PERSONALITY CORRELATES OF BIRTH WEIGHT AND FAMILY BIRTH ORDER

An Undergraduate Research Scholars Thesis

by

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ABSTRACT

Personality Correlates of Birth Weight and Family Birth Order

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In an attempt to better understand relationships between birth weight, birth order, and later psychological adjustment, three scales were administered to a sample of 192 undergraduate students (53 males, 139 females), including the Oxford Happiness Scale, the NEO-PI Big Five Personality Scale, and the Dispositional Resilience (Hardiness) Scale. Based upon reported birth weight estimates, the participants were assigned to one of four weight estimate groups: Group 1, less than 3 lbs.; Group 2, 3 lbs. 1 oz. to 5 lbs. 7 oz.; Group 3, 5 lbs. 8 oz. to 8 lbs. 12 oz. and Group 4, 8 lbs. 13 oz. and above. For birth order, participants were assigned to one of four birth order groups: Group 1, first born; Group 2, second born; Group 3, third born; Group 4, born fourth or later. Participants were also divided into groups based on the number of siblings they reported: Group 1, only child; Group 2, one sibling; Group 3, two siblings; Group 4, three or more siblings. SAS procedures were employed in order to conduct MANOVAs comparing birth weight estimate groups, birth order groups, and the number of siblings groups on the personality measures. Concerning birth weight, participants in Group 1 scored higher on openness than those in Groups 2 and 3. Birth weight Group 2 scored lower on conscientiousness and happiness than those in Group 3. Group 1 also scored lower on commitment than the Groups 3 and 4. For birth order, participants that were born fourth or later were significantly less conscientious, more

neurotic, and scored lower on commitment than all of the birth order groups (first, second, and third born). The analysis on number of siblings revealed that there were significant predictive relationships between number of siblings and conscientiousness and commitment. Those with fewer siblings were more conscientious and scored higher on commitment than those with more siblings. The results show that the Big Five factors, Hardiness factors, and Happiness, can be influenced by birth weight, birth order, and the number of siblings.

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CHAPTER I

INTRODUCTION

For decades, researchers have been intrigued by the idea that different aspects of personality can be determined by birth order. Alfred Adler was the main pioneer of this idea, and countless scientists and researchers have used his ideas as their "Bible". Adlerian psychologists "have made greater use of birth order information than have any other school or group in society" (Manaster, 1977). Adler created two concepts of birth order: "actual" birth order, which is the "numerical rank order into which one is born in the family", and "psychological" birth order, which is one's "self-perceived position in the family" (Stewart, 2012; Whitbourne, 2013). Alan Stewart, a psychologist who studies birth order and the Adlerian theory, found that one's perceived role in the family is a greater influence than the timing of their birth (Whitboune, 2013).

Additionally, birth weight, specifically the extremes, as a predictor of personality, is not a topic that has been heavily researched.

This study used the NEO-PI (Costa, & McCrae, 1985), Oxford Happiness Scale (Hills, & Argyle, 2002), and the Dispositional Resilience (Hardiness) Scale (Bartone, Ursano, Wright, & Ingraham, 1989) to assess different aspects of an individual's personality, and to see if birth weight/order helped influence this.

NEO-PI (Big five)

Paul Costa and Robert McCrae developed the NEO Personality Inventory, (NEO-PI). This scale measures five major dimensions of personality: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism/emotional stability (also known as "OCEAN"). This scale is used in a variety of studies because of its reliability, validity, and utility, and is also used to study groups of people in various settings and environments because it is understandable and easy to use.

The NEO-PI further breaks down each large dimension of personality into six, smaller, more specific categories, which helps create a broader view of the traits that comprise personality. This scale does not perfectly dissect and explain every specific aspect of an individual's personality, nor could it, because of the complexities of the human mind and differences between each one. This scale does, however, provide a nice framework for understanding many of the larger components of personality that help us understand how people interact with one another. It can also help one better understand a large part of him/herself.

Openness assesses one's appreciation of experiences and motivation to seek them. The six facets of openness include: fantasy, feelings, aesthetics, actions, ideas, and values. An individual who achieved a high score on this scale could be seen as imaginative, creative, and curious, while a person low on this scale could be viewed as down-to-earth, less creative/artistic, and have less diverse interests.

Conscientiousness assesses an individual's degree of organization, control, persistence, and motivation in goal-directed behavior. The sub-categories of this personality include competence, dutifulness, order, self-discipline, deliberation, and achievement-striving. People that score high in conscientiousness can be viewed as reliable, self-disciplined, organized, and ambitious. Laziness, lack of motivation, and low ambition are characteristics of people with low scores in this category.

Assertiveness, warmth, positive emotions, activity, excitement seeking, and gregariousness are the six subsets of extraversion. Extraversion measures the quantity and intensity of the energy when interacting with others, as well as activity level, and stimulation needs. High scores on this dimension indicate that the person is sociable, talkative, optimistic, and very people-oriented, while low scores indicate that the person is more introverted, quiet, and reserved.

Agreeableness assesses the types of interactions that an individual prefers, and can range from compassion to animosity. Trust, altruism, modesty, tender-mindedness, compliance, and straightforwardness are the six components of agreeableness. A person who scores high in this category can be seen as trustworthy, soft-hearted, and good-natured, while low scores indicate that the person can be rude, uncooperative, manipulative, and irritable.

Lastly, neuroticism assesses emotional stability and helps identify individuals who are prone to psychological distress. The six facets of this category include depression, vulnerability, anxiety, impulsiveness, self-consciousness, and angry hostility. Characteristics of those scoring high in this category include nervousness, insecurity, low self-esteem, and poor control of emotions.

Conversely, those scoring low in this category are more calm, have better control of their emotions, and are more hardy and resilient. A higher score on the neuroticism scale indicates that the person has less neurotic tendencies.

The NEO-PI was used in this study because it is well-known and established, and can more easily compare the data we obtained to data from previous studies that have also used this scale.

Multiple studies have found that firstborns, regardless of gender, tend to be more conscientious than later-born individuals (Leman, 2009; Paulhaus, Trapnell, & Chen, 1998). On the contrary, later-born individuals are more open to experience than firstborns, and are seen as "more rebellious" (Leman, 2009; Paulhaus et al., 1998). Leman also states that firstborns also tend to be more authoritarian, and are more likely to hold leadership positions in almost all aspects of their lives. Leman states that firstborn children (especially ones with later-born siblings), could have heightened levels of conscientiousness and authoritarianism due to assuming a caretaker role for their younger siblings, such as acting as their babysitter. Children without siblings tend to exhibit the same personality traits as firstborn individuals (Leman, 2009). It has been postulated that this is most likely due to the need to win their parents' approval.

One study used a mixed factorial design and used self-reports from first and later-born individuals, as well as peer and parent evaluations of the subjects (Marini, & Kurtz, 2011). There were no significant differences between each of the birth order groups (first born and later-born) in each of the three trials (self-reports, peer-reports, and reports from parents), as well as no significant differences between the traits of first and later-born individuals, in each trial.

Another study used a complete within-family design by "asking siblings of varying birth orders, from the same family, to provide independent self-reports of their own personality" (Bleske-Rechek, & Kelley, 2014). Parent and peer reports were used along with the self-reports from both the first and later-born siblings, and no significant differences were found in any of the categories (sibling-sibling, peer-sibling, parent-sibling), as well as between each report group.

The Helsinki study of very low birthweight children used the NEO-PI scale, and found that young adults who were born with a very low birth weight "scored significantly higher in conscientiousness and agreeableness, and lower in openness… and neuroticism", and scored high in the "warmth" facet of extraversion. However, they scored lower in assertiveness and excitement seeking facets. (Pesonen et. al, 2008). This study compares their results to another study conducted by Allin et. al (2006). Although a different personality scale was used, two facets can be compared: neuroticism and extraversion (Allin et. al 2006). Like Pesonen, Allin found that very preterm birth individuals, comparable, but not identical to the very low birth weight category in Pesonen's study, had very low extraversion scores. Unlike results from Pesonen's study, however, Allin found that very preterm birth individuals scored higher on neuroticism.

Happiness

The Oxford Happiness Inventory (Argyle, Martin, & Crossland, 1989) was originally created as "a broad measure of personal happiness" (Hills et al., 2002). The format of this scale follows closely in format and design with the "Beck Depression Inventory", which was used in clinical

settings to diagnose depression and mania (Beck, Ward, Mendelson, Hock, & Erbaugh, 1961). To create the Oxford Happiness Inventory, items in the Beck Depression Inventory were reversed, thus creating items relevant to "subjective well-being" (Hills et al., 2002). Additional items were added to cover more aspects of happiness. The Oxford Inventory was first used outside of clinical settings, but because there was not enough of a "range" for the participants to choose when ranking their answers, accurate measures of happiness were not obtained. Thus, the Oxford Happiness Questionnaire was developed. It used a six-point Likert scale for each of the items, and reversed approximately half of the items. These changes reduced the probability of compliant answering, and provided a more accurate measure of happiness.

The happiness scale was used to find a possible difference in happiness between those with siblings (also factoring in their birth order), and those without, as well as whether their birth weight might have affected their happiness as a young adult.

A study conducted by Rim (1993) found that middle and last-born men scored higher on happiness than firstborn men, and middle-born women scored higher on happiness than first or last-born women, followed by firstborn women and last-born. Another study looking at happiness obtained much different results: last-born males scored lower on happiness than the other birth orders, while firstborn males scored the highest (Allred, & Poduska, 1988). Also in this study, last-born females scored the lowest on happiness, followed by the firstborn females, second-born, and middle-born females (Allred et al., 1988).

There is limited data regarding birth weight and happiness. This could be due to the use of a different scale, the lack of popularity of the topic, or even the file drawer effect. The latter is where the data might not have been significant to show that one group is happier than the other, so the researcher might have felt that he or she should not publish it for "lack of excitement".

Hardiness

The Dispositional Resilience (Hardiness) Scale was created by Bartone et al. (1989). This scale measures "personality hardiness", which has "been found to be a stress/health moderator" in a variety of studies (Bartone, 1995). The three facets of hardiness include commitment, challenge, and control. Commitment is defined as "a sense of meaning and purpose imputed to one's existence encompassing self, others, and work" (Bartone et al., 1989). Challenge is a passion for life and living that causes one to be excited for change because they view change as opportunities for growth. Lastly, control is "a sense of autonomy" and the ability to "influence one's own destiny" (Bartone et al., 1989). People who score highly on this measure are more likely to succeed in rigorous, high stress events, and show a greater commitment to work, a greater sense of control, and are more open to challenges. Bartone based his scale off of one created by Kobasa (1979), and Maddi and Kobasa (1984), called "Personality Hardiness". Bartone created the "Dispositional Resilience Scale" because the "Personality Hardiness Scale" had no standard tool to measure it (Bartone, 1995; Funk, & Houston, 1987).

The concept of hardiness with birth order and birth weight is interesting because both situations could be incredibly stressful, such as being the youngest sibling and being "picked on" constantly by the older siblings, or immediately facing the struggle of facing medical

complications that may go along with having a very low birth weight. The scale chosen, though, is not very common, and is therefore not very popular and heavily studied with these topics.

CHAPTER II

METHODS

192 students (53 males, 139 females) from two undergraduate level psychology courses at a large public university in the south participated in this study. The participants were given a background questionnaire and three scales, including the 60-item NEO-PI Big Five Scale, Oxford Happiness Scale (29 items), and Dispositional Resilience (Hardiness) Scale (45 items) to measure different aspects of their personality. The subjects were asked to compete the items as accurately and truthfully as possible. SAS procedures were employed in order to conduct MANOVAs comparing birth weight estimates groups on the personality measures, birth weight by number of siblings, number of siblings by birth order, and birth order by weight estimate groups. Also, a Multiple Regression Analysis (MRA) was conducted to measure the effects of birth weight on personality.

Based upon reported birth weight estimates, the participants were placed in one of four weight estimate groups: “Very low birth weight” Group 1 (less than 3 pounds), “low birth weight” Group 2 (3 lbs. 1 oz. to 5 lbs. 7 oz.), “average birth weight” Group 3 (5 lbs. 8 oz. to 8 lbs. 12 oz.), and “high birth weight” Group 4 (8 lbs. 13 oz. and above). These ranges were determined by the Centers for Disease Control and Prevention (“Low birth weight”, 2012).

Upon reported birth order, participants were placed in one of four groups: Group 1 (first-born), Group 2 (second-born), and Groups 3 and 4 contained the later-born children.

Upon reported number of siblings, participants were placed in one of four groups: Group 1 (only child), Group 2 (one sibling), Group 3 (two siblings), and Group 4 (three or more siblings).

CHAPTER III

RESULTS

Birth weight analyses

SAS procedures were employed in order to conduct Multiple Regression Analyses (MRA) contrasting predictive values of the personality measures on the weight estimate groups. No significant effects were noted.

A Multiple Analysis of Variance (MANOVA) comparing birth weight estimate groups on the personality variables resulted in a significant Wilk's Lambda ($F_{(6,364)} = 2.29$, $p < 0.04$). Subsequent analyses revealed that openness, conscientiousness, commitment, and happiness all were significant.

The openness variable proved significant ($F_{(3,171)} = 3.80$, $p < 0.01$). Birth weight Group 1 ($M = 47.50$, $SE = 0.97$) scored significantly higher ($p < 0.007$) on openness than birth weight Group 2 ($M = 35.96$, $SE = 1.70$). Birth weight Group 2 scored significantly lower ($p < 0.005$) than birth weight Group 3 ($M = 41.18$, $SE = 0.73$).

Significant effects were also found for conscientiousness ($F_{(3,182)} = 2.58$, $p < 0.05$) with birth weight Group 2 ($M = 41.82$, $SE = 0.54$) scoring significantly lower ($p < 0.006$) than birth weight Group 3 ($M = 45.44$, $SE = 0.54$).

A significant effect was also observed for the Hardiness Commitment measure ($F_{(3,182)}$ =2.81, p< 0.04) with birth weight Group 2 (M= 45.93, SE= 0.80) scoring significantly lower than both birth weight Group 3 (M= 47.70, SE= 0.36) and birth weight Group 4 (M= 49.47, SE= 0.97).

The happiness variable also proved significant ($F_{(3,178)}$ = 2.70, p< 0.05). Birth weight Group 2 (M= 109.52, SE= 3.99) scored significantly lower (p< 0.007) on happiness than birth weight Group 3 (M= 121.41, SE= 1.72).

Birth order analyses

A MANOVA contrasting birth order groupings achieved a significant Wilk's Lambda ($F_{(15,464)}$ = 2.17, p< 0.007). Subsequent analyses revealed significant differences between the birth order groups on conscientiousness ($F_{(3,163)}$ = 2.71, p< 0.05) and neuroticism ($F_{(3,163)}$ = 2.55, p< 0.05). Significant differences were also noted for birth order on the Hardiness Commitment scale ($F_{(3,163)}$ = 3.27, p< 0.02).

Birth order Group 4 (M= 42.12, SE= 0.45) scored significantly lower (p< 0.04) on conscientiousness than did birth order Group 1 (M= 36.69, SE= 0.22), and birth order Group 3 (M= 45.58, SE= 0.09, p< 0.01).

Additionally, birth order Group 4 (M= 31.37, SE= 0.25) scored significantly lower (p< 0.04) on neuroticism than birth order Group 1 (M= 35.82, SE= 0.27). Group 4 (M= 46.87, SE= 0.25) also scored significantly lower (p< 0.03) on the commitment than Group 1 (M= 48.14, SE= 0.14).

Lastly, Group 4 (M= 31.37, SE= 2.30) scored significantly lower (p< 0.01) on neuroticism than birth order Group 5 (M= 41.50, SE= 0.77).

In general, birth order Group 4 was much less conscientious, scored lower on neuroticism, and scored lower on commitment than did the other birth order groups. Interestingly, the only four "fifth born" participants scored highest of all the birth order groups on neuroticism (M= 41.50, SE= 0.78).

Birth order Group 2 (M= 35.23, SE= 1.23) scored significantly higher (p< 0.02) on neuroticism than birth order Group 3 (M= 32.25, SE= 1.04), and birth order Group 4 (M= 31.37, SE= 2.30, p< 0.01).

Birth order Group 3 (M= 32.25, SE= 1.04) scored significantly lower (p< 0.03) on the neuroticism than birth order Group 5 (M= 41.50, SE= 0.77).

Number of siblings analyses

The MANOVA contrasting number of siblings on the personality variable did not achieve statistical significance, however, a MRA relating the personality variables to the number of siblings detected two significant predictors (Omni $F_{(10,178)} = 2.10$; p< 0.03; r^2= -0.23): conscientiousness (t= -2.69, p< 0.008, β= -0.23), and commitment (t= -2.22, p< 0.03, β= -0.24). People with fewer or no siblings scored higher on conscientiousness and commitment than those with more siblings.

CHAPTER IV

CONCLUSION

Based on the literature for birth weight, it was anticipated that the low birth weight groups would be more conscientious, and less open to experience. However, the findings suggest that people born with a lower birth weight are *more* open to experience, and *less* conscientious than those with an average or higher birth weight. The data do not support this hypothesis. It was also anticipated to find differences in levels of agreeableness and neuroticism between the birth weight groups, however, none of these factors were significant. In general, people born with a very low birth weight tend to be more open to experience than other birthweight groups. People born with a low birth weight tend to be less conscientious, less committed, and less happy than those with an average or higher birth weight.

Based on the literature for birth order, it was anticipated that firstborn people would score higher on conscientiousness than those who were later-born. Based on the data, the hypothesis is supported. However, the other differences that were anticipated, such as later-born people tending to be more open, and differences in levels of happiness, were not significant. With regards to the number of siblings, the hypothesis stated that those who were firstborn with a few siblings or only children would score higher on conscientiousness than those born later or with more siblings. This hypothesis was accepted.

This study was slightly too ambitious, and the scope should have been more narrow. When the project started, birth weight and birth order were studied because of the high possibility that one

category might not produce any data. The extra category was considered a safety net in case the other failed. However, upon analyzing the data, each category produced interesting results, and all were obligated to be reported. For future studies, one topic should be studied at a time to produce more in-depth data. However, it would be interesting to perform cross-comparisons between categories like birth weight by birth order, or birth order by number of siblings in future studies, because interesting results could be produced. Also, due to the population studied, and the small sample size that was obtained, extreme measures in birth weight could not be assessed to the extent desired. Done differently, a larger sample that is more representative of the general population would be obtained, and would strictly compare the extremes in birth weight to the average.

A benefit of this study is the addition of multiple dimensions to previously one-dimensional topics. This study introduced multiple other aspects of personality to the field of research of birth weight, birth order, and the number of siblings, such as the Hardiness and Happiness scales, which were previously unused in other studies.

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