



The Early Reading Development Study becomes An International Reading Study: Some Differences Between Countries

Our International Longitudinal Twin Study (ILTS) of early reading development involves U.S., Australian, and Scandinavian samples of twins born between 1994 and 2000 in Colorado, the Sydney area, and in Sweden and

Norway. The twins are assessed in preschool for prereading skills and their prereading environment. Their subsequent reading and spelling development is being assessed at the end of kindergarten, first, and second grade. The overall aim of this cross-national and cross-language twin study is to identify genetic and environmental factors that influence young children's growth in language and literacy. The inclusion of twins from different countries tested on parallel measures provides a unique opportunity to assess the effects of cultural and language differences on genetic and environmental influences in early literacy acquisition.

In the ILTS, we are attempting to clarify the basis for similarities and differences across populations in estimates of genetic and environmental influences on early literacy development in the following ways. First, we employ the same measures across our three samples, differing only in their translation from English to Norwegian or Swedish for the Scandinavian cohort. Second, we use multiple measures of most prereading skills to maximize reliability and allow for latent trait modeling that minimizes the contribution of measurement error to our estimates of non-shared environment influences. Third, we assess the means and variance for different early literacy related activities in the home, including parent reading activities and education.

At preschool age, one main difference in family and preschool environment is apparent between Scandinavia on the one hand and Australia and the U.S. on the other hand. In Scandinavia (both Norway and Sweden), compulsory education starts when the child is seven years old, and there is an established tradition that children should not be subjected to any formal or informal reading instruction until school starts. This attitude towards early literacy acquisition is cemented by a master plan common to all preschools in Sweden and Norway. The main theme in the preschool curriculum is to emphasize social, emotional, and aesthetic development rather than intellectual preparation for school work. This opinion is also well integrated among most parents in Scandinavia. The situation in English-speaking countries is quite the opposite. These countries generally favor early informal and sometimes formal reading instruction in the home and preschool, though there is considerable variation across families and preschools. This difference in family and preschool environment between Scandinavia and English-speaking countries should have an average impact on prereading skills, particularly those related to early print knowledge.

At kindergarten age, an interesting difference occurs between the Australian and the U.S. twin samples. In New South Wales, Australia, twins enter a school system at kindergarten in which a state-wide curriculum guides instruction, using amongst other things a series of "indicators" and "outcomes" (some examples from kindergarten; *child recognizes and supplies rhymes; recognizes spoken words with same sound; recognizes some letters and sounds beyond those in own name*). In addition, the children attend school full days (roughly 9am to 3pm), five days a week, and a minimum 35% of the school week is recommended for language and literacy instruction. Both the curriculum guiding teaching in reading and spelling and the amount of time invested to teach literacy should have a substantial impact on average reading and spelling skills at the end of kindergarten in Australia. The kindergarten school system in Colorado is characterized by much more diversity with a range of alternative educational settings for literacy instruction, and there is no state standard for teaching reading and spelling in kindergarten. In addition, Colorado children typically attend kindergarten for only three to four hours each day.

At present, when reading is tested at the end of kindergarten, the twins' average reading performance is higher and genetic influences on individual differences are strongest among the Australian twins with their more intense and consistent program of reading instruction. Environmental influences are much stronger and reading is less developed among Scandinavian twins. The results for Colorado twins fall between those of the Australian and Scandinavian samples.

Thank You!

Thank you to all the committed families who continue to allow us to come into your homes and visit your children! We have now finished testing all twins who have completed 1st grade.

We especially appreciate the fact that so many of you have let us see your children for the added and unexpected fourth grade visit.

We are now seeking funding to see the twins after they have finished seventh grade and hope that you and your children will still be excited about continuing with the reading study visits.



Parents of 2nd Grade Twins

Please
look for
question-
naires be-
ing mailed



to you in February. We hope you will give the questionnaires to your twins' 2nd grade teachers. The teacher questionnaires are useful in investigating the very early stages of how children learn to read.



Just What is Behavioral Genetics?

Behavioral Genetics: Mapping our Inner Surroundings

For centuries explorers have mapped the world around us in order to gain knowledge and understanding of the complex place we inhabit. With advances in technology, scientists have been increasingly able to map our inner surroundings as well. In 2000, the first complete map of the human genome was created. Variations in these genes contribute to differences in our physical attributes and behavior. However, researchers are just beginning to find out what many of these genes do. The field of behavioral genetics is at the forefront of this search, and the results from your tests are helping us discover many exciting new aspects of human development and behavior.

Behavioral Genetics is the study of genetic and environmental factors that create behavioral differences among individuals (1). This is the classic nature (genetics) vs. nurture (environment) debate. Researchers are finding that instead of “vs.,” it would be more appropriate to say “nature and nurture”, as different combinations of genetics and environment make us who we are, it is not strictly one or the other.

Currently, researchers in behavioral genetics are focused on: 1) finding behaviors and traits that are associated with specific genes and groups of genes, and 2) discovering how genes interact with the environment to make us each unique individuals. In order to find these connections, projects such as this one are being conducted around the world. Data about emotional, mental, and physical traits are collected through questionnaires and interviews, and DNA is collected through blood or saliva in order to match certain behaviors with certain genes. Researchers have begun pinpointing the functions of many genes, including those involved with reading disabilities, addictive behaviors, sleep, and memory.

This is an exciting time in the field of behavioral genetics, and your contribution to our understanding of the human experience is invaluable. Thank you again for your continued participation as we fill in the map of our inner surroundings.

1. Plomin, R. (1996) Nature and Nurture: An introduction to Human Behavioral Genetics, Wadsworth Publishing. Pg 4

Other Twin Studies at The Institute for Behavioral Genetics

Center for Antisocial Drug Dependence: Genetics - Community Twin Sample (CADD) For this project twins ages 12-18 and their siblings throughout Colorado participated in a 2 1/2 hour interview that covers questions about personality, behavior, intelligence and various mood and conduct disorders. Participants are now being followed-up 4-6 years later.

Longitudinal Disabilities Research Center

Since its inception in 1982, the CLDRC has worked with over 1400 twin pairs to assess and find factors that contribute to the development of various reading disabilities. This testing is conducted over 2 days with twin participants contacted throughout school districts in Colorado. Recruitment for this project is ongoing.

Longitudinal Twin Study of Reading Disability (LTSRD) This new study is a 5-6 year follow up with 12-25 year-old twins who participated in the CLDRC. It is the first time a longitudinal study has been conducted with twins who have reading disorders. The initial study calls for an abbreviated battery that assesses cognitive, behavioral and reading abilities and will enroll 200 twin pairs and 50 of their siblings.



A Thank You and A Reminder

Thank you to all parents who have sent in their twins' latest **CSAP** scores. If you haven't sent in the scores yet we would still love to have them!

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