

NIMH Outreach Partnership Program 2011 Annual Meeting

Diagnosis and Treatment of Depression in Preschool Children

Presentation by Joan Luby, M.D.

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At the National Institute of Mental Health's (NIMH) 2011 Outreach Partnership Program meeting, Joan Luby, M.D., professor of child psychiatry at Washington University School of Medicine in St. Louis presented findings from the first large-scale empirical studies on the occurrence of major depressive disorder (MDD) in pre-school aged children.

Highlights

- Contrary to long-standing theory that children are not developmentally mature enough to experience depression, new research suggests that not only can it occur in children, but also in those as young as three to six years of age.
- After following 300 pre-school age children from St. Louis, Dr. Luby and colleagues found that early childhood depression was an extremely strong predictor of later depression.
- Using brain imaging, Dr. Luby and colleagues found that school-aged children who had a major depressive episode in early childhood processed emotional stimuli such as negative emotional pictures or video differently than normal controls. Functional connections were also found to be affected, suggesting that emotions were regulated differently in this group.
- Understanding these differences may lead to opportunities to intervene early before a full-blown episode of depression in adulthood.
- Preliminary results from an intervention called Parent/Child Interaction Therapy Emotion Development are showing robust effects, raising the possibility of a critical period in brain development when changing parents' behavior can help change the child's behavior.

Presentation

Dr. Luby, who, in addition to her professorship, is the founder and director of the Washington University School of Medicine's Early Emotional Development Program, is conducting the first large-scale empirical studies demonstrating that MDD can occur in pre-school aged children, and establishing "developmentally translated" criteria for identification of the disorder.

"Two independent study samples show that children between three and six could get depressed," said Luby.^{1,2} "They have the same core symptoms of depression as adults, except that they are expressed in

¹ Luby JL, Heffelfinger AK, Mrakotsky C, et al. The clinical picture of depression in preschool children. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2003 Mar;42(3):340-8.
<http://www.ncbi.nlm.nih.gov/pubmed/12595788>

the context of a young child's life experience. They also have biological alterations similar to those seen in older children and adults with depression such as increased reactivity to stress. They come from families with higher rates of depression.” She notes that these children also show changes in sleep and appetite, high levels of guilt and anhedonia (i.e., inability to experience pleasure), extreme fatigue, social impairments, and problems functioning in the classroom. Pre-school depression was also a strong predictor of depression later in life.^{1,2,3,4,5,6,7,8}

In a brain imaging study of school-aged children who had suffered an episode of pre-school depression (but may or may not have been currently depressed), these children showed greater brain activation in response to negative emotional stimuli than normal controls did. There was a correlation, too: the more severe the pre-school depression, the greater the brain response to negative emotions. In addition, these children showed alterations in the functional connections among brain regions, suggesting they have deficits in regulating emotion, and reduced hippocampal volume—a region of the brain involved in creating and filing new memories.^{9,10,11}

² Luby JL, Belden AC, Pautsch J, et al. The clinical significance of preschool depression: Impairment in functioning and clinical markers of the disorder. *Journal of Affective Disorders*. 2009 Jan;112(1-3):111-9. Epub 2008 May 16. <http://www.ncbi.nlm.nih.gov/pubmed/18486234>

³ Luby JL, Si X, Belden AC, et al. Preschool depression: Homotypic continuity and course over 24 months. *Archives of General Psychiatry*. 2009;66(8):897-905. <http://www.ncbi.nlm.nih.gov/pubmed/19652129>

⁴ Luby JL, Heffelfinger A, Mrakotsky C, et al. Preschool major depressive disorder: Preliminary validation for developmentally modified DSM-IV criteria. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2002;41(8):928-937. <http://www.ncbi.nlm.nih.gov/pubmed/12162628>

⁵ Luby JL, Sullivan J, Belden A, et al. An observational analysis of behavior in depressed preschoolers: Further validation of early-onset depression. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2006 Feb;45(2):203-12. <http://www.ncbi.nlm.nih.gov/pubmed/16429091>

⁶ Lavigne JV, Gibbons RD, Christoffel KK, et al. Prevalence rates and correlates of psychiatric disorders among preschool children. *Journal of the American Academy of Child & Adolescent Psychiatry*. 1996 Feb;35(2):204-14. <http://www.ncbi.nlm.nih.gov/pubmed/8720630>

⁷ Egger HL, Angold A. Common emotional and behavioral disorders in preschool children: presentation, nosology, and epidemiology. *Journal of Child Psychology and Psychiatry*. 2006 Mar-Apr;47(3-4):313-37. <http://www.ncbi.nlm.nih.gov/pubmed/16492262>

⁸ Wichstrom L, et al., unpublished data

⁹ Gaffrey MS et al., under review

¹⁰ Luking KR, Repovš G, Belden AC, et al. Functional connectivity of the amygdala in early childhood onset depression. In press: *Journal of the American Academy of Child and Adolescent Psychiatry*.

¹¹ Gaffrey MS, Luby JL, Belden AC, et al. Association between depression severity and amygdala reactivity during sad face viewing in depressed preschoolers: An fMRI study. *Journal of Affective Disorders*. 2011 Mar;129(1-3):364-70. <http://www.ncbi.nlm.nih.gov/pubmed/20869122>

Given the plasticity of the developing brain, it is possible that if depression is identified early enough, it might be possible to intervene and change the trajectory of these brain alterations—ultimately stopping or minimizing later episodes of depression.

“We had a really bad snowstorm about a month ago and I asked my 16-year-old to go out and shovel the snow. He dawdled and delayed and procrastinated. By the time he shoveled the snow it was hard as a rock and two-feet deep,” Luby said. “This is akin to the malleability of fresh snow. It’s easy to move fresh snow prior to a hard freeze. You can still move the snow after it’s frozen, but it’s a lot harder and it takes a lot more energy. So the idea about early intervention in a mental disorder is the need to move the snow prior to the obvious build-up.”

One early intervention, called Parent/Child Interaction Therapy Emotion Development, is showing promise. This technique involves parents working directly with their child as a therapist coaches them through an earpiece.

“It focuses on the parent’s role as the emotion regulator for the child, and it focuses on helping young children to develop emotionally,” said Dr. Luby. The initial data are showing robust effects; however, the work is still very preliminary.^{12,13}

¹² Lenze SN, Pautsch J, Luby J. Parent-child interaction therapy emotion development: a novel treatment for depression in preschool children. *Depression and Anxiety*. 2011 Feb;28(2):153-9.
<http://www.ncbi.nlm.nih.gov/pubmed/21284068>

¹³ Luby JL, Lenze S, Tillman R. A novel early intervention for preschool depression: Findings from a pilot randomized controlled trial. In press: *The Journal of Child Psychology and Psychiatry*.