

The Future of Preschool Prevention, Assessment and Intervention

Hudziak J, Archangeli C

Child and Adolescent Psychiatric Clinics, North America 26 (2017) 611-624

Introduction

Modern research and scientific knowledge has shown that much is now understood about why some children struggle and some succeed. It is possible to understand how both negative and positive environmental factors influence the structure and function of the brain and therefore human thoughts, actions and behaviours.

Little attention has been paid over the previous 50 years as to why children succeed. Building healthy brains in young children requires healthy environments. Children raised in adverse conditions are at greater risk from many of the negative outcomes of adult life, including psychological conditions, drug abuse, hypertension, diabetes, obesity and cancer. Although some children are able to rise above their adversity and be successful, they are the exceptions.

Whereas most adults have a certain degree of control over their environment, children, particularly the preschool age group, have almost no choice in the type of environment they live in. Understanding the processes by which the environment influences the structure and function of the developing brain and subsequent cognitive and emotional health is a key part of understanding how best to promote healthy brain development in preschool children. An obvious starting point is to help parents create a home environment for their child which protects its healthy brain development. Secondly, it is necessary to ascertain that there are high quality childcare and preschool settings in which to develop, or in some cases undo, the influences of the home environment on the child.

Health promotion

The researchers looked at some of the most important issues of early brain development and give examples of health-promotion strategies for the preschool period. Specifically, areas such as nutrition, physical activity, mindfulness, music and parent training are addressed. The belief is that each of these areas promotes healthy brain development in young children, reduces negative behaviours by the family and can improve emotional health and lead both the child and their family to wellness. For each area there are suggested recommendations that child psychiatrists could make to families.

Understanding the developing brain

The preschool period, defined here as birth to five years, is the most important period of brain development. Research on the ante-natal period shows the effects of maternal mental health states on the structure of a child's brain. Ante-natal anxiety

(this Summary may be photocopied)

affects the development of the hippocampal region of the brain; maternal depression leads to alterations in brain structure in newborns and in late childhood. Exposure to corticotrophin-releasing hormone (the main element in the body's response to stress) through the placenta can affect a child's mental health at five years of age.

In infancy and early childhood the home environment also affects the developing brain. Research has linked maternal support with the development of the hippocampal region of the brain, with a large hippocampal volume associated with high maternal support and lower levels of preschool depression. A smaller hippocampal region and more severe preschool depression are both associated with low levels of maternal support. The negative effects of poverty on brain development have also been shown. Alterations in brain structure can manifest in symptoms such as attention-deficit hyperactivity disorder (ADHD) and anxiety and depression.

Nutrition

Parental influences are shown to have an effect on children's nutrition through various means. For example, maternal obesity in the ante-natal period has been linked to eating disorders in offspring, as well as to autism spectrum disorders, ADHD, anxiety, depression and schizophrenia. Maternal stress hormones in pregnancy increase the risk for obesity in children. Increased structured meal times and responsive feeding, for example not restricting or pressurising a child to eat, are associated with more desirable eating behaviours. Families tend to make healthier eating choices when incentivised.

Previous studies have shown a clear relationship between unhealthy dietary patterns and poor mental health in children and adolescents, and healthy diets with better mental health. It has been shown previously that omega 3/6 fatty acids can demonstrate improvements in ADHD symptoms. The benefits of good nutrition from the ante-natal period onwards have been shown and there is evidence for a connection between parental nutrition and eating behaviour with child nutrition and eating behaviour.

Child psychiatrists recommend families eat structured meals together, including meditating for two minutes before and after meals. Children should be provided with three meals and two snacks each day, with meals and snacks being based on fruits and vegetables, including omega-3 fatty acids such as fish.

Physical activity

Physical activity has been shown to have positive effects on ADHD symptoms, as well as on anxiety, executive function and social disorders. Studies have also shown exercise to cause a moderate reduction of depressive symptoms and bursts of aerobic exercise as short as ten minutes have improved impulsivity in children with behavioural problems. Factors that can affect children's activity levels include maternal employment, travel mode to school and having a television in the bedroom.

Recommendations include 35 minutes of moderate physical activity every day for the whole family, with families finding activities they enjoy doing together where possible. Televisions should be removed from bedrooms and screen time limited.

Mindfulness

Mindfulness has been the subject of great public interest and increasing scientific research over recent years. Mindfulness practice has been used successfully in schools as stress-reduction interventions, with research showing lower levels of somatization, depression, negative affect, negative coping, rumination, self-hostility and post-traumatic symptoms. Mindfulness interventions have shown profound effects in older children and even preschool children have seen positive effects. Research trials are being carried out on the effects of meditation against medication and family-based mindfulness for ADHD. Mindful parenting decreased aggression and increased social behaviour in children with developmental disabilities. Mindfulness interventions can be used throughout the family and affect a child's wellbeing at many important developmental periods. A trial of mindfulness in pregnant women showed lower anxiety and depression scores, which is important given the role of maternal depression and anxiety on child brain development. As mindfulness may improve symptoms of ADHD in adults, this could have a subsequent affect for children of adults with ADHD.

It is recommended that people meditate for five sessions of two to three minutes daily, preferably as a family.

Music

Music therapy has been shown to be effective in addressing a range of symptoms in adults with psychiatric illness. In children music therapy interventions have been shown to have a positive effect on pain, procedure-related distress, anxiety and depression. Playing a musical instrument is associated with more rapid cortical maturation in areas of the brain responsible for motor planning and coordination, visuo-spatial ability and emotion and impulse regulation. Children in at-risk impoverished environments who are exposed to music training develop stronger encoding of speech and increased reading scores. Pregnant women who listen to music show decreased levels of stress and anxiety and improved sleep quality.

Recommendations include learning to play an instrument and playing it for one hour a day for two years. Families should listen to music together and incorporate classical composers such as Bach.

Parent training

Parent training programmes have been shown to be effective, particularly among the three to five year age group. It is expected that interventions will continue to show a positive effect in regard to emotional and behavioural problems such as depression in pre-schoolers.

Parenting choices such as sleep, screen time and reading also have an effect on children. Behavioural parenting interventions and parental education interventions have shown significant reductions in children's bedtime resistance and night-waking. Screen time has been shown to disrupt sleep, and television exposure increases the occurrence and persistence of externalising problems in preschool children. Reading,

however, reduced the risk for aggression in both boys and girls. Research into combined parent training and shared reading intervention showed a significant improvement in parenting behaviours, child behaviours and language development in children.

Recommendations for parent training include training all parents on parent management, with children with sleep disturbances being involved in behavioural interventions around sleep. Screen time should be limited whilst shared reading should be encouraged. A ratio of 1:1 minutes spent reading to minutes of screen time is recommended.

Summary

Growing knowledge of the developing brain and how the home environment affects this is central to the prevention and treatment of emotional and behavioural problems in preschool children. Firstly, a family-based approach needs to be adopted in which parents' strengths and weaknesses are assessed and the strengths built on. By providing parent training for all parents, clinicians can help ensure that the knowledge, skills and attitudes necessary for raising healthy children are widely disseminated. By identifying and treating existing emotional-behavioural and medical problems in parents clinicians can improve overall parental health and place parents in a better position to be able to carry out the lessons learnt in parent training.

The crucial part of this approach is the benefit of working with parents of young children in health promotion. Not only do the recommendations bring families closer together but research shows that each recommendation improves overall cognitive and emotional-behavioural health. By implementing these recommendations health-care professionals and parents together can build healthier preschool brains and hopefully alter the arc of possibilities for all children. The approach of health promotion, illness prevention and family-based intervention will help those already struggling to bring positive strategies into their lives, to prevent at-risk children and their families from developing emotional-behavioural problems, and those who are well will achieve new strategies for raising healthy children.

Dr C. Cunningham