The National Children's Study (NCS) Vanguard Study was a pilot study for a planned large-scale epidemiological birth cohort of children (and their parents) to examine environmental influences on child health and development. Between 2009 and 2014, the study enrolled and followed 2,302 mother-child pairs in 43 counties across 5 states throughout the United States. At protocol-specified visit days, data concerning a wide variety of health-related topics were collected including demographic, medical conditions and history, feeding, cognitive, behavioral, and educational outcomes. The NCS Archive consists of research results from qualitative investigations. The NCS Archive is freely available to researchers to use outside of sample collection and handling costs. This presentation is an example of the use of the NCS Archive data for pediatric research, in this case with respect to maternal autoimmune disorders and risk of autism. In addition, this presentation describes several childhood developmental screening tools used in The National Children's Study, data from which are available for researchers.

**Background**

The NCS Vanguard Study sample. Graphics were prepared using R version 3.4.1 (RStudio, Inc., Boston, MA).

**Methods**

**Maternal Education, N (%)**
- Post Graduate Degree: 438 (19.7), 10 (6.4), 428 (20.7)
- Associate Degree, Some College: 597 (26.8), 35 (22.6), 562 (27.2)
- High School Diploma or Less: 1,167 (54.5), 112 (71.0), 1,055 (52.1)

**Child Characteristics**
- Sex of Child, N (%)
  - Male: 1,154 (53.4), 102 (64.2), 1,052 (52.1)
  - Female: 1,198 (56.6), 67 (42.8), 1,131 (57.9)
- Maternal Employment Status, N (%)
  - Employed: 1,630 (74.4), 72 (45.0), 1,558 (76.6)
  - Not Employed: 572 (25.6), 53 (33.8), 519 (25.4)

**Child's Age at M-CHAT Screening (Months)**
- <12: 733 (32.9), 25 (15.8), 708 (34.8)
- 12-23: 818 (36.9), 61 (38.3), 757 (37.8)
- >23: 771 (34.2), 72 (45.0), 708 (34.8)

**Statistical Analysis**

The analyses for this presentation investigated the effect of the exposure of interest, presence of an autoimmune disorder during pregnancy, on the outcome of interest, offspring or an autism spectrum disorder. Descriptive analysis of maternal education, yearly household income, and child sex among children who were at risk and those not at risk or autism were examined using cross-tabulation of dichotomous variables for analyses using logistic regression analysis and adjusted for a priori identified confounders. All analyses were adjusted for maternal age at childbirth, education, employment, income, sex of the child, gestational age at birth, and birthweight. The association between autoimmune disorders and risk of autism was examined using logistic regression analysis. Model exposure At-Risk for Autism Not at Risk for Autism OR (95% CI) P-Value

- **Maternal Autoimmune Disorder and Risk of Autism**
  - Eighteen out of 156 (12%) women whose children were at risk for autism had an autoimmune disorder during pregnancy, while 78 out of 2,088 (3.7%) women whose children were at risk but did not have an autoimmune disorder during pregnancy. The association between maternal autoimmune disorder during pregnancy and offspring at risk for autism was non-significant (odds ratio [OR] 1.245; 95% confidence interval [CI] 0.720 to 2.154; P = 0.422). The OR, after adjusting for maternal age at childbirth, education, employment, income, sex of the child, gestational age and birthweight, also revealed no significant relationship between maternal autoimmune disorder during pregnancy and offspring at risk for autism (adjusted odds ratio [aOR] 1.348, 95% confidence interval [aCI] 0.714 to 2.546; P = 0.347).

**Results**

### Distribution of Demographic Characteristics Among Study Participants

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>NCS Vanguard</th>
<th>NCS All</th>
<th>NCS All with Sibling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Age at Child's Birth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20</td>
<td>138 (82)</td>
<td>194 (88)</td>
<td>121 (76)</td>
</tr>
<tr>
<td>20-24</td>
<td>189 (112)</td>
<td>266 (12)</td>
<td>155 (95)</td>
</tr>
<tr>
<td>25-29</td>
<td>159 (94)</td>
<td>234 (11)</td>
<td>125 (77)</td>
</tr>
<tr>
<td>30-34</td>
<td>134 (79)</td>
<td>210 (9)</td>
<td>104 (63)</td>
</tr>
<tr>
<td>&gt;34</td>
<td>132 (77)</td>
<td>213 (9)</td>
<td>109 (65)</td>
</tr>
</tbody>
</table>

**Conclusions**

The National Children's Study, a prospective study of environmental influences on child health and development, recruited 5,420 mothers during pre-conception, pregnancy, or at childbirth — the mother-child pairs were followed for up to the 4th month post-birth. Evaluating the 156 (12%) mothers who self-identified as having an autoimmune disorder during pregnancy, the relationship between the risk of autism and mothers who self-identified as having an autoimmune disorder during the pregnancy was not explored. The data do not provide evidence of a significant association between having an autoimmune disorder during pregnancy and children at risk of autism, at level of significance 5%. The association between maternal autoimmune disorder and reported diagnosis of autism spectrum disorder (ASD) was not explored in this presentation due to small sample sizes. Limitations of the NCS data should be noted. The purpose of the NCS Vanguard Study was to pilot procedures for use in a larger study, individual evaluations were not conducted on all participants. This presentation illustrates how researchers can use the newly released developmental screening data from The National Children's Study.

**Acknowledgements**

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**References**


For more information, please contact:
NICHHD Website
NCS Archive Website
Archive Email
https://www.nih.gov/nci/NCS
https://ncsarchive.s-3.net/
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