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Master of Group Work Organization Inventory: Possibilities and Limitations

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Abstract
Introduction. The concept of three roles of the organizer of group work (facilitator, mediator, and moderator) underlies the FaMeMo Inventory, which expands our understanding of the psychology of leadership. This study aims at developing and testing a modified version of the Inventory, which provides an external evaluation of the leader's competencies by members of his/her group.
Methods. We tested the Inventory in a quasi-experiment and examined how the components of the organizer's competence influence the efficiency of joint intellectual activity. To check the validity of the modified version of the tool we used the following questionnaires: Diagnostics of Group Motivation (I. D. Ladanov), Diagnostics of a Team's Business, Creative, and Moral Climate (N. P. Fetiskin, V. V. Kozlov, G. M. Manuylov), Technique for Assessing Psychological Atmosphere in a Team (A. F. Fidler), Technique for Determining the Group Cohesion Index (K. I. Sishor), and Technique for Studying the Subject-activity and Socio-psychological Cohesion of a Group (A. V. Sidorenkov, A. L. Mondrus).
Results. The results of the empirical study in a sample of 97 individual participants aged 18–25 years indicate the normality in the distribution for the 'mediator' scale, the negative asymmetry for the 'facilitator' and 'moderator' scales, and a high degree of internal consistency reliability of the Inventory scales (0.846–0.854). Structural modeling provided evidence for the factor validity of the Inventory. We identified and analyzed the items that reduced psychometric characteristics and proposed their reformulations. The hypotheses of the convergent validity of the Inventory scales were verified and mainly confirmed.
Discussion. The proposed version of the technique demonstrated good psychometric properties, which determines the possibility of investigating competence components in masters of group work organization by means of external evaluation of their group members and also prospects of further development of the tool.

Keywords
group work, facilitator, mediator, moderator, organizational competence, emotional competence, expert competence, organizational and leadership qualities, emotional leader, cooperativeness

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Highlights

- T. Yu. Bazarov's concept of the components of competence in masters of group work organization provides theoretical and empirical evidence and underlies the development of a modified version of the Facilitator – Mediator – Moderator Inventory, which makes it possible to evaluate the leader by the members of his/her group.
- The proposed technique demonstrates high reliability and sufficient factor validity.
- The 'mediator' and 'moderator' scales show associations with indices of general group motivation, cohesion, psychological atmosphere, and team climate. The convergent validity of the 'facilitator' scale requires further research.
- The 'mediator' scale is characterized by validity across gender. No gender differences were found for the 'moderator' and 'facilitator' scales.

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Introduction

As A. L. Zhuravlev makes the point, the most important social task is to create a productive system of incentives for motivating employees to work together productively, achieving group goals with an eye toward the human role and psychological factors, which importance is steadily and naturally increasing in modern society (Zhuravlev, 2005).

Numerous modern authors point to the decisive role of teams in ensuring the success of the project (see, e.g., Belbin, 2007; Bogdanov, 2012; Razu, 2011). They believe that effective personnel management is the basis for project management and the main factor influencing success in its implementation (Bazarov, 2011; Bazarov & Ladionenko, 2017).

Efficient business management largely depends on the functioning of organizational processes, in particular, on the system of human resources management. At this level, there is a need for the organizer who masters a wide range of techniques and technologies for diagnosing and training.

In the concept of the Master of Group Work Organization (Bazarov, 2011, 2013), there are three basic components of joint activity such as (a) working at the individual level, (b) working at the group level, and (c) working at the task level. From this it follows that there are three roles of the master of group work organization, which differ in their priority aspects of interaction with respect to all the components of joint activity. The first point is the role of a *facilitator*, for whom group processes and the group as a whole are the primary orientations. In the terminology of the competency-based approach, here we are talking about organizational competency (competency represents a number of personality characteristics, traits, abilities and also the degree of motivation required for productive activity in the context of a certain competence (work requirements) (Bazarov & Ladionenko, 2017), authors' comment). Secondly, these are individual characteristics of the personnel, which competent accounting implies emotional competence. The

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master of group work organization who is mainly focused on this aspect is hereinafter termed as a *mediator*. The development and analysis of the substantive perspective of organizational tasks, which requires intellectual expert competency, is represented in a *moderator's* activity (Bazarov, 2013). Let us identify the semantics and functionality of each role in more detail.

The Facilitator's Role

Facilitation technology is associated with the development and management of processes and group structure, as well as achieving results (Martynova, 2011). The fundamental characteristic of the facilitator manifests itself in the **object** of his/her influence – *the group as a whole, its processes and dynamics*. The main goal of the facilitator is to achieve productive group work. In general, the **facilitator's functions** are as follows: (a) removing communicative barriers, (b) creating conditions that help each participant to be involved in group problem solving, (c) developing regulations (stages and rules of work) as well as their controlling, (d) creating and distributing team roles, and (e) regulating group thought processes. At the same time, being active during interacting with group members, the facilitator does not interfere with the substantive aspect of work. The facilitator's methodological arsenal includes various ways of organizing group joint activities, for example, brainstorming, group discussion, etc. (Bazarov, 2011; Bazarov & Ladionenko, 2013), which, in turn, reduce difficulties of interaction in the group (Shtroo, 2015).

For successful enactment of the facilitator's role, the following **competencies** are required:

- *Organizational and leadership qualities* as the ability to organize group communication and collective activity and to form the role structure of the group; the facilitator should be active, initiative in these aspirations.
- *Cooperativity* as knowledge of the mechanisms of group dynamics; the facilitator is mostly characterized by his/her readiness for teamwork and orientation towards partner interaction.
- *Prudence* as the ability to analyze a group situation, to specify the stages of achieving joint goals, and to stage the future.

Besides, the facilitator requires in-depth knowledge of group processes, such as group dynamics, role structure of groups, including the distribution of team roles, building effective communication, and creating working rules with subsequent monitoring. The role of the facilitator is sometimes characterized as 'lacking in substance', bearing in mind the fact that the facilitator focuses on building effective interaction rather than on the content of the problem being solved by group members (Bazarov, 2011). In the facilitator's role the organizer of group work creates the conditions for employees' effective motivation, encourages participants to work together (Bazarov, 2011; Martynova, 2011). The ability to use techniques and technologies, as well as a clear understanding of the theoretical models and principles of the facilitating process are considered as the highest level of the facilitator's competency (Bens, 2005; Schwarz, 2005).

The Mediator's Role

The mediator's role involves the interaction of the master of group work organization with group members at the emotional level. The functional of the leader and/or the leader of this style is aimed at creating the necessary conditions for personal development, the manifestation of various personality patterns necessary when performing the task. In the mediator's activity *personality characteristics* of group members are in the centre of his/her attention; his/her **functions** are to improve the socio-psychological climate, create the atmosphere necessary for the

disclosure and development of personnel. In addition, the mediator works with the internal states of participants (Bazarov, 2011, 2013).

The mediator's **competency** includes the following components:

- *Influence* as the presence of credibility of communication partners, the creation of internal conditions for the implementation of uniqualization processes, and encouraging development in others; the mediator's influence implies the ability to establish personal emotional contact with other people.
- *Penetration* as the diagnosis of emotional states in others, the assessment of the possibilities of personal changes; the mediator's penetration is determined by the ability to manifest each participant.
- *Tolerance* as willingness to accept various forms of self-expression, the direction of individual development in partners, the ability to decenter; tolerance includes non-judgmental non-verbal behavior, the ability to impartially take everyone's side.

Most often, the mediator's role manifests itself in conflict situations, when he/she performs a psychotherapeutic function and acts as a mediator in resolving problems between participants. The mediator's role in the group is aimed at creating an optimal socio-psychological climate for joint activities. This, in turn, involves the diagnosis of relationships in the group, and then the development of group norms, demonstrating tension and emotional conflicts among participants. Helping others in self-improving, cultivating, and consolidating personal relationships contributes to the high efficiency of interaction with others (Boyacis & Mackey, 2007). In doing so, the mediator should effectively fulfill the following lines (Bazarov, 2011, 2013):

- *Emotional leader* as a person who is an authority for group members (not necessarily holding a leadership position).
- *Diagnostician* as a person who is able to identify the current psychological state in the group, as well as in each individual participant.
- *Integrator* as a person who can integrate the group by resolving interpersonal conflicts.

A number of studies show that that the efficiency of the mediation process is different in people with different levels of emotional leadership. The highest productivity in resolving conflicts is characteristic to the mediator with the medium and high levels of control of emotional intensity and the impact on emotional states in others (Bazarov & Chinnova, 2012; Shtroo & Serov, 2011).

The Moderator's Role

The moderator's role in group interaction is related to task solution by means of the question-answer procedure, achievement of group pluralism, and consideration of situations from various perspectives. The **subject** of the moderator's work is the *content of a task or a problem*. The moderator's activity is **aimed** at *joint problem-solving, expanding the arsenal of ways of problem-solving, and finding the most effective solution* (Bazarov, 2011, 2013).

In order to act as a moderator, master of group work organization should be an expert in the topic of discussion (Bazarov, 2011, 2013; Krichevsky, 1993; Howard & Bray, 1990). The moderator's most important tasks are dialogue organization – the 'question-answer' procedure (Sorina, 2006) and creating conditions for a free exchange of views, for a joint creative approach to problem-solving (Bazarov, 2011, 2013).

In the process of group work, the moderator's **functions** are as follows:

- Identifying the essence of the issue.

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– Developing the pluralism of points of view among participants (Bazarov, 2011; Bazarov & Eremin, 2006).
– Developing group creativity and co-creation (Bazarov, 2017).
– Eliminating potential errors in reasoning, improvement of arguments.
– Developing mutual understanding among participants and coordination of their points of view.
– Choosing the optimal way of problem-solving.
– Developing group and individual responsibility for task solving.
– Discussing the future work plan (Bazarov, 2011, 2013).

The moderator role is implemented through the following **competencies**:

– *Dynamic thinking* as the ability to work with diverse intellectual and practical tasks with high speed and accuracy, to switch rapidly from one problem to another.
– *Creativity* as the ability to produce unusual solutions to traditional problems, the search for ways of overcoming problems, and high variability of solutions.
– *Problem orientation* as the ability to trace and consider inconsistencies in various aspects of situation, to formulate productive contradictions.

In order to help the group advance in content, the moderator should be a broad-minded person and be aware of modern developments in science and practice. In addition, he needs to be receptive to the opinion of group members, listen and hear the answers to the questions, understand the meaning of the answers (Bazarov, 2011).

Methods

The foregoing theoretical construct provided the basis for developing the *Master of Group Work Organization* inventory by Professor T. Yu. Bazarov, Doctor in Psychology.

The sample. The sample was comprised of 41 male and 56 female participants (n = 97) aged 18 to 25 years.

All the respondents were divided into 25 groups; each group included one leader (11 men and 14 women) and, with few exceptions, three individual participants. The players who had the experience of performing organizational functions were team captains. Students of the same group were divided into different groups.

The procedure. The study participants were asked to cooperatively solve two types of intellectual tasks taken from the manual of the 'What? Where? When?' intellectual game (Rusanova, 1992) and the Raven's Advanced Progressive Matrices Test.

Then we surveyed the participants.

The ***techniques*** were as follows:

1. Master of Group Work Organization Inventory.
2. Diagnostics of Group Motivation (I. D. Ladanov) (Ladanov, 2004; Fetiskin, Kozlov, & Manuilov, 2002).
3. Diagnostics of a Team's Business, Creative, and Moral Climate (Fetiskin et al., 2002).
4. Technique for Assessing Psychological Atmosphere in a Team (F. Fidler) (Fetiskin et al., 2002).
5. Technique for Determining the Group Cohesion Index (C. Sishor) (Fetiskin et al., 2002).
6. Technique for Studying the Subject-activity and Socio-psychological Cohesion of a Group (Sidorenkov & Mondrus, 2011).

The data were processed using Microsoft Office Excel 2010, statistical packages for SPSS 15.0 and EQS 6.2 for Windows.

Results

Descriptive Statistics and Reliability-Consistency

Initially, we calculated indices of descriptive statistics for each item of the Inventory and the reliability of its scales (Table 1).

Table 1
Indices of descriptive statistics and Cronbach's alpha after removal of all the Inventory items

	Mean	Standard deviation	Asymmetry	Excess	Item-scale correlation	Cronbach's alpha coefficient after removing the item
Facilitator Scale (a = 0,855)						
Fa1. While working in the group, he/she ensured pushing the matter through.	3,66	1,195	–0,776*	–0,391	0,626	0,835
Fa2. He/she has the talent of the organizer	3,37	1,007	–0,474	0,181	0,686	0,832
Fa3. In a situation of group interaction, he/she easily managed to involve everyone in group work	3,31	1,069	–0,394	–0,615	0,615	0,837
Fa4. He/she motivated participants to problem-solving	3,23	1,000	–0,349	–0,095	0,611	0,838
Fa5. He/she clarified common objectives and expected results of joint activity	3,43	1,185	–0,268	–0,913	0,653	0,833
Fa6. He/she clarified individual goals of joint activity (goals of each participant)	3,12	1,297	–0,158	–1,118*	0,495	0,847
Fa7. The organization of the group process is one of his/her strengths	3,19	1,098	–0,139	–0,521	0,666	0,832

Table 1
Indices of descriptive statistics and Cronbach's alpha after removal of all the Inventory items

	Mean	Standard deviation	Asymmetry	Excess	Item-scale correlation	Cronbach's alpha coefficient after removing the item
Fa8. He/she paid great attention to formal characteristics of group work	2,96	1,142	–0,047	–0,632	0,516	0,845
Fa9. He/she established rules and stages of work	3,17	1,311	–0,315	–1,038*	0,572	0,840
Fa10. He/she recorded the success achieved by the group in the process of work	3,18	1,330	–0,250	–1,038*	0,262	0,869
The Mediator Scale (a = 0,846)						
Me1. He/she may be characterized as a kind person	3,89	0,950	–0,895*	0,695	0,484	0,837
Me2. He/she is interested in the state of each member of the group	3,00	1,170	0,000	–0,738	0,673	0,819
Me3. He/she seeks a good understanding of emotional states of his colleagues	3,19	1,069	–0,068	–0,432	0,696	0,817
Me4. He/she feels people and can easily affect their emotional state	3,15	0,940	–0,065	–0,080	0,654	0,823
Me5. He/she helped the group resolve unproductive conflicts	3,30	0,964	–0,067	–0,203	0,337	0,849

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	Mean	Standard deviation	Asymmetry	Excess	Item-scale correlation	Cronbach's alpha coefficient after removing the item
Me6. I think that he/she can provide emotional support, when I feel bad	3,47	1,056	–0,327	–0,373	0,625	0,824
Me7. It seems to me that personal contact is the most important thing in communication for him/her	3,31	1,029	–0,131	–0,632	0,465	0,839
Me8. He/she was inclined to solve the problem at the emotional level	2,50	1,114	0,116	–0,997*	0,314	0,853
Me9. He/she helped less communicative members of the group enter the communicative space	2,96	1,169	0,042	–0,806	0,576	0,829
Me10. Solving emotional problems is one of his/her strengths	3,00	1,046	0,056	–0,215	0,636	0,823
The Moderator Scale (a = 0,854)						
Mo1. He/she can quickly identify and use new ways of problem solving	3,55	1,035	–0,404	–0,360	0,590	0,838
Mo2. Logic is one of his/her strengths	3,5	0,929	–0,362	0,259	0,513	0,844
Mo3. He/she knows how to ask questions in such a way that people find the right solution to their problem by themselves	2,81	1,079	–0,027	–0,582	0,549	0,841

Table 1
Indices of descriptive statistics and Cronbach's alpha after removal of all the Inventory items

	Mean	Standard deviation	Asymmetry	Excess	Item-scale correlation	Cronbach's alpha coefficient after removing the item
Mo4. He/she always starts a discussion in order to stimulate colleagues to new thoughts and set the group in motion	3,64	1,007	–0,918*	0,700	0,516	0,844
Mo5. He/she switches from one problem to another quickly and easily	4,19	0,837	–0,917*	0,400	0,305	0,859
Mo6. He/she is good in presentation of the essence of the problem	3,75	1,036	–0,696*	0,029	0,695	0,828
Mo7. He/she is engaged in the formulation of problematic issues	3,51	1,076	–0,675*	–0,017	0,572	0,839
Mo8. He/she clearly presents and expresses his/her ideas	3,84	0,998	–0,846*	0,541	0,688	0,829
Mo9. He/she stimulated participants to questions and comments	3,35	1,142	–0,606*	–0,541	0,537	0,843
Mo10. He/she suggested a large number of ideas for solving the problem	3,62	1,109	–0,651*	–0,382	0,602	0,836
Standard error			0,246	0,488		

Legend: * – the value exceeds two its standard errors by the module.

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All the scales have a reliability-consistency level of more than 0.8, which is a very good result for personality questionnaires (Mitina, 2011).

The Facilitator Scale has a single item, the removal of which would increase reliability – *'He/she recorded the success achieved by the group in the process of work'*. This item has a significant negative excess. Apparently, the leaders were heterogeneous, and some of them considered this function optional, delegated it to the secretary, etc.

The Mediator Scale has two items that slightly reduce its consistency: *'He/she helped the group resolve unproductive conflicts'* and *'He/she was inclined to solve the problem at the emotional level'*. However, their meanings represent the construct well; changes are not justified.

The Moderator Scale has a single item that weakly reduces its consistency: *'He/she switches from one problem to another quickly and easily'*; it has significantly higher scores. Presumably, it does not adequately reflect the content of tasks and would become more effective in the wording *'He/she switches from one intellectual problem to another quickly and easily'*.

Scale scores were calculated by averaging the respondents' answers to the scale items. The statistics of scale scores are summarized in Table 2.

Table 2
Descriptive statistics and the test for normality for the scale items of the method (N = 95)

	Mean	Standard Deviation	Minimum	Maximum	Asymmetry	Excess	Shapiro–Wilk p-value
Facilitator	3,24	0,749	1	5	–0,555*	0,638	0,034
Mediator	3,16	0,658	1,3	4,8	–0,058	0,309	0,752
Moderator	3,56	0,662	1,5	4,8	–0,598*	0,915	0,007
		Standard error			0,247	0,490	

Legend: * – the value exceeds two its standard errors by the module.

The Facilitator and Moderator scales have relatively high scores, which can be explained by both the specific characteristic of the task for a team intellectual discussion and the possible social desirability of the qualities. In the Mediator Scale the distribution does not differ from the normal one, which proves the sufficient representativeness of the sample for this parameter.

Structural modeling

To check the ***reliability*** and ***factor validity*** of the Inventory scales, we used confirmatory factor analysis. The implementation of the method was problematic in our sample. Firstly, the number of subjects is small for structural modeling (Tabachnick & Fidell, 2014). Secondly, the Likert scale (by points) should be considered only as a rank categorical one. To increase confidence in the conclusions, we performed the calculation twice, using (a) Yuan–Bentler statistics optimal for small samples (Tabachnick & Fidell, 2014) and (b) analysis of categorical variables (Bentler, 2006).

According to the Yuan–Bentler approach, the consistency of the model with empirical data can only be considered as moderate (χ^2 = 638.18, df = 402; CFI = 0.759; RMSEA = 0.079). If the ratio between χ^2 and degrees of freedom is below 2 (Mitina, 2008) and the RMSEA value below 0.1 does not allow poor consistency (Tabachnick & Fidell, 2014), then the comparative consistency index is far from the required level of 0.9 (Tabachnick & Fidell, 2014; Mitina, 2008). Calculations based on categorical variables indicate high consistency between the model and the data (χ^2 = 646.548, CFI = 0.941; RMSEA = 0.080).

In both tests, all the items in the Inventory showed a significant positive loading on the factors corresponding to them ($z \geq 2.06$; $p < 0.02$). In addition, all the latent variables had significant ($z \geq 10$; $p < 0{,}0005$) and very high correlations between each other (Table 3).

Table 3
The Pearson correlation coefficients between latent variables according to confirmatory factor analysis in the total sample

	Mediator		Moderator	
Methodology	Yuan–Bentler statistics	Polychoric correlation	Yuan–Bentler statistics	Yuan–Bentler statistics
Facilitator	0,772	0,779	0,817	0,797
Mediator			0,706	0,706

The high correlation between the scales makes relevant the examination of factor validity. For this purpose, we tested a competing model No. 2, in which the correlations between the factors were equated to 1, corresponding to the identity of all the roles of the master of group work. Differences in the consistency of the models were evaluated using the chi-square test (Byrne, 2010) and information criteria (Garson, 2015). All these criteria have extremely high levels of significance ($p < 0.00001$) and are presented in Table 4.

Table 4
Consistency between the main model and the competing one

		Model consistency indices					
	df	CFI	RMSEA	χ^2	AIC	CAIC	Difference χ^2
Model 1	402	0,759	0,079	638,175	–165,825	–1598,693	
		0,941	0,080	646,548	–157,452	–1590,320	
Model 2	405	0,690	0,089	708,653	–101,347	–1544,908	70,478
		0,903	0,102	805,485	–4,515	–1448,076	158,937

Thus, discriminant validity of the scales of our Inventory of the roles of the master of group work is extremely high. This provides empirical evidence for the specificity and independence of the constructs of facilitator, mediator, and moderator.

Then, we employed the LM test and then selected five the most significant and interpreted determinations of items as secondary factors. Therefore, we decided to reformulate the items (Table 5).

Table 5
Inventory items with side factors by the LM test results in the overall sample

Original statement	χ^2	Side loaded	Proposed statement change
Mo23. He/she knows how to ask questions in such a way that people find the right solution to their problem by themselves	17,88	Me	He/she knows how to ask questions in such a way that people find the right solution to their task by themselves
Mo29. He/she stimulated participants to questions and comments	14,23	Me	He/she asks participants questions and comment their suggestions
Me15. He/she helped the group resolve unproductive conflicts	14,19	Mo	In unproductive conflicts he/she helped participants to calm down and find a common language
Fa1. While working in the group, he/she ensured pushing the matter through	12,29	Me	*Doesn't need changes but should be considered as the inverse item for the 'Mediator' scale*
Mo24. He/she always starts a discussion in order to stimulate colleagues to new thoughts and set the group in motion	9,54	Fa	By his/her remarks he/she activates colleagues' thinking, allowing them to come up with new ideas in discussions

Further, we carried out confirmatory factor analysis of the data, which was limited to the sample of participants (n = 72), excluding group leaders.

According to the Yuan–Bentler approach, the consistency of the model with empirical data can only be considered as slightly acceptable (χ^2 = 601.023, df = 402; CFI = 0.760; RMSEA = 0.084). Calculations based on polychoric correlation of rank scales confirm very high consistency between the model and the data (χ^2 = 454.738, CFI = 0.981; RMSEA = 0.043).

In both tests, all the items showed a significant positive load. In both tests, all the items showed a significant positive load on their factors ($z \geq 2.06$; $p < 0.02$). All the factors had a significant ($z \geq 10$; $p < 0.0005$) high correlation among each other (see Table 6). The results are similar to the overall sample, which increases confidence in them.

Table 6
The Pearson correlation coefficients between latent variables in the sample of participants of discussion (N = 72)

	Mediator		Moderator	
Methodology	Yuan–Bentler statistics	Polychoric correlation	Yuan–Bentler statistics	Polychoric correlation
Facilitator	0,759	0,756	0,793	0,750
Mediator			0,724	0,711

Validity of the Inventory

Substantive validity of the Inventory is achieved by formulating items in accordance with theoretical tasks and methods for performing the three roles of the group work master.

The correlations among the scale scores and other techniques provided preliminary evidence for ***converged validity*** of the Inventory scales. We have put forward the following hypotheses:

1. The levels of group motivation, group cohesion and the psychological atmosphere within the team are directly associated with all the roles, especially with the mediator role.

2. The facilitator's role is directly associated with the business climate, the subject-activity, and socio-psychological cohesion. However, compared to the mediator's role, socio-psychological cohesion is less associated with the facilitator's role.

3. The mediator's role is directly associated with the business climate, moral climate, and socio-psychological cohesion.

4. The moderator's role is directly associated with the creative climate, subject-activity cohesion, and moral climate. However, compared to the role of the mediator, moral climate is less associated with the moderator' role.

Table 7 summarizes the statistics of the scales of validating indicators.

Table 7.
Descriptive statistics, testing normality and reliability of validating indicators

Scales	N	Cronbach's alpha	Mean	Standard deviation	Asymmetry	Excess	p-value, Shapiro–Wilk W-test
Overall group motivation	95	0,892	64,10	12,554	–1,936*	6,617**	< 0,0005
Business climate	95	0,793	6,41	1,296	–0,633*	0,435	0,044
Creative climate	95	0,901	7,00	1,366	–0,636*	–0,503	< 0,0005
Moral climate	95	0,875	7,39	1,159	–0,565*	–0,054	0,007
Atmosphere within the team	95	0,925	2,41	0,998	0,510*	–0,451	0,002
Cohesion	96	0,665	13,47	3,61	–1,498*	4,384**	< 0,0005
Subject-activity cohesion	91	0,880	25,59	7,67	–0,712*	–0,443	< 0,0005
Socio-psychological cohesion	91	0,904	25,14	8,39	–0,843*	–0,269	< 0,0005

Legend: * – the value exceeds two of its standard errors by the module.

All the scales used for validation are highly reliable. Because of the non-normality of distribution, we used Spearman's rank correlation coefficients as the basic ones (Table 8).

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Table 8
Correlation coefficients among the scales of the FaMeMo Inventory and the scales of validating techniques

Scales of other inventories	Scales of the FaMeMo technique		
	Facilitator	Mediator	Moderator
Overall group motivation	0,430***	0,572***	0,507***
Group cohesion	0,315***	0,417***	0,369***
Psychological atmosphere	–0,463***	–0,459***	–0,465***
Subject-activity cohesion	0,208*	0,396***	0,250**
Socio-psychological cohesion	0,228**	0,398***	0,244**
Business climate	0,331***	0,401***	0,420***
Creative climate	0,416***	0,391***	0,505***
Moral climate	0,381***	0,424***	0,479***

Legend: * – Correlation is significant at the 0.1 level;
** – Correlation is significant at the 0.05 level;
*** – Correlation is significant at the 0.1 level.

The data obtained indicate that the psychological atmosphere within the group is almost equally associated with all the roles of the master of group work, which can be explained by the specific character of group activity. When solving productive thinking tasks in the format of a regulated procedure, the competencies of the facilitator and the moderator could be important for a favorable group atmosphere.

The facilitator's role was positively, albeit insignificantly, associated with subject-activity cohesion. Perhaps the specific character of the activity contributed to a greater integration of the group behind the generator of ideas. All the associations are significant. However, the mediator and psychotherapeutic functions of the leader turned out to be core to all the aspects of cohesion, including the subject-activity one.

Validity across gender. We assumed that the mediative function of the master of group work organization, which was oriented on the emotional aspect of interaction, should be more

characteristic of female leaders. The Mann-Whitney test (U = 844; p = 0.027; r = 0.227), indeed, confirms the presence of a weak association. However, the roles of the facilitator and the moderator do not manifest gender specificity (U ≥ 977.5; p ≥ 0.220; r < 0.1).

Discussion

During the empirical study, we developed and tested the diagnostic tool that demonstrated good psychometric properties. All the Inventory scales have a high level of internal consistency reliability; there are no clearly uninformative items. At the same time, statistical data demonstrated the need to reformulate some statements, which allowed us to improve original materials. It is possible to talk about the factor validity of the structure of the Inventory, which supports the concept of the three independent and irreducible to each other, although closely interrelated, roles of the master of group work.

In addition, we obtained some evidence confirming convergent validity and validity across gender, which indicates the ability of the tool to objectively differentiate existing differences.

Conclusion

We see the prospect of this study in the practical use of the developed tool in the field of management and training of specialists in group work organization.

We should note the specifics of the sample for testing and specific characteristics of the content of the subjects' joint activities (solving creative and problem-posing tasks). In order to ensure greater representativeness of the data, further studies in other samples and in different conditions of interaction, a multiple increase in the number of respondents at the main stage of testing will be needed.

It should also be noted that the distribution of data by a number of items, as well as the 'facilitator' and 'moderator' scales, had relatively higher scores, which can be caused both by incomplete data representativeness and, possibly, social desirability of these traits, which should be considered when using the diagnostic tool.

The possibility of diagnostic use of the Inventory, of course, implies the calculation of test norms. The standardization of the modified Facilitator – Mediator – Moderator Inventory, along with new evidence on its reliability, validity and representativeness, is the most important prospect of future research.

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