

Effect of Siblings on Personality Development

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Abstract

Non-cognitive skills are behaviors and attitudes that affect how an individual approaches a given situation. These skills have been viewed with increasing importance, leading to inquiry in how these skills are developed. Since skills are heavily influenced by parental factors and by influences during childhood, it seems likely that other familial and childhood factors, such as sibling-related variables, would also impact the development of these skills. Although previous research has been done on various sibling-related factors and how they affect personality trait development, these studies generally find correlational relationships, whereas I seek to find if there is a causal relationship, specifically between the number of siblings an individual has and

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the extraversion the individual later develops. I will do this by using NLSY97 data and running several regressions, checking for bias and nonlinearities, to determine the relationship between siblings and extraversion. Ultimately, I hope to answer the question, “How does number of siblings affect an individual’s extraversion?”

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Introduction

Non-cognitive skills is a term for a particular group of skills in behaviors and attitudes that affect how an individual approaches certain situations (Kattan, 2017; Schanzenbach, Nunn, Bauer, Mumford, & Breitwieser, 2016). These skills are distinguished because they tend to be more associated with personality, temperament, and values, and less directly related with intellect than cognitive skills are (“KEY FACTS”, 2014). Studies have shown that non-cognitive skills are at least as influential as cognitive skills in affecting individual development and success (Brunello & Schlotter, 2011), which has led to recent inquiry on how non-cognitive skills develop in individuals (Gutman & Schoon, 2013).

Non-cognitive skills seem to develop and be most heavily influenced during childhood and adolescence. Flavio Cunha and James Heckman found that parental inputs have a large development on both cognitive and non-cognitive skills, especially in childhood (Aughinbaugh, Pierret, & Rothstein, 2015), while Raja Kattan reports that interventions to promote soft skills are also most effective during earlier stages of life (2017).

Since parental factors play such a large part in influencing non-cognitive skills, and since childhood is a critical time for soft skill development, other familial and childhood factors need to be examined to see if they also affect non-cognitive skill development. Because siblings tend to share many childhood experiences together and play a large part in the formation of the childhood environment, siblings seem likely to be a significant influence upon an individual’s soft skill development. My research will focus on a whether or not there is a link between

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siblings and the development of a specific interpersonal soft skill. I seek to answer the question “How does number of siblings affect an individual’s extraversion?”

Background

Research done on this topic tends to show that there are significant effects of various sibling-related factors on the development of non-cognitive skills. In Anger and Schnitzlein’s study, the authors found that parental skills most influenced skill development, but intragenerational factors, which include sibling factors, were also important influences (2016). Most studies generally focus on how parents affect their children, so this study was unique in that it focused on sibling influences and found important effects.

One of the most studied sibling-related variables in existing scholarship is birth order. In their experimental study on how birth order affects competition preferences, Okudaira, Kinari, Mizutani, Ohtake, and Kawaguchi found that having an older sister negatively correlated with a male individual’s preference for competition, although their findings are not confirmed to be generalizable beyond Japan (2015). Another study on birth order by Rohrer, Egloff, and Schmukle focused on the effect of birth order on intelligence and various personality traits, and found that first born siblings are more likely to score higher on intelligence assessments, but found no significant effect on other personality traits (2015). Salmon, Cuthbertson, and Figueredo’s research of the effects of birth order on prosociality does find significant effects through a quadratic analysis, which implies middle-born children are the most prosocial (2016). Since these studies found contradicting significances in how birth order affects various personality traits, it will be interesting to see how my research either supports or contradicts these findings regarding sibling-related factors.

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The second most studied sibling-related variable in existing scholarship is number of siblings. Judith Blake found that number of siblings negatively correlates with educational achievement and verbal ability, and attributed this to the greater division of parental attention and interaction the individual receives when there are more siblings (1989). Since the data was collected in 1955-1986, I can add to the significance of these findings by using more recent data from the National Longitudinal Survey of Youth from 1997 (NLSY97). Yucel studies the effect of number of siblings on self-reflective mindsets, and found a small effect between a high number of siblings and worse self-reflection, similarly implying these negative effects may occur when there becomes a scarcity of resources in parental attention and interaction (2014). These two studies suggest an impact from dilution of parental attention and resources, but Trent and Spritze find contradicting results in their research on having siblings and social activity participation. Although the authors found significant results, their findings did not hold when applied to adults, suggesting that the popular model of “resource dilution”, where parental attention and interaction is further divided when there are more siblings, is unimportant in the long term (2011). My research will hopefully add an additional perspective to support and give more weight to some of these contradictory findings.

My research ultimately hopes to build on these previous studies with my own sibling-related and non-cognitive skill variables. I seek to come close to finding a causal effect between my variables rather than the correlational studies that most previous projects have done. I will use some of the most recent longitudinal data from NLSY97, where the participants were randomly selected (so the data sample is expected to be unbiased). Essentially, I aim to explore how the number of siblings an individual has affects their extraversion in personality.

Methodology

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There are two primary economic models for my research. I assume that having more social interactions in childhood leads to a more extraverted personality, since having many social interactions when young most likely makes the individual more comfortable and more excited to interact with people as an adult. Having many siblings might decrease the extraversion an individual has because of budget constraints and limited resources, otherwise known as the “resource dilution” theory. Parents have a certain amount of time and money to spend on their kids. If there are more kids, parents must divide their time and attention, reducing the amount of direct social interactions the parents can have with each child, which then reduce the individual’s later extraversion. However, a second theory suggests a higher number of siblings could potentially increase extraversion. This theory is known as the “siblings as resources” model, which suggests that having many siblings leads to an expanded production possibilities frontier because siblings provide a larger built-in social network. This allows for more social energy and direct interactions between the siblings and the individual, increasing the individual’s extraversion.

My hypothesis is that as number of siblings increase, extraversion will decrease. Although both pieces of economic theory will contribute to the overall effect, since previous studies indicate a larger effect from parental influences than sibling influences, I predict the budget constraints factor will have a stronger effect than the expanded production possibilities frontier, therefore causing extraversion to decrease as number of siblings increases.

Participants

The data used for regression analysis will be data from the NLSY 1997 study, which is a longitudinal study done on the same selected teenagers over the course of several years. As

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described on the NLSY97 website, the study was primarily funded by the Bureau of Labor Statistics (BLS), and was meant to gather information on employment, education, households, health, activities, attitudes, and expectations. The initial group of teenagers was randomly chosen for the sample. Data is collected annually (since 1997) from each of these individuals by giving them interview-style electronic questionnaires and collecting their reported answers (“The NLSY97,” 2018).

Expected Results

To analyze the data, I will complete several regressions and analyze the results for statistical significance to determine whether or not the effect of number of siblings on extraversion is significant. My first simple regression will be of the 2008 “Personality Scale: Extraverted, Enthusiastic” variable on the 1997 “Number of Household Members Under 18” variable. I will run further regressions to control for whether or not the individual grew up with both biological parents and for their 1997 household income, and to check for nonlinear relationships. These regressions are designed to correct for the major threats to internal validity and get the estimate closer to the true β_1 effect. (Gallagher, 2018). I intend to produce a scholarly paper detailing my regressions and findings, including the strengths and limitations of my analysis.

The strengths of this analysis is that it seeks to find a causal effect rather than a correlational one, taking a step further from previous studies done on siblings and skill development. These regressions also use data from the NLSY 1997 study, so assuming the survey properly randomly selected its participants, the data used is fairly recent and should be

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relevant, given the perspective that longitudinal studies are infrequently done. The analysis attempts to control for major sources of omitted variable bias, strengthening its internal validity.

Conclusion

Ultimately, the proposed research seeks to answer the question “How does number of siblings affect an individual’s extraversion in personality?” through regression analysis. Survey data will be analyzed from the NLSY 1997 survey, and the resulting findings will be published in a research paper to present results to the academic world. Although the question is precise in its specificity, it lends light to the larger questions of how siblings influence skill development and what other variables may significantly affect the development of non-cognitive skills.

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Budget and Timeline

Week 1:

I will collect and clean the dataset. I will do thorough research into how the NLSY97 survey was conducted, including finding details about the sample and their methodology for collecting data. I will download data for the variables needed for my research and compile it into a single cleaned dataset ready for regressions and analysis. Lastly, I will look at the data visually and plan regressions according to intuition and economic theory to predict patterns in the data.

Estimated time: 15 hours

Requested salary funds: \$12 per hour

Week 2:

I will begin my analysis. I will run the regressions that I specified and record the regression results, including the variable of interest coefficient, significance, and measure of fit. I will interpret the regression results, identifying which regression best accounts for the relationship of the data and controls for major threats to validity, to find if there is a causal effect. Lastly, I will report my findings in a scholarly paper, including discussion on the regression results, interpretation of the results, and the strengths and limitations of my research.

Estimated time: 20 hours

Requested salary funds: \$12 per hour

Week 3:

I will reevaluate the data, taking into account new factors that may affect or bias the regression, and adapt or add regressions to fix the new issues, if any. I will analyze any new findings, and add to my paper by reporting new results and findings. I will revise accordingly with mentor

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feedback and suggestions. After completing my edits of the paper, and I will submit my finished work for publication.

Estimated time: 20 hours

Requested salary funds: \$12 per hour

Total requested funds for budget = \$660