From the Principal Investigator

We are about to enter the 13th year of the Stony Brook Temperament Study, and are so grateful for your participation, starting from the time your child was three-years old, and continuing through the 6, 9, and 12-year old phases. We greatly appreciate all your help and support for this unique and ground-breaking study of child development.

Now your children are adolescents. Few large samples of children have been followed from preschool into adolescence to examine the full range of biological, psychological, and environmental influences on adolescent development. With your help, we hope to continue the project until your children are young adults.

We have already published 67 scientific papers from this study, providing new insights on topics ranging from genes, hormones, neural activity, temperament, emotion, attention, memory, psychological symptoms, parenting, peer relationships, and life stress. In this issue of the newsletter, we provide brief summaries of nine of these papers to give you a taste of some of the issues you have helped us to examine.

However, the most important contributions are still to come. We will be able to see how early temperament and related biological and environmental factors influence children as they develop through adolescence and cope with all the challenges associated with this critical period. This should provide important clues that will help professionals and parents provide better guidance for youngsters in the future.

In this next phase of the study, we will invite you and your 15-year old to return to our lab, followed by a briefer assessment about one month later in your home. As always, we are grateful for your participation in whatever aspects of the study you are comfortable with, as every bit of information is extremely helpful.

Again, thank you for partnering with us in this ambitious and ground-breaking project. We hope that we can continue to count on you for this phase, and in the years to come.

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Many of us were affected by Hurricane Sandy several years ago. We had to deal with power outages, gas shortages, schools closing, and for some, damage to home and possessions. In this study, we looked at how parents were affected by stress from Hurricane Sandy, and how this was affected by their personality traits. In particular, we looked at the adult temperament traits of positive and negative emotionality. Positive emotionality refers to things like joyfulness, exuberance, engagement with the environment, and sociability. Negative emotionality refers to tendencies to feeling sad, angry, or fearful.

We found that parents who showed lower levels of negative emotionality or higher levels of positive emotionality were less likely to experience depressive symptoms if exposed to high levels of stress from the hurricane. On the other hand, parents with higher levels of negative emotionality or lower levels of positive emotionality experienced more depressive symptoms if they were exposed to high levels of hurricane-related stress. These results suggests that we might be able to identify who is most vulnerable to depressive symptoms before they experience major stressors, and possibly intervene early to help those individuals better cope or adjust to stress.

The ability to display socially appropriate behavior is an indicator of a child’s academic success and peer acceptance, and a number of factors have been shown to influence this ability in childhood. Two of these factors are parenting and temperament, and research has shown that they don’t just operate independently. In fact, they interact to shape a child’s ability to display socially appropriate behavior.

Generally, it has been shown that temperamentally difficult children are more vulnerable to the effects of negative parenting, but relatively little is known about the impact of positive parenting on these children. Since we know that positive parenting tends to foster more socially appropriate behavior in children, we studied how both positive and negative parenting interact with a measure of temperamental dysphoria (a temperamental trait that includes displayed anger, hostility, sadness and pushiness) in 3-year old children when predicting children’s socially appropriate behavior at the start of formal schooling (age 6).

There were two main findings from this study. First, temperamentally dysphoric children exposed to positive parenting (as defined by high positive affect and warmth) were more likely to display socially inappropriate behavior at age 6. Conversely, children with a low level of temperamental dysphoria exposed to positive parenting showed more socially appropriate behavior at age 6. One possible explanation for this is that positive parenting could actually reinforce a child’s behavior, so highly dysphoric children learn to maintain that behavior, as do children low on dysphoria.

The second finding was that children exposed to high levels of both positive and negative parenting displayed the most socially inappropriate behavior at age 6, perhaps because these parents are perceived as unpredictable, and unpredictability has been shown to contribute to negative outcomes, like aggressive and oppositional behavior, in children. These new findings shed light on how a child’s temperament interacts with parenting to predict functioning in later childhood.

Do boys and girls differ in basic temperament characteristics? If so, in what ways? We addressed these questions in the Stony Brook Temperament study by joining with two other studies of young children from the University of Western Ontario and Northwestern University, totaling 865 children from ages 3-5. The study used several methods of gathering information on children’s temperament — we asked both the children’s mothers and fathers, and observed the children’s behavior directly in the laboratory. Across all three sets of measures, girls showed higher levels of positive emotions, such as joyfulness and exuberance, as well as higher levels of cautiousness/fearfulness. In contrast, boys exhibited higher levels of activity than girls across all assessments.

There were also some differences that were detected using only one set of measures. According to mothers’ reports, girls displayed more negative emotions, particularly sadness, compared to boys. In addition, according to fathers, girls were less social than boys. However, when observed in the laboratory, girls were rated as more social and less negative than boys. It could be that this difference is because sociability includes both socially dominant (e.g., power, leadership) and affiliative (e.g., warmth, friendliness) behaviors, and fathers focus more on the former, while the lab setting pulls more for the latter.

Interestingly, while this study did find differences in young boys’ and girls’ temperament traits, these differences were smaller than the sex differences that other researchers have observed in adults. This suggests that some components of gender differences likely change across development, possibly as a result of differences in how boys and girls are socialized.

Mood-related problems are common, and particularly among women with young children. While extensive research has explored how children are negatively impacted when their mothers have mood-related difficulties, not many have examined the role that children’s moods and behaviors have on their mothers’ emotional health. This study investigated the effects of child temperament and emotional and behavioral problems on later maternal mood. This research also analyzed the role of maternal marital satisfaction on these effects.

As part of the Stony Brook Temperament Study, a large sample of families with 3-year-old children participated in follow-up assessments when the children were approximately 6 years old and again at 9 years of age. Interviews and questionnaires were obtained from both parents to assess child characteristics, maternal mood, and mothers’ marital satisfaction.

We found that pre-school aged children with temperamental negative affect (e.g., proneness to sad, anxious, and irritable mood) and emotional and behavioral issues predicted an increased likelihood that mothers would develop mood problems 6 years later. Furthermore, higher levels of child behavioral difficulties at age 3 predicted lower levels of marital satisfaction 3 years later, which then led to an increased risk of maternal mood-related concerns when the children were 9 years old.

These results suggest that early child traits and symptoms may influence mothers’ later mood problems both directly and indirectly through their effect on the parents’ marital relationship. These findings suggest that treatment of early child emotional and behavioral problems may reduce the potential for maternal mood complications later in life.

Cortisol is a hormone which plays an important role in how our bodies respond to stress. In this study, we looked at data from when the children in the Stony Brook Temperament study were three years old, and again when they were six. We were interested in understanding the links between the overall quality of the relationships between children and their parents, children’s cortisol levels when they visited our laboratory, and how these interact to influence how child temperament develops over time. In particular, we were interested in the development of children’s positive and negative emotionality. Positive emotionality refers to things like how joyful and exuberant the child is, how they react when good things happen to them, and how sociable they are. Negative emotionality refers to tendencies towards feelings of sadness, anger or fear.

We found that for children who show higher levels of cortisol, a better quality relationship with their parent when they were three years old predicted decreases in negative emotionality when they were six years old, meaning these children were less likely to experience feelings of sadness, anger, or fear. For children who showed lower levels of cortisol, a better quality relationship with their parent when they were three predicted increases in positive emotionality when they were six years old.

Overall, this study helps to understand both environmental (parenting) and biological (cortisol) factors that influence how children’s temperament changes over time.

Children differ in how sociable they are. Some are very outgoing, while others are shy. However, there is more than one form of shyness. Some children are nervous to interact with other because they are afraid other children won’t like them, or might reject them; this is often referred to as “conflicted shyness.” Other children prefer to stick to themselves; they aren’t inclined to play with others and are happy to play by themselves. This can be referred to as “social disinterest.” In this study, we looked at how these two types of shyness related to symptoms like depression, anxiety, and behavior problems, such as aggression and defiance.

While results were a bit different for boys versus girls, in general we found that children who are shy because they worry about being rejected by other children are more likely to experience symptoms of depression or anxiety, and are somewhat more likely to show behavior problems. These results suggest that parents and teachers might want to keep an eye out for children who seem shy because they are afraid of others rejecting them, and indicate that helping children with social skills and making friends may be helpful in preventing symptoms of depression or anxiety.

Previous neuroscience research has shown that when anxious adults and children make an error, they are more likely to show greater neural reactivity in brain regions associated with pain, threat and punishment. We wondered whether this neural reactivity is also related to heightened risk for anxiety disorders. That is, if you show greater neural reactivity in response to committing an error, are you at greater risk for developing an anxiety disorder? We were able to test this possibility using data collected from the Stony Brook Temperament Study. As you may recall, when children were six-years-old, they completed a task in which they were asked to respond to upward pointing triangles and withhold their response to all other triangles. We used EEG to record their brain activity immediately after they made a mistake on the task. When children were nine-years-old, we assessed children for anxiety disorders.

We found that, among children who were not anxious at age 6, those who went on to develop an anxiety disorder at age 9 showed heightened neural reactivity in response to errors at age 6, compared to those children who did not develop an anxiety disorder. This is the one of the first studies to identify neural predictor of the onset of anxiety disorders. These findings suggest that children who may be more worried about behavioral competence and performance may have a greater probability of developing an anxiety disorder later in life and error-related brain activity may be a target for efforts to prevent anxiety in youth.

Effortful control refers to the ability to inhibit a dominant response in order to receive a reward later on (e.g., delayed gratification). Previous studies suggest that both genetics and early parenting affect effortful control. When children visited our laboratory at age 3, they participated in two tasks that measured their effortful control. In the Tower of Patience and Snack Delay tasks, participants played games in which they had to wait increasing amounts of time before they took their turn placing a block on a tower or taking a candy placed in front of them. We recorded how many times the child placed a block out of turn or took the candy before they heard the bell. We also collected genetic samples. In a second laboratory visit, a parent and the child performed a set of tasks together (e.g., copying a design, reading a story). We coded parent-child interactions for a number of factors, including positive parenting (parents’ confidence and positive affect towards their child) and negative parenting (hostility and intrusiveness).

The results showed that young children who received positive parenting were better at waiting their turn, while those who received negative parenting more often failed to wait their turn. Additionally, a specific gene involved in regulating the neurotransmitter Dopamine also had an effect on children’s ability to wait their turn. Children who were exposed to negative parenting and also had a particular variant of this gene were less likely to wait their turn. Effortful control in children exposed to negative parenting who did not have this gene was similar to the other children in the sample. These findings show that the both parenting and genetics, and particularly the way in which genes and environment interact, play important roles in the development of young children’s effortful control.

Recently, researchers have shown that even preschoolers can experience depression. We were interested in exploring how factors present in a child’s life when he or she is three years old may increase the chance that he or she experiences depression a few years later, around the time of school entry. We looked at a variety of factors, including whether children or parents had experienced psychological disorders in the past, how children got along with other kids, whether they had experienced something stressful recently, and their temperament. You might remember when we observed your child’s temperament when s/he was three years old – your child participated in a series of scenarios, such as having to wait until a bell was rung to receive a snack, playing with giant soap bubbles, and being given a wrapped – but empty – gift box.

We found that several of these factors were related to whether children experience depression at a young age. Specifically, children who had a lot of symptoms of anxiety when they were three were more likely to be depressed three years later, as were children who had a more fearful temperament, or who had more difficulty controlling their actions in tempting situations. Children who had trouble getting along with other kids were also more likely to be depressed. This pattern of predictors is similar to what has been observed in older children, adolescents, and adults. We also found that whether parents had a psychological disorder in the past was related to depression in their children. This might be because parents and children share genes that could be related to depression, or because parents who have psychological disorders may at times have more difficulty parenting. Finally, children who experienced stressful events were more likely to become depressed compared to children who did not experience significant stressors.

Each of these factors contributed a little bit in predicting whether a child experienced depression. It’s important to keep in mind that it is still too early to tell exactly how these factors impact the experience of any individual child. Nonetheless, this information is extremely helpful for understanding how children develop depression, and for developing programs that can help kids with depression.

Thank you for your help with these discoveries!!!