

## A little about our collaborator Dr. Richard Davidson

Dr. Richard Davidson is the director of the Waisman Laboratory for Brain Imaging and Behavior and the Laboratory for Affective Neuroscience at the University of Wisconsin-Madison. His collaboration with the Twin Research Program concerns a set of on-going research studies examining the neurobehavioral bases of emotion regulation in adolescence. Dr. Davidson holds two distinguished professorships at the University of Wisconsin-Madison and has published more than 250 articles, chapters and reviews, and has edited 13 books. He earned his Ph.D. in 1976 from Harvard University and has been at Wisconsin since 1984. Dr. Davidson was the founding co-editor of the new American Psychological Association journal, *EMOTION*. In 2000, he was the recipient of the most distinguished award for science given by the American Psychological Association – the Distinguished Scientific Contribution Award. In 2003 he was elected to the American Academy of Arts and Sciences and in 2004 he was elected to the Wisconsin Academy of Sciences, Arts and Letters. He was named one of the 100 most influential people in the world by Time Magazine in 2006. In 2006, he was also awarded the first Mani Bhaumik Award by UCLA for advancing the understanding of the brain and conscious mind in healing. For more information about Dr. Davidson and his research visit: <http://psychz.psych.wisc.edu/>





## Thank you



Thank you for participating in home visits, telephone interviews, and questionnaires! Your perspective is invaluable to our research. We enjoy meeting so many wonderful families. Your participation contributes to advances in child development research and improves our understanding of individual differences and the complexities of personality and behavior. ☺ Enjoy your twins!

Moving? Want to get involved? Contact us now!

 (866) 230-2560 (toll free)

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# Wisconsin Twin Research

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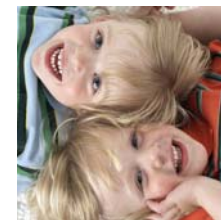
UW Dept. of Psychology  
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Waisman Center  
Arizona State University  
Medical College of Wisconsin

### Featured Results

Empathy, Happiness &  
Prefrontal Brain Activity

by S. Light, J. Coan, C. Zahn-Waxler, C. Frye, H. Goldsmith &  
R. J. Davidson  
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It's double the giggles and double the grins, and double the trouble if you're blessed with twins. ~Author Unknown

## Research Update

Nicole Schmidt, Project Manager

It was a somewhat bittersweet end to our summer data collection. On August 31, we visited our last family for our study of 1<sup>st</sup> and 2<sup>nd</sup> graders. In total, over 700 families welcomed us into their homes over the last ten years. We estimate we have traveled over 166,052 miles throughout Wisconsin and surrounding states – that's equivalent to nearly 7 times around the earth! Our journey took us through all sorts of weather including the snowiest December on record for Madison. We can thank each of you and *Google Maps* for always helping us find our way. We truly enjoyed spending time with you and will miss the fun these visits brought. The end of the first grader study allows us to devote more time to writing empirical papers and working on our adolescent studies. We continue to spend each weekend day visiting families with adolescent twins around the state and have begun following up with the oldest sets of twins for another interview. In an effort to save our resources, this will be the last newsletter mailing for the entire Twin Panel (over 6,000 households). Updates and newsletters will appear online each spring and fall at <http://www.waisman.wisc.edu/twinresearch/newsletter/s/index.shtml> and actively participating families will continue to receive a mailed version. After a busy

summer, it's good to be home more again and enjoy another change in the seasons.

With gratitude,

*Nicole*



A view of the main entrance of the Waisman Center from the north side of the complex.

## Exploring Culture in Our Studies

Our twin studies present a unique opportunity to learn how culture and family background influence child behavior and emotion. **We are committed to upholding a national standard of culturally sensitive research, so we need your help!** We want to enroll more families of ethnic-minority descent, including African American, American Indian, Asian, Hispanic and other families of twins with diverse backgrounds. Families are paid for participation. If you or a family you know may be interested in learning more about this research opportunity, please call us toll-free at (866) 230-2560 or email Patrick at [pheath@wisc.edu](mailto:pheath@wisc.edu)



## Featured Results

### Empathy, Happiness, & Prefrontal Brain Activity

Sharee Light, graduate student

Empathy is a complex emotional state that emerges later in development than basic emotions such as happiness and fear. The prefrontal cortex is a structure in the brain that plays an important role in a variety of functions, including emotion, working memory, and learning, but little is known about prefrontal activity (EEG) and empathy. The role of the prefrontal cortex in empathy is particularly interesting because the occurrence of empathy depends on the ability to engage in a series of complex tasks (holding emotional information, switching attention between one's own emotional state and the emotional state of another person, and synthesizing the information into an appropriate emotional response).

This study examined empathy through a behavioral task and EEG activity during a fun task. The study included 128 twins ages 6-10. Happiness was captured during a fun task in which a can designed to resemble a can of edible nuts was given to the child. The can actually contained a slinky toy that popped out upon opening. An experimenter demonstrated this to the child and then the child offered the can to an unsuspecting parent. The task was videorecorded and the child's EEG patterns were recorded. The child's intensity of smiling was coded during the task. The empathy task was administered on a separate day and involved the experimenter simulating pain for 30s after clipping a finger in a clipboard. The child's facial, vocal, and bodily responses were coded for empathetic concern.

**Results:** Similar levels of empathy were displayed in 6-yr-old children and 10-yr-old children. Children who exhibited empathetic concern exhibited right and left prefrontal activity during the fun task. Children who exhibit empathetic happiness tend to exhibit symmetrical prefrontal activity. **This novel evidence showed for the first time that changes in prefrontal brain EEG during a positive task in children are related to behavioral measures of empathy** obtained during a separate experimental session. The child's ability to flexibly shift between negative and positive emotional states based upon contextual information may provide an optimal substrate for expressing certain forms of empathy. Sustained maintenance of equal amounts of left and right prefrontal cortex activity during a fun task may indicate that these children generally maintain a relatively neutral emotional set-point that may tend to make them particularly willing to vicariously absorb the positive emotion of others.

Published 2009 in *Child Development*, 80, 1210-1231.


## Twins and Research on Autism


We estimate that there are as many as 200 pairs of twins in Wisconsin under the age of 18 in which one or both twins has autism or some other form of pervasive developmental disorder (PDD-NOS or Asperger Syndrome). We have great personal and scientific interest in these disorders. In the first phase of our current work, parents are interviewed via telephone about their children's developmental and medical history. The interview generally takes 45-60 minutes and can be scheduled whenever is convenient to the family. Families are paid \$25 for participating in this interview. In the next phase, we re-contact some families and ask them to participate in a follow up interview, which is also compensated.

In order to accurately assess the prevalence of autism in twin pairs, we would like to know if your family or someone you know has a family where one or both twins have some form of autism, even if they choose not to participate. Thus far, we have located about 160 twin pairs in which one or both has autism or a related challenge. We would appreciate a phone call or email from parents of twins with autism living in Wisconsin. It is not important if the twins are identical or fraternal, boys or girls, or even if the co-twin has any behavioral issues or not; we are interested in all aspects of the autism spectrum.



Please contact Kristin Oden for more information:

 (866) 230-2560 (toll-free)

 (608) 262-5574 (local)

 Email: [tap@waisman.wisc.edu](mailto:tap@waisman.wisc.edu)

## Fun Facts: 1<sup>st</sup> & 2<sup>nd</sup> Grade Study

"Twin" comes from the German word "twine" meaning "two together"

We visited **287 different cities**

The furthest home visit: 5hrs away, **644 miles roundtrip**

**195,770 minutes** conducting telephone calls – that is equal to 136 straight days of phone conversation!

**218 students and staff** assisted with data collection