

Depression: Not just for adults

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From a distance, Callie (not her real name) appears to be a normal if quiet 5-year-old girl. But when faced with a toy that blows large soap bubbles—an activity that makes the vast majority of kindergarteners squeal and leap with delight—she is uninterested in popping the bubbles or taking a turn with the gun herself. When offered dolls or other toys, she is equally unmoved. When groups of children congregate to play, Callie does not join them. Even at home, she is quiet and withdrawn. While Callie's mother explains this lack of interest in play as simple "shyness," researchers are now discovering that children as young as 3 years of age can meet the clinical criteria for major depressive disorder (MDD). What's more, they demonstrate patterns of brain activation very similar to those seen in adults diagnosed with the disorder.

Brain Changes in Pre-School Depression

Joan Luby, director of the early emotional development program at Washington University in St. Louis, has been studying pre-school depression for almost two decades. Developmental psychologists have argued that young children did not have the emotional or cognitive competence to experience depression, but Luby's clinical experience contradicted the party line.

"When you think about it, most of the core symptoms of depression are developmentally broad," says Luby. "Sadness and irritability can occur at any age from infancy to very old age. But symptoms like anhedonia were thought to be adult problems because it's often talked about as decreased libido. That, obviously, doesn't occur in young children. But when you

developmentally translate it to an absence of joyfulness, especially when joyfulness is the dominant mood state of young children, you have a pretty robust clinical marker."

Depressed pre-schoolers do not just show synonymous clinical symptoms to adult depression—they also show similar patterns of brain activity when scanned using a functional magnetic resonance imaging (fMRI) techniques. In a study published in the March 2011 issue of the *Journal of Affective Disorders*, Luby and colleagues scanned 11 depressed children with an average age of 4.5 years while they viewed faces with different expressions of emotion. The group found that there was a significant correlation between the severity of the depression and increased activity in the right amygdala, the same pattern of activity viewed in adults with depression.

"There is something about the experience of depression in very early childhood that seems to leave an enduring mark on the brain—these kids are more likely to be depressed as adults, too," she says. "So these results suggest that there may be very early markers of a depressed brain that can be picked up in kids as early as age 4 or 5 and may open the door to much earlier intervention."

Risk Factors for Early Childhood Depression

Daniel Klein, a psychologist at Stony Brook University, is investigating potential factors in early childhood that may predict later chronic depression.

"When clinicians ask a depressed person when they first started feeling depressed, they'll often report having been depressed their entire lives," he says. "It's not clear when the onset is so I study pre-school age children with the intent of trying to identify behavioral and emotional precursors that will later evolve into chronic depression."

He is currently following more than 600 families from the local community sample in a longitudinal study. Though preliminary, a few factors appear to play a large role in the onset of depression later in life.

"In terms of temperament, a lack of exuberance and joy in situations where most kids get very excited about and then a lot of feelings of fearfulness and sadness stand out," he says. "These kids tend to have parents who have a history of depression and we're seeing some abnormalities in electrical activity when we take EEGs. There's some evidence now that these patterns predict not necessarily clinical depression but more depressive symptoms three or four years later."

Treating Children With Depression

While understanding the origins of MDD is of great biological interest, parents of depressed pre-schoolers are more interested in viable treatment options than brain scans. While anti-depressants have been used with some success in the adult population, there is wide concern about whether they should be used in children, let alone children of such a young age whose brains are going through critical periods of development.

"Certainly, with kids, there are all kinds of concerns particular to their age and level of neurological and physical development when we're talking about drug treatments," says Michael Yapko, a former clinical psychologist and author of *Depression is Contagious*. "Despite those concerns, the Food and Drug Administration estimates that 7% of antidepressants are still being prescribed to children."

While Luby does not dismiss the idea of a pharmacological treatment in the future, Luby's lab is currently testing a unique early intervention called dyadic play therapy. Children work with their primary caregivers, who are coached via an earpiece by a therapist, on emotional regulation

and development.

"So far, the treatment appears promising," she says. "We are just now writing up the results of a small randomized, controlled trial suggesting there may be large effect sizes with this intervention."

Both Luby and Klein emphasize that our biological understanding of pre-school [depression](#) is still very preliminary. And while there is no one treatment option for these [children](#) at this point, Luby offers this advice to parents—especially parents who have a child like Callie.

"Be attentive. If you have a child who is persistently irritable, persistently sad, who does not brighten in play or when fun and exciting things happen, that's every bit as much of a concern as a child who is disruptive in pre-school," says Luby. "We don't tend to pay as much attention to it but it is every bit as much of a concern. And treating it early may make all the difference."

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