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## Assessing the Second Born: The Role of Competitiveness and Extrinsic Motivation in Birth Order

Melissa D. Thye  
*University of Central Florida*

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ASSESSING THE SECOND BORN:  
THE ROLE OF COMPETITIVENESS AND EXTRINSIC MOTIVATION IN  
BIRTH ORDER

by

MELISSA D. THYE

A thesis submitted in partial fulfillment of the requirements  
for the Honors in the Major Program in Psychology  
in the College of Sciences  
and in the Burnett Honors College  
at the University of Central Florida  
Orlando, Florida

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Thesis Chair: Dr. Cyrus Azimi

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## **Abstract**

Birth order may represent one of the most influential environmental factors that directly impacts personality development and even life outcomes. The present study sought to expand upon the existing literature by examining the motivational and dispositional differences between first born and second born individuals. Research indicates that first born children show significantly higher levels of academic achievement and lifelong attainment due to experiencing higher parental expectations as well as increased financial support. As a result, the second born child is likely to compare him/herself with the first born sibling and develop a greater level of competitiveness. Additionally, this desire to surpass the first born may lead to the development of extrinsically motivated goals. Few research endeavors to date have explored the specific motivational disposition of the second born child with no future siblings. By engaging in this research, a better understanding of the complex interaction between siblings can be ascertained as well as a deeper appreciation for how the familial environment impacts development. Such information can be applied to the educational setting to develop programs more rewarding and salient to second-born individuals, thus increasing their level of academic achievement.

Seventy-two male and female participants took part in the present experiment. Research validated scales were used to assess overall competitiveness in addition to intrinsic and extrinsic motivation. A paired-t test was used to evaluate the data and compare the differences between the two groups. Although the results do not support the hypotheses, there were a number of limitations that may have served to restrict the scope of the data. The theoretical implications of the results and suggestions for future research will be discussed.

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## **Chapter One: Introduction**

Perhaps there is no environmental factor quite as pervasive and underestimated as the role of birth order in developmental and personality outcomes. The environment in which individuals are born into and raised has a significant impact on the future personality, social, and intellectual development of the individual. Especially important to this development are the early years of maturation as the individual progresses through significant developmental stages that will shape and define the individual's character and temperament. Although parental interaction, support, and attention all play vital roles in the upbringing and future outcomes of the child, the present research endeavor will examine the role that siblings play in molding character development and motivational dispositions.

Most children in the United States are raised in an environment with at least one other sibling. Typically siblings spend time interacting with each other more so than either their parents or peers. Therefore, the role of brothers and sisters in the lives of their other sibling or siblings is paramount to eventual development. Later borns may compare themselves to the first born and develop a competitive need to overcome the first born. Conversely, siblings may go through a process of de-identification wherein they purposefully separate themselves from other siblings (Eckstein & Kaufman, 2012). The interactions between and among siblings and the personality traits associated with each ordinal birth position has been a topic of numerous research endeavors for decades.

Research in the past has shown that first borns comprise roughly 28% of the United States population. It is interesting to note that second borns account for 28% as well with only, middle, and youngest children totaling 5%, 20%, and 18% of the population respectively. It



should be assumed that this data has fluctuated slightly since the completion of the study, but the general population trends remain the same. If second borns make up an equal percentage of the population, it seems imperative to assess this often overlooked birth position. Extensive research has focused on first born, middle born, later born, and only children but has disregarded the unique characteristics of a substantial percentage of the population by failing to assess the second born (Simpson, Bloom, Newlon, & Arminio, 1994). The present study will seek to explore the specific motivational makeup of second born individuals in order to better understand the unique factors that influence this population.

Birth order research is a promising field of study due to the ability to theoretically generalize the results to the majority of individuals. Regardless of whether specific characteristics and personality traits can be attributed to ordinal positions, birth order is a central factor in the formation of identity, self-efficacy, and worldview. Future research could allow researchers as well as educators, parents, friends, and even other siblings to understand more about themselves and others. While past research has led to the formation of trends within each ordinal birth positioning, it is important to note that the goal of such research is never to create or reinforce over-simplified stereotypes about birth order. Taken all together, the research in this area should be applied with caution and with an understanding of the complex environmental interactions that influence development aside from birth order. A brief summary of the role of birth order in the development of specific personality traits will be considered before outlining the methodology of the present study.

## **Chapter Two: Review of Literature**

Extensive research has been conducted in the field of birth order and current academic interest remains high. Generalizations about first borns, only children, middle borns, and later borns have been maintained by years of research. Past research has indicated that intellectual differences may be displayed between first borns and later borns. For instance, the oldest child has been repeatedly shown to display higher IQ, academic success, levels of motivation and achievement (Eckstein, 2000). In particular, research has illustrated that first borns regardless of gender are more likely to attend college than later born siblings, and there is some evidence that first borns are overrepresented in colleges, graduate schools, and among eminent scholars. This overrepresentation may be directly related to the higher level of achievement motivation that is theoretically displayed in first borns at a greater rate than later borns (Schachter, 1963). There is also an overrepresentation of first borns in positions of political prominence. This is illustrated by the fact that there have been a greater number of first born Presidents of the United States and British and Australian prime ministers than any other ordinal birth position (Eckstein & Kaufman, 2012). Additional research involving the role of birth order in personality development has revealed a number of consistent personality traits displayed by first borns and later borns. For instance, first borns are more likely to be dependent and serious, while later borns are more likely to be outgoing and popular (Bradley, 1968). When assessed according to the Big Five Personality Inventory, first borns show higher levels of Conscientiousness, while later borns display higher levels of Openness to experience and Agreeableness (Paulhus, Trapnell, & Chen, 1999). Although there are some inconsistencies in the literature linking personality characteristics to birth positioning, there is a stable trend seen in first borns displaying higher

levels of achievement motivation and academic success than later born siblings (Bonesronning & Massih, 2011; Eckstein & Kaufman, 2012). This has been linked to an environment saturated in parental attention, support, and intellectual interaction that occurs in the formative years of development (Fakouri, 1974). First born children are exposed to parental expectations in a way that future children are not. In response to the pressure to succeed, first born children will typically strive to excel behaviorally as well as in traditional settings such as school and work (Paulhus, Trapnell, & Chen, 1999). Each child enters an environment markedly different from the environment the other siblings are brought into.

It is interesting to note that the prominent birth order researcher, Alfred Adler, emphasized the need to measure what is termed psychological birth order rather than the actual ordinal positioning of the individual. He emphasized that the ordinal birth position alone was not the cause of certain stable personality or dispositional outcomes, but rather people's responses to and beliefs regarding their birth position were far more influential in the development of characteristic approaches to life. He argued that birth order effects are largely the result of how the child interprets family relationships and his or her subsequent place within the familial structure. This self-perception of individual positioning within the family directly inspired the concept of psychological birth order. The Psychological Birth Order Inventory (PBOI) is a scale used to correlate ordinal birth position to psychological birth order. Administration of this scale has illustrated a number of consistent personality traits that correspond to ordinal birth positions. Individuals that psychologically identify with the first born position display less impulsivity and more orderliness, while the psychological youngest birth order position demonstrates passivity, manipulation, and need for attention or recognition (Stewart, Stewart, & Campbell, 2001). While

psychological birth order is an important research consideration, utilizing a scale that assesses psychological birth order and then assigning participants to groups according to perceived birth order introduces the possibility of confounding variables and non-generalizable results. Additionally, the Psychological Birth Order Inventory assigns participants birth order designations based on the endorsement of certain statements. The theoretical foundation of the PBOI relies on widespread, ingrained beliefs about the personality composition of each birth order. However, if the characteristics attributed to each birth order position are inherently flawed, the PBOI loses validity and is no longer a functional measurement of psychological birth order. The PBOI is also not a sensitive measure for detecting and evaluating second born individuals who would be broadly classified as later borns (Stewart, 2012). Research with the Psychological Birth Order Inventory has demonstrated a significant relationship between psychological birth order and actual ordinal positioning,  $X^2(9, N=556) = 68.69, p < .00001$ . However, use of the Psychological Birth Order Inventory has shown that if conditions are not appropriately controlled, there can be a large discrepancy between the actual birth order and psychological birth order (Campbell, White, & Stewart, 1991). Given this finding, the current study will attempt to control conditions that may lead to a disparate psychological birth order. While the PBOI is a valuable tool in the field of birth order research, it is better employed in large sample sizes in conjunction with careful monitoring of actual birth order and any differences between psychological and actual birth positioning (Stewart, 2012). For these reasons, as well as the reasons detailed previously, the PBOI will not be utilized in this research endeavor.

There are some potential confounds that should be considered and avoided when conducting birth order research. Many methodological problems exist in this field of research

which increases the probability of confounding variables and erroneous data analysis. While birth order may represent a significant factor in personality development, motivation, and long term achievement, there may be other factors that influence these same outcomes. Without considering the possibility that individuals are motivated by complex interactions within their environment, it becomes difficult to draw any meaningful conclusions from the data collected (Stewart, 2012). Oftentimes in research conducted in the past, results varied considerably across studies. Such varied results blur the role of birth order and misconstrue the data. A direct cause of much of this ambiguity in findings is due to the poorly controlled conditions of the experiment. For instance, many studies in the past have failed to account for age spacing as an important variable in birth positioning (Watkins, 1992). The effect that age spacing has on sibling interaction and psychological birth order outcomes is an important variable in birth order research. Age spacing refers to the degree of separation in terms of years that a sibling experiences relative to other siblings. If there are several years between the first born and the second born child, the second born may live in an environment where the first born has already moved out of the house and he or she may subsequently be treated like an only child. The youngest child will often fall within the only child scale of the Psychological Birth Order Inventory when there is significant age spacing between the youngest child and the other siblings (Campbell, White, & Stewart, 1991). Additionally, siblings that lived in the same environment are more likely to develop a closer relationship than those siblings that did not cohabitate within the same household (Van Volkom, Machiz, & Reich, 2011). To account for this potential confound, research has suggested that an age difference of five or fewer years will preserve the effects ordinal positioning (Eckstein et al., 2010). While an age difference of five years or more

may serve to undermine the effects of birth order positioning, it is also important to examine the relationship between siblings who are twins. Having no age gap between the two siblings will likely interfere with the typical birth order outcomes and may actually lead to a more competitive environment as the two siblings must simultaneously compete for parental attention and resources (de Haan M., 2010). Given the unique environment in which twin siblings are raised and the probability of disparate birth order effects, it is prudent to include having a twin sibling in the exclusion criteria for studies examining general trends in birth order outcomes. Another potential confound that can occur when conducting birth order research is the presence of a sibling with a developmental, intellectual, or physical disability. Parental and sibling interactions with a disabled child could significantly alter the traditional birth order effects. The death of a sibling could have a similar effect. For instance, if the first born child dies, the second born child may or may not assume the title of first born, and the child is likely to develop in an atypical environment and fail to develop typical birth order outcomes (Eckstein et al., 2010). To avoid a disparate psychological birth order from actual birth position, the number of years between siblings must be controlled.

When conducting birth order research it is important to assess the degree to which gender affects the outcome of the study. Gender differences are more likely to occur when either one or both of the parents are strongly influenced by the gender of their child. For example, the youngest child may be treated like the first born if he is the only boy in the family (Eckstein & Kaufman, 2012). Research indicates that intelligence as measured by IQ testing is higher for first borns and subsequently declines with each sibling. However, there were no differences in intelligence found between genders (Boomsma et al., 2008). When assessing sibling interactions

themselves, females are more likely than males to compare themselves to the sibling closest to their age (Van Volkom et al., 2011). Additionally, there has been evidence to indicate that there may be a significant difference in competitiveness between males and females within the same birth order position (Snell, Hargrove, & Falbo, 1986). Therefore, careful consideration should be given to controlling for gender to ensure consistent results and accurate interpretation of the data. While gender can cause a significant deviation in characteristic birth order effects in unique circumstances, being a first born or later born is a more influential factor.

Faulty conclusions can also be drawn when oversimplifying birth order designations. For instance, research in the past has adopted the Adlerian model and classified birth order into four categories: first born, later born, middle born, and only child. The underlying assumption of using these labels is that assignment to the groups should result in stable patterns of behavior and outcomes. However, in the case of the later born group assignment, individuals within this designation could be the second, third, fourth and often higher sibling within the family. Several past studies have also condensed the birth order groups in such a way that middle born individuals are classified as later borns. This introduces extreme variation into the research model. If later born is defined simply as being the last child within a family, the complex interactions that take place between the siblings are largely ignored. A research model that utilizes this ordinal birth positioning assumes that later borns are not affected by the sheer number of other siblings. This is a potentially dangerous implication. This group designation introduces the possibility of a number of potentially confounding variables that the experiment will be unable to control. Thus for the present study, consideration will be given to the grouping of the participants. Specifically, the study will assign participants to a first born group or second

born without further siblings group in order to limit the ambiguity of the findings and generate generalizable results.

The interaction between the size of the family as well as the environment the child develops in will significantly impact personality and motivational outcomes. There is a significant decline in the number of years of schooling related to birth order. Older siblings are more likely to have more years in school than the younger siblings. This could be directly related to the amount of financial investment the parents must make for each successive child (de Haan M., 2010). Later born children are more likely to receive less parental attention as well as less financial support as parents are forced to pay for several children rather than only one. The resource dilution model accounts for the loss of resources with each additional child (Horner, Andrade, Delva, Gorgan-Kaylor, & Castillo, 2012). Furthermore, the first born enters an environment with a high level of intelligence due to the influence of the parents. Later borns enter a progressively lower intellectual environment due to the lower developmental and intellectual levels of their older siblings (de Haan M., 2010). The middle child and the youngest child have a poorer educational prognosis than first born children. Older children benefit from undiluted resources (Iacovou, 2008). First borns also benefit from better language models than later born children. First borns are more likely to serve as tutors to younger siblings, thus increasing exposure to material and promoting intellectual development (Zajonc, 2001). Past research has also indicated that mothers interact with the first born child in a distinctly different way than later borns. Mothers are more likely to use more complicated explanations as well as stress the importance of achievement when they are conversing with the first born child (Rothbart, 1971). Individuals with multiple siblings are more likely to have well-defined



academic expectations compared to only children or individuals with fewer siblings (Hester, Osborne, & Nguyen, 1992). This supports the idea that the presence of siblings within the family environment has a significant impact on motivational outcomes.

One of the areas that birth order has been found to have a significant impact upon is motivation. One way of conceptualizing motivation is to define it according to mastery versus performance goals. Mastery goals involve striving to excel, improve, or achieve based on personal abilities and aspirations. Performance goals involve comparing personal performance to others and striving to meet or surpass others' level of achievement. First borns show a greater tendency to have mastery goals, while later borns typically display performance goals. Considering the potentially competitive environment that later borns grow up in, it is not surprising that many develop a motivational system based on outperforming others (Carette, Anseel, & Van Yperen, 2011). It is not uncommon for the youngest sibling to experience feelings of inferiority when comparing themselves to older siblings. The first born is typically identified as possessing a drive to achieve and gain the approval of adults and parents, while the youngest child typically does not display the perfectionism that is often seen in the psychological first born. The reason such prevalence for perfectionistic behavior patterns are seen in first borns may be related to the high expectations placed upon them by the parents. As the first and temporarily only child, the first born is exposed to more pressure to achieve and succeed (Ashby, LoCicero, & Kenny, 2003). Later born children often feel as though they must compete with their older sibling (Campbell, White, & Stewart, 1991). Research assessing the early recollections of individuals across the different birth order positions suggests that later borns are heavily influenced by their older siblings. When asked to recall a childhood incident, later born

participants were more likely to mention their siblings when compared to first born participants. This outcome is not entirely unexpected, however, as younger siblings were introduced into an environment saturated with sibling interaction whereas first borns functioned as only children for a period of time prior to the introduction of siblings. The results of this research also indicate that later borns have a greater tendency to compare themselves to first borns and even compete with the accomplishments of the older sibling (Fakouri & Hafner, 1984). First borns are also more likely to believe that good performance is related to personal efforts. As a result, they are not as willing to ask for or accept assistance from others (Phillips, 2000).

A distinct link can be distinguished between the goals of the first and later born children and intrinsic and extrinsic motivation. Intrinsic motivation involves the desire to pursue an activity or accomplish a goal for the sake of the activity itself or for pure enjoyment. It can be conceptualized as an internally driven desire to engage in an activity. Extrinsic motivation, conversely, involves completing a task or engaging in an activity to gain some reward or incentive. It can be understood as an external pressure to undertake a task or achieve (Reiss, 2012). Mastery goals are commonly linked with intrinsic motivation, while performance goals are often associated with extrinsic motivation. There is support for the idea that mastery goals are linked with long term intrinsic goals, whereas performance goals are associated with more extrinsically motivated future goals (Lee, McInerney, Liern, & Ortiga, 2010). Therefore, the prevalence of a mastery goal approach in first borns is expected to produce future goals intrinsic in nature. Similarly, the presence of performance goals in later born siblings will likely lead to the development of future goals that are extrinsic in nature.

## **Statement of Problem**

Drawing from past and present research on birth order outcomes, it appears as though second born children without future siblings represent a specific ordinal positioning that is often overlooked in birth order research (Zajonc, 2001). The significance of being the second born lies in the possibility of feeling the need to directly compete with the first born. They are the first sibling to be introduced to an environment of lowered parental expectation, attention, and resources. It seems not only possible, but probable that such individuals develop specific personality characteristics separate from other birth order positions. They are also unique in that without the presence of later siblings, they only have the first born to compare themselves against. Given the overwhelming support that first borns are more likely to excel academically, receive more financial support and parental attention, and be overall more successful in the future than later borns, it seems reasonable to assume that many second borns will feel inadequate and may respond with competitiveness. Furthermore, the research suggests that because the individual is a later born, he or she will develop an orientation toward performance goals. According to the literature, an orientation toward performance goals will lead to a reliance on extrinsic motivation.

## **Hypotheses**

The following hypotheses are proposed regarding the current investigation:

Hypothesis 1: Second-born individuals with no further siblings will display more competitiveness when compared to first-born individuals from the same age demographic.

Hypothesis 2: Second-born individuals with no further siblings will display a tendency to be more extrinsically motivated than first born siblings from the same age demographic.

## **Chapter Three: Method**

### **Participants**

Seventy-two participants were included in the data analysis for this study. The ages of the participants ranged from 18 to 48, and both male and female participants of varying ethnicities completed the study. Initially 152 individuals took the study but only 81 of those individuals were considered eligible for the study based on the exclusion criteria established before study administration. The exclusion criteria included: being an only child, having more than one other sibling, having more than a five year difference in age between the participant and the other siblings or an age gap of zero as in the case of twins. Participants were all students attending the University of Central Florida and were compensated with class credit upon completion of the study. Both groups of participants were recruited via an electronic listing within the UCF Sona Systems web service.

### **Materials**

The materials consisted of three brief questionnaires which were administered online through the UCF Sona Systems website. The first questionnaire asked basic demographic information to ensure participation eligibility. Although the survey system that was used was incapable of halting the progress of ineligible participants based on the answers to the demographic survey, those participants were later eliminated from the data analysis.

The second questionnaire administered was the Work Preference Inventory-College Student Version. The Work Preference Inventory (WPI) measures the intrinsic and extrinsic motivation of an individual. A specific college student version of the WPI was used that differs slightly in the wording of some of the questions. The decision to use the college version of the

WPI was based primarily on the anticipated sample population. Although the two primary scales are subdivided into four secondary subscales, only the overall composite scores on the intrinsic and extrinsic scales were used in the current investigation. There were 30 questions with responses ranging from 1 (never/ almost never true) to 4 (always/almost always true) (Fairchild, Horst, Finney, & Barron, 2005). Both the intrinsic and extrinsic scales of the college student version of the Work Preference Inventory displayed strong test-retest reliability over a period of six months (intrinsic scale = .84, extrinsic scale = .94). There were no significant differences in scores found between men and women on either of the primary scales in the student version of the WPI (Amabile, Hill, Hennessey, & Tighe, 1994). The Cronbach's alphas for the intrinsic and extrinsic primary scales of the student version of the WPI were .76 and .63 respectively thus demonstrating reliable internal consistency (Loo, 2001).

The final questionnaire given was the Revised Competitiveness Index. The scale consists of fourteen questions assessing enjoyment of and contentiousness related to competition. Participant responses range from 1 (strongly disagree) to 5 (strongly agree). Given the potential to predispose the participant to knowledge that may affect the participants' responses, the scale was referred to as an "Attitude Questionnaire" when it was administered (Houston, 2012). Recent research has supported the reliability of the Revised Competitiveness Index to measure the construct of competitiveness. Cronbach's alphas for the 9 Enjoyment of Competition and the 5 Contentiousness items were .93 and .82 respectively. The Revised Competitiveness Inventory overall was found to be highly reliable (14 items;  $\alpha = .90$ ). The test-retest reliabilities were also consistent for the Enjoyment of Competition subscale ( $r = .85$ ), the Contentiousness subscale ( $r = .78$ ), and the Revised Competitiveness Index overall ( $r = .85$ ) (Harris & Houston, 2010).

## **Research Design**

The experiment employed a matched-subjects design with two groups and three measurements that were assessed between the groups. Group assignment was determined based on birth positioning with one group consisting of only first born individuals and the second group consisting of only second-born individuals. The two group assignments based on the birth order designation of the participant served as the independent variables within the design of the study. The dependent variables were the composite scores on the three scales including overall competitiveness, extrinsic motivation, and intrinsic motivation. According to the matched-subjects design, all of the participants in both groups were administered each of the scales.

Prior to conducting the experiment, a power analysis was run to determine the minimum number of participants required to obtain adequate power. A moderate effect size value of .50 was used in order to detect moderate changes in the data. There has been no research to support the use of a small or large effect size within the field of birth order research. The alpha and beta values were set at .05, resulting in a power of .95. The analysis indicated that a sample size of 42 with 21 participants in each group would serve as the minimum number of participants needed. The total number of eligible participants after accounting for the exclusion criteria totaled 81. However, a matched-subjects design requires an equal number of participants in each group. There were 45 first born participants and 36 second born participants; therefore, 9 participants were eliminated from the first born group resulting in a total of 72 participants with 36 in each group.

## **Procedure**

Participants were able to access the study through the UCF Sona Systems website. Once initiated, the participants completed three questionnaires and the data was collected

electronically. The results of the three questionnaires were then compared between participants who were first born and participants who were second born without any further siblings.

For the Work Preference Inventory a composite score for each construct was generated that ranged from 15 to 60. The following questions comprise the intrinsic motivation scale: 3, 5, 7, 8, 9, 11, 13, 14, 17, 20, 23, 26, 27, 28, and 30. Questions 1, 2, 4, 6, 10, 12, 15, 16, 18, 19, 21, 22, 24, 25, and 29 are included in the extrinsic motivation scale. In order to ensure response consistency and to generate a meaningful composite score, the following items were reversed scored: 1, 9, 14, 16, and 22. A higher score on a construct indicates a greater predisposition for that construct. The intrinsic and extrinsic composite scores were subsequently analyzed between the two groups. The responses to the Revised Competitiveness Index were summed. Again in order to ensure the consistency of responses, the following questions were reverse scored: 3, 4, 5, 6, 7, 8, 9, 10, and 14. The possible composite score falls between 14 to 70 with a higher score indicating higher levels of competitiveness. A paired-t test was computed to assess the relationship between all of the experimental variables. The difference between the means of the two groups on each of the dependent variables was analyzed to determine if any significant differences were present

## Chapter Four: Results

The current investigation proposed two hypotheses that were subsequently statistically analyzed and interpreted. The first hypothesis stated that second-born individuals with no further siblings will display more competitiveness when compared to first-born individuals from the same age demographic. The second hypothesis stated that second-born individuals with no further siblings will display a tendency to be more extrinsically motivated than first born siblings from the same age demographic. A matched-subjects experimental design was utilized in this study. Each participant completed all of the study content and were assessed according by group which was represented by birth positioning. After the administration of three surveys assessing competitiveness, intrinsic motivation, and extrinsic motivation, the raw scores from these measures were analyzed to assess the significance of the differences between the means of the two independent variables within each of the three dependent variables. A paired-samples t test was thus the most appropriate statistical indicator of any significant differences between the groups across the different surveys.

The SPSS output of the paired samples statistics is shown in Table 1. Listed within the table are the means, sample size, and standard deviations of the composite scores on each of the dependent variables within each group. An examination of the means within Table 1 illustrates how marginally the means differed among the different scales. The overall competitiveness of the first born group had the highest mean ( $M=46.44$ ) but also the second highest standard deviation ( $SD=11.480$ ).



Table 1: Paired Samples Statistics

<b>First Born</b>	<b>Mean</b>	<b>N</b>	<b>Std. Deviation</b>
Competitiveness	46.44	36	11.480
Extrinsic Motivation	43.78	36	12.513
Intrinsic Motivation	41.11	36	6.061
<b>Second Born</b>			
Competitiveness	42.08	36	5.028
Extrinsic Motivation	41.08	36	5.045
Intrinsic Motivation	41.72	36	4.761

Table 2 illustrates the paired samples test that was conducted across all of the conditions. The table lists the paired differences between the groups on each dependent variable. Additionally, the table displays information regarding the t value, the degrees of freedom and significance of the results. A paired-samples t test was conducted to compare the composite score from the Revised Competitiveness Index in the first born condition and the second born condition. There was not a significant difference in the scores for first born (M=46.44, SD=11.48) and second born (M=43.78, SD=12.51) conditions on the Revised Competitiveness Index;  $t(35) = .91, p = .367$ . Another paired-samples t test was conducted to assess the difference in the overall extrinsic motivation score between the first born and second born conditions. There was not a significant difference in the scores for the first born (M=41.11, SD=6.06) and the second born conditions (M=42.08, SD=5.03) on overall level of extrinsic motivation as measured by the Work Preference Inventory-College Student Version;  $t(35) = -.78, p = .440$ . Finally, the same test was conducted to evaluate the differences between the first born and second born conditions on the overall score for intrinsic motivation on the Work Preference Inventory: College Student Version. Again, there was not a significant difference in the mean score for the first born group (M=41.08, SD=5.05) and the second born group (M=41.72, SD=4.76) on the intrinsic motivation scale of the WPI;  $t(35) = -.546, p = .588$ .

Table 2: Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
<b>Pair 1</b>	Total First Born and Second Born Competitiveness	2.667	17.496	2.916	3.253	8.587	.914	35	.367
<b>Pair 2</b>	Total First Born and Second Born Extrinsic Motivation	-.972	7.474	1.246	3.501	1.557	.781	35	.440
<b>Pair 3</b>	Total First Born and Second Born Intrinsic Motivation	-.639	7.019	1.170	3.014	1.736	.546	35	.588

## **Chapter Five: Discussion**

### **Implications**

The importance of studying the motivational and dispositional characteristics associated with birth order stems from a desire to understand how the familial environment and the sibling relationships specifically relate to positive life outcomes and motivation. Such knowledge would allow parents to adjust certain patterns of behavior to better provide for the unique needs of the child. Another application of the study is within the educational setting. Motivation can and does play a significant role in educational outcomes including academic attainment and career advancement. Individuals who display intrinsic motivation are driven by an internal desire to succeed or accomplish what is personally valued to those individuals. Individuals who are primarily motivated intrinsically will rely less on the feedback, performance, or expectations of others. Individuals that are primarily extrinsically motivated seek external rewards, stimulation, or incentive to motivate them to complete a task or engage in an activity. Such individuals may be more difficult to encourage within the educational setting due to the lack of personal, internal motivation to succeed. If the research reliably indicates that second born children are more extrinsically motivated, than teachers can use this knowledge to develop programs that will encourage external reward and feedback. With interventions such as this, it is theoretically possible to encourage second borns and increase the overall level of academic attainment.

It was hypothesized that second born individuals with no further siblings would display more competitiveness as well as more extrinsic motivation when compared to age-matched first born individuals. Implicit in this statement is that intrinsic motivation would be expected to be higher in first borns when compared to their second born counterparts. Although the hypotheses

put forth in this study were not supported by the data collected, there are still important conclusions that can be drawn from the data. It is important to note that the presence of no results is a result on its own. Finding no significance between the two groups on the three scales can indicate that intrinsic motivation, extrinsic motivation, and competitiveness do not differ between the groups. Certainly it is possible for other motivational factors as well as generalized personality trends to be seen across birth order designations, but the variables assessed in the present study may not be consistent outcomes of birth order. Some of the limitations of the experiment as well as suggestions for future research within the field of birth order research are discussed.

### **Limitations**

There were a number of limitations to the present research endeavor that may have served to constrict the applicability of the data collected. Chief among these limitations was the population that was sampled. It is interesting to note that many studies are conducted through universities where college undergraduates serve as a convenient and readily available population. Utilizing undergraduate students can be detrimental to the overall research investigation, however, as skewed results can mislead well educated researchers with novel and potentially significant research questions. The use of the college population is also likely to impact motivational studies in particular as the sample is comprised of individuals who presumably already show a higher level of motivation through their enrollment in college. The lack of significance between the composite intrinsic and extrinsic motivation scores indicates that both groups were roughly matched in terms of the presence and the type of motivation. Certainly the fact that all of the participants displayed a high level of motivation is atypical when utilizing a

standardized motivational measure. A possible ceiling effect may have occurred that limited the scope of the study. A related limitation that should also be considered is that sampling from a generally homogenous population that is actively involved in some degree of higher education can lead to results that are not generalizable to more diverse populations. This study in particular sought to examine specific motivational differences between two very broad groups. The group assignment solely depended on the ordinal birth positioning of the individual and thus age, sex, race, level of scholastic achievement, marital status, and a great number of other factors were deemed irrelevant to the overall research question. Thus the groups assigned in this study represented a very diverse population but the data was drawn from a uniform sample of participants. It can be assumed that administering the study to only undergraduate students likely limited the overall applicability of the results to the rest of the population.

The research that served as the impetus of this experiment suggested that first borns tend to account for a greater percentage of the total college population than later borns. However, the instruments utilized in this study were not able to detect the total enrollment of first borns versus second borns within the university. Additionally, the nature of a paired-t test eliminates this important variable by matching an equal number of participants within each group assignment. No conclusions could be drawn about the overall college attendance rates of first borns versus second borns. Such data would likely illustrate important differences between the groups in terms of motivation to succeed academically and even life outcomes.

Another important consideration is the fact that participants were from different families and likely experienced varied environments as they matured. Assessing the characteristics of a first born individual from one family versus a second born individual from another family may

not be an accurate indicator of the influence of birth order. For instance, the second born from one family may be significantly more competitive and extrinsically motivated than the first born from the same family, but when compared to a different family, the same second born and the first born may display no significant difference. The foundation of birth order research is built upon the idea that sibling interaction and birth order impacts each sibling in a characteristic way, but if the first born from one family is more competitive than the first born from another family an examination of the overall competitiveness score across families may lead to an erroneous conclusion. Theoretically, the stability of the personality characteristics associated with each ordinal birth position should remain stable across families, but it might be interesting to conduct a study similar to the current investigation within family units to isolate any trends in motivation or competitiveness. While personality tendencies may be characteristically present according to birth positioning, the expression of those characteristic traits may be more marked in some families or individuals than others.

### **Future Research**

Future research within the field of birth order should draw from the limitations of the present study to formulate a research model that is able to detect significant, generalizable results. The chief concern in most, if not all, research endeavors is whether the participants sampled are reflective of the overall target population that is of interest to the researcher. In this case, utilizing a more diverse pool of participants may have illustrated more substantial and significant motivational differences between the groups. Taking into account the age, educational attainment, race, and possibly many other factors would lead to a more heterogeneous and thus more generalizable sample.

The nature of the surveys utilized in the current study prevented a total number of first versus second borns enrolled in college from being determined. Future researchers that conduct birth order studies on college populations could resolve this issue by accounting for the overall number of first, second, or later born participants within a given sample. This data may better illustrate the motivational differences between the two groups to a greater degree than the questionnaires that were used in this study.

The difficulty in identifying trends across birth order positions may be lessened by examining these trends within families. General motivational and dispositional trends may be present that the questionnaires are not able to detect across families. Therefore, researchers may find it more advantageous to collect data from within the same families to have a controlled sample to more accurately examine personality development.



## **Appendix A: IRB Approval Letter**



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901 or 407-882-2276  
[www.research.ucf.edu/compliance/irb.html](http://www.research.ucf.edu/compliance/irb.html)

## Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**  
**FWA00000351, IRB00001138**

To: **Cyrus Azimi and Co-PI: Melissa D. Thye**

Date: **May 02, 2013**

Dear Researcher:

On 5/2/2013, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination  
Project Title: Assessing the Second Born: The Role of Competitiveness and Extrinsic Motivation in Birth Order  
Investigator: Cyrus Azimi  
IRB Number: SBE-13-09365  
Funding Agency:  
Grant Title:  
Research ID: N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 05/02/2013 02:59:56 PM EDT

A handwritten signature in black ink that reads 'Joanne Muratori'.

IRB Coordinator

**Appendix B: Demographic Information Questionnaire**

**Demographic Information Questionnaire**

1. Gender?
  - Male
  - Female
2. Age?
3. How many siblings do you have?
4. If you only have one other siblings, how many years separate you and your sibling (please note if you have a twin)?
5. What is the gender of your sibling?
  - Male
  - Female
  - I have more than one sibling
6. Are you the first born child or the second born child?
  - First Born Child
  - Second Born Child
  - Neither; I have more than one sibling

**Appendix C: Work Preference Inventory-College Student Version**

**Work Preference Inventory**  
**College Student Version**  
 Teresa M. Amabile, Ph. D.

Please rate each item in terms of how true it is of you. Please circle one and only one letter for each question according to the following scale:

N = Never or almost never true of you  
 S = Sometimes true of you  
 O = Often true of you  
 A = Always or almost always true of you

- |   |   |   |   |  |
|---|---|---|---|--|
| N | S | O | A | 1. I am not that concerned about what other people think of my work.                                     |
| N | S | O | A | 2. I prefer having someone set clear goals for me in my work.  |
| N | S | O | A | 3. The more difficult the problem, the more I enjoy trying to solve it.                                  |
| N | S | O | A | 4. I am keenly aware of the goals I have for getting good grades.  |
| N | S | O | A | 5. I want my work to provide me with opportunities for increasing my knowledge and skills                |
| N | S | O | A | 6. To me, success means doing better than other people.  |
| N | S | O | A | 7. I prefer to figure things out for myself.   |
| N | S | O | A | 8. No matter what the outcome of a project, I am satisfied if I feel I gained a new experience.          |
| N | S | O | A | 9. I enjoy relatively simple, straightforward tasks.   |
| N | S | O | A | 10. I am keenly aware of the GPA (grade point average) goals I have for myself.                          |
| N | S | O | A | 11. Curiosity is the driving force behind much of what I do.   |
| N | S | O | A | 12. I'm less concerned with what work I do than what I get for it.                                       |
| N | S | O | A | 13. I enjoy tackling problems that are completely new to me.   |
| N | S | O | A | 14. I prefer work I know I can do well over work that stretches my abilities.                            |
| N | S | O | A | 15. I'm concerned about how other people are going to react to my ideas.                                 |
| N | S | O | A | 16. I seldom think about grades and awards.  |
| N | S | O | A | 17. I'm more comfortable when I can set my own goals.  |
| N | S | O | A | 18. I believe that there is no point in doing a good job if nobody else knows about it.                  |
| N | S | O | A | 19. I am strongly motivated by the grades I can earn.  |
| N | S | O | A | 20. It is important for me to be able to do what I most enjoy.   |
| N | S | O | A | 21. I prefer working on projects with clearly specified procedures.                                      |
| N | S | O | A | 22. As long as I can do what I enjoy, I'm not that concerned about exactly what grades or awards I earn. |
| N | S | O | A | 23. I enjoy doing work that is so absorbing that I forget about everything else.                         |
| N | S | O | A | 24. I am strongly motivated by the recognition I can earn from other people.                             |
| N | S | O | A | 25. I have to feel that I'm earning something for what I do.   |
| N | S | O | A | 26. I enjoy trying to solve complex problems.  |
| N | S | O | A | 27. It is important for me to have an outlet for self-expression.  |
| N | S | O | A | 28. I want to find out how good I really can be at my work.  |
| N | S | O | A | 29. I want other people to find out how good I really can be at my work.                                 |
| N | S | O | A | 30. What matters most to me is enjoying what I do.   |

**Appendix D: The Revised Competitiveness Index**

**The Revised Competitiveness Index**

**Attitude Questionnaire**

**Instructions:** Use the following response scale in answering the items below. Make sure to read each item carefully and circle the number that best represents your answer.

- 1 = Strongly Disagree**
- 2 = Slightly Disagree**
- 3 = Neither Disagree Nor Agree**
- 4 = Slightly Agree**
- 5 = Strongly Agree**

- |     |   |   |   |   |   |   |
|-----|---|---|---|---|---|---|
| 1.  | I get satisfaction from competing with others.                          | 1 | 2 | 3 | 4 | 5 |
| 2.  | I am a competitive individual.  | 1 | 2 | 3 | 4 | 5 |
| 3.  | I will do almost anything to avoid an argument.                         | 1 | 2 | 3 | 4 | 5 |
| 4.  | I try to avoid competing with others.                                   | 1 | 2 | 3 | 4 | 5 |
| 5.  | I often remain quiet rather than risk hurting another person.           | 1 | 2 | 3 | 4 | 5 |
| 6.  | I find competitive situations unpleasant.                               | 1 | 2 | 3 | 4 | 5 |
| 7.  | I try to avoid arguments.   | 1 | 2 | 3 | 4 | 5 |
| 8.  | In general, I will go along with the group rather than create conflict. | 1 | 2 | 3 | 4 | 5 |
| 9.  | I don't like competing against other people.                            | 1 | 2 | 3 | 4 | 5 |
| 10. | I dread competing against other people.                                 | 1 | 2 | 3 | 4 | 5 |
| 11. | I enjoy competing against an opponent.                                  | 1 | 2 | 3 | 4 | 5 |
| 12. | I often try to out perform others.                                      | 1 | 2 | 3 | 4 | 5 |
| 13. | I like competition.   | 1 | 2 | 3 | 4 | 5 |
| 14. | I don't enjoy challenging others even when I think they are wrong.      | 1 | 2 | 3 | 4 | 5 |



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