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Birth order and procrastination: An analysis of first-born and last-born individuals

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Abstract
The influence of birth order on personality development and behavioural tendencies has been a subject of considerable research, with Alfred Adler's theory providing a prominent framework. This study examines the relationship between birth order and procrastination, focusing on first-born, last-born, and only children. Adler's theory suggests that birth order shapes personality traits and behaviours, potentially influencing procrastination tendencies. First-borns are often characterized by responsibility and conscientiousness, possibly leading to perfectionism and procrastination as coping mechanisms. In contrast, last-borns, who may experience more leniency, might develop a more carefree disposition but also a higher propensity for procrastination. This research employs a correlational design, utilizing an online survey among 130 college students aged 18-30. Results indicate a significant positive correlation between birth order and procrastination levels, with last-born individuals exhibiting higher procrastination compared to first-borns. The study also explores gender differences in procrastination but finds no significant correlation. These findings underscore the importance of considering birth order and its interaction with personality traits and environmental factors in addressing procrastination behaviours among students.

Keywords: Birth order, procrastination, first-born child, last-born child

Introduction

The concept of birth order has captivated scholars and researchers for decades, with many studies investigating its potential influence on personality development and behavioural tendencies. Among the most notable theories in this field is that of Alfred Adler, a pioneering psychologist who posited that an individual's position within the family hierarchy significantly impacts their personality traits and life choices. According to Adler, birth order can shape one's experiences, attitudes, and behaviours, including the propensity to procrastinate.

Adler's theory suggests that first-born children often receive undivided attention from their parents until the arrival of siblings, which can foster a sense of responsibility and a desire to meet high expectations. As a result, first-borns may develop traits such as diligence, conscientiousness, and leadership qualities. However, they may also experience pressure to maintain their status and meet parental expectations, potentially leading to perfectionism and, in some cases, procrastination as a form of coping with these pressures.

In contrast, last-born children, often regarded as the 'babies' of the family, may receive more leniency and indulgence. Adler argued that this position could lead to a more carefree and sociable disposition, but it might also result in less discipline and a tendency to procrastinate, as last-borns might rely on others to take care of responsibilities.

Only children, who do not experience sibling rivalry or comparison, often receive continuous attention and support from their parents. Adler believed that only children might develop characteristics similar to first-borns, such as maturity and conscientiousness, due to their close interactions with adults. However, they may also face unique challenges, such as higher expectations and potential isolation, influencing their approach to tasks and deadlines.

This paper aims to explore the relationship between birth order and procrastination, focusing on first-born, last-born, and only children through the lens of Adler's theory. By examining existing literature and synthesizing findings from various studies, we seek to provide a comprehensive analysis that sheds light on how these birth order positions influence procrastination behaviours. Understanding these dynamics offers valuable insights into personal development and the broader psychological implications of birth ord.er.

Theoretical Background

Alfred Adler, a prominent Austrian psychiatrist and founder of Adlerian psychology, proposed a theory that birth order significantly influences personality and behaviour. According to Adler, the position one holds within the family hierarchy can shape one's characteristics, attitudes, and interactions with others. This theory emphasizes the unique psychological environment and parental attention each child receives based on their birth order, leading to distinct personality traits and behavioural patterns.

For firstborn children, Adler observed a tendency toward responsibility, reliability, and organization. As the initial recipients of their parents' undivided attention, firstborns often develop leadership qualities and a strong sense of duty. However, the arrival of a sibling can disrupt this dynamic, leading to feelings of dethronement and a potential struggle with perfectionism and authoritarian tendencies.

In contrast, the youngest children, or lastborn, are typically seen as charming, outgoing, and sociable. With the advantage of parental and sibling attention, lastborn often enjoy a more relaxed upbringing, fostering a free-spirited and sometimes attention-seeking nature. Despite these positive traits, they may also face challenges such as dependency, lack of self-discipline, and feelings of inferiority.

Only children occupy a unique position in Adler's birth order theory. Without siblings, they receive their parents' undivided attention and resources, which can lead to maturity, self-confidence, and strong intellectual abilities. However, this can also result in challenges in social

interactions, a tendency toward perfectionism, and difficulty with sharing or collaboration.

Adler's birth order theory provides a framework for understanding how family dynamics and parental attention contribute to the development of personality. While birth order plays a significant role, Adler also recognized that individual temperament and family environment are crucial factors in shaping one's behaviour and interactions.

Review of Literature

Gabriel and Kimani, (2015) aimed to explore how birth order affects procrastination among college students in Eldoret town. The study concluded a statistically significant relationship between birth order and procrastination, particularly among last-borns. The hypothesis testing confirmed a significant association between procrastination and respondents' age. Among procrastinators, 57.1% were female, and 42.9% were male.

Saleem, Marium, Rafique, Rafia (2012) [26] study aimed to investigate the potential link between procrastination and self-esteem among university students. The study also sought to identify gender and birth order differences in both procrastination and self-esteem. The results indicated a significant negative correlation between procrastination and self-esteem among university students. The study suggests the potential improvement of self-esteem through the implementation of psychological interventions.

Preeti Tabitha Louis and Navin Kumar, (2016) [18], study focus on the Perfectionism as a complex characteristic with both advantageous and detrimental aspects which is linked to leadership qualities and high intellectual abilities. Interestingly, first-born individuals were more likely to exhibit perfectionistic tendencies, and insights from interviews highlighted the influential role of fathers in decision-making and the manifestation of conscientious behavior. The findings of this study underscore the significance of addressing perfectionism among engineering students and fostering adaptive responses to familial and societal expectations. The results offer valuable insights for educational interventions aimed at promoting positive and adaptive coping mechanisms for students dealing with perfectionistic tendencies.

Zhang Y and Liu F. (2023) [31], meta-analysis study consolidates the findings of 40 studies examining the relationship between birth order and procrastination. The analysis reveals a small but statistically significant tendency for later-borns to exhibit higher levels of procrastination than their older siblings. However, the effect size is modest, suggesting that while birth order may contribute to procrastination, it is likely one of many factors, including personality traits and environmental influences.

Smith, L. E., & Gomez, R. J. (2023) [27] study explores the differences in procrastination tendencies between first-born and last-born children, with a focus on the mediating role of personality traits. Results indicated that while direct birth order effects on procrastination were minimal, significant differences were observed in conscientiousness and neuroticism across birth orders, which in turn were related to procrastination. Specifically, first-borns showed higher levels of conscientiousness and lower levels of procrastination, suggesting that personality traits may mediate the relationship between birth order and procrastination

Garcia, M. J., and Rodriguez, P. Q. (2023) [10], study explores the influence of parental expectations on the relationship between birth order and procrastination during the transition to emerging adulthood. Findings revealed that first-born individuals experiencing high parental expectations were more susceptible to procrastination, suggesting a potential stress-mediated pathway. Later-born individuals, however, displayed varied procrastination tendencies irrespective of parental expectations. This study highlights the complex interplay of birth order and parental influences during the critical phase of emerging adulthood.

Peter JO, Aloka, (2023) [2], investigated how birth order differences affect the adjustment of first-year undergraduate students at a selected university in Kenya. The ANOVA results revealed a significant effect of the birth order on the overall adjustment level of first-year students. Tukey's HSD Post Hoc test further indicated that first-born students exhibited significantly higher overall adjustment compared to other birth orders. The study suggests that university counselling centre staff should develop specific orientation programs to enhance the adjustment of first-year students, particularly those occupying later birth orders in their families, in addition to addressing the needs of first-born students.

Nguyen, H. T., & Patel, S. K. (2023) [25] In this cross-cultural study examines the influence of birth order on procrastination across different cultural contexts. The findings revealed significant cultural differences: in collectivist cultures, birth order had a more pronounced effect on procrastination, with later-borns more likely to procrastinate. In contrast, in individualistic cultures, the effect of birth order was negligible. This study highlights the importance of cultural context in understanding the dynamics of birth order and procrastination.

Carter, E. J., & Williamson, H. G (2023) [7], this longitudinal study examines the influence of family dynamics and birth order on the development of procrastination habits from adolescence to young adulthood. The results indicate that family dynamics, particularly parenting style and sibling interactions, play a significant role in shaping procrastination tendencies. Moreover, middle children in families with highly competitive sibling environments displayed higher levels of procrastination, suggesting that birth order interacts with family context to influence procrastination.

Ranu Roy, Dr. Debasri Banerjee, (2022) [21], studies undergraduate education is a crucial component of the higher education system in India, and the psychological factors of undergraduate students significantly impact their learning. The results indicated that male and female students differed in their levels of procrastination. However, there was no significant difference in procrastination among students from different academic streams (Science, Commerce, and Humanities).

Sreethi Nair, (2017) [24] study titled 'Procrastination Behaviour, Stress Tolerance, and Study Habits' aimed to address a gap in cross-cultural analysis between Kerala and Abu Dhabi, considering the significant presence of Indians in Abu Dhabi. The findings indicated that students in the UAE generally exhibited lower stress tolerance compared to those in Kerala. However, there was no significant difference observed in terms of procrastination behaviour and study habits between the two groups.

Methodology

Aim

To study the relationship between birth order and procrastination.

Objectives

1. To examine the relationship between birth order and procrastination among college students.
2. To study if there are gender-based differences in procrastination among college students.
3. To study if the last born has higher procrastination level among college students.

Hypothesis

H1: There is significant relationship between birth order and procrastination.
H2: There is significant gender difference in procrastination among first born and last born.
H3: Last-born individuals have higher levels of procrastination compared to first-born individuals.

Procedure

An online consent form was prepared prior to the commencement of data collection activity. This consent form was attached to the first section of the google form. This section also includes what the study is about and its purpose. The participants were well aware of the study and the participant inclusion and exclusion criteria. The confidentiality of each participant has been maintained throughout the research.
The sample population was established through an online survey distributed via Google Forms. the responses were collected through online surveys. The data was collected with their consent and full participation. The questionnaires were distributed to the individuals with age group of 18-30 selected. All the individuals participated and answered the questionnaire. The data was coded and analysed. For the interpretation of results, the SPSS statistics was used.

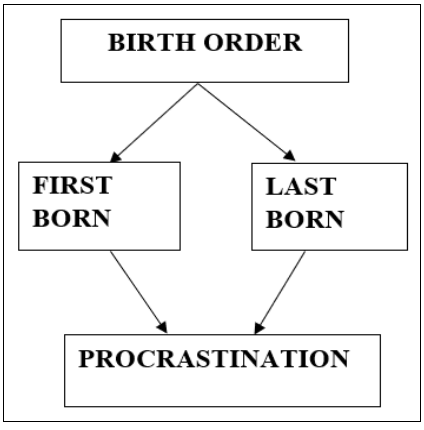
Consent Process: Participants are provided with a consent form explaining the study's purpose, procedures and confidentiality measures before proceeding to the survey.

Google Form Survey: The survey consists of several sections:

1. Voluntary participation in the study.
2. Demographic Information: Collects data on age, gender, field of study and other relevant demographics.
3. Birth order questions: to assess the individual's birth order (such as First born, Last born) and siblings if any.
4. General Procrastination scale: to assess the individuals procrastination level.

Research Design

Correlational study.



Sampling Size and Nature

The study aims to include a sample of 130 college students aged 18 to 30 years. By focusing on this demographic, the study seeks to understand the impact of birth order on procrastination among college students.

Sampling criteria

Participation inclusion criteria

1. The study sample is for college students
2. Voluntary participation
3. Adults within the range of 18 to 30
4. provide informed consent

Participant Exclusion Criteria

1. Individuals not currently enrolled in college.
2. Those unwilling to participate or unable to provide informed consent

Tool of data collection

1. Socio-demographic Data Sheet**:** Semi structured form gathering essential information about participants to understand their background and context.
2. Birth order questions: to assess the individual's birth order (such as First born, Middle born, only child, Last born) and how many are elder than the individual or younger than the individual.
3. General Procrastination scale: to assess the individuals procrastination level. In various domains like domains-academic, workplace, medical and civic responsibilities (GPS 2016)

Results

Table 1: Showing the results of Kolmogorov-Smirnov and Shapiro-Wilk tests

Test	Statistic	Df	Sig.
Kolmogorov-Smirnov			
Birth Order	0.348	130	<.001
GPS Sum	0.085	130	0.021
Shapiro Wilk			
Birth order	0.636	130	<0.01
GPS Sum	0.976	130	0.020

The Kolmogorov-Smirnov and Shapiro-Wilk tests indicate that both Birth Order and GPS Sum significantly deviate from a normal distribution, with Birth Order showing a more substantial deviation. The test statistics and p-values confirm non-normality, especially for the Birth Order variable.

Kolmogorov-Smirnov Test

Birth Order: Test statistic = 0.348, p-value < 0.001. The distribution significantly deviates from normality. GPS Sum: Test statistic = 0.085, p-value = 0.021. There is a significant deviation from normality.

Shapiro-Wilk Test: Birth Order: Test statistic = 0.636, p-value < 0.01. Indicates a significant departure from normality.
GPS Sum: Test statistic = 0.976, p-value = 0.020. Shows a significant deviation, but closer to normal distribution than Birth Order.
Both tests indicate non-normality for both variables, with Birth Order showing a more substantial deviation.

Table 2: Showing the results of Spearman's correlation coefficient

	Age	Birth order	Gps sum	Gender
Spearman's rho				
Age				
Correlation coefficient	.	.	.	.
Sig. (2 - tailed)		.	.	.
N	130	130	130	130
Birth order				
Correlation coefficient	.	1.000	.815**	-.064
Sig. (2-tailed)	.		<.001	.469
N	130	130	130	130
Gender				
Correlation coefficient	.	.815**	1.000	-.140
Sig (2-tailed)	.	<.001		.113
N	130	130	130	130

** indicates a correlation is significant at the 0.01 level (2-tailed)

The Spearman's rho analysis shows a strong positive correlation between Birth Order and GPS Sum (correlation coefficient = 0.815, $p < 0.001$), indicating that higher birth order is associated with higher GPS Sum. Birth Order and Gender have a very weak negative correlation (correlation coefficient = -0.064, $p = 0.469$), showing no significant relationship. Similarly, Gender and GPS Sum display a weak negative correlation (correlation coefficient = -0.140, $p = 0.113$), suggesting no significant association. Overall, the only significant relationship is between Birth Order and GPS Sum, while the other correlations are not statistically significant.

Correlations
Birth order and procrastination

Correlations				
			BO	GPS score
Spearman's rho	BO	Correlation Coefficient	1.000	.815**
		Sig. (1-tailed)	.	.000
		N	130	130
	GPS score	Correlation Coefficient	.815**	1.000
		Sig. (1-tailed)	.000	.
		N	130	130
**. Correlation is significant at the 0.01 level (1-tailed).				

The Spearman's rank-order correlation was conducted to examine the relationship between birth order (BO) and the general procrastination scale score (GPS score) among 130 participants. The results indicate a strong positive correlation between birth order and GPS score, with a correlation coefficient of **0.815**. This relationship is statistically significant at the **0.01 level** (1-tailed), as evidenced by a p-value of **0.000**. This suggests that as the birth order increases, the GPS score tends to increase significantly, indicating a strong and meaningful association between the two variables in this sample.

First born and procrastination

Correlations				
			GPS	birth order 1 (First born)
Spearman's rho	GPS	Correlation Coefficient	1.000	.
		Sig. (1-tailed)	.	.
		N	63	63
	birth order 1 (First born)	Correlation Coefficient	.	.
		Sig. (1-tailed)	.	.
		N	63	63

The Spearman's rank-order correlation was conducted to assess the relationship between general procrastination scale score (GPS score) and birth order 1(First born). However, the results indicate that no correlation coefficient is calculated between these variables.

Last born and procrastination

Correlations				
			birth order 3 (Last born)	GPS
Spearman's rho	birth order 3 (Last born)	Correlation Coefficient	.	.
		Sig. (1-tailed)	.	.
		N	67	67
	GPS	Correlation Coefficient	.	1.000
		Sig. (1-tailed)	.	.
		N	67	67

The Spearman's rank-order correlation was conducted to assess the relationship between birth order 3 (last born) and general procrastination scale score (GPS score). However, the results indicate that no correlation coefficient is calculated between these variables.

Test Statistics	
	birth order 1
Mann-Whitney U	486.000
Wilcoxon W	1152.000
Z	.000
Asymp. Sig. (2-tailed)	1.000
a. Grouping Variable: gender	

A Mann-Whitney U test was conducted to assess whether there is a difference in birth order 1 (referring to first-born) based on gender. The results indicate no statistically significant difference between the two gender groups (Mann-Whitney U = 486.000, Z = 0.000, p = 1.000). Both gender groups have identical mean ranks of 32.00, meaning that gender does not seem to influence birth order 1 in this sample. Therefore, birth order 1(first born) appears to be equally distributed across both genders.

Test Statistics	
	birth order3
Mann-Whitney U	561.000
Wilcoxon W	1156.000
Z	.000
Asymp. Sig. (2-tailed)	1.000
a. Grouping Variable: gender	

The Mann-Whitney U test was conducted to determine whether there is a difference in birth order of last born based on gender. The results show that there is no statistically significant difference between the two groups (Mann-Whitney U = 561.000, Z = 0.000, p = 1.000). Both groups (gender 1 and gender 2) have identical mean ranks of 34.00. This indicates that birth order last born does not vary between genders in this sample. Therefore, gender does not seem to have an effect on birth order in this particular data set.

Test Statistics	
	GPS
Mann-Whitney U	1760.000
Wilcoxon W	4245.000
Z	-1.588
Asymp. Sig. (2-tailed)	.112
a. Grouping Variable: Gender	

The Mann-Whitney U test results indicate that there is no statistically significant difference in procrastination levels between the two gender groups (p = 0.112). Although Gender 1 had a higher mean rank for procrastination scores compared to Gender 2, this difference was not large enough to be statistically significant. Therefore, we conclude that gender does not have a significant impact on procrastination in this sample.

Interpretation and discussion

H1 Significant Relationship Between Birth Order and Procrastination

The Kolmogorov-Smirnov and Shapiro-Wilk tests for the "Birth Order" variable both resulted in significant p-values (<0.01), indicating that the data for birth order do not follow a normal distribution. The GPS (presumably General Procrastination Scale) sum also shows significant p-values, suggesting non-normality. The correlation coefficient between birth order and GPS sum is 0.815 with a significance level of <0.001, indicating a strong positive relationship. This suggests that as birth order increases (from first-born to last-born), procrastination levels also increase.

Therefore, the strong positive correlation supports the hypothesis that there is a significant relationship between birth order and procrastination. This indicates that individuals who are last-born tend to have higher procrastination levels compared to their first-born counterparts.

Mann – Whitney U test

Gender and first borns

Ranks				
	Gender	N	Mean Rank	Sum of Ranks
Birth Order first born	1	27	32.00	864.00
	2	36	32.00	1152.00
	Total	63		

Gender and last borns

Ranks				
	Gender	N	Mean Rank	Sum of Ranks
Birth Order Last born	1	33	34.00	1122.00
	2	34	34.00	1156.00
	Total	67		

Gender and Procrastination

Ranks				
	Gender	N	Mean Rank	Sum of Ranks
GPS	1	60	71.17	4270.00
	2	70	60.64	4245.00
	Total	130		

H2 Gender Difference in Procrastination Among First-Born and Last-Born

The Mann-Whitney U test results for both first-born and last-born individuals indicate no significant gender differences in procrastination levels. For first-borns, the test yielded a Mann-Whitney U value of 486.000 with a p-value of 1.000, showing identical mean ranks of 32.00 for both genders and no significant difference in procrastination behaviour. Similarly, for last-borns, the Mann-Whitney U value was 561.000 with a p-value of 1.000, also indicating identical mean ranks of 34.00 and no significant gender-based variation. Overall, the Mann-Whitney U test for the

entire sample showed a U value of 1760.000 and a p-value of 0.112, revealing that gender does not significantly influence procrastination levels. Despite a slight difference in mean ranks between genders, it is not statistically significant. Thus, these results suggest that gender does not play a significant role in procrastination tendencies among first-born and last-born individuals, leading to the rejection of H2.

H3 Last-Born Individuals Have Higher Levels of Procrastination Compared to First-Born Individuals

The strong positive correlation (0.815) between birth order and procrastination levels supports the idea that last-born individuals have higher levels of procrastination compared to first-born individuals.The findings are consistent with this hypothesis, reinforcing the view that birth order is a significant predictor of procrastination behaviour, with last-born individuals being more prone to procrastination.

Discussion

Birth Order and Procrastination

The hypothesis that there is a significant relationship between birth order and procrastination is supported by multiple studies. Gabriel and Kimani (2015) and Zhang and Liu (2023) [31] both highlight a statistically significant tendency for later-born individuals, particularly last-borns, to exhibit higher levels of procrastination compared to their older siblings. This is further corroborated by Smith and Gomez (2023) [27], who found that first-borns displayed higher levels of conscientiousness and lower levels of procrastination, suggesting that personality traits may mediate this relationship.

However, while these studies underscore a clear link between birth order and procrastination, the meta-analysis by Zhang and Liu (2023) [31] reveals that the effect size is modest, indicating that birth order is likely one of many contributing factors. Nguyen and Patel's (2023) [25] cross-cultural study also points out that cultural context significantly influences the birth order-procrastination dynamic, with more pronounced effects observed in collectivist cultures. These findings suggest that while birth order is an important factor, it interacts with a range of environmental and cultural influences.

Gender and Procrastination

The relationship between gender and procrastination presents a more complex picture. While Gabriel and Kimani (2015) reported a higher percentage of female procrastinators, the interpretation of Hypothesis 2 indicates that there is no significant correlation between gender and procrastination among first-born and last-born individuals. This aligns with the findings of Ranu Roy and Dr. Debasri Banerjee (2022) [21], who observed gender differences in procrastination levels among undergraduate students but did not find significant variations across different academic streams. The lack of a significant gender effect in some studies suggests that while gender differences may exist, they are not universally applicable across all contexts and may be influenced by other factors such as cultural norms and academic pressures.

Last Born have higher level of procrastination than First Born.

Hypothesis 3, which posits that last-born individuals have higher levels of procrastination compared to first-born individuals, is supported by several studies. Research by Gabriel and Kimani (2015) and the meta-analysis by Zhang and Liu (2023) [31] indicate a statistically significant tendency for later-borns to procrastinate more. Smith and Gomez (2023) [27] suggest that personality traits like conscientiousness, which are typically higher in first-borns, play a crucial role in this behaviour. However, contradictory evidence, such as Garcia and Rodriguez's (2023) [10] finding that high parental expectations can lead first-borns to procrastinate, and Nguyen and Patel's (2023) [25] observation of varying birth order effects across different cultural contexts, highlight the complexity of the relationship. Carter and Williamson (2023) [7] further emphasize the influence of family dynamics, suggesting that factors like sibling rivalry can also impact procrastination levels. Thus, while birth order is a significant predictor of procrastination, it interacts with other variables such as personality traits, cultural influences, and family environment, necessitating a holistic approach to understanding and addressing procrastination behaviours.

Conclusion

This study explored the relationship between birth order and procrastination among college students, aiming to understand whether birth order is a significant predictor of procrastination behaviours and whether gender differences exist in procrastination tendencies. The findings support the hypothesis that birth order has a significant impact on procrastination, with a strong positive correlation indicating that as birth order increases, so do procrastination levels. Specifically, last-born individuals tend to exhibit higher procrastination levels than their first-born counterparts, reinforcing the view that birth order influences personality traits, such as conscientiousness, which mediate procrastination tendencies.

The study did not find significant gender differences in procrastination between first-born and last-born individuals, suggesting that gender may not be a predominant factor in procrastination behaviours among this demographic. This aligns with the findings of previous studies that report gender differences in procrastination but indicate that these differences may be context-dependent and influenced by factors such as cultural norms and academic pressures.

While the research supports the hypothesis that birth order is a significant predictor of procrastination, it also highlights the complexity of this relationship. Factors such as personality traits, parental expectations, cultural context, and family dynamics interact with birth order to shape procrastination behaviours. The modest effect size identified in the meta-analysis by Zhang and Liu (2023) [31] underscores the need to consider these additional variables when addressing procrastination among students.

The insights gained from this study suggest that interventions aimed at reducing procrastination should consider birth order in conjunction with individual personality traits and environmental factors. Educational and psychological interventions that address these multifaceted influences can help students develop effective coping mechanisms and improve their academic performance and personal development. Future research could further explore the interplay between birth order, personality, and environmental influences to provide a more comprehensive understanding of procrastination and inform targeted intervention strategies.

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