

The influence of rivalry on the activity performance: based on the research of industrial enterprises

La influencia de la rivalidad en el rendimiento de la actividad: basada en la investigación de empresas industriales

LEVCHENKO, Valeriy V. [1](#); YURYEVA, Olga V. [2](#); RASTORGUEVA, Elena N. [3](#); NEVEROVA, Julia S. [4](#) & TALIPOVA, Lyudmila Yu. [5](#)

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ABSTRACT:

The relevance of the present study is due to the existing ambiguity and inconsistency of the results of numerous studies conducted over the last century in the social psychology on the problem of the influence of this phenomenon on the activity performance. The purpose of this article is to identify the impact patterns of certain types of rivalry on objective and subjective indicators of activity performance. Research methods included analysis of documents, socio-psychological and personal questionnaires, including a specially designed author's questionnaire. Statistical data processing was carried out using standard packages of SPSS v.22.0 application software. Research, which was carried out over three decades, covered about 8,000 respondents working in industrial enterprises and organizations. In consequence of the study, the author's structural and compositional concept of rivalry enabled making significant clarifications, and largely removing the uncertainty on the issue of subjective and objective effects for each type of rivalry. In particular, the following stable patterns were revealed: the strongest positive impact on the objective and subjective aspects of the activity performance was provided by kind of rivalry, such as active cooperation, while the weakest impact was caused by reactive altruism. Also, it should be noted that in terms of the objective activity performance indicators, an active competition was in second place (after active cooperation), while all active types of rivalry appeared to be more productive compared to similar passive forms of rivalry. The research aspects considered in the article are of practical importance for a broad range of economic, social, and socio-psychological processes since the consideration of the specifics of each of the rivalry types will allow a more accurate and differentiated approach to the problem of improving the organization of joint activities.

Keywords: rivalry, competitiveness, altruism, individualism, cooperation, metasystems approach.

RESUMEN:

La relevancia del presente estudio se debe a la ambigüedad existente y la inconsistencia de los resultados de numerosos estudios realizados durante el siglo pasado en la psicología social sobre el problema de la influencia de este fenómeno en el rendimiento de la actividad. El propósito de este artículo es identificar los patrones de impacto de ciertos tipos de rivalidad en los indicadores objetivos y subjetivos del desempeño de la actividad. Los métodos de investigación incluyeron análisis de documentos, cuestionarios socio-psicológicos y personales, incluido un cuestionario de autor especialmente diseñado. El procesamiento de datos estadísticos se realizó utilizando paquetes estándar del software de aplicación SPSS v.22.0. La investigación, que se llevó a cabo durante tres décadas, cubrió a unos 8,000 encuestados que trabajan en empresas y organizaciones industriales. Como consecuencia del estudio, el concepto de rivalidad estructural y compositivo del autor permitió hacer aclaraciones significativas y eliminar en gran medida la incertidumbre sobre el tema de los efectos subjetivos y objetivos para cada tipo de rivalidad. En particular, se revelaron los siguientes patrones estables: el impacto positivo más fuerte en los aspectos objetivos y subjetivos del desempeño de la actividad fue provisto por el tipo de rivalidad, como la cooperación activa, mientras que el impacto más débil fue causado por el altruismo reactivo. Además, debe señalarse que, en términos de los indicadores de rendimiento de la actividad objetiva, una competencia activa ocupó el segundo lugar (después de la cooperación activa), mientras que todos los tipos activos de rivalidad parecían ser más productivos en comparación con las formas pasivas similares de la rivalidad. Los aspectos de investigación considerados en el artículo de importancia práctica para una amplia gama de procesos económicos, sociales y socio-psicológicos, a pesar de la consideración de los aspectos específicos de cada uno de los tipos de rivalidad, permitirán un enfoque más preciso y diferenciado del problema de mejorar la organización de actividades conjuntas.

Palabras clave: rivalidad, competitividad, altruismo, individualismo, cooperación, enfoque de metasistemas.

1. Introduction

The problem of rivalry is one of the topical issues in both the social sciences in general, and social psychology and its specific branches, such as the psychology of interpersonal and intergroup interaction, social psychology of personality, the psychology of small groups, and organizational and economic psychology. The vitality of this problem is determined by both the logic of the social and socio-psychological knowledge development, and the changes taking place in society today. The growth in complexity and dynamics of social processes in the transforming society is accompanied by multidirectional, often ambivalent, processes of social integration and differentiation, by new network

forms of interaction that combine competitiveness and cooperation (starting from competitive partnerships in the economy to the gamification of joint activities in organizations), which require theoretical comprehension. The idea that competition, cooperation, and altruistic behavior are closely related to each other in the development of complex systems is becoming increasingly common in the biological and social sciences.

The greatest attention of the vast majority of domestic and foreign researchers dealt with rivalry is attracted by the problem of the consequences of this phenomenon. The issue of the most effective form of rivalry is widely disputed to date. After all, the importance of rivalry as the main internal source of additional activity (overactivity) of the individual and social group is recognized by everybody. Nevertheless, views on the effectiveness of certain types of rivalry often diverge than coincide. It should also be noted that most of the results of empirical studies are dealt with the comparison of just two main types of rivalry, namely, competition and cooperation. Other types of rivalry (passive forms of competition and cooperation, individualism, and altruism) come to the attention of researchers much rarely (Shmelev, 1997; Levchenko, 2011; Garcia et al., 2013; Monni et al., 2017; Fomina et al., 2018; Saleem et al., 2018).

Many researchers have obtained empirical facts proving the negative effects of cooperation, and therefore they conclude that competition based on Darwin's theory of natural selection contributes to the highest achievements in all kinds of life-sustaining activity, including production, art, sports, science, etc. (Pochebut and Chiker, 2002; Hagstrom, 1980; Shmelev, 1997; Abra, 1993; Bonta, 1997; Epstein and Harackiewicz, 1992; Kline and Sell, 1996; Okebukola and Ogunniyi, 1984; Smither and Houston, 1992; Gerasimov et al., 2018; Muradl and Ahmadov, 2019).

Nevertheless, the vast majority of the research results, especially in the last three decades, testify a sufficiently convincing advantage of cooperation in comparison with other types of rivalry, and that the positive effects of cooperation, manifested in various fields of activity, are more pronounced especially in the area, which is associated with social and interpersonal aspects of life-sustaining activity (Aronson, 2006; Axelrod, 2006; Cosier, Dalton, 1988; Deutsch, 2014; Johnson and Johnson, 1979; Johnson et al., 1981; Slawin, 1994; Stephan, 1975). In general, the results of numerous studies by various researchers indicate rather ambiguous consequences of a particular type of rivalry.

In order to bring some clarity to this problem, a new conceptual approach was developed and proposed, which makes it possible to reveal the complex nature of the phenomenon of rivalry, to go beyond the simplified dichotomy of competition-cooperation relations prevailing at the analytical stage of studying this phenomenon. The authors' structural and compositional concept of rivalry opens up opportunities for studying genesis, functional organization, and structural originality of this phenomenon from the standpoint of the metasystems approach as one alternative of the system-based analysis of rivalry, i.e., to consider rivalry from the perspective of its metasystems, namely, society, activity (interaction), and personality (Levchenko, 2017). In practical terms, the proposed structural and compositional concept of rivalry and the results of empirical research not only expand the tools for diagnostics of social and socio-psychological processes, but also allow more differentiated and integrated constructive resolution of social conflicts, as well as developing programs to improve the effectiveness of joint activities in various living environments.

The authors consider the main parameters of the rivalry phenomenon from the standpoint of a noted conceptual approach. "Rivalry, as a kind of interaction and a special form of socio-psychological activity, which is a consequence of the simultaneous implementation of two ambivalent aspirations, originally inherent in the social subject: self-separation (isolation) and interaction (integration) – is a holistic structure, which includes two equal grounds ("orientation" and "intensity"), which allows moving from the traditional simplified dichotomous scheme of the study of rivalry to a more differentiated scale" (Levchenko, 2017).

Rivalry, as a form of coactivity, is characterized by certain properties such as intensification of its basic characteristics (spontaneity, arbitrariness, going beyond the requirements and conditions of the situation, efficacy, and emotionality), and orientation. The orientation in the subject-subject relations is expressed in the presence of several vectors of the rivalry process. One vector can be conditionally designated as altruism. Altruism is one of the two tendencies inherent in the subject. It is demonstration of just the general interest of the subject (when the subject pursues group goals, usually to the detriment of his individual goal) in the course of comparison, evaluating also regulations of his activities. The opposite pole of rivalry, which is a one-sided manifestation though of the second trend inherent in the subject (the tendency to isolation and opposition), can be conditionally designated as competitiveness. Another form of rivalry is cooperation, where there is the maximum permissible (but not always, and not necessarily equal) synchronized implementation of two opposite tendencies inherent in the subject in the adversarial interaction: the tendency to isolation and the tendency to integration. That is, subjects achieve the maximum if other participants also reach it (while maximizing the gains of both sides of the interaction, though not resulting in their parity). In another form of adversarial interaction, namely, self-serving behavior (individualism), each participant achieves his goal regardless of the achievements of others (Levchenko, 2017).

It has been suggested that the analysis of this phenomenon exactly from the standpoint of the structural and compositional concept of rivalry, which is possible with the fundamental transformation of the basic paradigm of research from analytical to systemic, and then to metasystems, will provide a fairly effective means to overcome a kind of deadlock in the theoretical analysis of the rivalry phenomenon, as well as will allow bringing greater certainty of one of the most important and controversial problems of rivalry, i.e. the impact on the activity performance.

2. Methods

To achieve the goal and solve the tasks, a set of methods was used that complement each other and ensure the verification of the reliability of the results. Empirical methods included a survey (semi-standardized interview and questionnaire), the method of sociometric measurements, document analysis (documentary sources of activity performance), as well as socio-psychological and personal questionnaires (K. Rogers and R. Diamond's socio-psychological adaptation scale, K. Thomas's diagnostics methods of personality predisposition to conflict behavior, B. Bass's diagnostics method of the individual's orientation, A. Mehrabian's questionnaire to define the level of motivation towards achieving success, A. Petrovsky's methods to determine individual's activity and focus), as well as monitoring. A particular place in the study was occupied by the technique based on the use of specially designed questionnaire

"Rivalry in various social activities", which was tested for validity and reliability, and included two scales that allowed assessing the internal subjective series (Questionnaire data), indicating the two leading trends of rivalry, namely, orientation ("on themselves – on others" or "exit"), and intensity (from complete indifference to the maximum independent manifestation of intensity). Access to the integral indicator of rivalry was provided by the procedures of classification and typology of the two main components of rivalry – orientation and intensity.

Mathematical and statistical methods of empirical data processing included descriptive statistics procedures, correlation analysis, difference significant criteria (Student's t-test, Mann-Whitney U-test), α -Kronbach coefficient, as well as cluster and regression analysis. Statistical data processing was done using standard packages of SPSS v.22.0 applied programs.

The empirical base consisted of the results of empirical studies carried out for almost 30 years. They were retrieved from the following sample: Norilsk Mining and Metallurgical Combine (145 primary production groups, or 920 people), Perm State Technical University (155 groups, or 3,050 students), teaching staff of secondary schools in Perm (146 primary teams, or 2,892 people), CJSC "Sibur-Khimprom" of Perm (375 people), and employees of medical institutions of the Perm Region (121 people). The study covered a total of about 500 primary production groups and a total sample of about 8,000 people.

3. Results

From the standpoint of the proposed structural and compositional concept of rivalry, a comparative analysis was carried out of the results of specific empirical investigations with numerous studies of rivalry in related social sciences (social psychology, sociology, economics, etc.). At that, the main task of this analysis was to clarify the differentiating influence of rivalry on joint activity performance in small social groups.

In the study of rivalry at the Norilsk Mining and Metallurgical Combine (a representative sample included 145 primary production groups, or 920 employees), the following significant differences between the types of rivalry were obtained for individual indicators of group efficiency (at that, it was necessary to exclude from consideration the respondents with individualistic orientations due to their small number, and combine potential and reactive forms of rivalry for the convenience of identifying the main trends and patterns).

In order to more clearly and distinctly present the degree of influence of each type of rivalry on the group activity performance, the ranking operation of each individual activity performance indicator was carried out. Only those indicators of group activity performance, on which significant differences between the types of rivalry were found, were ranked. Then all ranked positions were summed up (individually for each type of rivalry), and the average score was calculated. First rank (average score equal to 1.4) was taken by kind of rivalry such as active cooperation. That is, this kind of rivalry has the most positive impact on group activity performance. Second-ranked position (2.3) was occupied by active competition, i.e., it had the second largest (after cooperation) impact on group activity performance. Third rank position (2.8) was occupied by active altruism. Fourth rank (3.0) was taken by reactive cooperation, i.e., this type of rivalry had even weaker impact on group activity performance. The fifth position in terms of the power of influence was taken by reactive competition (4.2), and the last sixth place was given to reactive altruism (4.4). The revealed regularities also indicate, on the one hand, the obvious dominance of active forms of rivalry over passive ones in terms of their impact on group activity performance, while on the other hand, they indicate that the most productive type of rivalry is cooperation, while the least productive is altruism.

The results of the study of employees of the industrial enterprise CJSC "Sibur-Khimprom" ($N = 375$) and the social group of teachers ($N = 731$), indicate that the subjective assessment of professional success (professional and career advancement) by employees with different rivalry attitudes, basically coincide with the objective performance indicators, however there are some distinctive features (Tables 1, 2).

Subjective experiences coincide with objective indicators in respondents with active cooperation (in fact, they subjectively evaluate their professional career ($\beta = 0.122$ and 0.134), while their initiative is assessed most highly ($\beta = 0.153$)). Subjective assessments in employees with active altruism are clearly higher than their objective indicators ($\beta = 0.098$), while in respondents with active competition, on the contrary, subjective assessments of activity performance are slightly lower than objective indicators ($\beta = 0.007$). But at the same time, the indicator of "striving for better results" is the highest one ($\beta = 0.246$).

Table 1
Influence of the rivalry development level on self-assessment of respondents' activity performance ($N=375$, linear regression coefficients)

Dependent variables	Predictors, β								R^2
	Types of rivalry								
Activity performance indicators (self-assessment)	Reactive competitiveness	Active competitiveness	Reactive individualism	Active individualism	Reactive altruism	Active altruism	Reactive cooperation	Active cooperation	
Professional career (self-assessment)	0.123*	0.131*	-0.071	0.107*				0.134*	0.124
Evaluation of	0.095*	0.112*	0.033	0.024	0.106*	0.009	0.113*	0.097*	0.243

the quality of their work									
Taking initiative in the workplace	0.017		-0.034	0.008		0.131*	0.112*	0.153*	0.167
Striving for better results	0.065	0.246*	0.066	0.173*	0.208*	0.118*	0.036	0.224*	0.365

Notes: 1. In the analysis of the results, potential and reactive forms of rivalry relations are combined due to the small number of reactive forms of rivalry. 2. * p <0.05; ** p <0.01; *** p <0.001; β is the standardized regression coefficients; R^2 is the dispersion ratio.

At that, it was revealed that respondents with an attitude to active cooperation believe (self-assessment) that they have achieved the most in their workplace (compared to other types of competitiveness). These achievements involve finding and engaging in interesting, independent work ($\beta = 0.254$); making good reliable friends ($\beta = 0.243$); as well as achieving high official status ($\beta = 0.267$) and stability in life ($\beta = 0.154$).

Respondents with active altruism gave the highest marks to the following parameters of their professional success: achieving high qualification ($\beta = 0,179$); interesting, independent work ($\beta = 0,286$); and high authority and status in the team ($\beta = 0,145$). But the same group of respondents with active altruism has revealed the lowest estimates of life stability parameters ($\beta = -0.048$) and the presence of good, reliable friends ($\beta = 0.046$). Respondents with active individualistic attitudes believe that they managed better than others to achieve stability in life ($\beta = 0.142$) and high qualification ($\beta = 0.184$). Respondents with active competitiveness differed from individuals with other types of rivalry by higher estimates of achieved authority, status in the team ($\beta = 0.132$), high official status ($\beta = 0.131$), and the lowest qualification ratings ($\beta = 0.008$) (Table 2).

Table 2
Influence of the rivalry development level on self-assessment of the respondents concerning their achievements in the workplace ($N=375$, linear regression coefficients)

Dependent variables	Predictors, β								R^2
	Types of rivalry								
What was achieved in the workplace	Reactive competitiveness	Active competitiveness	Reactive individualism	Active individualism	Reactive altruism	Active altruism	Reactive cooperation	Active cooperation	
High job title	0.123*	0.131*	0.027					0.267*	0.128
Material wealth	0.095*	0.097*	0.033		-0.006				0.102
High qualification	0.017	0.008		0.184*		0.179*			0.146
Interesting, independent work	0.065	0.045	0.066			0.286*		0.254*	0.267
Personal and business connections			-0.034		0.035	0.054	0.064		0.059
Stability in life				0.142*		-0.048	0.114*	0.154*	0.165
High authority and status in the team		0.132*				0.145*	0.045		0.104
Making good, reliable friends						0.046	0.114*	0.243*	0.123

Notes: 1. In the analysis of the results, potential and reactive forms of rivalry relations are combined due to the small number of reactive forms of rivalry.

Another pattern should be noted: no significant differences were revealed in subjective assessments of professional success between reactive and active forms of rivalry (compared with those differences that take place based on objective indicators).

In the primary production groups of medical workers ($N = 121$), approximately the same influencing features of rivalry on the self-assessment of professional (official) career were revealed. The most favorable impact on the assessment of their professional career was provided by active cooperation ($\beta = 0.113$) and active competitiveness ($\beta = 0.097$), while the most adverse impact was noted with regard to potential individualism ($\beta = -0.026$). The tendency of the more positive influence of active types of rivalry on activity performance of medical workers is confirmed as well. That is, in general, active forms of rivalry have a more positive effect on activity performance indicator than passive and potential types of rivalry.

4. Discussion

Thus, the results obtained in our studies conducted at various sites over a long period of time indicate that the impact of different types of rivalry on the group activity performance has a well-defined and unambiguous pattern that largely allows overcoming the uncertainty and inconsistency of numerous results of foreign studies of this phenomenon (see Introduction). The detection of such certainty of the impact of rivalry on the group activity performance is largely due to a new view of this phenomenon from the standpoint of the metasystems approach, and the consideration of rivalry as a special form of socio-psychological activity, which is a consequence of the simultaneous implementation of two ambivalent aspirations, originally inherent in the social subject (isolation and integration), and as a holistic structure, which includes two equal grounds ("orientation" and "intensity") that allowed moving from the traditional simplified dichotomous scheme of the study of rivalry to a more differentiated scale consisting of twelve subtypes of this phenomenon.

At that, the most beneficial (facilitative) impact on both objective and subjective indicators is caused by rivalry, such as active cooperation. It should also be noted that in terms of the objective performance indicators, the second place (after active cooperation) is occupied by active competitiveness, while all active types of rivalry appeared to be more productive compared to similar passive forms of rivalry.

The subjective consequences of the impact of rivalry on the activity performance are somewhat different from the objective indicators:

- a) Respondents with active altruistic attitudes assess their activity performance much higher compared to persons with other competitive attitudes (except employees with the attitude for active cooperation) and compared with their objective performance indicators;
- b) The differences in the effects of the impact of rivalry on the activity performance between active and reactive forms of rivalry in terms of subjective self-assessment are somewhat smoothed (reduced) compared with the established and sufficiently significant differences between these types of rivalry based on the objective parameters of the activity performance.

5. Conclusion

The analysis of empirical data obtained at the Laboratory of Sociology of the Perm National Research Polytechnic University over the past three decades leads to the conclusion about a strong and unambiguous differentiating influence of rivalry on the group activity performance. The framework that helped to clarify this issue, was the author's structural-compositional concept of rivalry, which gave the opportunity to reveal the complex nature of the rivalry phenomenon from the standpoint of the metasystems approach as one of the system analysis options of rivalry, i.e. to examine rivalry from the perspective of its metasystems, namely, society, activities, and personality (Levchenko, 2017), and to go beyond the simplified dichotomy of relations of competition-cooperation, prevailing at the analytical phase of studying this phenomenon.

The obtained results generally confirm the suggested hypothesis about quite unambiguous connection between rivalry and activity performance, while in practical terms, the proposed structural and compositional concept of rivalry, as well as the results of empirical research not only expand the diagnosing tools for social and socio-psychological processes but also allow more differentiated and complex constructive resolution of social conflicts as well as optimize the processes contributing to joint activity performance. In the future, it is necessary to expand the analysis of the effects of rivalry, considered from the standpoint of the structural and compositional concept to other areas of life, such as interpersonal relationships, personal development, etc.

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1. Perm National Research Polytechnic University, 29 Komsomolsky prospekt, Perm, Russia, 614000. E -mail: v-v-levchenko@bk.ru
 2. Perm National Research Polytechnic University, 29 Komsomolsky prospekt, Perm, Russia, 614000
 3. Perm National Research Polytechnic University, 29 Komsomolsky prospekt, Perm, Russia, 614000
 4. Perm National Research Polytechnic University, 29 Komsomolsky prospekt, Perm, Russia, 614000
 5. Perm National Research Polytechnic University, 29 Komsomolsky prospekt, Perm, Russia, 614000
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