

# Gaining advantages from childhood experience

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It often seems that certain aspects of our personalities are influenced by events that occurred in our childhoods. A recent study by Dr. Akaysha Tang's research team from the University of New Mexico Psychology Department and collaborators at Rockefeller University examined how early life experience influences social skills and ability to handle stressful situations using a rat model. The study will be published on July 30th in the online, open-access journal *PLoS ONE*.

In this study, Dr. Tang and colleagues examined whether rats that experienced greater novelty by spending three minutes a day away from their familiar home environment during infancy had a greater ability to compete against other rats for exclusive access to chocolate reward compared to their siblings that stayed in the home environment during infancy.

They found that novelty-exposed rats were able to "beat out" their competitors more often than their home-staying siblings. They also found that across repeated sessions of competition, novelty-exposed rats decreased their release of stress hormones into the bloodstream, suggesting that they adapted faster to the stressful situation.

These findings were made among rats that were 24 months of age—considered old age for a rat. Perhaps most remarkably, the differences in early experience were induced by approximately 60 minutes of cumulative differential treatment carried out during the first 3 weeks of life. This means that very brief exposures to a novel

environment during infancy can have a life-long influence on social competitive ability and the stress response.

Another question asked by Dr. Tang and colleagues was whether the differences between siblings depended on the care received from their mothers during infancy. They measured how much mother rats licked and groomed their pups after the novelty exposure procedure and how consistently they provided this care from day to day. They discovered that the mother rats that delivered more care to their pups on average were inconsistent in their amount of care from day to day. This led to the surprising finding that the novelty-exposed rats with the most adaptive stress responses had mothers that gave highly consistent, but lesser amounts, of care.

In translating possible significance of these findings to the human species, although it is sometimes assumed that the overall amount of care from the mother is one of the most important influences on her children's development, this study by Dr. Tang and colleagues provides a different view—that the consistency of maternal care may be more important than the amount of maternal care and that other sources of influences, such as environmental novelty can play an important role in shaping a child's development.

Citation: Akers KG, Yang Z, DelVecchio DP, Reeb BC, Romeo RD, et al. (2008) Social Competitiveness and Plasticity of Neuroendocrine Function in Old Age: Influence of Neonatal Novelty Exposure and Maternal Care Reliability. PLoS ONE 3(7): e2840.

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