Big Things Are Happening When Babies Twitch in Their Sleep

By Paige Towers • July 25, 2016 at 4:13pm

Dogs do it, cats do it — even baby rats do it. Twitching mid sleep sleep is a natural phenomenon in all mammals. And who hasn't stared at a sleeping baby or an adorable puppy, watched it twitch and then uttered an 'awww' while wondering what it was doing in its dreams? But the slight jerk young bodies exhibit during sleep is not a symptom of dreaming. Rather,

, a researcher in the Department of Psychological and Brain Sciences at the University of Iowa, has shown mammals twitching in their sleep is an essential part of child development.

Dr. Mark Blumberg

Dr. Blumberg, who has been studying child development for over 30 years, is currently researching the 'sleep twitch' patterns of human infants in order to prove the connection between twitching and the development and maintenance of the motor skills. And although it's unclear when that research will be published, Dr. Blumberg believes that the implications of it may change the way that we monitor the healthy development of babies.

Until he publishes the forthcoming study, we can turn to Dr. Blumberg's 2015 previous work concerning twitching in baby rats to understand the implication. After monitoring the movement and brain activity of young rodents, Blumberg concluded that "When the animals are twitching, they're producing a ton of activity in the brain."

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So what's the big deal with twitching? Dr. Blumberg proposes that the act can be thought of as a form of motor exploration — meaning baby mammals use their time in active

sleep to make connections between their brain, spinal cord and other body parts. Sleep may just be the perfect time for babies to figure out how neurons and muscles relate to each other. Thus, when a healthy baby wakes, they may have gathered enough connections between how sensory input specifically affect motor output that they can now, say, grasp a piece of food with their adorably tiny hands.

In regards to his current research on human infants, Dr. Blumberg thinks there are signs for how the patterns of twitching progress as the babies get older.

“The first thing we started noticing was certain patterns of twitches — like twitches in the head or in the neck muscles [...] tend to predominate in infants from 23 months. What’s interesting about that is that in those first few months, infants are starting to stabilize their neck muscles so they can control their head movements,” said Dr. Blumberg. “And by the time they have control of their head movements, those twitches have disappeared.”

The good doctor went on to say that other movements, such as those that occur in the hand and fingers, follow soon after. This suggests that, in the future, we may be able to use twitches as a way to document child development. In fact, Dr. Blumberg even envisions this area of research being labeled as a “sleeping skill,” just like how doctors look measure the development of fine and gross motor skills.

In addition to serving as a developmental marker for parents and doctors to hopefully reference, Dr. Blumberg's research also has possible implications for adults who have suffered physical trauma.

“The hope would be is that it’s used as an indicator of problems, like strokes, [...] mental disorders, like autism perhaps, which has major motor problems associated with it,” said Dr. Blumberg. “The idea is we get a really good sense of what typical development looked like, then we would also be able to understand something about atypical development.”

Right now, Dr. Blumberg is taking another look at his work with baby mice in order to evaluate patterns of twitching based on age. He hopes his efforts will allow him to create two models for twitching development: one for mice, one for humans. (Baby mice seem to twitch their whiskers a lot at first, for instance, and then later start twitching their limbs.)

In addition to serving as a developmental marker for parents and doctors to hopefully reference, Dr. Blumberg's research also has possible implications for adults who have suffered physical trauma. For instance, stroke patients may be able to remake those neural to limb connections they lost through the process of sleep twitching.

Dr. Blumberg also theorizes that amputees fit with prosthetics may benefit from future research on how the brain recognizes and correlates with body parts during sleep. Those with replacement limbs often take off their prosthetics at night, but Dr. Blumberg wonders if it’s during sleep when the neural system may calibrate and explore its connection to the foreign part.

But if twitching is so important to child development, then why do adults still do it in their sleep? Dr. Blumberg doesn’t have the answer yet. He suggests, however, that twitching, much like rapid eye movement, may serve some sort of maintenance purpose.

“Parts of the body that have been mapped out may not need [...] twitching," he says. "but when you get into things that are sensitive, such as eyes and whiskers and digits that are

constantly in motion and doing important cognitive and sensory tasks — it could be the calibration of these systems that is what twitching is doing."

Are you a parent of a newborn baby? The

at the U of I is asking parents to complete a survey in their efforts to better understand twitching during sleep and child development. You can take it

Sleep Development Lab

here.