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### Abstract

The Geneva PACE (GPACE) survey is collected on behalf of Success for Geneva's Children to track child wellbeing and academic markers of incoming kindergarten classes. The data from the 2017 and 2018 surveys were shared with the HWS Sociology Capstone as part of the Service Learning Course (SLC) program, on the condition that any findings that are reached using the data from the survey be shared. Students of the capstone have been using the data to measure various community trends as well as attempt to reach some relevant recommendations for SFGC. As part of the sociology capstone, the relationship between parental educational background, and how it influences their children's cognitive development utilizing the GPACE data arose as a point of interest. Child's cognitive development (defined as how a child expresses intellectual progress along developmental benchmarks) was correlated with parental education to measure the presence, trends, and overall reliability of said relationship. These findings will ideally be used to aid SFGC in their mission to assist families caring for kindergarten aged children, and recommend projects for future development programs.

#### Null hypothesis:

- ▶  $H_0$ : Parental educational background is not correlated with child's cognitive success.

#### Alternative Hypothesis

- ▶  $H_1$ : Parental educational background is correlated with child's cognitive success.
- ▶ Predict: Positive Correlation

List 1: Null and Alternative Hypotheses being tested

### Literature Review

In *The Power of Cognitive Ability in Explaining Educational Test Performance, Relative to Other Ostensible Contenders* (2018), a study of 7,525 children in Ireland, mathematics and reading test scores were assessed over time. Specifically, it measured children's educational test scores based on various factors including socioeconomic status and parental education level. The study found a positive correlation when comparing parental education to both math and reading scores, meaning children with parents with higher educational levels, received higher test scores (O'Connell 2018: 125).

*Diverging Destinies: Maternal Education and the Developmental Gradient in Time With Children* (2018) studied data from the American Time Use Survey (ATUS) reflecting the status of 6,640 children, and found that more educated mothers spent greater time caring for their child overall, especially in categories such as teaching. This trend was strongest among ages 0 – 2 years old, where college graduates spent 42% more on basic care and 94% more time on play. (Kalil et al 2012: 1371).

### Variables

The independent variable, Parents Educational Background (PEB) was to be defined as the level of educational attainment as indicated in the survey. Operationalized, this reflected parents' highest level of education. The variable explored the highest attainment for Parent 1 (per the survey), and later included the highest among both parents, seeking to find the best-case scenario for parents.

The dependent variable, Child's Cognitive Development (CCD) was to be defined as how a child expressed academic readiness along developmental benchmarks. To operationalize this, questions from the survey were collapsed into a composite measure. Questions scored each child from not well [1] to very well [4] across 8 assorted questions, with a minimum total score of 8 and a maximum of 32.

- ▶ Tell a complete story with a beginning, a middle and end?
- ▶ Listen to books being read?
- ▶ Read his/her own written name?
- ▶ Read numbers up to 12?
- ▶ Count 20 things?
- ▶ Write the numbers from 1 to 12?
- ▶ Retell a story that was just read aloud?
- ▶ Learn new things?

### Data

A correlation ( $r$ ) of 0.220 between Parent 1's educational background and CCD was found at a 0.006 significance level. When selecting highest educational level attained by either parent, a correlation ( $r$ ) of 0.265 was found at a 0.001 significance level. No parent with a master's or professional degree scored their children under [19] (marked well/very well for almost all 8 questions). Lower educated parents have a larger range of scores as opposed to higher educated parents.

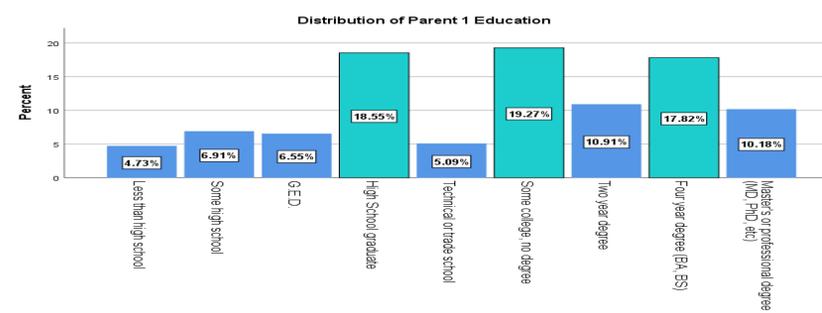


Figure 1: Distribution of Parent 1's education

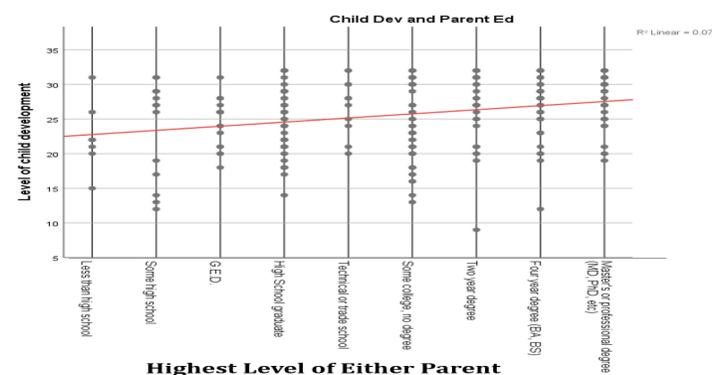


Figure 2: Correlation between CCD and PEB (of highest parent)

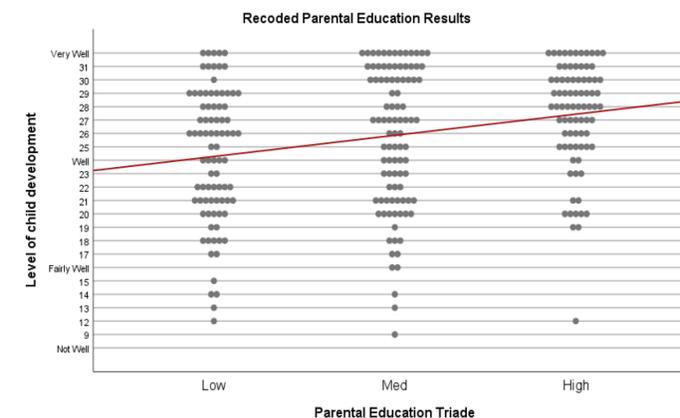


Figure 3: Correlation between CCD and PEB (recoded into three categories)

### Conclusions

Data reflected that parental education was closely correlated to child cognitive development, with a positive relationship overall. This affirmed the alternative hypothesis and is in line with the predictions of the researchers. Regardless of the way PEB was operationalized (Parent 1 versus the highest parent), the relationship remained. Furthermore, it was found that scores concentrate at higher levels as PEB increases, a trend that also enjoys lower variance compared to lower PEB levels. More work can be done to study intervening and confounding variables, such as race, gender, and socio-economic status. There appears to be an opportunity for intervention on the part of the community to levy this relationship in order to bolster child readiness for school via expanding parental education opportunities.

### Limitations

Limitations of the study included the issue of parental reporting, which may be skewed (most parents selected very well), and assumed that both parents have some impact on the child's cognitive development. The selection of measures for the new variables may have also proved limiting if some critical data was missed, which may have skewed the results in some way. Also, the sample was limited and not necessarily generalizable to public patterns. Geneva families and children are not perfectly representative of families throughout the country, nor a fair proxy for upstate and western New York towns and cities due to Geneva's disproportionately high poverty rate. The child cognitive development/parental educational background may have been subject to some confounds, such as socioeconomic status, race, and gender, which were not able to be controlled for due to the lack of such items being present in the survey data. Finally, correlation and causation are not necessarily the same, and therefore should be approached with this in mind.

### Works Cited

Kalil, Ariel, Rebecca Ryan, and Michael Corey. 2012. "Diverging Destinies: Maternal Education and the Developmental Gradient in Time with Children." *Demography* 49(4):1361-83.

O'Connell, Michael. 2018. "The Power of Cognitive Ability in Explaining Educational Test Performance, Relative to Other Ostensible Contenders." *Intelligence* 66:122-127.