The Effects of Birth Order

On Personality

A Paper

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Abstract

This literature review examines 25 empirical articles regarding the effects of birth order on personality to determine whether this research supports Alfred Adler's birth order theory. The research focused on a broad range of topics covering the complete lifespan and included such topics as relationships, executive functioning and mental health. Overall the research found that there is a significant effect on many aspects of personality due directly to birth order.

Introduction

Birth order is believed to influence many aspects of one's personality. Alfred Adler was one of the first in the field of psychology to theorize about the differences birth order could make. Adler, the founder of Individual Psychology, was the first to discuss the influence of birth order on personality development. While he identified common characteristics and patterns for particular birth order positions, he emphasized how every person has a self-perceived place in his or her family. This perceived position may or may not be the person's chronological place in the family. Alfred Adler believed that birth order had a direct association with personality characteristics. Personality theorists such as Adler have asserted that family position can affect individuals' experiences and development. It is believed that each birth order position has its own unique set of personality traits.

Firstborns are believed to be more conservative. They are viewed as leaders who follow rules. They submit to authority. They are often more ambitious than other birth order positions and also more conforming. Adler suggested that firstborns tend to be more motivated to achieve than laterborns. They are usually good at pleasing adults and behaving in socially appropriate ways. They typically adhere to rules and expect the same from others. They are also the dethroned child who must deal with the birth of a second sibling. Because of this, they work hard to stay ahead of the other siblings and keep their special place.

Middleborns are considered more rebellious and more likely to challenge authority. They often have a more difficult time finding their place of significance in the family. Because of their middle position they are often the peacemakers in the family and become experts at negotiation. They learn to be competitive because they have to keep up with their older sibling while trying to stay ahead of younger siblings. Adler believed the middle child was particularly at risk for becoming discouraged. The second child must find a way to measure up to the accomplishments of the firstborn or find a place of significance through other means. For example, if the firstborn finds significance through academic achievement and pleasing, the second may compete with the older sibling or find significance through another area such as sports, music, or an ability to develop strong social relationships. Adler described

this child as appearing to be in a race in order to overtake the firstborn child.

Youngest siblings are often viewed as pampered, dependent, immature, and irresponsible. They tend to be more sociable and usually get the most attention. Others often do things for them. They learn to use this to their advantage and often use charm and manipulation to get people to do things for them.

Adler described only children as often being the center of attention and striving for attention from adults more than peers. Only children are often leaders and have a more difficult time going along with others, especially in groups of their peers. They typically carry feelings of entitlement. A typical characteristic of an only child is the carefulness that results from the extreme amount of attention they receive growing up. It is believed that independence, sociableness, responsibility, and thoughtfulness are qualities associated with the only child position.

There has been extensive research into birth-order theory. Many studies look at how specific traits, such as intelligence or creativity, relate to birth order. Many of these studies have confirmed Adler's theory in regard to specific traits. Results of some of these studies have been found to not support Adler's theory. These findings may lead to revisions or improvements of the theory.

This paper will review research closely related to the effect of birth order on a broad range of personality characteristics and influences on personality to determine in what ways and to what extent birth order actually does affect ones personality.

Effects of Birth Order on Personality Traits

Early Childhood

The interactions that infants have with adults are a foundational influence on the development of personality because it is the beginning of the development of relationship skills. Keller and Zach (2002) looked at the differences in parental behavior between parents of firstborn children and parents of laterborn children. This study found that individually mothers and fathers were alone with their firstborn infants significantly longer than with their laterborn infants. Fathers of firstborn infants engaged in face-to-face interactions with their infants far longer than fathers of laterborn infants did with their children. Fathers' increased display of facial interactions with firstborn infants is most significant when the mother

is also present. Both parents were also present together longer with firstborn infants than with laterborn infants. Mothers' and fathers' simultaneous presence was highest for firstborn boys and significantly different from all other groups of children.

The role of children in early childhood within their family is also believed to be a foundational influence on development of personality. In the Mendelson and Gottlieb (1994) study mothers were asked to evaluate nine qualities of first and secondborns' sibling roles – help, protection, nurturance, affection, getting along, friendliness, approval, companionship, and identification. This study included 76 two-children families that included a youngest child at age 5, 11, or 17 months. Each family was evaluated twice with an interval of 6 months, which allowed them to compare means when the secondborn was 5, 11, 17, and 23 months.

Mendelson and Gottlieb (1994) found that mothers rated firstborns higher on helping than the secondborn child. This difference between the children became smaller as the children got older. Firstborns were also rated higher than secondborns for protection and nurturance. Older firstborns tended to be rated more highly on approval, and affection. Firstborns whose younger siblings were in the older age ranges rated higher on identification than those with younger siblings.

Secondborns were rated higher than firstborns on identification, approval, friendliness, and companionship. The older secondborns were also more likely to be rated high on protection, nurturance, and help, but low on friendliness. Older secondborns and secondborns with relatively young older siblings were more likely to be rated high on getting along. Secondborns with older siblings tended to be rated higher on protection, affection, and approval. Older secondborns were rated more similar to their sibling than were younger secondborns on protection, nurturance, help, and friendliness.

Six qualities increased from 5 to 11 months and did not change otherwise (firstborn's protection, approval, companionship, and identification; and secondborn's help and identification). Two qualities increased more gradually (secondborn's protection and nurturance) and two gradually decreased (firstborn's getting along; secondborn's friendliness).

For nurturance and help, the difference favoring firstborns was not significant at older ages. For

friendliness, the difference favoring the younger child was not significant at older ages. For approval, secondborns were rated higher than firstborns at 5 and 23 months but not at intermediate ages.

At all ages, firstborns were rated higher than secondborns for protection, similarly to secondborns for affection and getting along, and lower for companionship and identification, which indicates that some role differences correlate with birth-order. Other aspects over time became increasingly similar, which indicates that competency differences are also important.

The Howe and Ross (1990) study looked at the influence of mothers on their first and secondborn children during early childhood. In this study firstborns ranged from 36 to 58 months and secondborns were 14 months. This study found that the mothers' references to the firstborn child about the baby's feelings and skills were positively associated with a positive and playful sibling relationship, friendly sibling relations, child-baby play and marginally associated with child-baby negative behavior. While references made to the mother from the firstborn child about the baby's feelings and skills were positively associated with child-baby play and with child-baby negative behavior.

Maternal interaction was related to the consistent quality of the sibling relationship. Differential maternal interaction has been systematically associated with differences in the quality of the relationship between school-aged siblings. Maternal interaction did not enhance positive sibling behavior and was associated with a less positive sibling relationship. In fact, maternal interaction with either child was negatively related to friendly sibling relations. A mother's interaction with the firstborn child was associated with less child-baby play, and was associated with less caretaking by the firstborn child. The mothers interaction with the secondborn child was associated with less positive interaction and with less negative interaction between the children (i.e. prohibit, protest, or touch negatively such as hitting or poking).

A powerful influence on someone's interaction with another person is the other's behavior, even if the other is a baby or toddler. Infants and toddlers do not interact with peers or siblings as effectively as they do with parents. It is during these early, formative years that the foundational aspects of social skills begin to develop. As we can see birth order, as well as the age gap between siblings and their interactions

with their parents has a significant impact on the personalities of children during their early years.

Adolescence

Adolescence is a point of significant development in the personality of a young person. While biological changes are occurring and relationships are changing new experiences must be integrated into the private logic of the individual. Dramatic changes in personal identity are taking place while new feelings and emotions are being explored. During this time the young person begins to develop many personality traits that will affect the rest of his or her life. Studies have shown how birth order has a significant influence on their personality development in this pivotal time in their lives.

The Beer and Horn (2000) study focused on adoptive families in order to separate the effects of biological birth order from the effect of rearing order. In an adoptive family a biological firstborn may be raised with older siblings.

This study used data from two separate investigations of adoptive families. They got their data from two previous studies of adoptive families, the Texas Adoption Project (TAP) study, and the Colorado Adoption Project (CAP). Subjects were coded as either first-reared or later-reared. They performed both between- and within-family analyses. In a between-family analysis people of the same birth order position are grouped with others of the same position in other families so they can be compared with other birth order position groups. In a within-family analysis each sibling is compared only with other siblings within their family. Those differences are then compared with differences found in other families.

Their between- and within-family analyses indicated that rearing order's influence on personality was very weak. The only clear difference was for conscientiousness, on which first-reared siblings scored higher, meaning first-reareds were more conscientious than later-reareds. There was also a significant difference for agreeableness in which first-reared children were found to be more agreeable than later-reareds. For conservatism, neuroticism, extraversion, dominance and openness no statistically significant differences were found.

The Runco and Bahleda (1987) study measured divergent thinking skills in children between the

ages of 10 and 13. The primary find of this study was that birth-order is related to divergent thinking test scores. Only children had significantly higher divergent thinking test scores than children in other family positions. The pattern of results revealed only, eldest, youngest and finally middle children having descending scores. However, the eldest, youngest, and middle children in this investigation did not have significantly different divergent thinking test scores. The study also found that children with more siblings had higher scores than children with one sibling and that the number of siblings was significantly related to the verbal divergent thinking tests. Children with more siblings had higher verbal divergent thinking test scores even though only children, who have no siblings, had the highest scores.

In the Updegraff, McHale, & Crouter (2002) study adolescent sibling pairs were interviewed individually about their relationship experiences over a three year period. Two relationship dimensions, emotional intimacy and control, were evaluated.

Firstborns described themselves as more intimate with friends than with siblings. They also said they had more intimacy with same-sex siblings than to opposite-sex siblings. Over the three year period, firstborn's sibling intimacy increased. Those who maintained the same friend reported a slight decrease in intimacy over time whereas those who changed friends reported an increase. Firstborns were also more controlling toward their siblings than toward their friends.

Secondborns had higher levels of intimacy with friends than with their siblings. They also reported higher levels of intimacy when they changed friends. Although they were more controlling with their siblings than with their friends secondborns reported their efforts to control both their siblings and their friends decreased over time.

There were stronger relationship connections for secondborns' than firstborns'. For secondborns, the findings revealed that older siblings' sex and secondborns' reports of sibling intimacy were linked to their friendship intimacy. Secondborns who were intimate with their older siblings were also intimate with their best friends. This was found to be true for secondborns, but not for firstborns. Experiences in the two relationships were linked only for secondborns.

During adolescence the Nakao et al. (2000) study evaluated three personality traits: extraversion,

maturity, and intellect. Of these three, only Intellect had a direct association with birth order. This association was negative, meaning intellect decreased as birth order increased. There were also other family influences on intellect. Intellect also had a positive relationship with socioeconomic status and with maternal participation in child rearing. For introverts, intellectual aspects were enhanced when parents participated more in child rearing. Only children with a high intellect tended to become more introverted when parents participation in child rearing increased.

While birth order did not have a direct influence on extraversion and maturity, other family atmosphere factors were found to have some influence. Children who had experienced overprotection/interference became more introverted, which is often the case with only children. Extraversion was also negatively associated with maternal participation before the age of 3 years, and with age, meaning children often became more introverted as they got older. Introverts matured more than extraverts when their father participated in child rearing after the age of 4. Paternal participation in child rearing at any age had a positive relationship with maturity. Maturity was higher in the children with high socioeconomic status and appropriate child-rearing patterns. Family environment impacted more on introverts and intellects than it did on extraverts and non-intellects.

Adults

During childhood people develop their concept of such things as what they believe men are like, women are like, and what is expected of them. This helps us to develop our concept of success. As we grow up we also develop an idea of what different birth ranks are like and how this may both pressure and limit us to live up to our perceived expectations. Herrera, Zajonc, Wieczorkowska, & Cichomski (2003) investigated these perceived expectations in their study by asking participants to rate firstborns, only children, middleborns, and lastborns, on 11 personality traits. They were not rating specific first born people, but rather their general concept of firstborn people.

Their results indicated that firstborns are commonly believed to be the most intelligent, responsible, stable, the least emotional, and the least creative. Middleborn children are believed to be the most envious and the least bold and talkative. Lastborns are believed to be the boldest, most creative,

emotional, extraverted, disobedient, irresponsible, envious, and talkative, and the least stable. Firstborns believed themselves to be the most agreeable, while middleborns also believed themselves to be the most agreeable. Lastborns rated themselves low in agreeableness. Only children ranked themselves low in agreeableness but highest in creativity.

In this study occupations were evaluated for personality traits that would be required. The findings of Herrera et al. (2003) indicate that the occupations believed to be held by firstborns were consistent with the personality traits attributed to them. Firstborns are believed to have qualities that are regarded as necessary in occupations requiring leadership and stability.

Another part of the Herrera et al. (2003) study was done in two different settings, one urban and the other rural and study found that individuals of higher birth rank and of smaller families actually do attain positions of higher prestige. In this study jobs were evaluated for level of prestige. This was then used to determine the level of prestige for participants according to their birth order. Occupational prestige was found to vary slightly with birth order as well as with family size. In both settings the average prestige rank of occupations to firstborn was significantly higher than that of lastborns. A consistent decline in occupational prestige was found with increasing family size, and with increasing birth order rank. There was also a consistent decline in years of schooling with increasing family size, and with increasing birth order, which correlates with occupational prestige.

These results show that people have definite beliefs about birth rank differences in occupation and personality and that these beliefs correspond to actual differences in occupational prestige and academic attainment. This is evidence that people's beliefs have important psychological, behavioral and social consequences.

Social attitudes. The Freese, Powell, & Steelman (1999) study tests the hypothesis that firstborns are more conservative, supportive of authority, and "tough-minded" than laterborns. This study tested for birth-order differences within families using data from a contemporary survey of adults in the United States to examine the relationship between birth order and social attitudes. They concluded that their data do not support the hypothesis. The means of most of the variables that were studied differ only slightly

between firstborns and laterborns, and none of the observed differences were statistically significant. Most of the observed differences were in the opposite direction of what was predicted. Firstborns actually identified themselves as more liberal than laterborns, although this result also was not significant. They concluded that parents' education, race, sex, age and sibship size are all more powerful predictors of social attitudes than birth order.

The Zweigenhaft and Von Ammon (2000) study tested the hypothesis that laterborns are more rebellious than firstborns. To do this they examined the birth order of a group of U.S. college students who had been arrested for engaging in civil disobedience in a labor dispute. The dispute lasted more than two years. During this time over 150 people were arrested. Among those arrested were 20 college students, some of whom were arrested more than once. For this study there were able to contact 17 of the 20. The study found that 6 of the 12 (50%) who had been arrested once were laterborns, and that all 5 (100%) of those who had been arrested more than once were laterborns. They determined that birth order accounted for this effect. Laterborns were more likely than firstborns to have been arrested. This provides evidence that laterborns are more likely than firstborns to rebel.

The Paulhus, Trapnell, & Chen (1999) study asked university students to compare themselves and their siblings on various personality and achievement dimensions. This study was conducted using within-family data in four studies using both student and adult samples.

Results of this study indicated firstborns were nominated by their siblings as most conscientious as well as most achieving. The relative proportion of achievers to nonachievers is 2.28 times higher among firstborns than among laterborns. This also extended to financial and prestige achievement.

Laterborns were more frequently nominated as most liberal, agreeable, and rebellious. The proportion of rebels to nonrebels is twice as high in laterborns as it is in firstborns. Extraversion and creativity showed no significant difference in either direction. The results in this study, however, only reached significance when there were two siblings.

The Phillips and Phillips (2000) study evaluated individuals’ self-attributions for both good and poor performance. Their findings indicate that firstborns have a greater tendency than laterborns to make

internal self-attributions for good performance, with no difference in their self-attributions for poor performance. This means that when a first born believes he has performed well he will be more likely to believe that he alone deserves the credit based on his internal qualities. When someone of another birth rank believes he has performed well he is more likely to credit help from others, circumstances or other external factors as contributing to his success.

This means that firstborns may not give as much credit to other people or recognize situational factors that have helped them succeed, which could have an impact on things like teamwork, leadership and interpersonal relations. This also means firstborns will be more independent. Feeling more personal responsibility for good performance, they may not be as able to recognize or as willing to accept help available from others or from aspects of the situation. Consequently, when overworked they may experience higher stress levels than their later-born peers.

Regardless of birth order, attributions for good performance were more internal, meaning people are likely to take the credit for a good job, while attributions for poor performance were more external, meaning people are more likely to blame others when things go wrong.

Intellectual ability and achievement. Travis and Kohli (1995) found that birth order has an impact on total years of education completed, but only among members of the middle class. Birth order had a strong negative impact on educational achievement within this social class. Only children appear to excel in terms of educational attainment. Birth order had no impact on the educational attainment of children who classified their families as wealthy, meager, or poor during their growing up years. They concluded that a family's social status affects educational achievement just as much as level of demonstrated ability does.

Baer, Oldham, Hollingshead, & Jacobsohn (2005) tested college students for creativity and found that firstborns from larger families were more creative when they had more siblings closer to their own age or of the opposite sex. In this study interest in birth order was limited to the effects of firstborn status on creativity. Firstborns with many siblings close in age were found to be highly creative. For firstborns from larger families, creativity increased as the number of siblings who were less than 3 years apart

increased, but decreased as the number of siblings 3 or more years apart increased. This means that a sibling age interval of less than three years enhances creativity for firstborns.

Although the creativity of firstborns with many siblings diminished as sibling age differences increased it was enhanced by an increase in sibling sex differences. Growing up with a large group of opposite-sex siblings seems to positively affect the creativity of firstborns. Older boys and girls with an opposite-sex sibling had more interests and were more curious than those with a same-sex sibling. Creative boys exhibited more feminine characteristics than their peers and creative girls were perceived as more masculine than other girls. Increasing sex differences only improved the creativity of firstborns from larger families but failed to result in a significant increase in creativity for firstborns from relatively smaller families.

This study concluded that sibling age and sex differences along with the number of siblings jointly moderate the correlation between an individual's birth order and his or her creative contributions in a team context.

Holmgren, Molander, & Nilsson (2006) measured aspects of intelligence and executive functioning in three different age groups and found that differences in the overall measures of intelligence and executive functioning did not reach significance with respect to birth order. Only the working memory subcomponent of executive functioning reached statistical significance. To test working memory participants were presented with a list of words and were asked to recall as many of these words as possible immediately after presentation. During the presentation of the list of words participants were asked to sort a deck of cards in one black and one red pile. Firstborn individuals performed better than those individuals born second or third.

Block Design was tested by having participants put sets of colored blocks together to match patterns on cards. In the middle-age group their analyses showed a significant interaction between birth order and age for block design, which indicated a larger age deficit for lastborns.

For the word fluency measure of executive functioning, there was also a significant interaction between birth order and age in the middle-age group. To test word fluency participants were given one

minute to generate as many words as possible with the initial letter A. For the composite measure of executive function there was a significant main effect of birth order, showing that firstborn children performed better than both the other two groups.

When controlling for socioeconomic status, an interaction between birth order and age was found for block design and a similar interaction was found for word fluency. This indicates a successive decrease in performance from firstborn individuals in the middle-age group. These results suggest family structure during childhood to be related to adult cognitive functioning and indicate that social and environmental factors during childhood do have a positive effect on intelligence in adulthood and old age. They also point out that level of education is associated with the effects of birth order. When education is controlled for the effect of birth order disappears.

The Holmgren, Molander, & Nilsson (2007) study used tests of recall and recognition to show that birth order affects episodic memory performance throughout the life span. Later-born siblings did not perform as well as firstborn siblings. Results showed significant effects for both recall and recognition, indicating lower birth order is associated with better memory performance. Recall performance impaired with ascending birth order. First born participants and participants born second or third performed superior to participants born as fourth child or later. For recognition the results showed only marginally significant effects of birth order.

They note that effects of birth order were probably stronger in recall tasks than in recognition tasks because less resource for retrieval of information is needed in recognition as compared to recall. Even stronger effects could be expected if the cognitive demands are further increased.

This study shows that the effects of birth order on performance of various episodic memory tasks remain throughout the adult life span. These effects appeared in a similar way in all cohorts studied. This finding was further established by the absence of any interaction with age and sex, and by stability over a 5-year interval.

Family relationships. The Salmon (2003) study found that firstborns seem to be secure in terms of parental preference. The parents perceived value of each subsequent sibling increases relative to each

parent's remaining reproductive ability. For this reason lastborns also experience enhanced investment from parents as they represent the last opportunity for parents to invest in their offspring. Middleborns lose out in terms of parental investment. When only sibships of three were considered, middleborns were significantly less likely than firstborns or lastborns to be chosen as a parental favorite.

This study also found that the impact of birth order on familial sentiment is significant, with middleborns being significantly less family-oriented than firstborns or lastborns. Firstborns and lastborns seem to identify more strongly with family members and are more positive about helping family members than middleborns. Middleborns expressed significantly more positive views on friendship and its benefits than either firstborns or lastborns. This would indicate that middleborns place greater importance on and have more positive views of non-family friendships than firstborns or lastborns. Middleborns were less inclined to help family in need than firstborns or lastborns. For helping strangers there were no birth order differences. All birth orders had less positive attitudes toward helping strangers than helping family members.

Middleborns were found to be the least likely birth order to cheat on a sexual partner. Middleborns reported "cheating" on a partner in a "monogamous" relationship significantly less than did firstborns or lastborns. Although firstborns did cheat with slightly greater frequency than the other birth orders the difference was not significant. Middleborns seem to interact with mates in much the same way as they interact with friends, being careful to maintain high-quality relationships.

The Spitze and Logan (1991) study investigated the effect of birth order in regard to feelings of closeness or attitudes toward family responsibility. They found that in people over 40, the only consistent effect of birth order is for only children, who visit and help their parents more than children with siblings. There were no significant differences between oldest children and those of other birth orders. There was a marginally significant negative effect of middleborns on helping. In all birth ranks there were more phone calls to parents who were in better health, there were more visits to older parents, and helping is not related to indicators of parental needs such as age and health.

They also found that respondents with more siblings have less contact with parents by phone and

in person and help parents less. Number of siblings is negatively associated with the number of visits and telephone calls between children and their parents, and with the hours of help adult children give to parents. They found the number of brothers to decrease visits and telephone calls significantly, more than that of sisters.

The Bogaert (2007) study examined the difference number of older brothers and right-handedness made in sexual orientation in men. They found that the number of older brothers increased the likelihood of being gay or bisexual only in moderate right-handers. In both non-right-handers and in extreme right-handers, older brothers either did not increase or lowered the likelihood of being gay or bisexual. Older brothers moderate the relationship between handedness and sexual orientation.

A high number of older brothers has also been associated with early developmental problems. There is evidence that prior male births is related to lower birth weight in subsequently born boys relative to subsequently born girls.

Mental health. Research has been done on the effects of birth order on issues of mental health such as schizophrenia, autism and social withdrawal, anxiety, perfectionism, and irrational relationship beliefs.

Cernovsky, O'Reilly, & Landmark (1994) studied symptoms relevant for diagnosing schizophrenia, autism and social withdrawal. Neither birth order nor the number of siblings were related to symptoms of schizophrenia. Only extremely low and nonsignificant correlations were found between birth order and the ratings of autism and of social withdrawal. The relationships of the number of siblings to autism and social withdrawal were also nonsignificant.

Patients who believed that people laugh at him or her, talk about him or her, spy on him or her, and check on him or her were more likely to come from small families. Those from larger families reported more problems with difficulties concentrating and problems with an excessively slow flow of thoughts. All these relationships are of low magnitude and only marginally significant.

Flowers and Brown (2002) reported that firstborns become more anxious than laterborns in stressful situations. This study evaluated athletes before competition for both cognitive anxiety, which is

thought based, and somatic anxiety, which is anxiety expressed in physical symptoms such as butterflies in the stomach. They found firstborns perceive more responsibility than laterborns to perform leadership duties. Greater perceived responsibility to lead, set an example, and still perform optimally can provoke high levels of cognitive and somatic state-anxiety. In this study firstborns experienced significantly higher cognitive and somatic state-anxiety as compared to laterborns athletes. For males, cognitive anxiety was the most impacted by birth order, and for females, somatic anxiety had the strongest birth order related impact. Females also exhibited higher levels of pre-competition state-anxiety than males.

The Ashby, LoCicero, & Kenny (2003) study examined different types of perfectionism and how they relate to birth order. Adaptive perfectionists are people who are focused on their own achievements. Ashby et al. (2003) found that this type of perfectionism was associated with psychological firstborns and was the least common for psychological middleborns. This type of perfectionism is characterized by significantly higher levels of Achieving personality priority than nonperfectionists and contributes to self-esteem and feelings of worth. It is associated with home environments of high parental expectations.

Maladaptive perfectionism is characterized by goals of both achieving and outdoing. This type of perfectionism is more common among middleborns than adaptive perfectionism. Maladaptive perfectionism is also associated with home environments of high parental expectations. Maladaptive perfectionists scored higher on the Outdoing and Detaching personality priority scales.

Nonperfectionism is more common for both middle and youngest birth ranks. These people are likely to have experienced home environments with lower parental expectations. Nonperfectionists would also be expected to have more of a tendency to need pampering or caretaking.

The results of this study suggest that adaptive perfectionists, maladaptive perfectionists, and nonperfectionists differ significantly from one another on psychological birth order characteristics.

The Kalkan (2008) study found that positions of psychologically first, middle, and youngest child were significantly related to irrational relationship beliefs. Irrational relationship beliefs are defined as highly unrealistic beliefs of individuals about themselves, about the nature of relationships, and about their partners in relationships. There was no significant correlation found between psychologically only

child scores and irrational relationship beliefs.

The psychological birth order positions were particularly effective in accounting for variation in total relationship beliefs, unlovability and helplessness. The results indicated that the psychological birth order scales, except for the only child, were all very influential and provided support for the concept that a person's position in the family might play a central role in the development of their romantic relationship beliefs. The results showed that as the scores for the psychologically first child increased, the irrational relationship beliefs decreased. The firstborn child has been described as a leader, who perceives himself as powerful, influential and important. Individuals who see themselves as leaders having a powerful role in interpersonal interactions have high self-esteem and low irrational beliefs.

The psychologically middle child scores were positively related to irrational relationship beliefs. The feelings of being less important than their siblings and having low self-esteem might be related to increased helplessness and unlovability beliefs in romantic relationships. The middleborns, when they become adults, may feel anxious about losing their partner's love, thus they may have irrational thoughts and beliefs such as unlovability.

The psychologically youngest child scores were positively related to irrational relationship beliefs. This indicates that increased feelings of helplessness and weakness or wanting to gain significance by pleasing others might be related to increased helplessness and unlovability beliefs in romantic relationships.

Psychological Birth Order

Although it might be assumed that the actual birth order position and the psychological birth order position for an individual would be the same this is not necessarily the case. The Gfroerer, Gfroerer, Curlette, White, & Kern (2003) study examined the correlation between psychological birth order position and lifestyle themes using the Basic Adlerian Scales for Interpersonal Success – Adult Form (BASIS-A). The results of this study showed that psychological birth order factors are related to lifestyle in a more meaningful way than actual birth order.

Results from this study showed positive correlations for psychological firstborn for the BASIS-A

scales including Taking Charge, Wanting Recognition, and Striving for Perfection scales. These positive correlations support the Adlerian view that firstborns are typically achievement driven and that they seek leadership roles.

The Stewart, Stewart, & Campbell (2001) study found that family emphasis on achievement and orderliness, as well as being an actual firstborn, correlated with higher scores on the first child scale. First born children perceived greater organization in their families than did middle children. Higher scores on the first scale were also associated with the presence of an active and recreational family atmosphere. The psychological first scale was associated negatively with the trait of impulsivity. This shows a deliberative and planned approach to life. Psychologically first persons accomplish goals through directing, leading, achieving, and attempting to please.

Being an actual first born was related to the first scale for men but not for women. The order scale was also a significant predictor for men but not for women. For women, higher scores on the first scale were predicted by needs for achievement and for recognition by others, as well as a need for dominance.

For middleborns, the Gfroerer et al. (2003) study's results showed a correlation for six of the BASIS-A scales. The middles psychological birth order position was positively related to Being Cautious and Harshness. Belonging/Social Interest, Going Along, and Striving for Perfection and Softness had a negative correlation. The positive correlations for Being Cautious and Harshness along with the negative correlation for Softness indicate middle children probably view their childhood experiences more negatively than others.

The Stewart et al. (2001) study found that middle scores increased along with increasing numbers of siblings and with increasing levels of family dysfunction or a decreased level of emotional expressiveness in the family. Middle scale scores, especially for men, were strongly related to a family atmosphere that involved dysfunction and disharmony. Middle children indicated greater levels of conflict in their families than youngest or only children. For the middle scale, negative experiences seem associated with perceiving oneself as disconnected, marginalized, or estranged from one's family. This

scale was associated with higher needs for achievement, which may reflect a striving to find a place within the family.

For men, the middle scale was related to needs to act in an uninhibited, spontaneous, or even impulsive manner. For women, a positive correlation with the middle scale was the need for aesthetics, sensuality, and perception, while Affiliation had a negative correlation.

In the Gfroerer et al. (2003) study the psychological position of youngest was positively related to Belonging/Social Interest, Entitlement, Striving for Perfection, and Softness. It was negatively related to Being Cautious. The Stewart et al. (2001) study found that youngest scale scores were predicted by needs for attention and recognition. Attention-seeking behavior was found to be the strongest predictor of scores. They also observed that the absence of family dysfunction was associated with higher scores and that this role was related to perceived social support from one's family and from one's friends. This indicates that persons in the youngest role are typically more skilled in developing and maintaining supportive relationships.

Psychologically youngest typically seek to achieve goals through passive or even manipulative means. They note that the youngest role often involves using charm, persuasion, complaints, or even guilt to achieve goals. (Stewart et al., 2001) The Gfroerer et al. (2003) study noted that psychological youngest often use charm and the ability to please others to gain significance within the family.

According to Stewart et al. (2001), for men, in addition to needs for attention, the youngest scale also was related to a need to protect oneself and avoid risk, along with decreased levels of curiosity and inquisitiveness. For women, the youngest scale was negatively related to desires for aesthetic and sensual experiences. Needs for affiliation with others was only marginally predictive of youngest scores for women, as was aggression. (Stewart et al., 2001)

The Gfroerer et al. (2003) study found that Going Along was negatively related to the only child scale, while Being Cautious and Entitlement were positively related. In the Stewart et al. (2001) study Social Desirability was negatively related to the only scale for women and marginally so for men, meaning the only child scale was characterized by a decreased need for others' approval, as well as a kind

of bluntness in presenting the self. Negative experiences associated with the only scale seem to occur for reasons that involve feeling smothered or enmeshed with others in the family. According to this study, a controlling family environment, lack of independence, and decreased needs for affiliation also predicted only child scale scores.

Family atmospheres that involved elements of control, limitations in freedom and independence, and family dysfunction or conflict all contributed to perceptions of the only child role. These family atmosphere features were found to be consistent with experiences of scrutiny, intrusion, and limitations. For men, in addition to negative contributions by the affiliation and Social Desirability Scale, the only scale also was predicted by higher needs for autonomy. For women, tendencies to be defensive and to avoid criticism characterized the only scale, as did increased needs for achievement and decreased needs for cognitive structure. The only scale for women depicted an introverted, achievement-oriented person who related in an unpretentious manner, but yet was sensitive to criticism and scrutiny.

Methodology

Many studies create their own method of gathering information that is tailored for their research. These are often just fact gathering surveys used for statistical analysis. While gathering demographic information they also asked questions about the participants' opinions, ratings and experiences. This was used to gather information such as birth order, gender, ethnicity, age, and the ages of their sibling and other similar types of information applicable to their study.

Unique Tests and Measurements

Some of the studies created unique tests to measure different abilities such as verbal fluency or recall and recognition, working memory, divergent thinking, caretaking behavior, quality of relationships between siblings, and creativity.

Studies Using Standardized Tests

Some of the studies used standardized tests that apply to their goals, such as the Competitive State Anxiety Inventory - 2 (CSAI-2) used by Flowers and Brown (2002), an instrument based on Russel's causal dimension scale used by Phillips and Phillips (2000), Infant Behavior Questionnaire used

by Keller and Zach (2002), The Block Design Test and the Test of visuospatial ability from Wechsler Adult Intelligence Scale used by Holmgren et al. (2006), The handedness measure used by Bogaert (2007), Almost perfect scale—revised (APSR) used by Ashby et al. (2003), Sociosexuality scores (SOI) used by Salmon (2003), The Relationship Belief Inventory (RBI) used by Kalkan (2008), Perceived Social Support (PSS) from Friends and Family Scale, Family of Origin Scale (FOS), Family Environment Scale (FES), The Marlowe-Crowne, and The PRF Form E used by Stewart et al. (2001), The Basic Adlerian Scales for Interpersonal Success - Adult Form (BASIS-A Inventory) used by Gfroerer et al. (2003), Landmark's (1978) checklist used by Cernovsky et al. (1994), and the White-Campbell Psychological Birth Order Inventory (PBOI) used by Stewart et al. (2001), Ashby et al. (2003), Kalkan (2008), and Gfroerer et al. (2003).

The Competitive State Anxiety Inventory - 2 (CSAI-2) used by Flowers and Brown (2002) to measure an athlete's cognitive and somatic state-anxiety levels, is a 27-item scale, consisting of three nine-item sub-scales measuring cognitive anxiety, somatic anxiety, and self-confidence.

The Phillips and Phillips (2000) study used an instrument based on Russel's causal dimension scale in which participants responded to five items, each of which had a 9-point response alternative ranging from internal to external on a scale from 1 to 9 in which 1=external and 9=internal. In this study participants were asked to recall a recent instance in which they performed well in school or at work and they were asked to make attributions indicating the extent to which they believed different factors affected this performance. Then the process was repeated with participants asked to recall a recent instance of poor performance.

The Infant Behavior Questionnaire (IBQ) used by Keller and Zach (2002) assesses parents' observations of infant behavior based on six hypothesized aspects of infant temperament: fear, distress to limits, duration of orienting, soothability, activity, and laughter and smiling.

The Block Design Test of Wechsler Adult Intelligence Scale used by Holmgren et al. (2006), reflecting visuo-spatial constructional ability, is strongly correlated with full-scale WAIS IQ, and is a good predictor of general intellectual ability. The Word Comprehension Test used in many intelligence

test batteries assesses verbal ability.

The test of visuospatial ability from Wechsler Adult Intelligence Scale used by Holmgren et al. (2006) involves putting sets of colored blocks together to match patterns on cards. Participants were instructed to motorically form different designs with the blocks by copying nine designs bound into a booklet.

The handedness measure used by Bogaert (2007) was a modified version of the Edinburgh Inventory which asks about hand usage for 10 physical activities.

The Almost perfect scale—revised (APSR) used by Ashby et al. (2003) contains 23 items designed to measure adaptive and maladaptive dimensions of perfectionism. Participants respond using a 7-point Likert scale from 1 (Strongly Disagree) to 7 (Strongly Agree). The inventory has three subscales: Standards (7 items), Order (4 items) and Discrepancy (12 items). The Order subscale is not used in identifying perfectionists and nonperfectionists and it was not included in this study.

Sociosexuality scores (SOI) used by Salmon (2003) is a questionnaire relating to attitudes toward friends and family as well as some aspects of mating behavior.

The Relationship Belief Inventory (RBI) used by Kalkan (2008) was developed by Kalkan for a previous study to measure dysfunctional relationship beliefs. It consists of two subscales – helplessness and unlovability – with a total of 20 items. The first subscale, helplessness, has 11 items. The second subscale, unlovability, has 9 items.

The Perceived Social Support (PSS) from Friends and Family Scale used by Stewart et al. (2001) gives an estimate of the perceived level of social and emotional support. This is a 40-item measure. The Family of Origin Scale (FOS) is a 40-item measure used to estimate the overall level of dysfunction in the subjects' family of origin. The Family Environment Scale (FES) is a 90 item measure that consists of 10 subscales (cohesion, expressiveness, conflict, independence, achievement orientation, intellectual and cultural orientation, active/recreational orientation, moral and religious orientation, organization, and control) that broadly assess family relationship, maintenance, and growth dimensions.

The Marlowe-Crowne is a 33 item, self-report instrument that assesses a person's need "to obtain

approval by responding in a culturally appropriate and acceptable manner".

The PRF Form E consists of 352 true-false items that generate 20 personality trait scales and 2 validity scales. The PRF is based on Murray's theory of psychological needs and environmental presses and assesses the needs that individuals bring to their interactions with other people and things. Only 14 of the scales were relevant to this study. The scales addressed the need for achievement, affiliation, aggression, autonomy, cognitive structure, defendence, dominance, exhibition, harm avoidance, impulsivity, order, sentience, social recognition, and understanding.

The Basic Adlerian Scales for Interpersonal Success - Adult Form (BASIS-A Inventory) used by Gfroerer et al. (2003) measures five lifestyle themes and five secondary themes identified as the HELPS scales, which are designed to expand and facilitate the interpretation of the five primary themes. It asks an individual to recollect childhood experiences rather than describe present functioning. The purpose of the BASIS-A Inventory is to help to identify how one's individual life-style, based on one's perceptions and beliefs of early childhood experiences, contributes to how the individual solves problems related to the tasks of work, social, and intimate relationships. The Major themes or personality descriptors of the BASIS-A Inventory include the following:

- Belonging/Social Interest - measures sense of belonging. Assumes a person who feels he belongs to a group will be cooperative, extroverted and interpersonally skilled.
- Going Along - measures rule-directed behavior. The degree to which a person is agreeable, structure-focused, and avoids conflict.
- Taking Charge - measure preference for being the leader or dominant person, directive, and controlling in nature.
- Wanting Recognition - measures tendency to be success-oriented, achievement-focused, and approval seeking.
- Being Cautious - measures sensitivity to affect, feeling orientation, and compassion toward others. This would probably evolve because of a family situation that was either unpredictable or

painful.

The following five supportive scaled are referred to as the HELPS themes:

- Harshness - a high score indicates a perception of his or her childhood as more difficult than it really was.
- Entitlement - a high score indicates he or she needs a lot of attention to feel accepted. Expects needs to be met and will be frustrated if not treated in the expected way.
- Liked By All - high score indicates he or she seeks to please others, or he or she is attuned to what it takes to be liked by others.
- Striving for Perfection - a high score indicates he or she has high standards and is sensitive to making mistakes. Probably thrives in a situation where rules, orderliness, and precision are valued.
- Softness - a high score indicates he or she presents a more favorable picture of his or her childhood than others who view a similar family experience.

Landmark's (1978) checklist used by Cernovsky et al. (1994) consists of 87 symptoms of schizophrenia and of socioanamnestic (interaction of social factors and memory) and socioeconomic variables. Symptoms were scored as either present or absent: rated as absent only if it had never been observed. Classification as either a schizophrenic or a non-schizophrenic was done according to 12 major systems for diagnosing schizophrenia other than DSM-III.

The White-Campbell Psychological Birth Order Inventory (PBOI) used by Stewart et al. (2001), Ashby et al. (2003), Kalkan (2008), and Gfroerer et al. (2003) is a 40-item self-report measure that inventories participants' experiences of themselves and others in the family of origin to measure the person's perceived birth order position, which may or may not be a person's ordinal birth position. The PBOI was developed to facilitate the study of psychological position in birth order research as well as for use with individual clients to assist the counselor with the process of lifestyle exploration. The following PBOI scales are scored separately for each gender:

- The psychological first scale measures the experiences of leading, directing, and achieving among siblings as well as pleasing adults.
- The middle scale taps themes of feeling rejected, neglected, or otherwise *not fitting into one's family*.
- The youngest scale assesses experiences of being an initiator, charmer, or manipulator as well as being popular and outgoing.
- Finally, the only scale assesses perceptions of being scrutinized, controlled, *or intruded upon by the family*, especially parents.

Studies Using Previously Gathered Information

While most of the studies recruited participants, some of the studies used information already gathered as part of another research project. These included the Adult Life Cycle Project (Travis & Kohli, 1995), the Pilski Generalny Sondaz Spoleczny (Polish General Social Survey [PGSS]) (Herrera et al., 2003), the Betula Study (Holmgren et al., 2006) (Holmgren et al., 2007), the 1994 General Social Survey (GSS) and the study of American Families (SAF) (Freese et al., 1999), the Texas Adoption Project (TAP) study and the Colorado Adoption Project (CAP) (Beer & Horn, 2000).

The Adult Life Cycle Project used by Travis and Kohli (1995) comes from a sample of adults (male and female) from city blocks randomly chosen within census tracts mirroring the actual class and racial percentages in a medium-sized California metropolitan area.

The Pilski Generalny Sondaz Spoleczny (Polish General Social Survey [PGSS]) used by Herrera et al. (2003) was conducted on a large representative cross-section sample of the Polish population. It includes a sample of the respondents which are representative of the Polish population. PGSS includes information about the birth order and occupational prestige of the respondents.

The Betula Study used by Holmgren et al. (2006) and Holmgren et al. (2007) is a prospective cohort study of memory, health, and ageing used to examine the effects of sibship size and birth order at various stages of adulthood and old age. Three samples of participants were included. SAMPLE 1 (S1)

1000 participants ages of 35, 40, 45, 50, 55, 60, 65, 70, 75, and 80 years, with 100 participants in each age cohort; in SAMPLE 2 (S2) 998 participants in the same ages as in S1 with 100 participants in each age cohort. THIRD SAMPLE (S3) included 956 participants, ages 40, 45, 50, 55, 60, 65, 70, 75, 80, and 85 years, with 100 participants for age cohorts 40-65. Participants in the three samples were randomly and independently drawn from the population registry in Umea, a city of about 108,000 people in northern Sweden.

The General Social Survey (GSS) used by Freese et al. (1999) is a full probability sample of noninstitutionalized, English-speaking adults in the United States. In 1994, as part of a special module on family mobility, GSS respondents were asked to provide background information on each of their siblings, including their year of birth. The Freese et al. (1999) study used a subsample of GSS respondents that excludes only children, respondents with any step- or half-siblings, and respondents who report having a sibling born the same year as they were born. The GSS allows comparisons between firstborns and laterborns from different families.

The study of American Families (SAF) attempted to interview one randomly selected sibling of GSS respondents. SAF includes a small subset of the social attitude items also used in the GSS.

The Texas Adoption Project (TAP) study used by Beer and Horn (2000) included a battery of psychological tests that were given to 300 families who had adopted at least one child from a church-related home for unwed mothers. A follow-up study was conducted roughly 10 years later, in which 181 of the original 300 families participated, including 258 of the 469 adopted children and 95 of the 167 biological children of the adoptive parents.

Confounding Variables

Many of these studies had possible problems with confounding variables. The most common type was inadequate control of family atmosphere variables such as demographic changes, incomplete sibships, age and sex of subjects, socioeconomic status (SES), and sibship size and neglecting to consider the effects of these potentially important confounding variables upon their results.

The Zweigenhaft and Von Ammon (2000) study pointed out that some have criticized birth-order

findings because the researchers have not acknowledged the educational advantages traditionally enjoyed by firstborns. Others have criticized birth-order researchers for ignoring the impact of socioeconomic class.

The Travis and Kohli (1995) study notes that socioeconomics are important for any analysis of birth order effects. Children in small families are more likely to be raised in similar periods of the parents' life cycle and to be closer in age. Birth order could interact with the family cycle to systematically affect the educational achievement of adults, making it necessary to somehow control for period effects.

The Flowers and Brown (2002) study did not consider the athletic competition experience of participants' parents or other siblings, which might be a significant socialization factor. These are additional factors that could influence the pressure put on participants and could therefore affect the anxiety levels of participants in their study.

In the Paulhus et al. (1999) study the finding that lastborns were more likely to be nominated as rebels may be due to the age range of the raters. The youngest siblings in families of students 19 to 21 years old are likely to be teenage or younger. In this case lastborns are likely to be at an age where rebelliousness is common. Maturity-related birth order differences should diminish over time. Lastborns that were rated, being teenagers or younger, may also have had little opportunity to demonstrate intellectual achievement.

Problems in Methodology

Some of the studies used methodologies that may have had an influence on observed results. The Beer and Horn (2000) study noted that questionnaires are usually considered as the gold standard for personality measurement however inferences from real-life behavior regarding personality are more valid than inferences from personality questionnaires. Questionnaires do not capture the "context-dependent" nature of personality.

Many studies use self-report data. This type of data also does a poorer job of capturing birth order's influence on personality than do real-life data or observer ratings.

In the Flowers and Brown (2002) study, administration of the questionnaire did not follow recommended protocol. It was administered 2-3 hours prior to competition rather than the recommended one hour. Because this questionnaire was evaluating anxiety before a competition that difference in time could have a significant impact.

The Holmgren et al. (2006) study was testing for intelligence. In this study it was noted that Intelligence may be of importance for avoiding diseases. If this is the case the effects of birth order will be underestimated by controlling for education and diseases.

The Paulhus et al. (1999) study notes that perceptions of intellectual achievement are not equivalent to concrete indicators. Perceptions of intellectual achievement incorporate perceptions of conscientiousness, which may exaggerate the association with firstborns. Respondents may also have had preconceived notions about birth order and personality that influenced their nominations of achievers and rebels.

Baer et al. (2005) measured creative contributions made by individuals in a team context. Interactions that occur naturally between the members of a team often inhibit creativity. They noted that brainstorming teams have frequently been demonstrated to produce fewer ideas than a comparable number of individual brainstormers due to factors such as social inhibition and cognitive interference. Therefore this study is not generalizable to situations where participants generate ideas independently.

The Stewart et al. (2001) study found in the second part of their study that actual birth position was less related to the PBOI scales (psychological birth order) than in the first part of their study. They point out that two of the variables in their analysis, the PRF-E and SDS scores, may have suppressed some proportion of the variance that actual birth order position otherwise may have contributed to predicting the PBOI scales in their second study.

Limiting Ability to Generalize

Participants in the Gfroerer et al. (2003) study were predominantly young, single, Caucasian college students. This limits the ability to generalize the results of the study.

The Kalkan (2008) study was conducted in Turkey which is a traditional country. Turkey has a

different family structure, religion, cultural and economic background, relationship style, parental styles and parental bonding from those of most Western countries. In this culture firstborn boys are treated more leniently than other children in Turkish families. The study sample here also was relatively well-educated. This homogeneity of subjects limits the generalizability of the results to other populations. (Kalkan, 2008)

Changes Over Time of Measured Variables

Somewhat problematic in studies covering the adult life span, such as the Holmgren et al. (2007) study, when several school reforms have occurred, changing radically the contents of the curricula and the number of years required in primary and secondary school, as is the case in Sweden during the 20th century. The different cohorts are not really on equal terms in this measure.

Between Family vs. Within Family

Many of these studies relied on between-family patterns rather than on within-family patterns. Freese et al. (1999) noted that they compared persons from different families, while birth-order theories posit a process of differentiation that takes place within families.

The Paulhus et al. (1999) study notes that the confounding variables of between-family birth order data are social class, parental personality, and sibship size. A full range of appropriate controls is seldom available. Another known confound of between-family birth order data is genetics. Between-family differences in personality and intellect are dominated by genetic variance.

Clinical Implications

From an Adlerian perspective, the concept of psychological birth order is critical in order to understand the problems clients bring to therapy. It is very important, especially in a therapeutic situation, to understand the individual from his or her own perceptions about family and sibling interactions. Each of these studies identify personality characteristics that may be affected by birth order, and that may provide insight to better understand the client and begin to build a relationship.

Clinicians can use these findings to understand better how psychological birth order position is related to personality and lifestyle development. Understanding these relationships can help the clinician

to more quickly and accurately identify clients' perspectives and to understand his or her psychological perceptions concerning their place in the sibling group and the family. Clinicians can also use these findings to make guesses and share hunches with the client about what typically happens. The clients' mistaken beliefs and private logic will be easier to identify and discuss. Using this information can be a powerful strategy particularly during the relationship development phase of counseling because the clients will quickly tell that the clinician has a strong understanding of their feelings and perceptions.

In order to comprehend fully the position of the client the clinician will have to assess his/her perceived place in the family, that is, the psychological birth order. Knowledge of psychological birth order may provide useful information about the client. Therapists or counselors may develop hypotheses concerning the client's lifestyle. If, in fact, psychological birth order is predictive of relationship beliefs, then the clinician can use these findings to help to understand irrational beliefs about romantic relationships.

Specific results from each study, such as the significant relationships between the middle psychological birth order position and high scores on the Being Cautious scale, are helpful for clinicians to be aware of when working with individuals and families. As an example, high scorers on the Being Cautious scale have a tendency to approach life with caution probably because their early family environment was either discouraging or unpredictable. This information is very useful for the clinician to understand the lifestyle and private logic of the client and can help with developing a relationship with the client as well as interpreting behavior.

Step- and half-siblings imply varying relations in a family between children and caregivers that may complicate the allocation of parental resources and may unfairly undermine the expectations of birth-order theories. Twins, unfortunately, have received little consideration in the birth-order literature.

Sport psychologists and coaches who train athletes may want to consider the role of birth order and sport context. This information may be used to develop strategies for reducing the cognitive anxiety of male athletes in individual competition and the somatic anxiety of female athletes in individual competition.

These data suggest that clinicians working with perfectionists may want to consider the effects of psychological birth order on the type of perfectionism (adaptive or maladaptive) exhibited by clients. For clinicians treating schizophrenics, these findings demonstrate the lack of strong relationships of birth order to the symptoms of schizophrenia. This may be helpful to those who currently use or are considering the use of interventions based on theories of birth order effects.

Counselors and therapists should focus on differences between children within the same family. These within-family differences are more helpful in relating to the client and bringing about the desired change.

Future Research

Further studies should examine family constellation information about each subject. Variables such as participants' and siblings' gender, number of siblings as well as age spacing are important variables for examination in psychological birth order research. Gathering thorough information about family influences could increase our understanding of any differences that may exist. Longitudinal studies that examine the influences of family environment, perceived role, and personality traits, especially from an Adlerian perspective, would advance our understanding of the causal relationships that exist among these variables.

More work needs to be done on birth order and measures of parental investment. The dynamics of interaction between mothers and fathers and their negotiations of investment decisions need to be further explored in follow-up studies. Future research should also take into consideration parental personality characteristics such as divergent thinking skills.

These results raise the possibility that peer influence might be a significant influence for middleborn children. It may worthwhile to consider peer influence in studies of personality development.

More studies are needed to determine whether or not the results of these studies vary according to culture. Future studies should be conducted with subjects who are more diverse in age and not as highly educated.

At early ages it will be important to learn more about what developmental factors explain

individual change and relationship patterns. Researchers must continue to move toward determining for which children at which stages of development, birth order differences exist.

These studies relied mostly on between-family patterns rather than on within-family patterns. Future research should more extensively control for potential confounding variables associated with differences between families, such as family environment, socioeconomic status, parental education and parents' birth order. Future researchers may also explore the relationship between actual birth order and psychological birth order.

Future research might focus on the relationship of perfectionism and other mental health related personality characteristics to other Adlerian constructs such as family atmosphere.

All of these factors have implications that could be pursued to provide guidance for therapists, counselors, and parents, as well as for the individuals themselves.

Conclusion

As we can see from the research explored in this paper, birth order has a significant effect on many aspects of personality. In early childhood firstborn infants are treated differently than their laterborn siblings. Both mothers and fathers spend more time and interact more with their firstborn infants. (Keller & Zach, 2002) As the children grew the mothers interactions with their children were shown to influence the way siblings interact with each other. (Howe & Ross, 1990) During the first two years of their lives personality traits such as helping, protection, companionship and identification showed measurable and sustained differences. (Mendelson & Gottlieb, 1994)

In adolescence it was found that first reared children were more conscientious and agreeable, while for traits such as Conservatism, Neuroticism, Extraversion, Dominance and Openness no statistically significant differences were found. (Beer & Horn, 2000) While only children had significantly higher test scores for divergent thinking, it was found that increasing birth order correlated with decreased divergent thinking ability. It was also found that children with more siblings had a stronger ability for divergent thinking. (Runco & Bahleda, 1987) During adolescence differences in relationships also emerged. Both firstborns and secondborns had more friendship intimacy with their

friends than with their siblings and were more controlling with their siblings. Secondborns had stronger relationship connections than did firstborns. Secondborns who were intimate with their older siblings were also intimate with their best friends. This was not true for firstborns. The sex of their older sibling also influenced their level of friendship intimacy. (Updegraff et al., 2002) It was also found that during adolescence birth order directly affected intellect. Intellect decreased as birth order increased. Extraversion and maturity were influenced by other family atmosphere factors such as parental participation during child rearing. Paternal participation was associated with maturity and maternal participation was associated with introversion. (Nakao et al., 2000)

People have different beliefs and expectations about each birth order rank. Firstborns are believed to be the most intelligent, responsible, stable, the least emotional, and the least creative. Middleborn children are believed to be the most envious and the least bold and talkative. Lastborns are believed to be the boldest, most creative, emotional, extraverted, disobedient, irresponsible, envious, and talkative, and the least stable. Only children ranked themselves low in agreeableness but highest in creativity. (Herrera et al., 2003)

Firstborns are believed to hold jobs of higher prestige. Those occupations believed to be held by firstborns were found to be of a higher level of prestige. When actual jobs were evaluated for prestige level it was found that the occupations held by firstborns were actually of a higher level of prestige. (Herrera et al., 2003)

Firstborns are also believed to be more conscientious and achieving, while laterborns were believed to be more liberal, agreeable, and rebellious. There was no difference in expectations for creativity and extraversion. (Paulhus et al., 1999)

Although Freese et al. (1999) found firstborns to be more liberal than laterborns, rebelliousness was clearly found to be correlated with the laterborn birth ranks. (Zweigenhaft & Von Ammon, 2000) Firstborns are also more independent and more likely to attribute good performance to their own internal qualities, while laterborns are more likely to attribute success to help from others or circumstances. This means firstborns will feel more responsibility along with higher levels of stress. There was no change in

attributions for poor performance which were always more external. (Phillips & Phillips, 2000)

Birth order was found to have a strong negative impact on educational achievement. This impact on the total years of education was only among members of the middle class. There was no impact on those who were either wealthy or poor. (Travis & Kohli, 1995) An individual's creativity was found to be correlated with birth order, and with the quantity and sex of their siblings. For firstborns Baer et al. (2005) found that siblings close in age and of the opposite sex increased creativity.

Firstborn individuals performed better than those born second or third on tests of the working memory subcomponent of executive functioning. Block Design tests indicated a larger age deficit for lastborns. Firstborn children also performed better than both the other two groups on tests of the word fluency measure of executive functioning. (Holmgren et al., 2006) When controlling for socioeconomic status, an interaction between birth order and age was found for block design and a similar interaction was found for word fluency. This indicates a successive decrease in performance from firstborn individuals in the middle-age group. These results imply family structure during childhood is related to adult cognitive functioning. These results also indicate that social and environmental factors during childhood have an effect on intelligence in adulthood and old age. (Holmgren et al., 2006)

In tests of episodic memory later-born siblings also did not perform as well as firstborn siblings. Results showed significant effects for both recall and recognition. The earlier born, the better memory performance. Recall performance impaired with ascending birth order. For recognition the results showed no significant effects of birth order, only effects of age and sex. Less resource for retrieval of information is needed in recognition as compared to recall. Even stronger effects would be expected if the cognitive demands are further increased.

The Salmon (2003) study found a significant impact on familial sentiment due to birth order. Firstborns and lastborns experience a higher degree of parental preference while middle born children are significantly less likely to be chosen as a parental favorite and also receive less parental investment. Firstborns and lastborns appear to identify more strongly with family members and are more positive about helping family members than middleborns. Middleborns are significantly less family oriented and

also expressed significantly more positive views on friendship. Middleborns are also much less likely to cheat on a sexual partner. They are much more careful to maintain high-quality relationships with both friends and with their mates. In people over the age of 40 it was found that only children visit and help their parents more than children with siblings. (Spitze & Logan, 1991)

There is a relationship between sexual orientation and handedness which is moderated by older brothers. A higher number of older brothers increased the likelihood of being gay or bisexual in moderate right-handers only. In both non-right-handers and in extreme right-handers, older brothers either did not increase or lowered the likelihood of being gay or bisexual.

While there was no relationship discovered between birth order and schizophrenia, and only insignificant correlations between birth order and autism and social withdrawal, there was a significant relationship between birth order and anxiety. Firstborns become more anxious than laterborns in stressful situations. For males, cognitive anxiety was the most impacted by birth order, and for females, somatic anxiety had the strongest birth order related impact.

Adaptive perfectionism was associated most with psychological firstborns and was the least common for psychological middleborns, while maladaptive perfectionism is more common among middleborns. Nonperfectionism is more common for both middle and youngest birth ranks.

Increasing birth order rank was also associated with increased irrational relationship beliefs in romantic relationships. While the psychologically first position was negatively related to irrational relationship beliefs, the psychologically middle position was positively related. The feelings of being less important than their siblings and having low self-esteem might be related to increased helplessness and unlovability beliefs. The psychologically youngest position was also positively related to irrational relationship beliefs.

It is important to take into account the psychological birth order position of each individual because this can be different than the biological birth order position. Adler's emphasis was on the importance of the psychological perspective of each child in the family.

In studies of psychological birth order it was found that psychological firstborns showed positive

correlations for Taking Charge, Wanting Recognition, and Striving for Perfection, supporting Adler's hypothesis that firstborns are achievement driven and seek leadership roles. (Gfroerer et al., 2003) It was also found that family achievement emphases, orderliness and being an actual first born predicted higher scores on the psychological first born scales. They were found to have a negative correlation with impulsivity showing a deliberate and planned approach to life. Orderliness and being an actual first born were related to the psychological first born position for men but not for women. Women's first scale was predicted by needs for achievement, recognition by others and a need for dominance. (Stewart et al., 2001)

The middle psychological birth order position was positively related to being cautious and harshness, while belonging/social interest, going along, striving for perfection and softness had a negative correlation. (Gfroerer et al., 2003) The psychological middle position was also associated with increasing levels of family dysfunction and conflict, and decreasing levels of emotional expressiveness in the family. For men, this scale was related to a need to act in an uninhibited, impulsive manner. For women this scale was related to needs for affiliation, aesthetics, sensuality and perception. (Stewart et al., 2001)

The psychologically youngest position was related to belonging/social interest, entitlement, striving for perfection and softness. It was negatively related to being cautious. Youngest scale scores were also associated with needs for attention and recognition and an absence of family dysfunction. The youngest scale was also associated with perceived social support from both family and friends. (Stewart et al., 2001)

The only-child psychological position was positively related to being cautious and entitlement, and negatively related to going along. (Gfroerer et al., 2003) Needs for others approval and for affiliation were also negatively correlated to the only scale. Family dysfunction or conflict, a controlling family environment, and lack of independence contributed as well to perceptions of the only child role. (Stewart et al., 2001)

In this research we have seen much support for Alfred Adler's theories about birth order. We

have seen factors that contribute to the development of differences in such areas as differential parental treatment, expectations of society, and differences in mental abilities such as divergent thinking and memory. Research has demonstrated that differences exist in such diverse areas as sexual orientation, mental health, intelligence and relationship styles.

And we have seen much evidence that these differences in personality actually do exist in meaningful ways, confirming Alfred Adler's theory about the effect of birth order on personality.

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