This past March, astronaut Scott Kelly returned to Earth after a record 340 days on the International Space Station. Scott Kelly and his identical twin brother Mark Kelly are taking part in an ambitious research project that examines how living in space affects long-term health. The research topics span immune function, cancer risk, cardiovascular disease, and more.

Scott Kelly initiated the idea for the NASA Twin Study. NASA planned to track his health over the course of his mission. Scott asked if it would be possible to do a comparative study between himself and his twin. NASA jumped at the spectacular opportunity and invited researchers to submit proposals. There was an overwhelmingly positive response from the scientific community. Over 40 proposals were submitted and ten were selected. The combination of both astronaut experience and genetically identical twin status make this endeavor a truly unique scientific opportunity.

What’s being studied?

- **Human physiology**
  Some studies examine on a molecular level how life in space triggers changes in organs such as the heart, brain or muscles.

- **Behavioural health**
  One study tests each twin’s perception, reasoning, decision-making and alertness to determine how spaceflight affects cognitive performance.

- **Microbiology**
  Researchers are examining how the brothers’ diets and stress agents affect their gut microbiome, the organisms that live in their digestive systems.

- **Molecular Omics**
  Several teams are studying the way genes are turned on and off in the twin’s cells. They are examining biomarkers to understand how stress agents in space affect astronauts on a cellular level.

Initial scientific publications are expected in 2017. This research will play a crucial role in preparing astronauts to Mars by the 2030s.

learn more: https://www.nasa.gov/twins-study

“Twins: two unique souls united by birth.”
-- Unknown Author
Dear twins and parents,

Our research project continues to make important progress as we publish from assessments conducted nearly twenty years ago. In the past year alone, more than twelve publications were generated from data we collected on twins and their families. A major theme in our research is the interplay of genetic and environmental influences on emotion (e.g., joy, fear, anger) and cognition (e.g., attention). Each publication underscores the importance of experience in explaining how individuals differ. In the coming year, we will relate our early childhood measures with updated contact information. Our study coordinators to accommodate schedules. Drop us a note if you received a voicemail or letter. We would love to catch up with more of you!

We hope to bring a total of 640 twins to UW-Madison before summer 2018. More than 270 twins have already attended an on-site neuroimaging visit; as more twins participate, we will build a stronger scientific narrative of adolescent development. For instance, some of our findings may generalize to all teens, others may be specific to boys or girls, and some findings may depend on the quality of family and peer relationships. To better understand adolescent development, we need to bring in a large group of twins to explore these important research questions.

As you can imagine, it is not easy to stay in contact with several hundred families. We appreciate your emails and phone calls with updated contact information. Our study coordinators schedule neuroimaging sessions on weekends and school breaks to accommodate schedules. Drop us a note if you received a voicemail or letter. We would love to catch up with more of you! Have a wonderful holiday season!

Sincerely,

Fun Facts

About 25 percent of identical twins develop facing each other, meaning they become reflections of one another. They may have birthmarks on opposite sides of the body, or have hair that swirls in opposite directions.

22% percent of twins are left handed, compared to 10% in singletons.

Nigeria has the highest rate of multiple births and more identical twins than any other countries.

Emotion theorists identify fear, anger, sadness, joy, disgust and surprise as basic emotions. In general, emotions can serve many functions: as tools for communication and also as adaptive mechanisms to motivate behavior and enhance survival. J. B. Watson, the founder of behaviorism, viewed infant positivity as a sign of one of the innate emotions (love; Watson, 1930). Positive affect, though relatively understudied, is related to several positive outcomes throughout the life span; children higher in positive affect have more secure parent–child relationships, stronger peer relationships and prosocial behaviors, and better physiological regulation of emotions.

Positive affect is exhibited with expressions of laughter, smiling, positive motor behaviors and vocalizations. Though infants begin to smile reflexively in response to stimuli around three weeks of age, the first emotionally responsive social smile is not apparent until closer to two months of age; laughter appears around four months and more social laughter 12 months of age. From an evolutionary perspective, the social smile becomes an integral component of socio-emotional development, with infants and caregivers utilizing smiling as a tool to enhance attachment bonds. Infants can exhibit positive affect as both a response to positive stimulation and also to make bids for caregivers’ attention and elicit responsive and sensitive caregiving.

Twin studies comparing behaviors across identical and fraternal twins can detect genetic and environmental effects on positive affect by analyzing similarities and differences between the twin pairs. We examined how positive affect increased from 6 to 12 months of age and also what mechanisms were responsible for the development of positive affect. Our results indicated that positive affect at the age of 12 months, but not at six months, was related to parent affect and positive family environment. This pattern may indicate that infants learn over time to effectively engage with caregivers and elicit positive responses, or that infants learn affective expression from their caregiver’s positive behaviors.

Contact Info Request

Help us keep our records up to date. Please email or call us with your current telephone numbers and address.

Enjoy the winter!

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