

An Only Child versus a Child with a Sibling: Difference In Perfectionism and the Big Five Personality Traits

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INTRODUCTION: Declining fertility and rising numbers of only children necessitate understanding their specific characteristics. The main objective of the present research study is to map the area of sibling constellations. It focuses on perfectionism and the Big Five personality traits. **METHODS:** Online data were collected from 1,384 Slovak participants aged 15-74 (133 only children, 1,251 with siblings) using the Frost Multidimensional Perfectionism Scale (FMPS) and the Big Five Inventory (BFI 10). Mann-Whitney U tests compared groups, with effect sizes (AUC) calculated. Spearman's correlation examined variable relationships. **RESULTS:** Analysis of data showed that, within our research sample, an only child achieved significantly higher scores for neuroticism ($p = 0.012$) and perfectionism ($p = 0.008$), while the agreeableness ($p = 0.035$) and conscientiousness ($p = 0.014$) scores were lower. No difference was observed for the personality traits of extraversion and openness. The strongest relation observed in the research, obtained through analysis of the correlations between the individual factors, was the positive relationship between neuroticism and concern over mistakes and doubts about actions ($r = 0.48$).

CONCLUSIONS: Given the significant differences in personality and perfectionism observed between only children and those with siblings, further research should explore the clinical implications of these findings.

Keywords | Sibling constellations – Only child – Perfectionism – Personality traits – Big Five

Submitted | 14 February 2025

Accepted | 11 March 2025

Grant affiliation | IGA_FF_2024_016 Psychologický výzkum ve vybraných oblastech pedagogické a klinické psychologie IX

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1 INTRODUCTION

The family and the environment in which an individual grows up undoubtedly constitute an important factor influencing an individual's behaviour and experiencing. Sibling constellations have been researched by multiple prominent personalities in the field of psychology, such as Adler (1928) or Hall (1908). The peak period for academics researching only children to date was in the 1970s and 1980s (Trent & Spitze, 2011). However, the topic is more relevant today than ever before.

At present, the fertility rate in Slovakia amounts to 1.5. This value corresponds to the average of the continent with the lowest fertility rate worldwide – Europe, a continent where no country has a fertility rate equalling two (The World Bank, n.d.) and which also has the greatest number of only children (Statista, 2022). For this reason, we believe that it is important to address the increasingly topical matter of “being an only child”.

Our research focused on two areas – perfectionism and the Big Five personality traits. Perfectionism is a multidimensional construct (Dimaggio et al., 2015) characterised by a tendency to require very high or even a flawless performance from others or oneself, exceeding what is needed in a particular situation (American Psychological Association, 2023).

We believe that study of this phenomenon is crucial because it is related to multiple disorders and negative phenomena such as anankastic personality disorder, eating disorders (Stackpole et al., 2023), obsessive-compulsive disorder (Pinto et al., 2017), anxiety (Lunn et al., 2023) depression, and suicidal attempts (Dimaggio et al., 2015). It also negatively impacts a non-clinical population (Park et al., 2010).

Interestingly, perfectionism is connected to personality traits. It is related to higher neuroticism (Burcaş & Creţu, 2021; Smith et al., 2019), higher conscientiousness, lower agreeableness, and lower extroversion (Smith et al., 2019).

Along with perfectionism, our study also involved research into personality traits. One of the prominent diagnostic inventories of personality traits is the Big Five Inventory (BFI 10) (Rammstedt & John, 2007; Hřebíčková et al., 2006; Považanová & Dolejš, 2020). As the name suggests, the inventory concerns five factors: openness, conscientiousness, extraversion, agreeableness, and neuroticism. While recent research has suggested possible differences between personality traits in people with and without siblings, it has not identified any statistically significant differences (Stronge et al., 2019), which confirms previously published findings (Fablo & Polit, 1986; Jefferson et al., 1998; Rohrer et al., 2015). A contradictory finding is presented by Yang and colleagues (2017). Using voxel-based morphometry (VBM), they identified differences in grey matter brain mass between only children and people with a sibling. Differences were found in the gyrus supramarginalis, which is positively correlated with flexibility scores, and in the medial prefrontal cortex, which is related to agreeableness. Slovak research has shown that adolescents who grew up with a sibling of the same sex were more conscientious and extroverted (Szobiová, 2008).

Given the ongoing decline in fertility, the subject of only children has gained significant topicality. A significant research gap is evident, given the lack of a study systematically delin-eating this phenomenon in the Czech Republic and Slovakia. Our research objective was to compare two groups: only children and individuals with a sibling, and establish whether they differ with regard to perfectionism and the Big Five personality traits.

2 METHODS

2.1 Participants

The basic set for our research was the population of the Slovak Republic. The total number of inhabitants of the Slovak Republic aged 15-74 is 4,198,843 with the total number of women in this age category equalling 2,113,040 (50.32 %) and the total number of men 2,085,803 (49.68 %) (Statistical Office of the Slovak Republic, 2022). Precise statistical data regarding the percentage of only children in the population of the Slovak Republic are not within our knowledge. Consequently, a direct comparison with the target population is not feasible. Sociological research indicates that the proportion of women with one child has increased in recent years, currently reaching approximately one-fifth of the total population (Šprocha, 2022), suggesting that the percentage of singletons in the population could be between 10-20%.

Table 1 | Age distribution of participants

Age	Only Child	Child with a Sibling
Average	31.69	34.55
Standard deviation	11.26	11.44
Median	33	33
	Total N: 133	Total N: 1,251

Data collection took place over seven months in the period from May to November 2022. Following a final selection of data, the research sample consisted of 1,384 participants, in particular 1,149 women (83.02 %) and 235 men (16.98 %). Concerning their family background, 133 participants (9.61 %) did not have any sibling, and 1,251 (90.39 %) had a sibling. Our research aimed to primarily focus on only children. Therefore, our methodology did not include differentiation of the sibling group by birth order (eldest, middle, youngest), partly due to the complexities of establishing that order in patchwork families and cases of sibling death. The age range of the participants was limited to 15-74 due to the ethics of the research. More detailed information is provided in Table 1.

Over the course of the research, the principles of participant anonymity and voluntary participation were observed. By participating in the questionnaire survey, the participants agreed that the data provided by them can be used by the research team in their scientific publications as anonymized data. The research observed the ethical norms and principles stated in the Meta-Code of Ethics published by the European Federation of Psychologists' Associations (EFPA, 2005).

2.2 Instruments

Data collection took place online through the social networking sites Facebook and Instagram. The questionnaire battery contained socio-demographic questions and the following standardized self-report questionnaires:

- Frost Multidimensional Perfectionism Scale (FMPS)** (Frost & Marten, 1990; Stober, 1998), professionally translated into Slovak in accordance with recommendations from the World Health Organization (WHO, n.d.). It contains 35 items divided into four subscales measuring (a) concern over mistakes and doubts about actions, (b) excessive concern with parents' expectations and evaluation, (c) excessively high personal standards, and (d) concern with precision, order and organisation. The validity of the Stöber version of the questionnaire has been tested in several studies, which have shown its correlation with several serious problems such as anxiety, insomnia, social phobia and features of obsessive-compulsive disorder (NovoPsych, 2021). Example items: "I set higher goals than most people." (item 12). "It takes me a long time to do something "right"." (item 33)
- Big Five Inventory (BFI 10)** (Rammstedt & John, 2007; Hřebíčková et al., 2006; Považanová & Dolejš, 2020). It is a shortened, 10-item version of the Big Five inventory originally introduced by Goldberg (1992), which is currently used in many research studies. Its authors have demonstrated its reliability at 0.85 and a high correlation of items with those in the original longer version. Its advantages are time-saving and psychometric quality. Each of the five factors (extroversion, agreeableness, conscientiousness, openness, and neuroticism) is represented by two items, one of which is reverse-scored. Example items: "I see myself as someone who is generally trusting." (item 2) "I see myself as someone who does a thorough job." (item 8).

2.3 Data Analysis

There were in total 1,532 completed test batteries. Following an in-depth check and clearing of data, 148 of them were excluded. If a participant omitted one question addressing one factor in the standardized questionnaire, the presumed answer was

imputed based on the average of the particular factor for the particular individual (Nárožná, 2013). After finalization of the data matrix, the data from 1,384 were entered into the program Statistica 14.0.0 in order to analyse and interpret them.

Our statistical analysis used the nonparametric Mann-Whitney U Test, which enables a comparison of two mutually independent groups with a correction for multiple comparisons. The advantage of this statistical test is that it does not require normal distribution of the variable investigated. The effect size was evaluated based on AUC = Area Under Curve. The listed p-values are one-tailed.

Table 2 | Reliability of the method BFI 10

BFI 10 Factor	Cronbach's Alpha
Openness	0.40
Conscientiousness	0.32
Extraversion	0.48
Agreeableness	0.07
Neuroticism	0.76

3 RESULTS

This chapter presents the results of a statistical analysis of the two applied standardized methods: BFI 10 and FMPS.

3.1 The Big Five Personality Traits

In the Big Five Inventory (BFI 10), each of the five factors is saturated by two items. The minimum number of points attributed to the participant based on his/her answer is two and the maximum is 10 points. As shown in Table 2, the internal consistency of three factors – openness, conscientiousness, and agreeableness – did not reach the value 0.45, which is the acceptable value for two-item scales (Balgui, 2018).

Results presented in Table 3 show that a single child achieves significantly lower scores in conscientiousness and agreeableness, and higher scores in neuroticism. As concerns openness and extraversion, we did not find any statistically significant difference.

Table 3 | Average scores and medians for factors of BFI 10

BFI 10 Factors	Only Child	Child with a Sibling	U Value	AUC	p-value
	Average score (median) [Std. Dev.]	Average score (median) [Std. Dev.]			
Openness	7.11 (7) [1.69]	7.27 (7) [1.64]	72,813.5	0.47	0.155
Conscientiousness	6.53 (6) [1.33]	6.81 (7) [1.42]	68,097.5	0.44	0.014*
Extraversion	6.13 (6) [1.64]	6.29 (6) [1.55]	71,866.0	0.47	0.106
Agreeableness	6.36 (6) [1.64]	6.69 (7) [1.40]	69,642.0	0.45	0.035*
Neuroticism	6.67 (7) [1.98]	6.28 (6) [1.84]	67,683.0	0.44	0.012*
	Total N: 128	Total N: 1,202			

Note: marking of a statistically significant result – * marks $p < 0.05$

3.2 PERFECTIONISM

In our scientific effort to establish whether only children manifest higher perfectionism, we employed a questionnaire called the Frost Multidimensional Perfectionism Scale (hereafter FMPS). As is apparent from Table 4, the value of Cronbach's alpha of the entire method for our research sample equalled 0.92, which confirms the high reliability of the method. The values of the four individual factors also show a high reliability.

Table 4 | Reliability of the method FMPS

FMPS Factor	Cronbach's Alpha
Concern over mistakes and doubts about actions	0.90
Excessive concern with parents' expectations and evaluation	0.90
Excessively high personal standards	0.81
Concern with precision, order and organisation	0.88
Total score of FMPS	0.92

The maximum possible number of points differs for individual factors, since there are different numbers of items saturating these factors. For this reason, Table 5 states the possible minimum and maximum scores that could be reached by the participants, as well as one-tailed p-values. Based on the results presented in Table 4, it is apparent that a single child achieves a statistically significantly higher level of concern over mistakes and doubts about actions compared to a child with a sibling. The same applies to the level of perfectionism (the total FMPS score).

As concerns the three remaining factors – i.e. excessive concern with parents' expectations and evaluation, excessively high personal standards, and concern with precision, order and organisation – no statistically significant differences were found.

3.3 Correlation Coefficients of Methods

In order to determine how our methods and their factors mutually correlate, we employed Spearman's correlation coefficient. We compared the total scores of methods, and the individu-

Table 5 | Average scores and medians for FMPS factors and total scores

FMPS Factors	Min.-max. score	Only Child	Child with a Sibling	U Value	AUC	p-value
		Average score (median) [Std. Dev.]	Average score (median) [Std. Dev.]			
Concern over mistakes and doubts about actions	13-65	34.07 (32) [9.60]	31.87 (31) [9.21]	71,654.5	0.43	0.004**
Excessive concern with parents' expectations and evaluation	9-45	23.59 (22) [8.24]	22.27 (21) [7.41]	76,170.0	0.46	0.055
Excessively high personal standards	7-35	21.45 (20) [5.02]	20.93 (20) [4.74]	78,816.0	0.47	0.159
Concern with precision, order and organisation	6-30	22.43 (23) [4.17]	22.47 (23) [4.09]	82391.5	0.50	0.427
Total score of FMPS	35-175	101.54 (99) [18.45]	97.54 (96) [18.35]	72,621.5	0.44	0.008**
		Total N: 133	Total N: 1,251			

Note: marking of a statistically significant result – * marks $p < 0.05$, ** marks $p < 0.01$

Table 6 | Spearman's correlation coefficient of the employed methods

	BFI 10 – Openness	BFI 10 – Conscientiousness	BFI 10 – Extraversion	BFI 10 – Agreeableness	BFI 10 – Neuroticism	FMPS
1	1.00					
2	0.02	1.00				
3	0.04	0.14***	1.00			
4	0.03	0.05	0.08	1.00		
5	0.06	-0.19***	-0.24***	-0.17***	1.00	
A	0.03	-0.23***	-0.20***	-0.20***	0.48***	0.82***
B	0.02	-0.09***	-0.06	-0.17***	0.17***	0.77***
C	0.10***	0.18***	0.05	-0.12***	0.05	0.69***
D	-0.01	0.43***	0.01	-0.04	0.01	0.32***
E	0.05	-0.01	-0.10***	-0.21***	0.32***	1.00

Note: *** = $p < 0.001$; 1 = Openness, 2 = Conscientiousness, 3 = Extraversion, 4 = Agreeableness, 5 = Neuroticism, A = Concern over mistakes and doubts about actions, B = Excessive concern with parents' expectations and evaluation, C = Excessively high personal standards, D = Concern with precision, order and organisation, E = Total score of FMPS

Table 7 | Spearman's correlation coefficient of the employed methods – an only child (N=133)

	BFI 10 – Openness	BFI 10 – Conscientiousness	BFI 10 – Extra-version	BFI 10 – Agreeable-ness	BFI 10 – Neuroticism	FMPS
1	1.00					
2	0.12	1.00				
3	0.12	0.03	1.00			
4	-0.16	0.06	0.13	1.00		
5	-0.05	-0.09	-0.22	-0.28	1.00	
A	-0.02	-0.28	-0.22	-0.35***	0.50***	0.79***
B	-0.13	-0.13	-0.09	-0.30***	0.15	0.81***
C	0.06	0.23	<0.01	-0.21	0.05	0.61***
D	-0.08	0.42***	-0.07	0.02	0.15	0.21
E	-0.05	-0.06	-0.18	-0.38***	0.37***	1.00

Note: *** = $p < 0.001$; 1 = Openness, 2 = Conscientiousness, 3 = Extraversion, 4 = Agreeableness, 5 = Neuroticism, A = Concern over mistakes and doubts about actions, B = Excessive concern with parents' expectations and evaluation, C = Excessively high personal standards, D = Concern with precision, order and organisation, E = Total score of FMPS

Table 8 | Spearman's correlation coefficient of the employed methods – a child with a sibling (N=1,251)

	BFI 10 – Openness	BFI 10 – Conscientiousness	BFI 10 – Extra-version	BFI 10 – Agreeable-ness	BFI 10 – Neuroticism	FMPS
1	1.00					
2	<0.01	1.00				
3	0.03	0.15***	1.00			
4	0.05	0.05	0.07	1.00		
5	0.08	-0.20***	-0.24***	-0.16***	1.00	
A	0.04	-0.22***	-0.20***	-0.18***	0.48***	0.82***
B	0.04	-0.08	-0.06	-0.15***	0.17***	0.76***
C	0.10***	0.18***	0.06	-0.11***	0.05	0.70***
D	<0.01	0.43***	0.02	-0.05	<-0.01	0.33***
E	0.06	<-0.01	-0.09	-0.19***	0.32***	1.00

Note: *** = $p < 0.001$; 1 = Openness, 2 = Conscientiousness, 3 = Extraversion, 4 = Agreeableness, 5 = Neuroticism, A = Concern over mistakes and doubts about actions, B = Excessive concern with parents' expectations and evaluation, C = Excessively high personal standards, D = Concern with precision, order and organisation, E = Total score of FMPS

al factors of BFI 10 and FMPS for the entire research sample (Table 6) as well as for only children (Table 7) and individuals who have a sibling (Table 8). The results confirm that all factors of the *Frost Multidimensional Perfectionism Scale* constitute the total score of the method. If one disregards the correlation between factors and the total score within one method, the strongest relation ($p < 0.001$; $|r_s| = 0.48$) was a positive correlation observed between neuroticism and concern over mistakes and doubts about actions. An interesting finding is the negative correlation between agreeableness and the total FMPS score, both for only children ($p < 0.001$; $|r_s| = -0.38$), and individuals with a sibling ($p < 0.001$; $|r_s| = -0.19$). In contrast, neuroticism is positively correlated to the total score of perfectionism for both groups ($p < 0.001$; $|r_s| = 0.37$ for only children; $p < 0.001$; $|r_s| = 0.32$ for individuals with a sibling).

4 DISCUSSION

Societal changes of recent decades have brought a lower fertility rate, which is obviously related to the increased number of only children. In view of the topicality of the matter as well as the lack of research into the area, we investigated the difference between only children and individuals with a sibling. The analysis of differences was based on the nonparametric Mann-Whitney U Test, which does not require normal distribution of the population under investigation, since our sample did not meet this parameter.

Personality traits are a phenomenon frequently addressed in the humanities. Our study investigated differences between the two analysed groups concerning the dimensions of the Big Five. We opted for the shorter BFI 10 due to the increased willingness of respondents to participate in the study. We found that **an only child scores higher in neuroticism** ($p = 0.012$).

Previous research also suggested that only children are more neurotic, although the difference was not statistically significant (Stronge et al., 2019). A possible explanation of this phenomenon is the correlation between neuroticism and perfectionism ($p < 0.001$; $|r_s| = 0.32$). Individuals who are an only child show greater perfectionism, and their parents may also put greater demands on them. Both these factors may contribute to the development of anxiety. Another possible explanation is that parents of an only child may be more neurotic and anxious, and these qualities are passed on to the child. Within our research sample, **only children** were **less conscientious** ($p = 0.014$), an observation also pointed out by Stronge et al. (2019), and **less agreeable** ($p = 0.035$). Lower conscientiousness may be caused by the fact that these individuals are more used to receiving certain duties from the parents. The fact that they are not used to sharing or dealing with people on a daily basis to the same extent as individuals with a sibling may result in lower agreeableness. We did not observe any significant difference between the two groups concerning openness and extraversion.

Leman (2018) and Pérez (2018) consider perfectionism to be a characteristic feature for an only child. Our research confirmed this claim. **Individuals who were an only child scored significantly higher in the total score of Frost Multidimensional Perfectionism Scale** ($p = 0.008$) **and the factor defined as concern over mistakes and doubts about actions** ($p = 0.004$). The reason may be pressure and expectations from parents, who hope that their only child will fulfil their expectations.

In our study, we also focused on the metric indicators of the methods employed. The reliability of the five factors of the scale BFI 10 ($\alpha_{\text{openness}} = 0.40$; $\alpha_{\text{conscientiousness}} = 0.32$; $\alpha_{\text{extraversion}} = 0.48$; $\alpha_{\text{agreeableness}} = 0.07$; $\alpha_{\text{neuroticism}} = 0.76$) was comparable to findings in existing research (Balgiu, 2018; Hřebíčková et al., 2016). The coefficient alpha is influenced by the number of items in the scale, so the reliability of the two-item scales tends to be medium to low (Furnham, 2008). It is always necessary to consider a compromise between the time necessary for administration, i.e. the extent of the scale, and the internal consistency of the scale. The reliability of FMPS was high; Cronbach's alpha for the total score reached 0.92 and none of the four factors had a value lower than 0.80.

4.2 Limitations and Strengths

The limitation of our research lies in the fact that data collection was conducted online, so the researchers cannot completely guarantee the correctness and truthfulness of respondents' answers. This is also related to the imbalance in the research

sample concerning the sex of the participants. Our research involved a disproportionately higher number of women compared to men. The reason may be that women participate more frequently in research that employs the self-selection method (Royall, 2020). It is also possible that women were more willing to help the female researcher and respond positively to the call from the research team.

Another limitation of the research is that within the group of individuals with a sibling, we did not differentiate between individuals who were the oldest, the middle, and the youngest child. This classification would be necessary when examining sibling constellations since it could provide more accurate and detailed data that would clarify the relationship between the selected aspects and the individual's sibling constellations. However, the aim of our research was to map the topic of only children. Therefore, we decided not to further differentiate the group of people with siblings.

In our view, a positive aspect of the research is its topicality. At present, the fertility rate in Europe, and therefore even in Slovakia, has been decreasing; this phenomenon is related to the increasing number of only children (The World Bank, n.d.). Europe is the continent with the highest number of only children, and establishing their specific features might be helpful in clinical practice, prevention, and other kinds of psychological aid. Bearing in mind that an only child scores higher in perfectionism, professionals in healthcare, psychology and helping professions can use this information and take into account the sibling constellation while providing a client with individualized help in the areas of prevention, e.g. in schools, counseling, and therapy.

5 CONCLUSIONS

Our research into various aspects of "being an only child" provided various findings from multiple areas. We observed a difference between the two research groups in three out of five personality traits defined as the Big Five and in perfectionism. Our results confirm that the absence of siblings influences an individual in various areas, some of which were identified by our research.

Future research might bring new findings concerning, for instance, how the higher perfectionism of an only child is manifested in practice, and might be more focused on clinical impacts – eating disorders, depression, anxiety, or the obsessive-compulsive disorder. Research within the clinical population might bring the conclusion that an only child suffers more frequently

Authors' contributions: Both authors designed the study and proposed the study design. The author Romana Poprocká conducted the literature review and prepared the summary of related work, performed the statistical analysis and participated in the data interpretation and article preparation. The author Martin Dolejš supervised the statistical analysis and participated in the preparation of the article. All authors contributed to the creation of the article and approved the final version of the manuscript.

Declaration of interest: no conflict of interest

from such conditions. It might also be beneficial to compare the clinical population of only children with our data.

We are aware that our results suggest a certain tendency backed by statistical evidence, however, when working with people it is

necessary to approach them individually, and our results cannot be generalized for every individual. Qualitative research and research addressing individual case reports might help to gain a more comprehensive and complex perspective on the individual.

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