Open Access

Original Article

Association between Sociodemographic Characteristics and Big Five Personality Traits of Undergraduate Medical Students in Pakistan: A Cross Sectional Analytical Study

Naseer Alam Tariq, Bushra Ameer Saeed Awan, Ali Hussnain, Muddasir Ejaz, Esha Iftikhar, Hunza Sehar, Iqra Pervaiz, Zahir Saeed

Army Medical College/National University of Medical Sciences (NUMS) Rawalpindi Pakistan

ABSTRACT

Objective: To analyze the relation between the three sociodemographic, characteristics gender birth order and class year characteristics on big five personality traits of medical students.

Study Design: Cross-sectional analytical study.

Place and Duration of Study: Study was conducted at Army Medical College, Rawalpindi Pakistan, from Jan to Jul 2022.

Methodology: The study included undergraduate medical students from first through final year belonging to an age group of 17-25 years and were willing to fill in the questionnaire through convenience sampling technique. Sample size as calculated by WHO calculator was 350.

Results: Mean age of the participants was 21.14±1.20 years. Males were 73.4% and 26.6% were females. Majority were between age group "21-23 years", n=281(74%), "middle born", n=154(40%) and in "third year", n=138(36) and "fourth year", n=147(39%). There was a significant association between gender, birth order, age group and class year and attributes related to "conscientiousness(p=0.01), "neuroticism" (p=0.01); "extraversion "and openness to experience.

Conclusion: Results of this study revealed that big five personality traits were strongly associated with self-reported attributes of Conscientiousness, openness to experience, extraversion, agreeableness and neuroticism, Specifically, gender was associated with attributes of conscientiousness Birth order was associated with attributes of neuroticism and extraversion agreeableness had relatively strong associations with empathic concern and the class year was significantly associated with all Big five personality trait attributes assessed in the study.

Keywords: Agreeableness, Big five personality traits, Conscientiousness, Extraversion, Medical students, Neuroticism, Openness to experience, Sociodemographic.

How to Cite This Article: *Tariq NA, Awan BAS, Hussnain A, Ejaz M, Iftikhar E, Sehar H, Pervaiz I, Saeed Z. Association between Sociodemographic Characteristics and Big Five Personality Traits of Undergraduate Medical Students in Pakistan: A Cross Sectional Analytical Study. Pak Armed Forces Med J 2022; 72(Suppl-4): S761-766. DOI: https://doi.org/10.51253/pafmj.v72iSUPPL-4.9652*

INTRODUCTION

Over the past 100 years, both the general public and scientists have shown an ongoing interest in the discussion about the relationship between sociodemographic characteristics and personality.[1] The pattern of thinking, sentiments, perspectives, habits, and behaviors that each person exhibits through time in many contexts to set them apart from others is referred to as their personality. The Big Five personality model provides for the assessment of five key traits: neuroticism, conscientiousness, extraversion, agreeableness, and openness to experience.[2] The associations between Sociodemographic characteristics and Big Five personality traits in medical education are still underrepresented in the existing literature.[3]

Gender seems to play a significant role in the choice of a medical specialty and the factors associated with this decision Gender-related differences in perceived stress correspond to these personality traits.[4,5] Conscientiousness, extraversion, and openness personality traits of Flemish medical students became stronger indicators of performance as they advanced to the later years of medical school.[6] Along with encouraging healthier lifestyle, conscientiousness appears to have an impact on academic performance through increased effort and improved perceptions of academic aptitude and competence. Greater degrees of diligence and Lower degrees of neuroticism and extraversion seem to reduce the frequency of stress in doctors and medical trainees.[7]

Evidence from Australia indicated that age of the medical students effect the personality and academic performance of medical students, older students tend to score more on academics.

What role does a person's birth order play in the development of their personality? According to Adler, firstborns are "power-hungry conservatives," second born can be "rebellious or overachievers" but also "most diplomatic and adaptable," and third born might be "immature, dependent, and selfish" or "very social,

Correspondence: Dr Bushra Ameer Saeed Awan, Department of Community Medicine, Army Medical College, Rawalpindi, Pakistan

fun-loving, and confident".[1] Birth order effects personality, intelligence, openness to experience and intellect and social interactions. The results of psychometric intelligence tests show that performance on them somewhat declines from firstborns to laterborn, according to empirical studies on the relationship between birth order and intellect.[8] A study in china making use of the national one child per family policy discovered that only children and later born are more open to experiences than first born. In addition, life satisfaction was rated higher in only children. At the same time recent researches from Sweden continue to support that earlier born are more probable to choose medical and engineering subjects, compared to children born after them mostly going to fields of art.[8] Professions demanding leadership and management qualities also tend to be filled up by first born.[9]

Even after decades of study, this subject remains a fascinating one that merits more research. The present study was designed to address this dearth. The research is a quantitative study which aims to analyze the relation between the three Sociodemographic characteristics gender birth order and class year characteristics on big five personality traits of medical students.

METHODOLOGY

This cross-sectional analytical study was conducted in Army Medical College, Rawalpindi Pakistan. Study was conducted over period of seven months, from January to July 2022. Data was collected in three months, from January 2022 to March 2022. The study included medical students from first through final year in one public sector medical college approached through convenience sampling technique. Sample size as calculated by WHO calculator was 350. Keeping in view the response rate of participants 81% from previous studies,[10] total of n=410 questionnaires were distributed to the participants and n=390(95%) were returned n=9(2%) did not provide complete information and therefore excluded from the survey.

Inclusion Criteria: The students pursuing undergraduate medical studies, belonging to an age group of 17-25 years and were willing to fill in the questionnaire were included.

Exclusion Criteria: Sample excluded twins and single children, participants who had step parents and physically handicapped and psychologically disturbed individuals.

Data was collected by, an easy to read, self-administered questionnaire distributed after taking informed consent of participants. Based on previous birth order studies birth order was categorized as on individual's birth order: first-born (having only younger siblings), middle-born (having both older and younger siblings), and last-born (having only older siblings).[11] The questionnaire included sociodemographic information (age, gender, birth order and academic class years). Twelve questions from different domains related to big Five personality traits i.e., conscientiousness, extraversion, openness to experience, neuroticism and agreeable.[12] The response range was assessed as always, often, sometimes and never. Participation was voluntarily with informed consent, and no incentives were offered. Data was later analyzed by using statistical package for social science (SPSS-16) software. Descriptive statistics done by calculating the frequencies and percentages To find out if there is any relation between the sociodemographic characteristics and personality of medical students Chi-square test of association was run to find out the association between categorical variables. Study was approved by the Ethical Review Committee of Army Medical College, NUMS (ERC/ID/25). The confidentiality was maintained. Results from the survey are only accessible to the lead investigator. The collected information was only utilized to accomplish the study's objectives.

RESULTS

There were 381 students, majority, were female n=217(57%) while male participants were n=164 (43%). Mean age of participants was 21.14±1.20 years. Majority were between age group "21-23 years", n=281(74%) followed by 18-20 years n=93(24%). In the birth order category "middle born", n=154(40%) were highest in proportion followed by last born n=117 (31%) and middle born n=110(29%). Most of the participants were studying in "third year", n=138(36) and "fourth year", n=147(39%) followed by Second Year n=55(14%), First Year n=31(8%) and final year n=10(3%). Sociodemographic details of the participants are shown in the Table-I.

In response to questions related to "conscientiousness", a big proportion of participants had to organize "often", n=132(35%) and "sometimes", n=111(29%) before starting some task while numerous participants replied "always", n=99(26%). Most of the participants "often", n=146(38%) followed a schedule in their mind whereas only a small proportion, n=38(10%) "never"

followed a schedule. For majority of the participants it was "always", n=183(48%) important to be strong & for only n=18(5%) it was "never" important to strong.

Table-I: Sociodemographic Characteristics of Medical Students

Variable	n(%)
Gender	
Male	164(43)
Female	217(57)
Age Group (years)	
18-20	93(24)
21-23	281(74)
24-26	7(2)
Birth Order	
First Born	110(29)
Middle Born	154(40)
Last Born	117(31)
Class Year	
1st Year	31(08)
Second Year	55(14)
Third Year	138(36)
Fourth Year	147(39)
Final Year	10(03)

In response to questions related to "openness to experience" most participants n=157(41%) "Always", liked challenges while many, n=97(25%) "Sometimes" liked challenges. In response to question that if they avoided things that scare them, majority of the participants n= 167(44%) replied "sometimes", whereas and only small number, n=47(12%) "Never" avoided things they are afraid of. In response to questions related to "extraversion", a major preponderance of participants, n=167(44%) suppressed feelings "often" while only, n=69(18) "always" suppressed feelings. Majority of the participants, n=169(44%) interrupted "sometimes" whereas numerous participants, n=90(24%) "Never" interrupted. A major number of participants, n=132 (35%) "Often" act like nothing bothers them, while only a minor number, n= 35(9) replied "never".

In response to "agreeable" personality trait attribute most participants, n=159(42%) "Often", look for what is wrong with things while n=88(23%) opted "always". A greater number of participants n=147 (39%) mistrust people "sometimes" while a small number, n=29(8%) "Never" mistrust people.

In response to questions related to "neuroticism", to major preponderance of participants n=139(37%) life "never" seemed unfair and to a small number n=43 (11%) life "always" seemed unfair. Majority of participants, n= 159(42%) tried to impress others "sometimes" whereas many participants, n=71(19%) "Never" tried to impress others. A significant pro-portion of participants n=143(38) "sometimes" try to prove how mature they are while many participants, n=70(18) "never" tried to prove maturity. The results are shown in Figure-1.

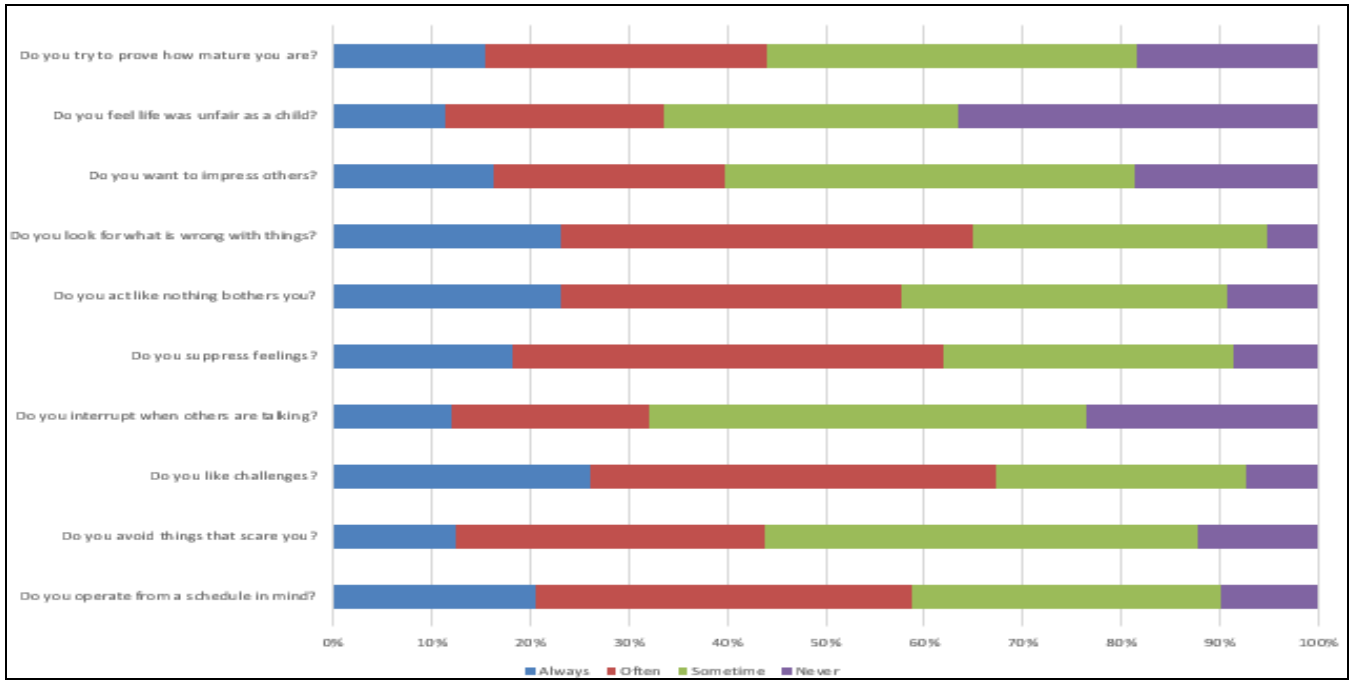

Figure-1: Responses of the participants of attributes of Big Five Personality traits

Chi square test of association was applied to find association between variables. There was a significant association (p=0.01) between gender of the participants and attributes related to "conscientiousness". Greater number of female participants tend to organize before starting something as shown in the Figure-2.

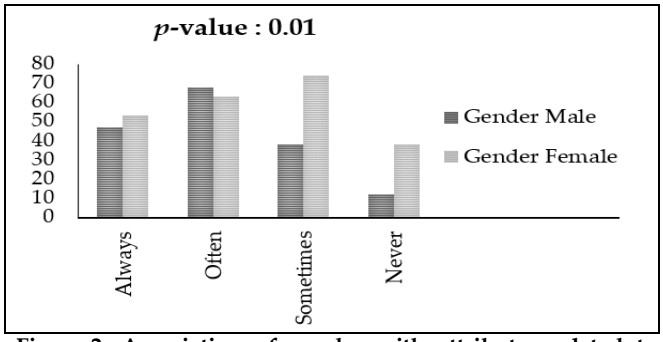

Figure-2: Association of gender with attributes related to "conscientiousness"

There was also a significant association between birth order and attributes related to "neuroticism"; middle born children were more inclined toward proving maturity to others (p=0.01). Birth order and attributes concerning to "extraversion" were also significantly associated, participants tend to exhibit composure in new situations (p=0.04) and suppress feelings (p=0.03). Results are shown in Figure-3.

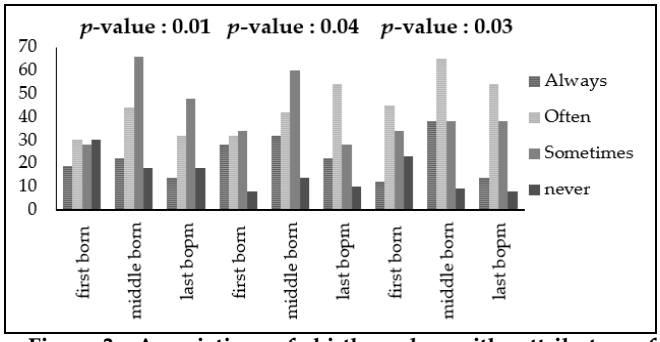

Figure-3: Association of birth order with attributes of neuroticism and extraversion

Significant association was also found out between class year in medical college and attributes related to "conscientiousness" (p <0.05), "extraversion" (p=0.004), "openness to experience" (p=0.017) and "neuroticism" (p=0.001) as depicted in Table-II. There was no significant association found between age group of participants and attributes related to big five personality traits.

DISCUSSION

This study explores the relationship between sociodemographic characteristics and the Big Five personality traits in medical students in Rawalpindi Pakistan, taking into account gender, age group, and birth order and class year. Over all out of 381 participants enrolled in the study majority were female n=217(57%) which is consistent with evidence from previous studies,[12] and mean age of participants was 21.14±1.20years. Majority were between age group "21-23 years", n=281(74%) followed by 18-20 years n=93 (24%). In the birth order category "middle born", n=154 (40%) were highest ion proportion followed by last born n=117 (31%) and middle born n=110(29%) contrary to a study done in Jordan.[13] Most of the participants were studying in "third year", n=138(36) and "fourth year", n=147(39%) followed by Second Year n=55(14%), First Year n=31(8%) and final year n=10(3%) of the Domains related to conscientiousness were associated with gender of medical students.

Birth order was also found to be significantly associated with factors concerning neuroticism and extraversion. However, class year was also found to be significantly associated with attributes concerning conscientious-ness, extraversion, openness to experience, neuroticism and findings of the study demonstrate significant association of gender with attribute related to conscientiousness. Female medical students tend to organize more than males medical students which is consistent with evidence from Saudi Arabia.[14]

There was also a significant association between birth order and attributes related to "neuroticism"; middle born children were more inclined toward proving maturity to others. Birth order and factors concerning to "extraversion" personality trait were also significantly associated, greater number of middle born and last born medical students tend to exhibit composure in new situations. Middle born medical students were those who tend to suppress feelings more often. Past research on birth order and personality found contradictory evidence, ranging from null effects to a pattern of differences where first-borns are higher in conscientiousness, neuroticism, and dominance, whereas later born are higher.[15]

Empirical evide-nce also suggested that birth order has an insignificant association to the development of personality traits and a minimal link (if any) to the development of Intel-lectual capacity.[16] This debatable phenomenon has never reached to its conclusions; with contrasting argu-ments from University of Wisconsin that the order in which the child is born does not have significant conse-quences on personality development.[17]

Table-II: Association of Class year with Big Five Personality Traits

Question	Response	Class Year					*p*-value
		1st year	Second year	Third year	Fourth year	Fifth year	
Do you avoid things that scare you?	Always	8	3	23	12	1	0.017
	Often	5	23	45	44	3	
	sometimes	11	22	59	72	3	
	Never	7	7	11	19	3	
Do you try to prove how mature you are?	Always	12	5	23	16	3	0.001
	Often	4	20	35	49	1	
	Sometimes	8	26	56	48	5	
	never	7	4	24	34	1	
Do you interrupt when others are talking?	Always	4	2	16	21	3	0.004
	Often	4	20	30	21	1	
	Sometimes	11	27	65	62	4	
	Never	12	6	27	43	2	
Is it important for you to be strong?	Always	25	18	68	68	5	<0.05
	Often	3	21	36	44	1	
	Sometimes	3	13	31	26	1	
	Never	0	3	3	9	3	
Total		31	55	138	147	10	

There was statistically significant association across class year of medical students and personality factor of "conscientiousness", "extraversion", "openness to experience" and "neuroticism". Third and fourth year medical students were more likely to avoid things they are afraid of. They were also more inclined toward proving maturity to others. Most of the medical students never tried to interrupt others while they were talking significant changes were seen associated with personality changes and class year.[18] Medical students across different class year were less likely to distrust others and never look for fault in things. These findings which is contrary to research conducted in china,[17] in However, there was a note-worthy link between extraversion and academic performance as medical student advance in class year.[19]

Our study indicated that there was no significant association across age group of participants and attributes related to big five personality traits and academic performance of medical students which is in line with evidence from Australia.[20] Evidence from other countries such as Saudi Arabia, United states, Norway and Jordan,[14] had also tried to investigate almost the same objective. This study was unique in a Pakistan as the study participants are undergraduate medical Although this paper helps establish the magnitude of associations of Sociodemographic characteristics of medical students with several attributes attributes big five personality traits in representative sample of medical students, it also has several limitations.

ACKNOWLEDGMENT

The authors would like to sincerely thank all the students of medicale medical students of rawalfor their cooperation and support throughout the study.

LIMITATION OF STUDY

Generalizability may be limited in that we studied students from just one medical college though students were from different cities and ethnic back grounds. Another limitation is that all study participants had already been accepted into medical school, so we cannot assume that identical results would be found in a population of medical school applicants.

RECOMMENDATION

These results can help to design programs to study whether some personalized intervention strategies could improve the personality and empathy in medical students by increasing perspective taking ability, more confidence, better self-esteem and decreasing anxiety and negative emotions

CONCLUSION

This study revealed that big five personality traits were strongly associated with self-reported attributes of Conscientiousness, openness to experience, extraversion, agreeableness and neuroticism, Specifically, gender was associated with attributes of conscientiousness Birth order was associated with attributes of neuroticism and extraversion agreeableness had relatively strong associations with empathic concern and the class year was significantly associated with all Big five personality trait attributes assessed in the study

Conflict of Interest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

NAT: Conception, Design, Write up, Review of manuscript & approval for the final version to be published.

BASA: Analysis and interpretation, Write up, Review of manuscript & approval for the final version to be published.

AH: Data Collection and Entry methodology & approval for the final version to be published.

ME: Data colllection, Entry analysis & approval for the final version to be published.

EI: Data collection and Entry referencing, Analysis & approval for the final version to be published.

HS: Data collection and Entry analysis, Interpretation & approval for the final version to be published.

IR:, ZS: Data collection and Entry analysis & approval for the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERENCES

1. Damian RI, Roberts BW. The associations of birth order with personality and intelligence in a representative sample of US high school students. J Res Pers 2015; 58(1): 96-105. https://doi.org/10.1016/j.jrp.2015.05.005
2. Feijter JM, de Grave WS, Dornan T, Koopmans RP, Scherpbier AJ. Students' perceptions of patient safety during the transition from undergraduate to postgraduate training: an activity theory analysis. Adv Health Sci Educ Theory Pract 2011; 16(3): 347-358. doi: 10.1007/s10459-010-9266-z.
3. Guilera T, Batalla I, Forné C, Soler-González J. Empathy and big five personality model in medical students and its relationship to gender and specialty preference: a cross-sectional study. BMC Med Educ 2019; 19(1): 57. doi: 10.1186/s12909-019-1485-2.
4. Stegers-Jager KM, Savas M, van der Waal J, van Rossum EFC, Woltman AM. Gender-specific effects of raising Year-1 standards on medical students' academic performance and stress levels. Med Educ 2020; 54(6): 538-546. doi: 10.1111/medu.14068.
5. Asaad M, Zayegh O, Badawi J, Hmidi ZS, Alhamid A, Tarzi M, et al. Gender differences in specialty preference among medical Students at Aleppo University: a cross-sectional study. BMC Med Educ 2020; 20(1): 184. doi: 10.1186/s12909-020-02081-w.
6. Haight SJ, Chibnall JT, Schindler DL, Slavin SJ. Associations of medical student personality and health/wellness characteristics with their medical school performance across the curriculum. Acad Med 2012; 87(4): 476-485. doi: 10.1097/ACM.0b01 3e31 8248e9d0.
7. Chatterjee K, Edmonds VS, Girardo ME, Vickers KS, Hathaway JC, Stonnington CM. Medical students describe their wellness and how to preserve it. BMC Med Educ 2022; 22(1): 510.
8. Rohrer JM, Egloff B, Schmukle SC. Examining the effects of birth order on personality. Proc Natl Acad Sci USA 2015; 112(46): 14224-14229. doi: 10.1073/pnas.1506451112.
9. Paulhus D L, Birth Order. In: Encyclopedia of Infant and Early Childhood Development, ed. by Marshall M. Haith and Janette B. Benson. Academic Press, San Diego 2008; 1(1): 204. doi 10.13140/2.1.3578.3687.
10. Lievens F, Coetsier P, De Fruyt F, De Maeseneer J. Medical students' personality characteristics and academic performance: a five-factor model perspective. Med Educ 2002; 36(11): 1050-1056. doi: 10.1046/j.1365-2923.2002.01328.x.
11. Lewis EG, Cardwell JM. The big five personality traits, perfectionism and their association with mental health among UK students on professional degree programmes. BMC Psychol 2020; 8(1): 54. doi: 10.1186/s40359-020-00423-3.
12. Horner P, Andrade F, Delva J, Grogan-Kaylor A, Castillo M. The Relationship of Birth Order and Gender with Academic Standing and Substance Use Among Youth in Latin America. J Individ Psychol (1998) 2012; 68(1): 19-37.
13. Abdulla Alabbasi AM, Tadik H, Acar S, Runco MA. Birth order and divergent thinking: A meta-analysis. Creat. Res. J 2021; 33(4): 331-346. https://doi.org/10.1080/10400419.2021.1913559
14. Albarkheel A, Masuadi E, Riba H, Al-Jundi Az, Sakka S. The Association between Birth Order and Academic Performance of Undergraduate Dental College Students in Riyadh, Saudi Arabia. J Clin Diagn Res 2019; 13(6). doi: 10.7860/JCDR/2019/39728.12905, [Internet] available at: https://www.jcdr.net/articles/PDF/12905/39728_CE%5BRa1%5D_F(SL)_PF1(AJ_SHU)_PFA(AJ_KM)_PN(SL).pdf
15. Ackerman PL, Chamorro-Premuzic T, Furnham A. Trait complexes and academic achievement: old and new ways of examining personality in educational contexts. Br J Educ Psychol 2011; 81(Pt 1): 27-40. doi: 10.1348/000709910X522564.
16. Damian RI, Roberts BW. Settling the debate on birth order and personality. Proc Natl Acad Sci USA 2015; 112(46): 14119-14120. doi: 10.1073/pnas.1519064112.
17. Bleske-Rechek A, Kelley JA. Birth order and personality: A within-family test using independent self-reports from both firstborn and laterborn siblings Pers Individ Dif 2014; 56: 15-88. https://doi.org/10.1016/j.paid.2013.08.011.
18. Song Y, Shi M. Associations between empathy and big five personality traits among Chinese undergraduate medical students. PLoS One 2017; 12(2): e0171665. doi: 10.1371/journal.pone.0171665.
19. Ha TS, Tam CL. A study of birth order, academic performance, and personality. InInternational Conference on Social Science and Humanity, IPEDR 2011; 5(1): 28-32.
20. Carr SE, Celenza A, Puddey IB, Lake F. Relationships between academic performance of medical students and their workplace performance as junior doctors. BMC Med Educ 2014; 14: 157. doi: 10.1186/1472-6920-14-157.