**Bibliometric Analysis of Publications from Post-Soviet Countries in Psychological Journals in
1992–2017**

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For several decades the Soviet academic psychology community was isolated from the West, yet after the collapse of the Soviet Union each of the 15 countries went their own way in economic, social, and scientific development. The paper analyses publications from post-Soviet countries in psychological journals in 1992–2017, i.e. 26 years after the collapse of the Soviet Union. Over the period in question, 15 post-Soviet countries had published 4,986 papers in psychology, accounting for less than one percent of the world output in psychological journals. However, the growth of post-Soviet countries' output in psychological journals, especially that of Russia and Estonia, is observed during this period. Over time, post-Soviet authors began to write more papers in international teams, constantly increasing the proportion of papers in which they are leaders and main contributors. Their papers are still underrepresented in the best journals as well as among the most cited papers in the field and are also cited lower than the world average. However, the impact of psychological papers from post-Soviet countries increases with time. There is a huge diversity between 15 post-Soviet countries in terms of contribution, autonomy, and impact. Regarding the number of papers in psychological journals, the leading nations are Russia, Estonia, Lithuania, Ukraine, and Georgia. Estonia is the leader in autonomy in publishing papers in psychological journals among post-Soviet countries. Papers from Estonia and Georgia are cited higher than the world average, whereas papers from Russia and Ukraine are cited below the world average. Estonia and Georgia also boast a high number of Highly cited papers.

Keywords

Post-Soviet countries; psychology; bibliometric analysis; national comparison; Web of Science; InCites

Introduction

Internationalization, global communication and collaboration are the key attributes of contemporary science. To be a part of international community means publishing papers in international journals and in the English language because English is the academic lingua franca today. This is true for the majority scientific fields, including psychology. Despite the fact that psychological academic community was relatively open for international communication before and in the early Soviet period (Yasnitsky 2010, 2011) and a number of Soviet psychologists and behavioral researchers were recognized by the international community (Aleksandrova-Howell et al. 2012; Haggbloom et al. 2002) for a long time the Soviet academic psychology community was isolated from the West. Ideological pressure in social sciences and the Iron Curtain led to almost full isolation from the Western scientific community. After the collapse of the Soviet Union each of the 15 Republics, which were parts of the Soviet Union, became independent countries and went their own ways in economic, social, and scientific development. The collapse of the USSR was a big transformation that influenced a large number of people in 15 former Soviet republics and in some other communist countries under the influence of the Soviets. This transformation has affected all areas of life, including science and education. Strong centralization and ideological pressure, especially in the social sciences, disappeared. A large group of scientists obtained the freedom of movement and the possibility to freely collaborate with researchers from Western countries. At the same time, in most post-Soviet countries a deep political and economic crisis arose.

Several bibliometric studies investigated the development of science in the former Soviet countries (Allik 2003, 2008, 2015; Fiala and Willett 2015; Gzoyan et al. 2015; Kozak et al. 2015; Markusova et al. 2009; Markusova et al. 2009; Zavadskas et al. 2011). However, these studies usually consider only selected countries and analyze publications from all fields as a whole output or focus on natural/computer sciences, while social and behavioral sciences were given little attention. The main goal of this paper is to provide a bibliometric analysis of publications from 15 post-Soviet countries in psychological journals. This study attempts to answer the following primary research questions.

1. What is an output of psychology publications in 15 post-Soviet countries in absolute terms and as a share of the global output in the psychology over the 26-year period?
2. What is the relative contribution of different post-Soviet countries in both quantitative and qualitative terms? And how do they collaborate with each other?
3. Are authors from post-Soviet countries autonomous in publishing papers in psychological journals? And what impact did their papers have?

Data and Methods

Data were obtained from Web of Science (WoS, Clarivate Analytics, ex-Thomson Reuters), the online version of the SCI-EXPANDED and SSCI, on July 25, 2018. An advanced search by fields Web of Science Category (WC), Country (CU), and Year Published (PY) was conducted. We searched papers with at least one author affiliated with one of 15 post-Soviet countries in journals belonging to at least one psychology category: Psychology; Psychology, Applied; Psychology, Biological; Psychology, Clinical; Psychology, Developmental; Psychology, Educational; Psychology, Experimental; Psychology, Mathematical; Psychology, Multidisciplinary; Psychology, Psychoanalysis; Psychology, Social. The retrieved results were limited by document types ('article' or 'review') and years of publication (1992–2017). With this search strategy, 4,986 papers were found. All available information about these 4,986 papers was downloaded.

The following two indicators were employed to examine the autonomy of the post-Soviet countries in publishing papers in psychological journals: 1) the percentage of papers with author(s) from a single post-Soviet country and 2) the percentage of papers with international collaboration where the correspondence author is from a post-Soviet country. These indicators do not cover the whole diversity of internationalization indicators, among which there are the indicators taking into account the diversity of cited authors, readers, the language of national journals, etc. (Buela-Casal et al. 2006). We use these indicators because they are the easiest to calculate, understand and interpret. The limitation is that we cannot comprehensively assess the degree of internationalization of psychological science in post-Soviet countries.

The impact of the post-Soviet psychological papers was examined using five indicators: 1) category normalized citation impact, 2) percentage of papers in Q1 journals, 3) percentage of papers in Top 1% by number of citations, 4) percentage of papers in Top 10% by number of citations, and 5) percentage of highly cited papers. A citation-based approach used in this study for analysis of the impact of the post-Soviet psychological papers has a number of limitations (MacRoberts and MacRoberts 1996, 2010, 2018). First of all, it is worth remembering that these indicators are based only on explicitly cited works indexed in WoS. It is well known that non-English language publications are worse represented in WoS. This can lead to the underestimation of both the number of publications of individual countries and the number of their citations. Therefore, its results must be interpreted in light of these limitations.

All results described in this paper were calculated by the authors based of WoS database or extracted from the InCites database. For the data preparation, analysis and visualization we used R, a programming language and environment for statistical computing (R Core Team 2017). Analysis of the international collaborations was conducted by the freely available computer program VOSviewer

(version 1.6.8) (van Eck and Waltman 2010). Data on international collaborations were saved from VOSviewer and visualized by the *igraph* R package (Csardi and Nepusz 2006).

Results

In sum, fifteen post-Soviet countries produced 4,986 papers indexed in SCI-EXPANDED and SSCI. Post-Soviet papers have been published in 412 journals, which is 69.2% of the total number of journals in 11 psychological categories in SCI-EXPANDED and SSCI. Table 1 shows top titles with the highest number of post-Soviet papers for the whole period. As can be seen from the table, the largest number of papers is concentrated in two journals – *Psikhologicheskii Zhurnal (PZh)* and *Voprosy Psikhologii (VP)*. These two journals are Russia-based and publish papers only in the Russian language. Thus the most of their papers are written by Russian authors. Since these papers are not in English, they are not very visible to the world, and few researchers can read them outside the post-Soviet countries. Their contribution to global science is limited and for this reason they should be considered separately. These journals are not comparable with English-language journals and are dramatically biased towards authors from Russia. For these reasons, we decided to exclude papers from these journals from further substantive analysis. The remaining journals with the largest number of post-Soviet papers represent different subfields of psychology. There are the journals from personality and social psychology, biological and cognitive psychology, and educational psychology among them. However, biological and cognitive science journals dominated by the number of the post-Soviet countries' papers published. Concurrently, some subfields of psychology are completely absent among journals with the highest number of post-Soviet papers. The authors from the post-Soviet countries still publish rarely in the prestigious journals on clinical psychology or work and organizational psychology.

Output of psychology publications in 15 post-Soviet countries

After removing papers from *PZh* & *VP* 2,285 papers remain in the sample. It is 0.34% from all 667,101 articles in psychological journals published globally. This is more than 10 times less than the share of post-Soviet countries in the world output in all journals (3.48%). The share of the papers in psychological journals from these countries increased from 0.01% in 1992 to 0.62% in 2017 (Figure 1). Though it is still a tiny part of the world output, there is an increase in the contribution of post-Soviet countries to the world output in psychological journals in contrast to the decline in their contribution to the world output in all journals. Spearman's rank correlation between the publication year and the percentage of the post-Soviet countries' papers from the world output in psychological journals is 0.79 ($p < .001$), whereas Spearman's rank correlation between the publication year and the

percentage of the post-Soviet countries' papers from the world output in all journals is -0.75 ($p < .001$).

Table 1. Top titles with the highest number of post-Soviet papers

Journal	Number of papers	Language	Country in which the journal is published
<i>Psikhologicheskii Zhurnal</i>	1566	Russian	Russia
<i>Voprosy Psikhologii</i>	1135	Russian	Russia
<i>International Journal of Psychophysiology</i>	84	English	The Netherlands
<i>Personality and Individual Differences</i>	71	English	England
<i>Physiology & Behavior</i>	60	English	England, USA
<i>Journal of Cross-Cultural Psychology</i>	58	English	USA
<i>Vision Research</i>	56	English	England
<i>Frontiers in Psychology</i>	49	English	Switzerland
<i>AIDS Care. Psychological and Socio-medical Aspects of AIDS/HIV</i>	40	English	England
<i>Perception</i>	40	English	England
<i>Perceptual and Motor Skills</i>	40	English	USA
<i>Intelligence</i>	36	English	USA
<i>Spanish Journal of Psychology</i>	36	English	Spain
<i>Learning and Individual Differences</i>	34	English	The Netherlands
<i>European Journal of Personality</i>	32	English	England, USA
<i>Behavior Genetics</i>	31	English	USA
<i>Behavioural Processes</i>	28	English	The Netherlands
<i>Frontiers in Human Neuroscience</i>	28	English	Switzerland
<i>Integrative Physiological and Behavioral Science</i>	27	English	USA

Figure 1. The share of the post-Soviet countries in the world output in psychological journals and in all journals (authors' calculations based on the data extracted by advanced search in the online version of the SCI-EXPANDED and SSCI).

Contribution of different post-Soviet countries

Five countries produce the largest number of papers: Russia, Estonia, Lithuania, Ukraine, and Georgia (Table 2). Authors of more than 95% of all post-Soviet countries' papers are affiliated with these four countries. Obviously, the size of population has no relation to the productivity because Russia with the highest number of papers has only 8.96 papers per million inhabitants, whereas Estonia with 612 papers has 464.88 papers per million inhabitants. Lithuania ranks second in terms of relative productivity, having 59.88 papers per million inhabitants. Estonia and Georgia have the highest levels of citations per paper among five leading countries (19.63 and 19.94, respectively).

Table 2. The number of papers from post-Soviet countries in psychological journals (1992–2017)

Country	Total number of papers	Percentage from all post-Soviet countries' papers	Number of papers per million inhabitants	Total citations	Citations per paper
Armenia	15	0.66	5.13	214	14.27
Azerbaijan	7	0.31	0.72	79	11.29
Belarus	30	1.31	3.16	248	8.27
Estonia	612	26.78	464.88	12,016	19.63
Georgia	70	3.06	18.82	1,396	19.94
Kazakhstan	24	1.05	1.35	121	5.04
Kyrgyzstan	11	0.48	1.81	66	6.0
Latvia	44	1.93	22.44	1,164	26.45
Lithuania	172	7.53	59.88	2,676	15.56
Moldova	3	0.13	0.84	140	46.67
Russia	1,293	56.59	8.96	19,867	15.37
Tajikistan	2	0.09	0.23	18	9.0
Turkmenistan	2	0.09	0.35	7	3.5
Ukraine	88	3.85	1.96	1,181	13.42
Uzbekistan	14	0.61	0.44	118	8.43

Note. Data about population of countries (2016) are taken from the 'World Development Indicators' database (<http://data.worldbank.org/>).

Figure 2 shows the number of papers from post-Soviet countries in psychological journals by years between 1992 and 2017. It is demonstrated that Russia and Estonia are the leaders during all this period. Before 2011–2012 there is a slow linear growth in the number of papers from Estonia, and approximately the constant number of papers from Russia. After 2010 for Russia and after 2011 for Estonia there is a faster grow in the number of papers and even a sharp rise in the quantity of papers from Russia after 2014. The number of papers from Georgia, Lithuania, and Ukraine has also increased in recent years. Ten post-Soviet countries (Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Latvia, Moldova, Tajikistan, Turkmenistan, and Uzbekistan) have published less than 50 papers in psychological journals over the last 25 years. This means less than two papers per year. Further bibliometric analysis is based on aggregate indicators, which are informative only for the countries with a significant enough number of papers. Due to this, one should be careful in interpreting the indicators of these countries.

Figure 2. The number of papers in psychological journals from post-Soviet countries (only countries with 50 and more papers).

Autonomy of the post-Soviet psychology

Almost 40% of papers are written by authors from only one post-Soviet country, i.e. without international collaboration. Almost all international articles are written in collaboration with at least one country from outside the post-Soviet space. Only 8 articles (less than 0.5%) are written by authors from two or more post-Soviet countries without collaboration with authors from at least one country from outside the post-Soviet space. At the same time in a quarter of the papers written in international collaboration authors from the post-Soviet countries are the correspondence authors (Table 3). In other words, authors from post-Soviet countries publish papers both independently and within international teams, in every fourth case taking a leadership position in the process of preparing a paper. Thus, we can conclude that post-Soviet authors who publish papers in international journals have a significant level of autonomy. The percentage of papers without international collaboration decreased from 70% in 1992-1999 to 29% in 2013-2017, while the percentage of international papers where correspondence author is from post-Soviet country increased from 5% in 1992-1999 to 25% in 2013-2017 (Figure 3). Over time, post-Soviet authors began writing more papers in international teams, constantly increasing the proportion of papers in which they are leaders and main contributors.

The analysis of the autonomy of individual countries shows that the five leading countries (in term of output) are not homogeneous. Estonia has the largest percentage of papers without

international collaboration (47%) and the largest percentage of international papers where the correspondence author is from Estonia (38%). At the same time, Estonia has the highest values for these indicators throughout the analyzed period. Georgia and Ukraine, on the contrary, have the smallest shares of such publications (Georgia: 16% and 17%, Ukraine: 19% and 10%, respectively). Thus, Estonia demonstrates the highest level of autonomy, while Georgia and Ukraine rank the lowest here. However, over time, most countries become more autonomous in publishing articles in international journals.

Table 3. Autonomy and impact indicators

Sample	% papers from single post-Soviet country	% international papers with post-Soviet correspondence author	% papers in Q1 journals	Category normalized citation impact	% papers in Top 1%	% papers in Top 10%	% Highly cited papers
All 15 countries	38.2	23.5	34.70	0.90	1.01	9.41	0.39
Armenia*	20.0	18.2	38.46	0.89	0.00	6.67	0.00
Azerbaijan*	28.6	40.0	42.86	0.50	0.00	0.00	0.00
Belarus*	53.3	15.4	18.52	0.34	0.00	0.00	0.00
Estonia	47.2	37.8	36.00	1.11	2.12	11.76	0.82
Georgia	15.7	16.9	39.73	1.20	1.28	15.38	1.28
Kazakhstan*	20.8	5.3	8.33	0.51	0.00	4.17	0.00
Kyrgyzstan*	0.0	36.4	18.18	1.00	0.00	18.18	0.00
Latvia*	20.5	37.1	12.50	1.14	2.27	11.36	0.00
Lithuania	36.6	21.1	30.54	1.00	0.58	12.79	0.00
Moldova*	0.0	0.0	66.67	1.44	0.00	33.33	0.00
Russia	34.7	16.6	36.26	0.85	0.62	8.58	0.23
Tajikistan*	50.0	0.0	0.00	0.35	0.00	0.00	0.00
Turkmenistan*	0.0	0.0	0.00	0.08	0.00	0.00	0.00
Ukraine	19.3	10.0	34.94	0.89	1.14	12.50	0.00
Uzbekistan*	42.9	0.0	57.14	1.12	0.00	14.29	0.00

Note. * – Countries with less than 50 papers (care should be taken in interpreting the indicators of these countries). There are no data about the correspondence author of 37 papers. % Papers in Q1 journals, Category normalized citation impact, % Papers in Top 1%, % Papers in Top 10%, and % highly cited papers were extracted from InCites database updated 2019-02-11. Includes Web of Science content indexed through 2018-12-07.

Figure 3. Indicators of autonomy and impact by years. The dashed red line represents all 15 post-Soviet countries together. Only countries with a substantial number of papers in each period are shown.

Impact of the post-Soviet psychology

Every third paper is published in a Q1 journal (Table 3). This value is lower than the percentage of papers in Q1 journals in general across all sciences in InCites database (43.58%, see Appendix for benchmarks), and than the median percentage of articles in Q1 journals in 10 psychological categories of WoS (40.76%). Citation normalized for subject, year and document type (CNCI) is also lower by

approximately 10% than the world average. Among publications in the Top 1% and Top 10% based on citations by category, year, and document type, papers from post-Soviet countries are also underrepresented (1.01% and 9.41%, respectively). In all fields in InCites database these indicators are 1.14% and 10.65%, respectively, and the medians for 11 psychological categories of WoS are 1.46% and 13.20%, respectively. Papers from post-Soviet countries are also slightly underrepresented among Highly cited papers (0.39%). For all fields in InCites database this indicator stands at 0.49%, with the median for 11 psychological categories of WoS at 0.45%. Thus, the impact indicators show that papers from post-Soviet countries are cited lower than the world average. However, three indicators of impact tend to grow with time (Figure 3). From 1992-1997 to 2013-2017, the percentage of articles in Q1 increased from 28% to 38%, the percentage of papers in the Top 10% increased from 6.77% to 10.48%, and CNCI increased from 0.57 to 1.02. Thus, it can be concluded that the impact of psychological papers from post-Soviet countries increases over time.

The analysis of the impact of papers of individual countries also reveals the heterogeneity of the leading post-Soviet countries. Estonia and Georgia demonstrate the highest level of the most impact indicators among post-Soviet countries. They have the highest percentages of papers in Q1 journals (36% and 40%, respectively), the highest percentages of papers in the Top 1% (2.12% and 1.28%, respectively), the highest percentages of Highly cited papers (0.82% and 1.28%, respectively), and the highest CNCI (1.11 and 1.20, respectively). Their papers are cited higher than the world average, they are well represented among the Top 1% and Top 10%, as well as extremely overrepresented among Highly cited papers. In turn, Russia has the lowest values of the impact indicators among five post-Soviet countries with the highest number of papers. Papers from Russia are cited 15% lower than the world average, are worse represented among the Top 1%, the Top 10%, and the Highly cited papers. However, there is a positive trend over time. The average citation in all leading post-Soviet countries is steadily increasing, and the representation of papers from different countries among the Top 1% and Top 10% cannot be considered stable. A relatively stable growth of these indicators is observed only in Estonia.

Cooperation between the post-Soviet countries

Figure 3 shows that in the early 1990s (before 1998) about every fourth paper from post-Soviet countries was written in international collaboration, though collaborations between post-Soviet countries were only episodic and only between several countries in the 1990s (Figure 4A). It means that right after gaining independence former members of the Soviet Union were publishing papers by themselves or in collaboration with other countries, but not in collaboration with post-Soviet countries. On a regular basis papers in co-authorship with researchers from other post-Soviet countries emerged only in the 2000s (Figure 4B). The greatest diversity in the co-authorship of researchers from post-

Soviet countries is observed in the period from 2001 to 2010. The most intensive collaboration during the whole period (Figure 4D) was between Russia, Estonia, Lithuania, and Georgia. Researchers from three Baltic countries also tend to collaborate with each other. However, as was mentioned above, there are very few international papers (8 papers) written by a team of authors only from post-Soviet countries. The majority of international papers include the author or authors from outside the post-Soviet space. In other words, authors from post-Soviet countries almost do not collaborate directly with each other, but interact through authors from third countries or within large international collaborations.

Figure 4. Co-authorship networks of post-Soviet countries for the whole period from 1992 to 2017 and for three periods (1992–2000, 2001–2010, and 2011–2017) separately. The thicker the edge, the closer the collaboration is between researchers from the countries.

Discussion and Conclusion

We have analyzed publications from post-Soviet countries in psychological journals in 1992–2017, i.e. over 26 years after the collapse of the Soviet Union. The output of psychology papers in the international journals has been rather poor after the dissolution of the USSR. In sum, the former Soviet republics have produced less than one percent of the world output in psychological journals. It should also be noted that SCI-EXPANDED and SSCI are the best fractions of the entire set of academic journals in the world and contributions to the top journals depend on the opportunities for meetings, travelling and interactions with scholars from other countries. Thus the analysis of conference attendance and collaborative grant applications would allow the contribution of the post-Soviet countries to psychology and their impact to be explored further.

However, the growth of post-Soviet countries' output in psychological journals, especially in Russia and Estonia, is observed. This growth can be only partly explained by the increase of the WoS itself. Our analysis does not allow us to unambiguously identify the sources and factors of this growth. However, certain assumptions can be made. First, in countries where the greatest growth of publications on psychology is observed, psychological science existed even before the Soviet period (see e.g. Allik 2007, 2011; Allik and Tammiksaar 2016; Dafermos 2014), which had created strong traditions and roots. Second, there emerged new actors producing research and publications. In many countries of the former USSR, the academic system is divided into institutes of the Academy of Sciences and universities. Research has traditionally been localized in the institutes of the Academy of Sciences, while the main mission of universities consists in teaching and training. However, in recent years, university science has been actively developing. In Russia, one of the most significant initiatives in this area is the Russian Academic Excellence Project (Project «5-100») aiming to maximize the competitive position of a group of leading Russian universities in the global research and education market (Schiermeier 2010). The impact of this program on the publication output of the leading universities has been proven empirically (Guskov et al. 2018; Poldin et al. 2017; Turko et al. 2016). According to the InCites data, Russian articles published before 2000 were written by authors affiliated with 53 organizations, 16 (30%) of which are universities (only 2 are in the top 20 organizations by the number of articles), while articles published in 2001-2010 are written by authors affiliated with 70 organizations, 34 (49%) of which are universities (7 are in the top 20), and articles published after 2010 are written by authors affiliated with 105 organizations, 62 (59%) of which are universities (10 are in the top 20). In 2010 Russian government introduced grants to support scientific research projects implemented by the world's leading scientists at Russian institutions of higher education (in Russia, so called 'megagrants'). This initiative proved to be another source of new actors. Previous research showed that every fifth Russian article published in leading international psychological journals in 2015 was supported by megagrants (Lovakov 2017). In the early 1990s, the

number of articles of post-Soviet countries in international psychological journals was quite small, so the appearance of even one or two new research groups or laboratories could create a noticeable increase in both the absolute number of articles and their percentage of world output. Third, the observed rise can also be attributed to other changes in the academic systems and policy decisions and initiatives, which have affected all research fields, including psychology. In Estonia, for instance, this is primarily project-based funding of research (more than 80% of research funding is project-based, most research funding applications had to be written in English, using foreign experts and top-level researchers as judges and decision-makers) which created a strong competition for limited funds and promoted scientific excellence (Allik 2015; Lauk and Allik 2018; Raudla et al. 2015). However, the nature of this growth is likely to be more complex and cannot be explained only by the mentioned reasons. The growth in the number of publications of post-Soviet countries is also observed in other areas, for example, in the field of higher education (Lovakov and Yudkevich 2018), but the reasons may be different.

Biological and cognitive science journals dominated among those publishing the post-Soviet authors' papers. The probable explanation may be that social sciences were under ideological pressure to a greater extent than natural and life sciences during the Soviet period. Therefore, after the collapse of the Soviet Union the social part of psychological science was more isolated and backward than the natural one. For this reason, in the 1990s, researchers from the social part of psychological science found it more difficult to produce research and publish papers that may become competitive at the international level.

Researchers from post-Soviet countries publish papers in psychological journal both themselves and in collaboration with coauthors from different countries. Almost 60 percent of papers are written in collaboration with researchers from other countries. It is difficult to judge whether this is a lot or a little, however, this value can be compared with other regions. A study of papers on social psychology written by authors from Asia revealed a similar percentage of international papers (Haslam and Kashima 2010). At the same time, in international papers the authors from the post-Soviet occupy both a leading and a secondary position. Thus, we can conclude that post-Soviet authors have a significant level of autonomy in preparation and publication of papers in psychological journals, and at the same time they are not isolated or self-isolated, because they are included in international interactions with researchers from other countries. This is a sign of health of at least part of the academic psychological community.

The analysis shows that in general the impact of the post-Soviet papers is lower compared to the benchmarks. However, the huge heterogeneity between post-Soviet countries is observed. Although Russia has the largest number of papers in international psychological journals, Estonia demonstrates the highest level of relative output, autonomy and impact. Authors from this country produce relatively

many papers having a significant impact. The high quality of Estonian scientific papers is also observed in other research fields (Allik 2008, 2015; Lauk and Allik 2018). At the same time, authors from other countries, primarily from Russia, produce numerous average or slightly lower than average papers.

The analysis also showed that collaboration between researchers from other post-Soviet countries emerged only in the 2000s. Almost all international collaborators before the 2000s were from outside post-Soviet countries. Similar collaboration patterns were relevant not only for psychology but for all fields (Kozak et al. 2015). It is possible that at that time it was easier or more profitable to collaborate with other countries, due to the dramatic decrease in funds for research and development in the 1990s because of the economic and political crisis in most post-Soviet countries.

Obviously, 15 post-Soviet countries do not represent a common space. Over the 26 years that have passed since the collapse of the USSR, each country has gone its own way in the development of higher education and science, which is reflected in their publication profiles, including publication profiles in psychological science. This bibliometric analysis only shows a general picture of the development of psychology in the post-Soviet space but does not provide a full explanation of the nature of the identified trends. The results obtained rather raise new questions than provide comprehensive answers. Further studies of the rise of psychological science in post-Soviet countries are needed in order to fully understand the causes and nature of the growth of their publication output and impact.

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Appendix

Table 4. Benchmarks for autonomy and impact indicators

Sample of papers	Web of Science papers	% papers in Q1 Journals	Category Normalized Citation Impact	% papers in Top 1%	% papers in Top 10%	% Highly Cited Papers
Global Baseline	28,458,992	43.58	0.98	1.14	10.65	0.49
Psychology	133,832	49.32	1.06	1.43	13.20	0.55
Psychology, Applied	70,124	39.26	1.10	1.49	13.31	0.44
Psychology, Biological	33,482	38.50	0.96	1.35	11.45	0.25
Psychology, Clinical	138,555	45.12	1.03	1.18	11.53	0.45
Psychology, Developmental	85,362	49.32	1.15	1.65	15.19	0.45
Psychology, Educational	43,188	35.67	1.14	1.68	14.51	0.29
Psychology, Experimental	126,195	48.78	1.12	1.71	13.87	0.48
Psychology, Mathematical	13,258	50.98	1.06	1.46	11.92	0.53
Psychology, Multidisciplinary	147,419	40.76	1.03	1.38	11.88	0.59
Psychology, Psychoanalysis	16,836	17.96	0.78	0.78	8.77	0.00
Psychology, Social	76,486	36.93	1.18	1.69	14.27	0.36
Whole psychology (mean)		41.14	1.06	1.44	12.72	0.40
Whole psychology (median)		40.76	1.06	1.46	13.20	0.45

Note. Data from InCites database updated 2019-02-11. Includes WoS content indexed through 2018-12-07. Time Period: 1992–2017. Document Type: Article or Review.