023 (Fall)

Gardening Program being planned as Tier 1 OT intervention

2024 (Summer-Fall)

Edible Garden is being implemented as Tier 1 OT intervention

Future

- OT continue to provide Tier 1 & 2 intervention utilizing edible garden.
- Increase parent involvement in the program

Role of OT in Head Start

Law: Improving Head Start for School Readiness Act of 2007, P.L. 110-134: authorizes the national Head Start program

IEP/IFSP: OT is involved when a child is identified as having a disability and qualifies under IDEA part B and C (Bowyer et al., 2016)

(Parent permission granted for pictures)

- Occupational Therapy is available on a limited basis in the context of Head Start (Bowyer et al., 2016)
- Occupational Therapists are typically involved in Head Start team when a child is identified as having disabilities (Reynolds et al., 2008)
- Educators identified issue areas (hand-eye coordination, drawing, manipulating objects, eating with utensils, sequencing, picky eaters, behavior management, staying seated and staying on task), but claimed the teachers primarily work on addressing these issues (Bowyer et al., 2016)

Role of OT in Momentum PTN Early Head Start

- High-quality Tier 1 and Tier 2 intervention.
- Use rigorous measures that can readily inform instructional changes through databased decision-making.
- Relies on the use of data to make decisions about:
  - Assessment and intervention planning
  - Overall effectiveness of intervention (Harlacher et al,. 2014)

Aligning with Head Start Early Learning Outcomes Framework (ELOF)

- Outdoors are an essential place for children's learning and are part of the program's daily curriculum delivery.

- Gardening supports holistic learning and support the Head Start Early Learning Outcomes Framework (Perceptual, Motor, Physical Development, Cognition, Language and Communication.

(Parent permission granted for pictures)

Nature-Based Interventions

What does the Research say?

Nature-based interventions provide:

- Varying sensory experiences, resulting in a willingness to incorporate new foods into their diet
- Increased physical activity and socio-emotional development (Skelton et al., 2020).
- Promotes cognitive and social development through active thinking, exploration, and naturalistic learning opportunities (Nazanin Omidvar et al., 2019).
- Improved attitudes and behaviors toward fruit and vegetable consumption (Holloway et al., 2023)
- Improved health and wellness across multiple domains (e.g., activity, nutrition, science learning, social interaction) with the incorporation of just one activity (Wells et al., 2023)

Research about Garden- Based Curriculum

Creating the Curriculum

Research states:

- Gardening activities are a health promotion strategy for children in the U.S. (Davis, et al., 2021).
- 12 week intervention consisted of garden plot design/preparation, learning about plants, growing, harvesting, tasting fruits/vegetables
    - Results showed a postive change in behavior, increased intake of fruits/vegetables and an increase in vegetable preferences (Heim et al. 2009)
- Highlighted the Seven mechanisms of gardening:
    - nutrition-based and garden-based education, experiential learning opportunities, family engagement and involvement, “authority figure” engagement and involvement, cultural understanding and context, multi-level, multi-component, and multi-sectoral, and sufficient duration and reinforcement of strategies (Holloway et al., 2023)

Garden-Based Curriculum

Garden-Based Curriculum

Sessions	Goals	Activities	Materials
S1: Get to know the garden	Allow the children to get familiar with the environment	Scooping and pouring dirt into the raised beds	Raised beds, shovels, dirt, gloves
S2: Planting	Improve fine motor skills through scooping/using tools to make room for the plants AND Improve socioemotional skills to take turns with peers to use tools/engage in activity	Scooping dirt, taking plants out of containers, placing the plants in the soil	Plants (i.e tomato, rosemary, lettuce, bell peppers, cilantro), shovels
S3: Watering the plants	Improve fine and gross motor skills by carrying watering cans/spray bottles to water the plants	Use spray bottles, watering cans, cups, etc. to water the plants	Spray bottles, cups, watering cans
S4: Let's learn about our senses	Increase sensory experiences through engaging with the garden	Have the children interact with the garden (i.e. smell the plants, touch the dirt)	
S5: Sense of belonging	Improve socioemotional skills and increase socialization amongst peers	Have the children work together to carry watering cans, take turns in watering the plants, etc.	Shovels, spray bottles, bucket, watering can
S6: Maintenance of the garden	Improve fine and gross motor skills, socioemotional skills and sensory experiences through engaging with the garden	Have the children water the plants, engage in tactile play, scoop dirt	Shovels, spray bottles, bucket, watering can
S7: Food exploration	Incorporate vegetables grown and seen in the garden into the children's lunches	Touch, smell, squeeze and eat tomatoes. Engage children in pizza making for their lunch	tomatoes
S8: Adding new plants + maintenance	Improve fine and gross motor skills, socioemotional skills and sensory experiences through engaging with the garden	Have the children water the plants, engage in tactile play, scoop dirt	Shovels, spray bottles, bucket, watering can

Parent Involvement

- Created a presentation tailored for Spanish speaking EHS parents on the edible garden prior to starting the program.
- Parents displayed interest and provided suggestions.
- Involving both center-based and home-based parents.

Outcome of the Edible Garden Project

- Increased sensory experiences
- Engagement in gross motor and fine motor tasks
- Improved motor planning and sequencing skills
- Increased purposeful and collaborative play
- Opportunities for food play
- Improved turn taking and sharing toys/tools
- Attention and focus to tasks

Teacher's Perception on the Edible Garden Project

- EHS kids are interested in the garden (7-8 consistent children participating)
- Increased interest in plants during their nature walks
- Children are interested in learning and seeing how things grow, what is growing, exploring their senses (i.e. touch, smell)
- Kids are learning how to be more gentle with their environment

Testimony

Benny (3 y/o)

OT Jasmin enters playground. Benny grabs OT's hand and says “Let's go garden”

Teacher Eileen

“The children run to get water and slowly walk it back to the area so that they wont spill over themselves, they use the shovels to dig and pour soil into the gardening bins. They even sometimes work together to bring the water over, pressing the faucet for their friends and/or carrying a big bowl together.”

Teacher Heydy

“The children have seen the cause and effect of the bell peppers and tomatoes growing from the garden. They have had the opportunity to touch smell and taste the tomatoes from the garden, we even linked it by making pizzas with the tomatoes that the children explored and touched.”

References

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Shavit et al. (2018) explored the impact of low socioeconomic status on brain and central nervous system development. They found that the combination of exposure to high stress and lack of typical childhood experiences during critical periods, leads to inadequate brain and central nervous system development.

McMillen et al. (2019) state that low-income families are less likely to meet nutritional recommendations. Garden-based education may offer the children opportunities to explore varying sensory experiences, which may increase their preferences for food and impact their willingness to incorporate new foods into their diet.

Nazanin Omidvar et al. (2019) state that nature promotes cognitive and social development through active thinking, exploration, and naturalistic learning opportunities.

Shavit et al. (2018) explored the impact of low socioeconomic status on brain and central nervous system development. They found that the combination of exposure to high stress and lack of typical childhood experiences during critical periods, leads to inadequate brain and central nervous system development.

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