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Green Spaces: A Vital Key to Young Children's Mental Well-Being

K.C. Compton · Research Lab · Jul 9, 2024 · *6 min read*

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As mental-health professionals, pediatricians, parents and educators weigh how to address what is widely viewed as a mental health emergency facing children and adolescents in the U.S., two recent studies suggest that time in nature may be an important piece of the puzzle.

Though previous studies have indicated that exposure to green space is associated with improved mood, reduced risk of mental disorders and a reduction of attention deficit disorders, most research has focused on older children, adolescents and adults. Few studies have considered whether green space is associated with young children's mental health outcomes. These recent studies suggest that not only can exposure to green spaces positively affect young children's mental health, but that early childhood may be an especially critical time for such exposure.

Dr. Nissa Towe-Goodman was drawn to the research that became the large national study, *Green Space and Internalizing or Externalizing Symptom Among Children*, published in the April 2024 issue of the journal *JAMA Network Open*, after reading about the dramatic effect of lifetime exposure to green space on mental health issues.

(Longitudinal evidence indicates that adolescents and adults raised in low levels of green

daughter was in preschool and Towe-Goodman noticed a dramatic difference in her little girl's demeanor on the days they stopped by the park on their way home to play by the river and hike the park's pathways.

"The transition to school is often challenging for kids," she says, "and I noticed that being outdoors, climbing and playing in nature reliably made such a difference for her. I wanted to take a deeper look at those effects.

"Before I became interested in green space, I was aware how stress is a major risk for young children's mental health. Your stress system and certain behavioral regulatory strategies are developing within that infancy, toddler, preschool period. We think one of the ways green spaces may impact young kids' mental health is through offering stress reduction, a restorative exposure whereby their stress systems can down-regulate."

High-intensity stress for extended periods can impair cognitive development and development of attention skills, which over time can build up and become mental health problems, Towe-Goodman says.

A research scientist at the University of North Carolina at Chapel Hill, Towe-Goodman led a team of researchers who drew their data from the National Institutes of Health's Environmental Influences on Child Health Outcomes program (ECHO), a consortium of socioeconomically and geographically diverse cohort sites across the U.S. that studies environmental factors related to child health. The team studied more than 2,000 children born between 2007 and 2013 living in nearly 200 counties across 41 states. It is the first study to examine the association of green space exposure on internalizing and externalizing symptoms in early childhood across the U.S., Towe-Goodman says.

The study used satellite imagery to estimate live vegetation density up to three-quarters

that greater exposure to residential green space in the 2- to 5-year-old children was associated with fewer internalizing symptoms such as anxiety, depression, withdrawal and sleep concerns. Although green space was also associated with externalizing symptoms such as aggression and rule-breaking, the link was not significant after accounting for the effects of neighborhood poverty.

"We know early childhood is really crucial in terms of developmental plasticity," Towe-Goodman says, "and the child's environmental exposures make a big difference early in development. As kids reach school age, they start getting involved in different activities and are exposed to all sorts of different environments. We were looking at the effect of residential green space. So, our study didn't show that effect in older children (ages 6 to 11)."

Green Space in Tennessee

A more geographically focused study led by epidemiologist Dr. Marnie Hazlehurst as a postdoctoral scholar at the University of Washington's Department of Environmental & Occupational Health Sciences investigated the relationship between residential green space exposures, and child behavioral and mental health, in children aged 4 to 6 in Tennessee. The children were part of the Conditions Affecting Neurocognitive Development and Learning in Early Childhood (CANDLE) cohort within the ECHO consortium, established to investigate determinants of child neurodevelopment. The CANDLE study is a longitudinal pregnancy cohort located in Shelby County, Tennessee, a socioeconomically and racially diverse cohort that included pregnant women enrolled between 2006 and 2011.

The study examined three measures of green space to assess the overall greenness of the

on a wide variety of their 4- to 6-year-old children's behaviors. The final analytic sample comprised 943 children.

Again, higher levels of residential surrounding greenness were significantly associated with lower scores on internalizing symptoms, including anxiety, shyness and emotional reactivity. Lower levels of internalizing problems were indeed associated with higher residential greenness, though not necessarily tree cover or park proximity. Hazlehurst says one of her study's unique aspects was its study of multiple forms of green space, though some of its findings beg further investigation, such as delving into the potential barriers to accessing the green space afforded by tree cover or parks (such as an unsafe environment), despite their proximity to the family's home.

As with Towe-Goodman's study, no associations were observed between green space and externalizing outcomes such as aggression, lack of emotional control and rule-breaking.

The study, *Associations of Residential Green Space with Internalizing and Externalizing Behavior in Early Childhood*, was published in the February issue of the journal *Environmental Health.*

"I was interested in studying green space as a beneficial environmental factor in children's health," Hazlehurst says. "There has been a growing concern that a lack of exposure to nature and kids not spending time outside in natural green spaces is contributing to health problems, including effects on mental health. Most of the prior work had focused on school-aged children, even though we know that early childhood is a sensitive window for the environment to influence kids' brain development."

Hazlehurst said the underlying mechanisms of green space's mental health benefits are

their emotional resources as well—a sort of "forest-bathing" for the pre-K set. Playing outdoors also allows children to build their emotional regulatory capacities through risk-taking, as well as mitigating some environmental stressors such as heat and air pollution.

One of the takeaways from Hazlehurst's research is that green space may be particularly important for children and families with access to fewer resources. Populations with lower socioeconomic status are more likely to experience higher levels of adverse stressors and environmental exposures, she says, and may be more reliant on resources within their residential neighborhoods. More green space in these neighborhoods might help mitigate some of these stressors.

Profound and Lasting Effects

Symptoms like depression and anxiety that develop early in life can continue to have profound and prolonged effects on a person's functioning throughout their lifetime. The protective role of green space during these early years may have long-lasting implications for children's mental health, as both recent studies suggest. The studies add to the body of evidence that preschool children benefit greatly from exposure to nature, from nature-based early learning, outdoor preschools, and programs that intentionally get children out into the green outdoors.

"(Creating more green space) is one of those potentially low-cost benefits not only for young kids, but for the environment and for families," Towe-Goodman says. "We are all increasingly aware of the ways we are intertwined with our environment. If you can help increase exposure to natural spaces, if you can protect those spaces and offer programs to

families early on to increase exposure to the natural areas around them, that seems like a

Resources

An emergency for America's children: *American Academy of Pediatrics Declaration of a National Emergency in Child and Adolescent Mental Health* In late 2021, the American Academy of Pediatrics (AAP), the American Academy of Child and Adolescent Psychiatry (AACAP) and the Children's Hospital Association (CHA) joined together to declare a National State of Emergency in Children's Mental Health. The challenges facing children and adolescents are so widespread that these professional organizations called on policymakers at all levels of government and advocates for children and adolescents to join them in the declaration and advocate for a set of proposed actions to address the crisis. The proposed solutions and the declaration can be found on the AAP website.

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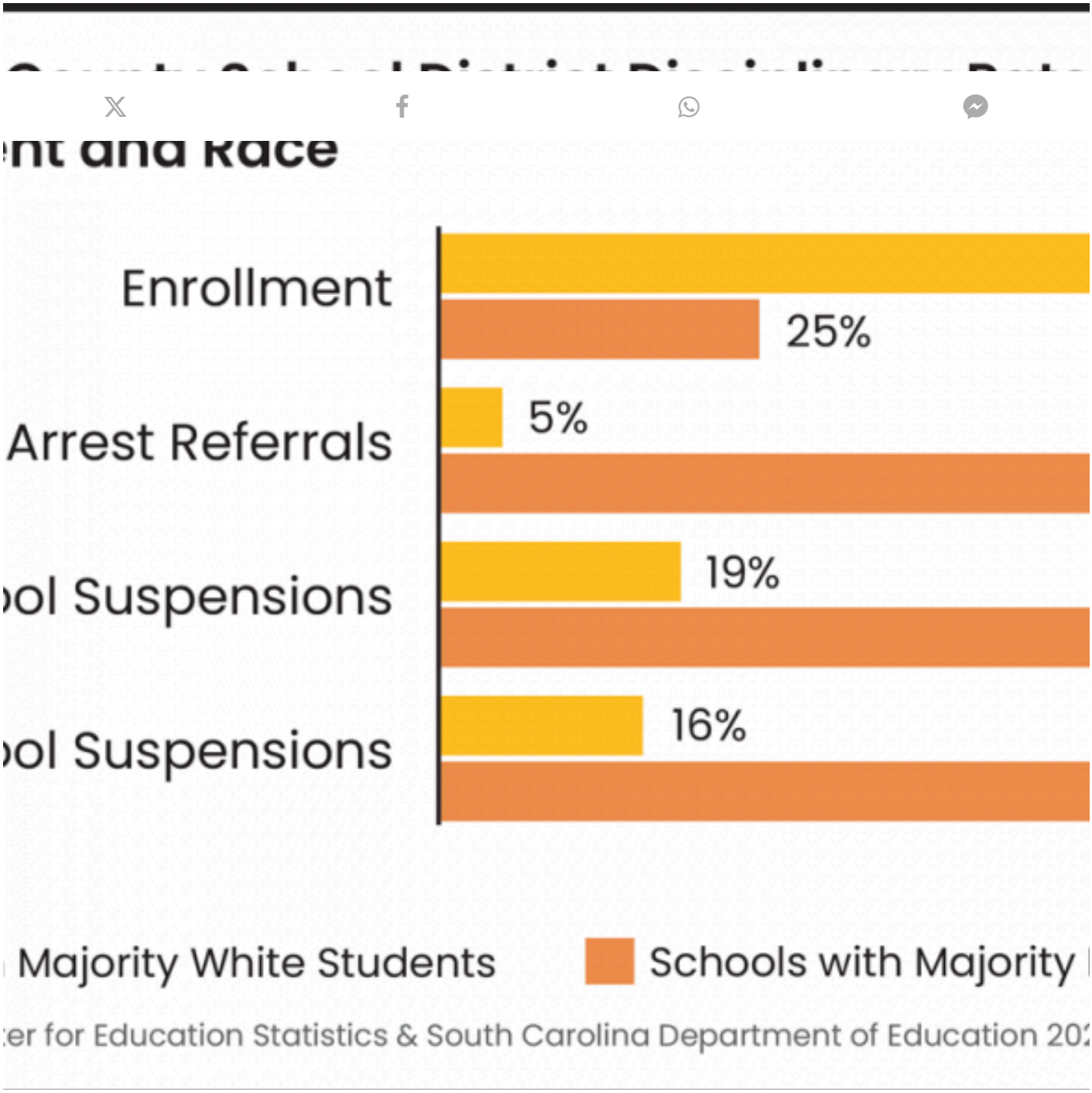
Website

K.C. Compton worked as a reporter, editor and columnist for newspapers throughout the Rocky Mountain region for 20 years before moving to the Kansas City area as an editor for *Mother Earth News*. She has been in Seattle since 2016, enjoying life as a freelance and contract writer and editor.



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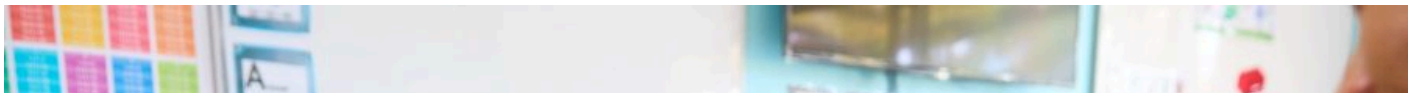

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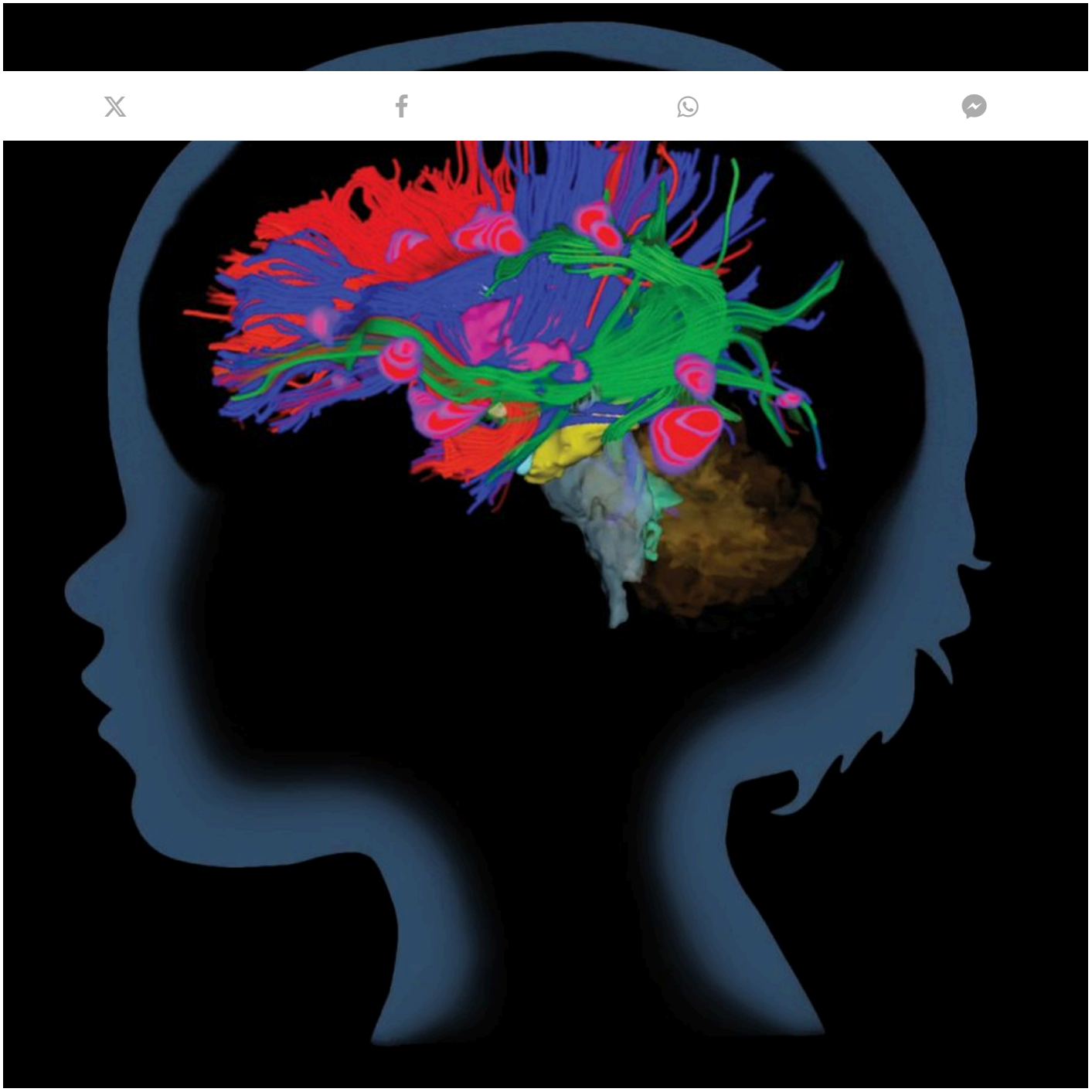

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