

Features of Frustration Behavior in Left-Handed Children of Primary School Age

Ekaterina S. Donskova

Kyrgyz-Russian Slavic University, Bishkek, Kyrgyzstan

ORCID: <https://orcid.org/0000-0002-2990-4076>, e-mail: sunnysideofthirty@yandex.ru

Changes in the social situation of development of primary school students are accompanied by frustrating situations. However, there is a lack of comparative studies of frustration behavior of left-handed children is emphasized. Purpose of the work: to compare the features of the frustration behavior of left-handed and right-handed junior schoolchildren. Research hypotheses: H1: between left-handed and right-handed younger students there are differences in the nature of reactions to a frustrating situation; H2: left-handed younger students show higher levels of anxiety and fear. 124 elementary school students were compared: with the leading left hand (n=62) and the leading right hand (n=62). 70 are boys and 54 are girls. The following methods were used: “S. Rosenzweig test. The technique of pictorial frustration. Children’s version”; “Self-assessment test. Characteristics of emotionality”; “Children’s version of the scale of apparent anxiety”; “Questionnaire for identifying fears”. Hypotheses were tested for statistically significant differences using the parametric Student’s t-test and the nonparametric Mann-Whitney U-test. The effect size is calculated using Cohen’s d value. The influence of independent factors (gender and leading hand) on the studied indicators was checked using two-way ANOVA. It was shown that in a situation of frustration in left-handed children, more often than in right-handed children, there is a tendency to fixation on an obstacle ($p \leq 0.01$), and extrapunitive reactions ($p \leq 0.05$). The results of the study are focused on practical application in the field of education and can be used in the development of programs of psychological and pedagogical support for left-handed children.

Keywords: frustrating situation, left-handed primary schoolchild, fixation on an obstacle, extrapunitive reactions, anxiety, fear.

Acknowledgements. The author is grateful to L.V. Khatamova, psychologist of the Ecological and Economic Lyceum #65, for her assistance in data collection.

For citation: Donskova E.S. Features of Frustration Behavior in Left-Handed Children of Primary School Age. *Psikhologicheskaya nauka i obrazovanie = Psychological Science and Education*, 2022. Vol. 27, no. 4, pp. 5—14. DOI: <https://doi.org/10.17759/pse.2022270401> (In Russ.).

Особенности фрустрационного поведения леворуких детей младшего школьного возраста

Донскова Е.С.

Кыргызско-Российский Славянский университет, г. Бишкек, Кыргызстан

ORCID: <https://orcid.org/0000-0002-2990-4076>, e-mail: sunnysideofthirty@yandex.ru

Отмечается, что изменения в социальной ситуации развития младших школьников сопровождаются фрустрирующими ситуациями. Подчеркивается дефицит сравнительных исследований фрустрационного поведения леворуких детей. Работа была посвящена тому, чтобы сравнить особенности фрустрационного поведения леворуких и праворуких младших школьников. В исследовании предполагалось следующее: H1: между леворукими и праворукими младшими школьниками существуют различия в характере реакций на фрустрирующую ситуацию; H2: леворукие младшие школьники демонстрируют более высокие показатели тревожности и страха. Сравнялись 124 ученика младших классов: с ведущей левой рукой ($n=62$) и ведущей правой рукой ($n=62$). Из них 70 мальчиков и 54 девочки. Для достижения поставленной цели были использованы: «Тест С. Розенцвейга. Методика рисуночной фрустрации. Детский вариант»; «Самооценочный тест "Характеристики эмоциональности"»; «Детский вариант шкалы явной тревожности»; «Опросник для выявления страхов». Гипотезы проверялись на статистически значимые различия с помощью параметрического t-критерия Стьюдента и непараметрического U-критерия Манна-Уитни. Размер эффекта рассчитан с помощью величины d Козна. Влияние независимых факторов (пола и ведущей руки) на исследуемые показатели проверялось с помощью двухфакторного дисперсионного анализа. Показано, что в ситуации фрустрации у леворуких детей чаще, чем у праворуких, наблюдаются склонность к фиксации на препятствии ($p \leq 0,01$) и экстрапунитивные реакции ($p \leq 0,05$). Результаты исследования ориентированы на практическое применение в сфере образования и могут быть использованы при разработке программ психолого-педагогического сопровождения леворуких детей.

Ключевые слова: фрустрирующая ситуация, леворукий младший школьник, фиксация на препятствии, экстрапунитивные реакции, тревожность, страх.

Благодарности. Автор благодарит за помощь в сборе данных для исследования психолога Эколого-экономического лица № 65 Л.В. Хатамову.

Для цитаты: Донскова Е.С. Особенности фрустрационного поведения леворуких детей младшего школьного возраста // Психологическая наука и образование. 2022. Том 27. № 4. С. 5—14. DOI: <https://doi.org/10.17759/pse.2022270401>

Introduction

A child's life undergoes many changes at primary school age. The social context in which they are developing is changing,

the child is mastering new social roles and relationships, and their primary activity is shifting from play to education. Significant changes in the emotional life of the child are

generated as a result, often accompanied by psychological difficulties.

At this age, the child is facing a variety of challenging situations in all spheres of life that may bring negative emotional experiences. The main outcome of psychological stress is frustration. Often, children form unconstructive ways to overcome frustrating situations from which emotional distress arises [13; 20]. Frustration negatively affects the relationship and behavior of the child and reduces his performance at school.

The problem of frustration as an internal conflict was considered by such foreign scientists as Z. Freud, A. Freud, and K. Horney, and was considered as an external barrier to satisfying one's needs by S. Rosenzweig, N. Mayer, D. Dollard, N. Miller. The influence of frustration on behavior and self-regulation has been studied by R. Baron, D. Krech, K. Levin, and R. May.

Russian authors who considered this problem include B.G. Ananov, A.A. Barsov, V.N. Myasishchev, V.N. Tarabrina, G.F. Zarembo, L.N. Sobchik, M.V. Orshanskaya, N.N. Plotnikova, Yu.E. Kukina, and others.

Nevertheless, how the features behavior born of frustration in primary school students depends on the choice of dominant hand, has not been sufficiently investigated.

As of today, there is a large amount of data indicating functional differences in the brain activity of right-handed and left-handed people [14].

Foreign and Russian researchers who have studied the peculiarities of the thinking and behavior of left-handed people include M. Annette, N. Gerswind, G. Deitch, S. Jackson, J. Levy, K. McManus, S. Springer, M.M. Bezrukikh, V.L. Bianchi, N.N. Bragina, T.A. Dobrokhotova, V.A. Moskvina, E.A. Karavaeva, A.R. Luria, E.D. Khomsakaya, and others.

G.G. Arakelov, E.K. Schott and other scientists suggest that the lower emotional and stress resistance of left-handed people is associated with a certain way of orga-

nizing brain processes and with the stress response mechanism in the dominant right hemisphere [1; 18].

It has been found that left-handed children demonstrate a high level of anxiety and emotionality, increased excitability and sensitivity, self-doubt, difficulties in establishing contact with peers, tension and difficulty adapting to school. According to a study by E.S. Arbuzova, conducted on the basis of a survey of parents, left-handed children face difficulties at school and at home, retreat from difficult tasks, experience increased tension and fatigue and have a high level of anxiety [2].

The problem of left-handedness is also of great importance in sports [6]. This study considers the features of speech development and visual memory in left-handers [8]. This study also compares indicators of emotional impressionability in left-handers and right-handers [10].

Modern foreign authors study the features of the manifestation of left-handedness using the twin method, investigate the relationship of behavioral reactions and the functional asymmetry of the brain, and consider the particularities of teaching left-handed children at school [12; 16; 19].

New studies emphasize the need to re-train teachers in order to gain knowledge about the psychophysiology of children with developmental disabilities, including those with left-handedness [9].

These studies do not fully answer the questions of how left-handed children adapt to frustrating situations associated with the onset of school life. However, we can observe manifestations of increased emotional response arising from a negative emotional undercurrent in relation to peers, school workload, and teachers [4].

The study of this problem can increase the efficiency of educational work and aid in the search for means of solving certain pedagogical and psychological problems. Two factors attest to the relevance of this re-

search within the framework of pedagogical psychology. First, the need to determine the characteristics of the emotional response and behavior of left-handed primary school students experiencing a state of frustration. Second, the lack of accurate data or scientific interest regarding the features of the psychological difficulties left-handed children face in adapting and socializing themselves to the school system.

Thus, the *purpose of this study* was to compare the features of the behavior of left-handed and right-handed primary school students amidst frustration.

The results of previous studies allow us to suggest the following hypotheses:

H1: there are differences between the reactions to a frustrating situation exhibited by left-handed and right-handed primary school students;

H2: Left-handed primary school students show higher rates of anxiety and fear.

Method

The scheme of the study. 124 primary school students from Bishkek took part in this study. Among these, 70 were boys and 54 were girls. The main criterion for the selection of respondents was their age — all of them were students of primary public and private schools. The the groups were distributed according to what hand students use the most.

Sampling in the study. The group of left-handed primary school students consisted of 62 students. Among these, 40 were boys and 22 were girls. The group of right-handed primary school students also consisted of 62 students. Among these, 34 were boys and 28 were girls.

Methods of study. To diagnose frustrated behavior and the features of emotional response exhibited by primary school students in such a state, the following methods were chosen: The S. Rosenzweig test. The technique of pictorial frustration, children's version (modified by N.V. Tarabrina, 1984) [3]; The self-assessment test Character-

istics of Emotionality (E.P. Ilyin, 2001) [7]; The children's version of the scale of apparent anxiety (A. Castaneda, B. Mckendles, D. Palermo, adapted by A.M. Prikhodzhan, 1995) [11]; Questionnaire for identifying fears (A.I. Zakharov, 1995)" [5].

The statistical package IBM SPSS Statistics v.21 was used for statistical data processing.

Results

When checking the distribution of scales using the Kolmogorov-Smirnov criterion, scales with a normal distribution were identified, tested for statistically significant differences using the parametric Student's t-test, while scales with an abnormal distribution were compared using the nonparametric Mann-Whitney U test.

The groups shown in the tables below have the following values:

group 1 — left-handed primary school students;

group 2 — right-handed primary school students.

Table 1 presents the descriptive statistical characteristics of those scales that are normally distributed for data systematization and quantitative description by means of basic statistical indicators.

Table 2 shows that the indicator "Fixation on an obstacle. OD" in the group of left-handed primary school students is higher than in the right-handed students group, where $p=0.010$, and Student's t-criterion is 2.618. We can conclude that there are statistically significant differences at the 1% significance level ($p\leq 0.01$). At the same time, the effect size ($d=0.47$) tends to the average (according to J. Cohen, $d=0.5$ will correspond to the average effect size). It can be assumed that in a frustrating situation, left-handed children have an increased tendency to fixate on an obstacle, while all attention is turned on the source of frustration, causing negative emotional experiences, so students demonstrate stereotypical perception and thinking, capricious behavior.

Table 1

Descriptive statistics of indicators of S. Rosenzweig’s pictorial frustration technique and A.I. Zakharov’s questionnaire to identify fears with a normal distribution among groups of left-handed and right-handed primary school children

No	Indicators	Group	Average value	Median value	Variance	Standard deviation
1	Fixation on an obstacle. OD (S. Rosenzweig)	1	45.561	45.800	213.372	14.607
		2	38.174	41.700	280.280	16.741
2	Fixation on self-defense. ED (S. Rosenzweig)	1	45.159	41.700	176.119	13.271
		2	42.409	41.700	176.119	17.511
3	Extrapunitive reactions. E (S. Rosenzweig)	1	47.108	45.800	413.319	20.330
		2	39.183	37.500	379.548	19.481
4	Intropunitive reactions. I (S. Rosenzweig)	1	25.408	25	251.088	15.845
		2	27.954	29.2	220.448	14.847
5	Impunitive reactions. M (S. Rosenzweig)	1	27.748	25	220.750	14.857
		2	25.333	25	185.058	13.603
6	Fears (A.I. Zakharov)	1	18.016	20	33.458	5.784
		2	14.532	16	52.679	7.258

Table 2

Comparison of average values of indicators of S. Rosenzweig’s pictorial among technique and A.I. Zakharov’s questionnaire to identify fears with a normal distribution for groups of left-handed and right-handed primary school children (Student’s t-test)

No	Indicators	Group 1	Group 2	Student’s t-test	Significance p	Effect Size Cohen’s d
1	Fixation on an obstacle. OD (S. Rosenzweig)	45.561	38.174	2.618**	0.010	0.470
2	Fixation on self-defense. ED (S. Rosenzweig)	45.159	42.409	0.986	0.326	0.177
3	Extrapunitive reactions. E (S. Rosenzweig)	47.108	39.183	2.216*	0.029	0.397
4	Intropunitive reactions. I (S. Rosenzweig)	25.408	27.954	-0.923	0.358	-0.165
5	Impunitive reactions. M (S. Rosenzweig)	27.748	25.333	0.944	0.347	0.169
6	Fears (A. I. Zakharov)	18.016	14.532	2.956**	0.004	0.530

The indicator “Extrapunitive reactions. E” also reveals statistically significant differences between the experimental and control groups at a 5% significance level ($p \leq 0.05$), where $p = 0.029$, and Student’s t-test is 2.216. The effect size ($d = 0.397$) is between

low and average (according to J. Cohen, $d < 0.2$ — low effect size, $d = 0.5$ — average effect size). Consequently, in a frustrating situation, for left-handed primary school students, the frequency of extrapunitive reactions in the form of open censure or ac-

cusations towards external causes such as people or circumstances increases.

The “Fears” indicator reveals differences at the 1% significance level ($p \leq 0.01$), where $p = 0.004$, and the Student’s t-test is 2.956. At the same time, the effect size ($d = 0.53$) is higher than the average (according to J. Cohen, $d = 0.5$ will correspond to the average effect size). Thus, we can conclude that the manifestation of the negative emotional process of fear is more characteristic for left-handed primary school students. Left-handed children are more likely to show anxiety and excitement in the form of an excited or depressed emotional state when experiencing real or imaginary danger than right-handed children.

Table 3 presents data demonstrating the significance of the differences in the data obtained during the study on the “Gender” factor and on the “Hand” factor. There are no significant differences in the “Gender” factor. As for the “Hand” factor, there are differences on the following scales: “Fixation on an obstacle. OD” at a 5% significance level ($p = 0.038$), “Extrapunitive reactions.

E” at a 5% significance level ($p = 0.015$), and the “Fears” scale at a 1% significance level ($p = 0.004$), which does not contradict the conclusions made earlier about the presence of significant differences when comparing the average values of the scales using the Student’s t-test.

Table 4 presents the descriptive statistical characteristics of those scales that are abnormally distributed for data systematization and quantitative description by means of basic statistical indicators.

As seen from Table 5, there are statistically significant differences in the indicator “Negative influence of emotions on the effectiveness of activity and communication” at the 1% significance level ($p \leq 0.01$), where $p = 0.002$, and Mann—Whitney U test is 1304.000. At the same time, the effect size ($d = 0.577$) is higher than the average (according to J. Cohen, $d = 0.5$ will correspond to the average effect size). Left-handed primary school students exhibit a highly negative influence of emotions on the effectiveness of their activities and communication. Consequently, amidst impactful emotional

Table 3

Checking the influence of gender on indicators of S. Rosenzweig’s pictorial frustration technique and A.I. Zakharov’s questionnaire to identify fears with a normal distribution among groups of left-handed and right-handed primary school children (two-way analysis of variance)

Factors	Indicators	Fixation on an obstacle. OD (S. Rosenzweig)	Fixation on self-defense. ED (S. Rosenzweig)	Extrapunitive reactions. E (S. Rosenzweig)	Intropunitive reactions. I (S. Rosenzweig)	Impunitive reactions. M (S. Rosenzweig)	Fears (A.I. Zakharov)
Gender	Type III Sums of Squares	9.795	352.974	971.300	189.750	699.333	141.209
	F	0.041	1.469	2.467	0.809	3.514	3.334
	Significance p	0.839	0.227	0.118	0.370	0.0632	0.070
Hand	Type III Sums of Squares	1037.912	403.812	2376.057	270.225	60.774	364.050
	F	4.359	1.681	6.036	1.152	0.305	8.596
	Significance p	0.038*	0.197	0.015*	0.285	0.581	0.004**

Table 4

Descriptive statistics of indicators of the scales of E.P. Ilyin’s self-assessment test Characteristics of Emotionality and A.M. Prikhodzhan’s scale of apparent anxiety with an abnormal distribution among groups of left-handed and right-handed primary school children

№	Indicators	Group	Average value	Median value	Variance	Standard deviation
1	Emotional excitability (E.P. Ilyin)	1	3.854	4.000	2.913	1.706
		2	3.467	4.000	4.285	2.070
2	Intensity of emotions (E.P. Ilyin)	1	4.806	5.000	4.289	2.071
		2	4.774	5.000	4.308	2.075
3	Duration of emotional experiences (E.P. Ilyin)	1	3.596	3.500	3.490	1.868
		2	4.177	4.000	2.541	1.594
4	Negative influence of emotions (E.P. Ilyin)	1	4.806	5.000	2.027	1.423
		2	3.967	4.000	2.195	1.481
5	Anxiety (A.M. Prikhodzhan)	1	8.435	9.000	3.167	1.779
		2	7.435	8.000	3.233	1.798

Table 5

Comparison of average ranks of indicators of the scales of E.P. Ilyin’s self-assessment test Characteristics of Emotionality” and A.M. Prikhodzhan’s scale of apparent anxiety with an abnormal distribution among groups of left-handed and right-handed primary school children (Mann—Whitney U test)

№	Indicators	Group 1	Group 2	Mann—Whitney U test	Significance p	Effect Size Cohen’s d
1	Emotional excitability (E.P. Ilyin)	65.98	59.02	1706.000	0.274	0.204
2	Intensity of emotions (E.P. Ilyin)	62.70	62.30	1909.500	0.950	0.015
3	Duration of emotional experiences (E.P. Ilyin)	58.19	68.81	1610.500	0.063	-0.334
4	Negative influence of emotions (E.P. Ilyin)	72.47	52.53	1304.000**	0.002	0.577
5	Anxiety (A.M. Prikhodzhan)	72.96	52.04	1273.500**	0.001	0.559

experiences, such emotions will most negatively influence the self-perception of left-handed children and their relationships with others.

It can also be concluded that there are statistically significant differences on the “Anxiety” scale at 1% significance level ($p \leq 0.01$), where $p = 0.001$, and Mann—Whit-

ney U test is 1273,500. The effect size ($d = 0.53$) is higher than the average ($d = 0.5$ is the average effect size). Consequently, left-handed primary school students are more likely than right-handed ones to experience mental or somatic tension, manifested in fatigue, irritability, impatience, a sense of inner stiffness, or a tendency to experience bouts

of intense fear and anxiety, even during minor events.

Discussion

The results obtained confirm the hypothesis that there are differences between the reactions of left-handed and right-handed primary school students toward failure and between their ways to get out of situations that hinder their activity or the satisfaction of their needs. For left-handed primary school students, the increase in such frustrating reactions as fixation on an obstacle and extrapunitive reactions is statistically significant. In frustrating situations, left-handed children will focus on the obstacle more than right-handed ones, that is, focus on the problem rather than on ways to solve it, showing rigidity and stereotypical thinking. Left-handed children have higher rates of extrapunitive reactions, which indicates low tolerance and emotional instability when facing frustration and a tendency to aggressive and accusatory actions towards other participants in a problematic situation.

In addition, statistically significant increases in anxiety and fear indicators were revealed, which emphasize the increased emotional response and negative emotional undercurrent characteristic of left-handed children during the period of adaptation to school life and a new social situation.

These features of the frustrated behavior displayed by left-handed primary school students may be associated with a certain way of organizing brain processes, functional, morphological and biochemical differences in brain activity in general, and at the time of reaction to stress in particular [14; 15; 17].

References

1. Arakelov G.G., Shott E.K., Lysenko N.E. Osobennosti stressovoi reaktsii u pravshei i levshei [Features of the stress reaction in right-handers and left-handers]. *Vestnik Moskovskogo universiteta. Seriya 14. Psikhologiya* [Moscow University Psychology Bulletin], 2004, no. 2, pp. 3—21. (In Russ.).

A prolonged negative emotional state will cause primary school students to more frequently exhibit outwardly aggressive reactions in frustrating situations.

Conclusion

There are differences in how right-handed and left-handed children react to situations that hinder activity or the satisfaction of their needs. Left-handed children are more likely than right-handed children to show the following reactions to problematic situations: aggressive and accusatory actions, fixation on the obstacle, and failure to solve the problem. They also demonstrate a higher level of anxiety and fear.

The differences found, although not pronounced, are quite real and, to a certain extent, quite tangible, and therefore should be taken into account when interacting with left-handed primary school students, particularly, when assessing their cognitive, emotional and behavioral indicators.

The results of the study are focused on practical application in the field of education, they can be useful for teachers and psychologists in developing programs for the psychological and pedagogical support of left-handed children, creating the necessary conditions conducive to social adaptation and maintaining psychological health, and for successful learning and development in the school environment. The data obtained concretize the already existing ideas about ways to overcome the difficulties that a child experiences at the beginning of school life, considering the specifics of the emotions and behavior of right-handed and left-handed primary school students exhibit in frustrating situations.

2. Arbuzova E.S. O mekhanizmax shkol'noi dezadaptatsii levorukikh detei po dannym anketirovaniya roditel'ei i metodakh ee korrektsii [On the mechanisms of school maladjustment of left-handed children according to the data of parents' questionnaires and methods for its correction]. *Izvestiya RGPU im. A.I. Gertsena* [Izvestia: Herzen

University Journal of Humanities and Sciences], 2008, no. 36(77), pp. 249—252. (In Russ.).

3. Dermanova I.B. Diagnostika emotsional'no-nravstvennogo razvitiya [Diagnostics of emotional and moral development]. St. Petersburg: Rech' Publ., 2002. 176 p. (In Russ.).

4. Donskova E.S. Issledovaniya emotsional'noi sfery mladshikh shkol'nikov [Studies of the emotional sphere of younger schoolchildren]. *Nauka, novye tekhnologii i innovatsii Kyrgyzstana* [Science, new technologies and innovations in Kyrgyzstan], 2019, no. 9, pp. 95—99. (In Russ.).

5. Zakharov A.I. Detskie nevrozy (psikhologicheskaya pomoshch' roditel'ei detyam) [Children's neuroses (psychological help of parents to children)]. St. Petersburg: Respeks Publ., 1995. 192 p. (In Russ.).

6. Ivanov V.D., Voloshina A.I. Levshi v sporte: Mezhpolutsharnaya asimmetriya i sport [Left-handers in sports: Interhemispheric asymmetry and sport]. *Aktual'nye problemy pedagogiki i psikhologii* [Actual problems of pedagogy and psychology], 2021. Vol. 2, no. 10, pp. 41—51. (In Russ.).

7. Il'in E.P. Emotsii i chuvstva [Emotions and feelings]. St. Petersburg: Piter Publ., 2001. 752 p. (In Russ.).

8. Kuprik K.S. Sravnitel'nyi analiz zritel'noi pamyati u levshoi i pravshoi [Comparative analysis of visual memory in left-handers and right-handers]. *Intellektual'nye resursy — regional'nomu razvitiyu* [Intellectual resources for regional development], 2021, no. 1, pp. 171—175. (In Russ.).

9. Loginova E.S., Bezrukikh M.M., Ivanov V.V., Orlov K.V. Znaniya uchitelei o psikhofiziologii detei s osobennostyami razvitiya (dети s SDVG, RAS, levorukiye i medlitel'nye deti) [Teachers' knowledge about the psychophysiology of children with developmental disabilities (children with ADHD, ASD, left-handed and sluggish children)]. *Novye issledovaniya* [New research], 2020, no. 4(64), pp. 46—73. (In Russ.).

10. Pershina K.V. Sravnitel'noe issledovanie temperamenta pravshoi i levshoi [Comparative study of the temperament of right-handers and left-handers]. *Vestnik eksperimental'nogo obrazovaniya* [Bulletin of experimental education], 2021, no. 1(26), pp. 12—22. (In Russ.).

Литература

1. Аракелов Г.Г., Шотт Е.К., Лысенко Н.Е. Особенности стрессовой реакции у правой и левой // Вестник Московского университета. Серия 14. Психология. 2004. № 2. С. 3—21.

2. Арбузова Е.С. О механизмах школьной дезадаптации леворуких детей по данным анкетирования родителей и методах ее коррекции // Известия РГПУ им. А.И. Герцена. 2008. № 36(77). С. 249—252.

3. Дерманова И.Б. Диагностика эмоционально-нравственного развития. СПб.: Речь, 2002. 176 с.

11. Prikhozhan A.M. Trevozhnost' u detei i podrostkov: psikhologicheskaya priroda i vozrastnaya dinamika [Anxiety in children and adolescents: psychological nature and age dynamics]. Moscow: MPSU Publ., 2000. 304 p. (In Russ.).

12. Avezmurodovich R. Psychological aspects of left-handedness: concept, causes, and peculiarities. *Psychology and Education*, 2021. Vol. 58, no. 1, pp. 4981—4988.

13. Callinan S., Leggat G., Van Egmonda K. The impact of handedness on health risk behaviours and socio-economic outcomes. *Personality and Individual Differences*, 2022. Vol. 187. 1114111. DOI:10.1016/j.paid.2021.111411

14. Herron J. Neuropsychology of Left-Handedness. New York: Academic Press Publ., 1980. 357 p.

15. Kumar S., Voracek M., Singh M. The effects of hand preference and sex on right-left asymmetry in dorsal digit lengths among adults and children. *Early Human Development*, 2021. Vol. 153. 105293. DOI:10.1016/j.earlhumdev.2020.105293

16. Marcori A., Monteiro P. Changing handedness: What can we learn from preference shift studies? *Neuroscience & Biobehavioral Reviews*, 2019. Vol. 107, pp. 313—319.

17. Morita T., Asada M., Naito E. Right-hemispheric Dominance in Self-body Recognition is Altered in Left-handed Individuals. *Neuroscience*, 2020. Vol. 425, pp. 68—69.

18. Peterson H., Greene A., Gao S. Large-scale differences in functional organization of left- and right-handed individuals using whole-brain, data-driven analysis of connectivity. *NeuroImage*, 2022. Vol. 252. 119040. DOI:10.1016/j.neuroimage.2022.119040

19. Pfeifer L.S., Schmitz J., Papadatou-Pastou M. et al. Handedness in twins: meta-analyses. *BMC Psychol*, 2022. Vol. 10, no. 11. DOI:10.1186/s40359-021-00695-3

20. Van der Kaap-Deeder J., Vansteenkiste M., Soenens B. Children's daily well-being: The role of mothers', teachers', and siblings' autonomy support and psychological control. *Developmental Psychology*, 2017. Vol. 53(2), pp. 237—251.

4. Донскова Е.С. Исследования эмоциональной сферы младших школьников // Наука, новые технологии и инновации Кыргызстана. 2019. № 9. С. 95—99.

5. Захаров А.И. Детские неврозы (психологическая помощь родителей детям). СПб.: Респекс, 1995. 192 с.

6. Иванов В.Д., Волошина А.И. Левши в спорте: Межполушарная асимметрия и спорт // Актуальные проблемы педагогики и психологии. 2021. Том 2. № 10. С. 41—51.

7. Ильин Е.П. Эмоции и чувства. СПб: Питер, 2001. 752 с.

8. *Куприк К.С.* Сравнительный анализ зрительной памяти у левой и правой // Интеллектуальные ресурсы — региональному развитию. 2021. № 1. С. 171—175.
9. *Логинава Е.С., Безруких М.М., Иванов В.В., Орлов К.В.* Знания учителей о психофизиологии детей с особенностями развития (дети с СДВГ, РАС, леворукие и медлительные дети) // Новые исследования. 2020. № 4(64). С. 46—73.
10. *Першина К.В.* Сравнительное исследование темперамента правой и левой // Вестник экспериментального образования. 2021. № 1(26). С. 12—22.
11. *Прихожан А.М.* Тревожность у детей и подростков: психологическая природа и возрастная динамика. М.: МПСУ, 2000. 304 с.
12. *Avezmurodovich R.* Psychological aspects of left-handedness: concept, causes, and peculiarities // Psychology and education. 2021. Vol. 58(1). P. 4981—4988.
13. *Callinan S., Leggat G., Van Egmonda K.* The impact of handedness on health risk behaviours and socio-economic outcomes // Personality and Individual Differences. 2022. Vol. 187. 1114111. DOI:10.1016/j.paid.2021.111411
14. *Herron J.* Neuropsychology of Left-Handedness. New York: Academic Press Publ., 1980. 357 p.
15. *Kumar S., Voracek M., Singh M.* The effects of hand preference and sex on right-left asymmetry in dorsal digit lengths among adults and children // Early Human Development. 2021. Vol. 153. 105293. DOI:10.1016/j.earlhumdev.2020.105293
16. *Marcori A., Monteiro P.* Changing handedness: What can we learn from preference shift studies? // Neuroscience & Biobehavioral Reviews. 2019. Vol. 107. P. 313—319.
17. *Morita T., Asada M., Naito E.* Right-hemispheric Dominance in Self-body Recognition is Altered in Left-handed Individuals // Neuroscience. 2020. Vol. 425. P. 68—69.
18. *Peterson H., Greene A., Gao S.* Large-scale differences in functional organization of left- and right-handed individuals using whole-brain, data-driven analysis of connectivity // NeuroImage. 2022. Vol. 252. 119040. DOI:10.1016/j.neuroimage.2022.119040
19. *Pfeife L.S., Schmitz J., Papadatou-Pastou M. et al.* Handedness in twins: meta-analyses // BMC Psychol. 2022. Vol. 10(11). DOI:10.1186/s40359-021-00695-3
20. *Van der Kaap-Deeder J., Vansteenkiste M., Soenens B.* Children's daily well-being: The role of mothers', teachers', and siblings' autonomy support and psychological control // Developmental Psychology. 2017. Vol. 53(2). P. 237—251.

Information about the authors

Ekaterina S. Donskova, PhD Student of the Department of Psychology, Kyrgyz-Russian Slavic University, Bishkek, Kyrgyzstan, ORCID: <https://orcid.org/0000-0002-2990-4076>, e-mail: sunnysideofthirty@yandex.ru

Информация об авторах

Донскова Екатерина Сергеевна, аспирант кафедры психологии, Кыргызско-Российский Славянский университет, г. Бишкек, Кыргызстан, ORCID: <https://orcid.org/0000-0002-2990-4076>, e-mail: sunnysideofthirty@yandex.ru

Получена 17.03.2022

Принята в печать 30.06.2022

Received 17.03.2022

Accepted 30.06.2022