SOCIAL PSYCHOLOGY

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The methods for investigation of the small production groups efficacy

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This article gives the description of a multidimensional model of group efficacy and the investigation methods based on subjective criteria of the subject-active and social psychological efficacy of the production groups. It also gives the results of the evaluation of the substantial, evident, and discriminant diagnostic value, reliability and consistency, normalcy of distribution, as well as the normative data. It has been determined that the techniques conform to the main requirements and can be used in research and practice.

Keywords: *small group, informal subgroup, group efficacy, subject-active efficacy, social psychological efficacy.*

Small groups, which include departments, shifts, crews, etc, play an important role in life-sustaining activity of their members and the organization as a whole. Therefore, the issue of their efficacy is quite an important matter. It is elaborated by the research in various fields, such as economics, psychology, sociology, which focus their attention on different aspects of the efficacy.

In theory the relevance of this issue is determined by the necessity to expand, specify and systematize the knowledge about the small group efficacy. Social psychological investigation of the group efficacy can be tentatively divided into two categories: the research papers devoted to determine its criteria and to build the conceptional models and the papers, aimed at the analysis of the factors and the conditions of the efficacy. The works of the first group include the D. Crech's, R. Cratchfield and A. Bellchi's ierarchical model, three-dimensional conception of J. Hackman, three-factor model of R. Schwartz, etc [5, 6, 7]. The numerous research of the external and internal factors (relating to the group), which one way or another influence its efficiency [1, 2, 4].

In practice the inportance of this issue is determined by the primary tasks and the development tendencies of the modern society. First, the attention is paid at pro-

ductivity increase of the primary industrial departments, which provides the competitive ability of the organization in general. Second, it is necessary to work on creating conducive conditions for the people to feel psychological comfort and to be able to develop both professionally and personally. This kind of conditions has a positive effect on life quality, health and the performance of people.

The criteria and the techniques used for the evaluation of the group efficacy also have a big importance, especially those that were created as a result of rethinking of the accumulated experience and forming of new conceptional approaches. Thus, in micro-group theory the group efficacy is understood as a multidimensional construction, that includes two aspects – potential and real and two types – subject-active and social psychological, that have a connection between them [3, 4].

Potential efficacy is a complex of alternatives (internal conditions) of the group, which together with the external conditions and the peculiarities of the organization of the activity form the real efficacy of the given subject. Real efficacy is the group's achievement of the requisite level of the accomplishment of the goal function (or specific tasks) in building of the social activity.

Subject-active efficacy (SAE) usually can be found in institualized groups and may be of economic or social type, which depends on the goal function of the group. Potential SAE includes three blocks of group characteristics: production and organization resources, social psychological and quantitative and structural characteristics. Actual group SAE may be evaluated by objective and subjective indices. Objective indices of group activity include the quality and the volume of the accomplished work, the relation of the result of the activity to the invested resources, the relation of the result of the activity of a specific group or organization to the indices of organizations which work in the same field or produce the same services. However in some groups it is not possible to evaluate the objective indices of the activity precisely enough (for example, the quality of produced goods and services). Moreover, in cases when it is possible, the evaluation procedure might be more or less complicated. Therefore, in some cases it is reasonable to use subjective criteria. They can be received based on the evaluation of a group or a subgroup, which is done by the management by several criteria: how successfully the plan, the program or a specific project has been accomplished, the activity in complex conditions (new conditions, lack of time, etc), or how rationally were the resources used (material and technical, staff, etc) and so on.

Social-psychological efficacy (SPE) is manifested in interpersonal relationships, both connected and not connected with cooperative activity. Potential SPE includes three blocks of group peculiarities: organizational and communicative resources, qualitative structural and social psychological characteristics. Real group's or subgroup's SPE has the following criteria: a) how satisfied the members are with the group and its results; b) psychological comfort of the members; c) how the group contributes to the personal and professional growth of its members.

The analysis of the research works has shown that there are not any techniques that would help to quickly evaluate the types of activity mentioned above based on subjective criteria.

The objects of the investigation: a) to work out two express techniques based on the group efficacy model described above – the *questionnaire for the subject-active efficacy of the group (QSAE)* and the *questionnaire for the social-psychological efficacy of the group (QSPE);* b) to conduct an investigation and to evaluate the representativity of the sample group, the validity of the questionnaires; c) to include the normative data with the questionnaires.

METHOD

The peculiarities of making the techniques. The QSAE is elaborated based on two subjective criteria of subject-active efficacy and includes two associated subscales: "the accomplishment of the plan and solving of the current problems" (PP) and "the activity in complex conditions" (CC). QSPE is made based on three criteria of social psychological efficacy and includes three corresponding scales: "satisfaction of group/subgroup members and the result of its activity" (S), "psychological comfort of the members in the group/subgroup" (C), "contribution of the group/subgroup to the personal and professional development of its members" (D). The stimulus material of the first questionnaire inludes six points – that it two per each scale (see supplement materials).

Both questionnaires are designed based on ordinal scale with bipolar principle of characteristics distribution. The points are presented as statements and are formulated inversely. To evaluate how represented the characteristic is we use the 7-point scale.

We have chosen directors and common group members as test subjects for QSAE. The QSPE is used to study the members of the group being evaluated.

Response validity control. The following choices manifest the tendency of the test subject to distorted answers:

a) 6- or 7-point answers for all the questions of the questionnaire;
b) the test subject chooses 7-point answers for 5–6 questions and any other answers for other questions;
c) the test subject chooses 1-point answers for 4–6 questions, and any other answers for other questions;
d) the test subject chooses 4-point answers to all questions.

The participants of the study. We invited three experts in order for them to test the substantial validity of QSPE and QSAE. All three experts – two professors with Ph.D and the personnel director of DON-PLAZA hotel (Rostov-na-Donu) – have a degree in psychology and more that 15 years of work experience. To test the evident and convergent validity, reliability and consistency, normalcy of distribution, and to prepare the normative data of QSAE we investigated 14 directors of various production groups, and for QSPE we tested 74 employees that work at various jobs

(except for the evaluation of the evident validity of QSPE, that was done based on test results of 25 people).

The registration of indices and valiables. The investigation was done in groups with the use of blank testing materials. The variables that were studied are the mentioned above criteria of real subject-active (S, C, D) and social-psychological efficacy, as well as integral indices of these types of efficacy (I-SAE and I-SPE). The values of the coefficients of PP and CC theoretically may vary from 3 to 21 points, and S, C, D – from 2 to 14 points. The indices of I-SAE and I-SPE groups may vary from 6 to 42 points.

The procedure of techniques evaluation. The *substantial validity* of the techniques was determined by psychologists, who checked the agreement of each point to the criteria that it is going to elicit. The evaluation of the *evident validity* was performed by random test subjects – experts from the point of view of how these points correspond to their ideas: the content of the points should be clear. The expert evaluation was done on 5-point scale. If the average score of the experts (both psychologists and "regular people" is 4–5 points, then this point is thought to have the corresponding type of validity.

The evaluation of *discriminant validity* was performed based on Pearson correlation coefficients among the subscale indices within the technique. As the two underlined aspects of subject-active efficacy and three aspects of social-psychological efficacy are connected by the content, correlation coefficient from 0.2 (weak correlation) to 0.7 (strong correlation) would show that this type of validity in fact is manifested there.

The evaluation of *reliability* and consistency of the technique was performed using the Cronbach's alpha coefficient. The indices $\alpha > 0,7$ for the scale in whole and for different subscales manifest their internal consistency.

The representativity of the selection was ensured by the following: a) each of the objects has to have the same chance of being represented in the selection; b) the selection was made from the similar totalities. The selection of the production groups was done randomly from different organizations with different types of activities.

The normalcy of distribution was evaluated using the α criteria of Kolmogov and Smirnov, which is considered to be the most reliable for determining the correspondence of empirical distribution to normal (if $p > 0.1$, then the empirical distribution is close to normal).

The statistical processing of the results was performed using the SPSS 17.0 program.

RESULTS AND DISCUSSION

Based on expert scores of the QSAE substantial validity one point was changed and inspected again. At the final, the average score for QSAE and QSRE vary from 4 to 5 points.

Based on determination the average score for QSAE points vary from 4.64 to 4.91, and QSPE – from 4.48–4.88.

The evaluation of reliability and consistency of the technique based on determination of Cronbach's alpha coefficient showed the following:

– in QSAE the coefficient for «PP» subscale was 0.849, «CC» subscale was 0.934, and for "I-SAE" integral index – 0.945;
– in QSPE the coefficient for «S» subscale was 0.866, «C» subscale – 0,821, and for "I-SPE" integral index – 0,835;

Therefore, the coefficient $\alpha > 0,7$ for the scales and subscales serve as the sign of their internal consistency. The results of the performed work show that all the technique points correspond to the chosen criteria of selection.

Pearson correlation analysis between the indices common for all groups of the first and the second technique gave the following indices of the correlation coefficient:

– in QSAE between the subscales «PP» and «CC» $r = 0.874$ ($p < 0.01$);
– in QSPE between subscales «S» and «C» $r = 0,47$, between «S» and «D» $r = 0,73$ ($p < 0.05$), between «C» and «D» $r = 0,54$.

Thus, we can talk about acceptable QSPE discriminant validity and low QSAE corresponding validity. Therefore, we should think how reasonable it is to have two subscales – «PP» and «CC». It might be enough to have the integral index "I-SAE". However it is necessary to check the QSAE discriminant validity again on a bigger selection.

The normalcy of distribution was evaluated using the α criteria of Kolmogov and Smirnov. It has been determined that the empirical distribution for all the subscales and integral indices of the questionnaires corresponds with the normal distribution (tab. 1).

Table 1

The indices of the results distribution for the questionnaires and its subscales

Statistics and asymptotic value	QSAE			QSPE			
	«PP»	«CC»	«I-SAE»	«S»	«C»	«D»	«I-SPE»
α	.550	.516	.491	.708	.489	.432	.614
p	.923	.952	0.97	.699	.970	.992	.845

The calculation of the normative data let us mark out statistical zones of the manifestation of the characteristics evaluated (see tab. 2).

Thus, the isvestigation has shown that the *questionnaire of group subject-active efficacy* and the *questionnaire of group social psychological efficacy* meet the main requirements and may be used in theoretical and practical needs. However in the future it is necessary to expand the capacity of these techniques. First, we need to work on these techniques so that it would be possible to evaluate the efficacy of not only the

group as a whole, but also every informal subgroup in this group. Second, we need to make the selection bigger in order to form new normative data.

Table 2

Normative data and statistical zones of the indices of subscales and integral indices of the questionnaires

Scales and subscales	Norma-tive data		Statistical zones				
		σ	low	Ttndency to low	average	tendency to high	high
«I-SAE»	28,94	7,32	6 – 14,29	14,3 – 21,61	21,62 – 36,26	36,27 – 42,0	-
«PP»	14,18	2,76	3 – 8,65	8,66 – 11,41	11,42 – 16,94	16,95 – 19,7	19,71 – 21
«CC»	14,76	4,78	3 – 5,18	5,19 – 9,97	9,98 – 19,54	19,55 – 21,0	-
«I-SPE»	28,0	4,77	6 – 18,45	18,46 – 23,22	23,23 – 32,76	32,76 – 37,53	37,54 – 42
«S»	8,33	1,69	2 – 4,93	4,94 – 6,63	6,64 – 10,03	10,04 – 11,72	11,73 – 14
«C»	10,52	1,14	2 – 8,22	8,23 – 9,36	9,37 – 11,66	11,67 – 12,8	12,81 – 14
«D»	9,15	2,63	2 – 3,88	3,89 – 6,51	6,52 – 11,78	11,79 – 14,41	11,42 – 14

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Supplement

Instruction and the stimulus material for the technique

INSTRUCTIONS: Read the statements and evaluate how true they are in regard to the group (department, shift, etc) where you work.

The evaluation is performed on a 7-point scale, where 1 point means "I completely agree", 7 points – "I completely disagree", 4 points – "something in between". Other scores show different level of your agreement or disagreement. Mark those points that correspond with your opinion. Each statement should have only one score. Please do not leave any statement without a score.

Questionnaire of the subject-active efficacy of the group

№	Statements	Score						
1	The group often does not accomplish the plan for the main direction/indices of work.	1	2	3	4	5	6	7
2	The group is not able to solve the everyday problems efficiently and/or in a timely manner.	1	2	3	4	5	6	7
3	Group members do not use their work time efficiently.	1	2	3	4	5	6	7
4	The group is not able to solve the new or complex problems efficiently.	1	2	3	4	5	6	7
5	The group is not able to act independently and to show initiative in uncertain working conditions.	1	2	3	4	5	6	7
6	Group members are not able to organize themselves quickly and do an urgent job.	1	2	3	4	5	6	7

Questionnaire of the social-psychological efficacy of the group

№	Statements	Score						
1	I do not feel satisfied by what is going on in the group	1	2	3	4	5	6	7
2	I would like the results of your work to be better than they are now	1	2	3	4	5	6	7
3	I feel constrained and uncomfortable	1	2	3	4	5	6	7
4	Sometimes I feel out of group	1	2	3	4	5	6	7
5	I cannot show my abilities to he maximum	1	2	3	4	5	6	7
6	I am not sure that I will get new and useful experience	1	2	3	4	5	6	7