Construction of instrument for identifying conflict in working team

A. Redlich[1], *S. D. Gurieva*[2a]

[1] University of Hamburg,
5, Von-Melle-Park, Hamburg, 20146, Germany
[2] St Petersburg State University,
7–9, Universitetskaya nab., St Petersburg, 199034, Russian Federation

For citation: Redlich A., Gurieva S. D. Construction of instrument for identifying conflict in working team. *Vestnik of Saint Petersburg University. Psychology*, 2023, vol. 13, issue 1, pp. 113–127. https://doi.org/10.21638/spbu16.2023.107

In modern society all spheres of our work and life are permeated with communications, which influence, determine and construct our indicators of success, satisfaction. The process of communication can be transformed in different directions, from the formation of long-term, trusting relationships, to conflict confrontation, resistance. In this regard, it is important to expand the knowledge of effective tools for identifying, regulating and forming constructive relationships between teams, groups, neutralizing the negative consequences of incipient or existing conflict. In this article, we present the problem of studying the different communication styles between members of work groups, which often leads to an increase in intergroup conflicts. This is detrimental to interpersonal relationships and work productivity. The subject of the study is the study of team interaction styles that are predictors of tensions leading to inter-group conflict. The task for developing this instrument is based on the assumption that different communication styles between group members lead to group dynamic tensions that may be stimulating and helpful for the team development, but also for generating conflict. The main research question is: "How can team developers and conflict counselors identify different communication styles in work groups and treat conflicts at a very early stage?" The purpose of this paper is to develop a tool for examining communication styles in work groups. The construction of the instrument and quality control is described, from theoretical justification to factor-analytic reduction of 12 items into 4 scales and quality control of the scales. The result is an easy-to-use tool with satisfactory quality that can be applied to groups with many members. It allows group members to carefully evaluate different communication styles and identify relevant differences. Based on it, group members can directly discuss the differences between communication styles and, if a tense situation or conflict arises, deal with them constructively. As a result, this will indicate better group work, trainings, examinations and further optimization of interaction tools.

Keywords: communications, identity, working group, conflict.

Introduction

Modern society is a powerful and large-scale flow of information exchange between people. All spheres of our life, work, leisure F. Lyutens (Lyutens, 1999) are permeated with communication. The ability to manage communication, especially in conflict situa-

[a] Corresponding author.

tions, is considered an important and determining indicator of success in any sphere of our life. For many centuries, the problem of achieving mutual understanding, harmony and trust has been a priority in many works and studies, being an object of close study of philosophers, thinkers, politicians, psychologists, economists, etc. "Trust is a psychic state which makes us rely on an opinion which we consider credible and thus refrain from our own study of the question which could be studied by us" (Zinchenko, 1998, p. 78). And this is not accidental, because effective communication in conflict situations is primarily aimed at the success of both parties, both teams, etc. in achieving mutually beneficial conditions. W. Mastenbroek paid particular attention to the problem of interdependence. He perceived negotiation as "the ability to pursue self-interest combined with the awareness that interdependence is inevitable " (Mastenbroek, 1993). The researcher repeatedly emphasized that it is through interdependence that an effective process emerges: participants follow interests that they cannot satisfy on their own and at the same time their interests overlap.

This skill is needed in all areas of social interaction with people: at work, in the family, in teamwork, etc. And sometimes we need to come to some kind of agreement to achieve our goals and pursue our interests. Success of our cooperation with other people may depend on various factors: whether we have experience in negotiations or not; personal traits of negotiating parties (Gurieva, Udavikhina, 2015); or success may be the basic principle for constructing relations between people, the mechanism of trust that is based on differences in perception of the trust phenomenon, trust situations, objects and basic functions of trust (Gurieva et al., 2016).

J. Camp, P. T. Steele and T. Beasor, R. Fisher, R. Fisher W. L. Ury, B. Patton developed the idea of building mutually beneficial, constructive communication in order to reach a mutually acceptable solution (agreement) (Camp, 2012; Steele, Beasor, 2004; Fisher, Ury, Patton, 2013). For example, an attempt has been made to systematize communication styles (focus on action, process, people and idea), justifying the influence of the following range of factors: from personal characteristics to the interests and needs of participants (Gurieva, Udavikhina, 2014).

The communication process can be transformed into a conflictual interaction, accordingly, according to many researchers (Kramer, 2004; Steele, Beasor, 2004) there is a need not only to emotionally regulate their own behavior, guided by trust, oriented towards long-term relationships, but also to understand and possess effective tools that allow to manage and neutralize the negative consequences of conflict, especially in teamwork. It is the main focus of this article.

The need to understand the algorithm of intergroup conflicts in team interaction poses a number of challenges to the researcher, one of which is to diagnose the communication styles that lead to tensions and, consequently, to conflict. From this perspective, it is important to analyze intergroup conflicts systematically, taking into account the positions, roles, emotions of the parties involved. Therefore, it is necessary to expand the arsenal of management tools to manage intergroup conflicts (Samoilov et al., 2015a). P. V. Samoilov, A. I. Fedoseev, L. V. Smarchkova, S. L. Zhitenev developed methods for effective conflict intervention by stages of conflict analysis, using an expert method based on different aspects of relationships. For example, understanding the internal structure between the parties to the conflict is important in order to determine the structure of the relationship; in order to maintain an "optimal level of conflict intensity" it is necessary to determine the consequences of con-

flicts, the degree of willingness of the parties to implement changes; in a situation of detailed conflict, a step-by-step consideration of the conflict is necessary, etc. (Samoilov et al., 2015b, p. 206).

1. L. A. Imamgalieva draws attention to the connection between the main directions of conflict management (conflict avoidance, conflict suppression and management itself) and the use of special methods in each direction (Imamgalieva, 2017).

2. Conflicts occupy a significant place in the system of social relations, in the system of which a manager should have the skills to promptly resolve or settle arising conflicts. In case the manager fails to resolve the conflict, mediation can be considered as an additional method (Gizatullin, 2018, p. 67). Thus, there is no doubt that conflicts are a natural phenomenon in the structure of social interaction in modern society, and the study of the most effective tools for their resolution is the main topic of our research.

Purpose and development of an instrument for the survey of individual conflict styles in groups. Goal setting

The subject of the study is the study of team interaction styles that are predictors of tensions leading to inter-group conflict. The task for developing this instrument is based on the assumption that different communication styles between group members lead to group dynamic tensions that may be stimulating and helpful for the team development, but also for generating conflict. This kind of instrument should deliver hints to tell the difference in the communication styles of members in the working group. In addition, the rating instrument, when developed, should achieve the following criteria, compare (DeVellis, 1991):

1. The instrument facilitates the localization of the members of the working group, dependent on their preferred communication styles and on the four theoretical dimensions mentioned in the previous sections (Redlich, Mironov, 2009, p. 85–109). Each member of the group gets a position in the four-dimensional room.

2. The items (rating scales) are concerned with concrete communication behaviors of group members in a normal team discussion.

3. Each group member assesses him/herself and all other members in the group (Bales, Cohen, 1979).

4. The rating instrument consists of up to 12 items, so that it can be used in groups of up to 20 members with reasonable time-consuming (DeVellis, 1991).

5. The items contain possible answers on a bipolar scale. Corresponding to the Circumplex Model, high scores on the scales correspond to problematic communication and low to medium scores correspond to rather favorable communication (Leary, 1957).

6. A division into a positive and negative scale pole will be explicitly avoided. All wording of items and scale points are positive and well acceptable for self-assessment (Saucier et al., 2001).

7. The arithmetic median estimations of group members (by others) should facilitate the identification of similarity and difference between the group members in the four-dimensional space. It may possibly refer to tensions in the working group (compare Symlog-rating procedures (Bales, Cohen, 1979).

Questionnaire development: Item selection

During one of the first steps different forms of communication were collected with verbal questioning of group members with and without leadership responsibilities. In light of the interviewed the communicative behavior "are important for the relevant and human quality of working group discussions", e. g., "talks seriously" or "takes initiative". The interviewed persons were 13 executives and 37 group members of different North German businesses from trade, management, industry, banks and other service companies. They were recruited by the human resources department of their company and interviewed by telephone. It was arranged that they were not working in the same group. They came from 50 working groups. Altogether, 120 communicative behaviors were collected.

These were examined on redundant information and consequently reduced by 4 experienced experts (2 female team developers and 2 male team developers). In a second step the remaining communicative behaviors were sorted into the four theoretical established dimensions. Again, some of them would be eliminated, because the experts could not adequately agree on assigning them. That reduced their number to 78. In a third step, the same experts compiled them into contrasting shapes as bipolar items. Those items the experts could not adequately agree on were eliminated. Finally, 5–7 items per dimension that best represented the expert's opinion were chosen. Altogether, 28 items were chosen.

In a fourth step the items were reduced to three items per dimension which made it possible to assess the communicative behavior of group members on a nine-stage bipolar questionnaire. The items were used in a pilot study on 30 students at Hamburg University (69 % female). The students were employed while studying and worked at a company off campus at least a month in a team setting. They assessed themselves as well as all members of the team. With the instruction to assess everyone it should be insured that no selection effect arises that, for example, inconspicuous group members are not adequately presented. Altogether, 162 people were assessed (74 males and 88 females). The data was analyzed by an exploratory factor analysis (Principal component with Varimax Rotation) (calculated by SPSS, see (Field, 2013)). It resulted in 4 factors corresponding to the theoretical defined dimensions. The number of items should be kept small, to keep the survey applicable to larger groups. Therefore, only the items with the three largest loadings were chosen for the final version of the survey.

Quality examination of the survey

For quality examination of the instrument with these 12 items the survey should correspond to the previously mentioned criteria. Firstly, the sample and the descriptive characteristics of items are examined. The mean should not differ more than one scale point from the scale midpoint. The standard deviation should not differ less than 2 scale points and no more than 4 scale points on the nine-stage bipolar questionnaire, to guard against, for example, a double peaked distribution. Given these conditions, the above mentioned circumplex-structure should be ensured. In addition, it should be examined, whether the factor structure corresponds to the four dimensions. Also, is proved if it is sufficiently similar in different samples. Finally, the internal consistency of the four scales should follow the usual criteria and yield α Cronbach of 0.7.

For this estimation the study will need about 1000 people who work in groups. It is estimated that one can expect about 5 people per working group (see (Kozlowski, Bell, 2003, p. 341ff)). Then, about 200 people (a) should assess all other members of their team and (b) themselves. To guard against a selection effect, where, e. g., inconspicuous members of the working group are underrepresented, all members of the working group should be assessed and not just a few.

Sample

While riding the train or bus, 200 people (half women, half men) from large cities in North Germany were contacted. They were spoken to between two stations with at least 30 minutes driving time in between. The people were asked if they were prepared for 20–30 minutes to participate in a research project about teams and to assess the members of their team and themselves. People who said that they worked less than one month so far or do not work in a team did not participate in the study. After it turned out that very few people wanted to disclose their demographic information, like age, gender, executive or union member, occupation, etc. and group (task, occupation, position in the hierarchy, etc.), it was decided to do without this part of the assessment. After that, the wanted number of 200 people who worked at least a month in a working group and willing to participate was achieved.

There is information on 1104 people available. 21 of them supplied wrong values or did not understand the instructions correctly or dropped out or did deny the use of their data in retrospect. Their information was deleted. Without the 21 deleted cases and without later discovered missing information on certain items or people, there was information on 931–974 group-members available (see below). These cases came from 179 people (91 females and 88 males). The group size contained between 3 and 13 people. The mean is 5.4 people per group. For both, the median and mode equals 5. The distribution is slightly leaning towards the left side: 95 % of the cases were in groups with 3 to 9 members, ⅔ in groups with 4–6 members.

Distribution of assessment

The following table 1 displays the means and standard deviations of the items. The values show that all means are close to the scale mean, within ¾ of one scale point from 0. The standard deviations show that ⅔ of group members are assessed inside two scale points from the mean. This means that ⅓ of the sample is rather outside the scale values. One can say that the items fulfill an important condition of the above mentioned Circumplex Model. While the majority of group members of the sample are in the positive mid area of the scales and display a coordination supporting role, while only a few members are assessed in the negative cooperation hindrance extreme areas.

Examination of the factor structure

To answer the question, whether the items assigned by the experts to the four dimensions can be localized on the factors, a factor analysis was conducted on this large record, whose results are presented here (see table 2). The four factors that were created

Table 1. **Mean and standard deviations of items**

Scales and items (*N* = 954 group members)	Mean	Standard deviation
Emotional expression between control and spontaneity		
Expresses her-/ himself rationally — expresses her-/himself emotionally	–0.47	2.1
Has her/his feeling under control — expresses her/his feelings spontaneously	–0.10	2.2
Is led by factual arguments — is led by emotions	–0.31	2.1
Activity between restraint and taking influence		
Tends to be reserved — takes the initiative	0.45	2.3
Tends to be taciturn — talks	0.75	2.1
Leaves things as they are — exercises influence	0.60	2.2
Relationship building between independence and connectedness		
Shows independence in thought/action — tends to agree with others	0.21	1.9
Gives her/his own opinion — supports the opinion of others	–0.40	2.0
Behaves independently — connects well with others	0.26	2.2
Task perception between structuredness and flexibility		
Sticks to the task with goal in mind — provides new ideas	–0.29	2.2
Prefers to reason things through — looks for creative stimulation	–0.32	2.2
Focuses on the topic on hand — expresses several ideas at once	–0.66	2.2

Table 2. **Eigenvalue and variance (with Varimax Rotation)**

Factor/Dimension (*N* = 954 group members)	Eigenvalue	Percent of variance	Cumulative percent
Emotional expression between control and spontaneity	3.7	30.8	30.8
Activity between restraint and taking influence	2.8	23.0	53.8
Relationship building between independence and connectedness	1.1	9.1	62.9
Task perception between structuredness and flexibility	0.9	7.5	70.4

by a Principal Component Extraction Model with Varimax Rotation explained 70.4 % of the variance. The communalities of items are in an appropriate area, because they are in between 0.80 ("tends to be reserved — takes the initiative") and 0.55 ("focuses on the topic on hand — expresses several ideas at once"). Even this weakest value of 0.55 fulfilled the criteria, suggested by Fürntratt (Fürntratt, 1969, p. 71) that at least 50 % of the solved variance of a variable (item) should fall on its factor; i. e., that the quotient of the squared factor loading (here 0.30) and communality (here 0.55) should be above 0.50 (here 0.54).

The four factors show eigenvalues between 3.7 (with items loading on scale "emotional expression between control and spontaneity") und 0.9 (with items loading on scale "task perception between structuredness and flexibility"), where the respective variances are between 30.8 and 7.5. Would one abide by the formal criterion for the number of

Table 3. **Factor analysis: Loadings of items on the four factors (Varimax Rotation)**

Items ($N = 954$)	Emotional expression	Activity	Relationship building	Task perception
Expresses her-/himself rationally — expresses her-/himself emotionally	**0.84764**	0.00336	0.06593	0.20483
Has her/his feeling under control — expresses her/his feelings spontaneously	**0.80405**	0.18112	0.02593	0.16453
Is led by factual arguments — is led by emotions	**0.79419**	–0.00669	0.11236	0.11113
Tends to be reserved — takes the initiative	0.05566	**0.87038**	–0.13656	0.16039
Tends to be taciturn — talks	0.18285	**0.82971**	–0.12294	0.12187
Leaves things as they are — exercises influence	–0.05577	**0.79160**	–0.21343	0.17824
Shows independence in thought/action — tends to agree with others	–0.03457	–0.23003	**0.78716**	–0.08273
Gives her/his own opinion — supports the opinion of others	–0.00365	–0.36384	**0.70573**	0.13328
Behaves independently — connects well with others	0.25789	0.03533	**0.76486**	0.01870
Sticks to the task with goal in mind — provides new ideas	0.08544	0.26241	–0.02930	**0.84976**
Prefers to reason things through — looks for creative stimulation	0.33294	0.16030	0.05785	**0.75822**
Focuses on the topic on hand — expresses several ideas at once	0.50194	0.03486	0.03139	**0.54852**

Note: High indicators of factor load are highlighted in bold.

factors an eigenvalue of 1, then one would get a three-factor solution. The fourth factor's eigenvalue is 0.9, which is according to Jollife (Jollife, 2002, p. 115) within the suggested value for an eigenvalue > 0.7 and if the total variance is larger than 10 %, it seems tenable to follow the theoretical suggestion of four dimensions and choose the four-factor solution. Using the addition of the four factors, the cumulative variance is over 70 %.

The factor analysis was supposed to examine whether the accepted four dimensions will be confirmed by the extracted factors for which they were planned by the theoretical considerations. The factor loadings of items show an unambiguous to the theoretical dimensions (see table 3). All items with one exception have a loading over 0.70 on their factor and under 0.37 on the other three factors. Only one item is loading on two factors with loadings of 0.50 and 0.54.

The chosen 12 items, therefore, generate a sufficient agreement with the theoretical developed four dimensions. The description of the individuals with four scale values promises a clear consideration of their configuration in the communication area of the group.

Congruence: Structure comparisons of different samples

Moreover, the question arises whether the factor solution is independent of different samples. Additionally, it will be examined how the factor solution corresponds to different groups of the total sample. For that, two types of samples will be exemplary investigated:

1. Samples of different groups of people who did the assessment (group members): on this occasion the samples from the female and male people who did the assessment are used.

2. Samples of different groups of people who assessed the group members: on this occasion the samples of the assessment of the own behavior and the assessment of the other group members will be used (self-ratings and ratings of others).

The comparisons of the factor structure of the certain samples within their sample types should not exhibit important differences for the instrument to be regarded as valid. For these investigations the samples will be treated the same as the above-described total sample: a factor analysis with Varimax Rotation (SPSS, see (Field, 2013)). Afterwards, the factor analyses of the respective samples from the females and males who did the assessments, as well as the self- and others assessments will be compared as Tucker suggested (Tucker, 1951).

Similarity of assessments from females and males

First of all, it is about the comparison of female group members who assessed 489 people and 468 assessments from male group members. Both factor analyses would as well yield 4 factors which explain about 71 % of the variance.

The female assessments show very similar factor loadings on the four factors like those of the whole sample (see table 4). Only, the previously mentioned item "focuses on the topic on hand — expresses several ideas at once" shows more directly what was seen in the loadings of the whole sample. This item will rather be assigned by female assessments to the factor "emotional expression" than to "task perception", which it was originally connected to by the experts.

The male assessments confirm the results of the whole sample, insofar, as their results compare even more to the wanted values (see table 5). Also, the values of the often-criticized item "focuses on the topic on hand — expresses several ideas at once" displays a clear assignment of the factor "task perception".

Table 6 displays the congruency values based on the scale values of the samples of the female and male assessments. The congruency values are created by a comparison of the factor loadings of the two samples (Tucker, 1951). The comparison of the two factor analyses shows high congruency between the two samples. For the congruency values among the scales (values in the diagonal) are generally over 0.90 and between the scales are less than 0.45, compare (Korth, 1978). An exception is the relatively large correspondence between "emotional expression" and "task perception" with congruency values of 0.58 and 0.40. This is most likely due to the previously mentioned critical item, which loads relatively high on both factors and which mostly the female assessment scores assigned to the "emotional expression". Nevertheless, even the smallest congruency value for "task perception" equals 0.92 and thus, is over the significance value of 0.90 ($p < 0.05$; with four factors and 12 variables) as suggested by Korth (Korth, 1978).

Table 4. **Factor analysis on female assessments**

Items ($N = 489$)	Emotional expression	Activity	Relationship building	Task perception
Expresses her-/himself rationally — expresses her-/himself emotionally	**0.865**	0.039	0.063	0.124
Has her/his feeling under control — expresses her/his feelings spontaneously	**0.792**	0.229	0.023	0.144
Is led by factual arguments — is led by emotions	**0.804**	–0.026	0.066	0.053
Tends to be reserved — takes the initiative	0.115	**0.863**	–0.120	0.181
Tends to be taciturn — talks	0.226	**0.810**	–0.108	0.157
Leaves things as they are — exercises influence	–0.051	**0.784**	–0.198	0.258
Shows independence in thought/action — tends to agree with others	–0.087	–0.282	**0.749**	–0.028
Gives her/his own opinion — supports the opinion of others	0.025	–0.466	**0.679**	0.058
Behaves independently — connects well with others	0.226	0.091	**0.806**	–0.002
Sticks to the task with goal in mind — provides new ideas	0.146	0.307	–0.036	**0.836**
Prefers to reason things through — looks for creative stimulation	0.334	0.190	0.052	**0.803**
Focuses on the topic on hand — expresses several ideas at once	**0.624**	0.090	0.018	0.358

Note: High indicators of factor load are highlighted in bold.

Table 5. **Factor analysis on male assessments**

Items ($N = 468$)	Emotional expression	Activity	Relationship building	Task perception
Expresses her-/himself rationally — expresses her-/himself emotionally	**0.831**	–0.018	0.090	0.244
Has her/his feeling under control — expresses her/his feelings spontaneously	**0.823**	0.113	–0.014	0.158
Is led by factual arguments — is led by emotions	**0.782**	–0.007	0.161	0.150
Tends to be reserved — takes the initiative	–0.003	**0.876**	–0.150	0.158
Tends to be taciturn — talks	0.146	**0.842**	–0.157	0.089
Leaves things as they are — exercises influence	–0.041	**0.814**	–0.220	0.061
Shows independence in thought/action — tends to agree with others	0.040	–0.235	**0.799**	–0.176
Gives her/his own opinion — supports the opinion of others	–0.073	–0.301	**0.724**	0.238

End of the Table 5

Items ($N = 468$)	Emotional expression	Activity	Relationship building	Task perception
Behaves independently — connects well with others	0.270	–0.062	**0.736**	0.031
Sticks to the task with goal in mind — provides new ideas	0.056	0.234	–0.046	**0.862**
Prefers to reason things through — looks for creative stimulation	0.446	0.081	0.045	**0.655**
Focuses on the topic on hand — expresses several ideas at once	0.365	0.014	0.067	**0.699**

Note: High indicators of factor load are highlighted in bold.

Table 6. **Correspondence of the factor loadings of female and male assessments**

Male Assessments / Female Assessments	Emotional expression	Activity	Relationship building	Task perception
Emotional expression	**0.974**	0.154	0.144	0.579
Activity	0.189	**0.981**	–0.431	0.317
Relationship building	0.166	–0.389	**0.993**	0.033
Task perception	0.404	0.391	–0.029	**0.928**

Note: High indicators of factor load are highlighted in bold.

Similarity of self and others assessments

Following, the comparison of 157 self-assessments with 774 other assessments will be displayed. Both factor analyses, just like the ones before will run on a Principal Component analysis with Varimax Rotation. They yield as well the so far established four factors. The factors of the self-assessments explain 67.1 % of the variance and the assessment of the others result in 71.1 % of the variance. Also, the self-assessments sample shows largest factor loadings on variables from the planned for four factors. Apart from three items, all loadings have at least a value of 0.70. With values over 0.58 even the weaker variables reach the criterion of 0.5 for single loadings.

Discussion and implications

The target of this study is the support of team development by constructing an instrument for identification of personal tensions and possible relationship conflicts in groups. It is assumed that big differences in communication styles in a group leads to tensions within the group, which prove detrimental to relationships, and on the other hand leads to conflicts and problems with co-operations. Therefore, the survey should make it possible to assess the individual communication styles in a group.

The instrument is supposed to contain only a few items to be supportive in large groups, because every group member should assess all other members. Corresponding to the various communicative behaviors it should cover a really wide communication area, at the

same time. In order to connect these opposite challenges on a small scale with large width, bi-polar assessment items are built to capture two behaviors at the same time with every assessment. Also, the instrument should follow the Circumplex Model (Leary, 1957; Olson, 2000): the scales of the items should not be constructed with a negative and a positive pole, like the usual. Instead, the positive behavior expressions should be in the middle area and the negative behavior exaggerations should border at the poles.

Well-Established and future optimizing of the instrument

First of all, a big number of communicative behaviors from existing models were collected with theoretical expert questioning and a 28 bipolar item reduction. In a first pilot study with the records of a small sample the best three items for each scale were traced out. From this questionnaire with these items 179 people assessed themselves and the other members of their working group. This resulted in a sample with about 970 assessments. This survey comprises the basis for inspection of the instrument. It shows that the instrument fulfills the important criterion of constructing a questionnaire.

The instrument possesses a satisfying objectivity in implementation: the team members are taking the assessments from themselves and others from fixed items with given scales. Their location in the four-dimensional communication room will be calculated from the resulting assessments. The survey can be carried out always in the same way.

The four-dimensional factor structure is confirmed: some factor analyses with the Principal Component Model and Varimax Rotation on the whole sample and parts of the sample reflects the four theoretical derived dimensions. The comparisons of the female and male assessments as well as the assessments from self and others display sufficient congruence.

In view of the quality of the scales, the item analyses on the dimension related scales show a satisfactory to very good internal consistency, although there are a minimal number, only three items per scale.

Altogether, the instrument seems sufficiently qualified and suitable for the purpose of the four-dimensional description of the individual communication styles from group members. It can be used to localize the members of groups in the four-dimensional communication area and to identify differences and similarities in the communication styles and therefore systematically support the conflict moderation in groups (Redlich, 2009; 2012; Redlich, Rogmann, 2012) and in team development by finding the relevant conflict points. Most of all, this is of good value with relationship conflicts because these are caused and multiplied by communication disturbances (Bush, Folger, 1994). The inspection of the instrument points as well to weaknesses of the survey and the instrument:

One item loading is of the same size on two factors. It should be optimized at a revision. Certainly, one can bring back an 8-item-version, where each dimension is represented by only two items after removing the weakest item of each factor. This was tested with a factor and item analyses on the same sample. It resulted in a more succinct solution than the 12-item-version. The shorter version supported the four-dimensional factor result and explained 81 % of the variance. The internal consistencies of the factors (correlation of the two items) are alpha = 0.66 (relationship building), 0.73 (task perception), 0.78 (emotional expression), and 0.81 (activity). Though, this version may be more susceptible to assessment mistakes.

Only explorative factor analyses on the same sample were used. The instrument should be tested on a new sample with a confirmatory factor analysis, e. g. (Byrne, 2010).

There is no knowledge yet about interpretation objectivity. The identification of different communication styles should be investigated with regard to the agreement with several evaluators.

Moreover, there are missing results for assessment agreements. The numbers come each time from one team member of a group. In future investigations all members of a group should assess each other and then the agreement determined (Langer, Schulz von Thun, 2007).

It is also little known about the validity of the assessment and their interpretation. Can future conflicts be predicted with this instrument? A first investigation produced encouraging results (Fischer, 2012). Members of five groups were asked to assess each other using the communication styles questionnaire for groups. Then, a diagram for each group was constructed and presented to an experienced evaluator. Without knowing the group, this person made about 20 statements per group, like, e. g.: "Between A and B appear to be tensions, that are in the way of working" — "C does not feel well in the group and contemplates thoughts of moving out of the project" — "X, Y and Z are trying to gain more influence in the group. There are harmful tensions between them" — "The group leader is taking too little influence". Six months later these statements were presented to three members selected by chance from each of the groups with the request to examine if these statements apply to their group at this time. Altogether, the agreement was 70 %. These investigations should be continued in comparison to other team assessment instruments with examination of their forecasting precision.

Put into practice, team development and conflict discussion should be made more objective in analysis and interpretation of concrete numbers by the use of computers. Some early work on this topic was done by Gewohn (Gewohn, 2010) who had the intuitive interpretation of an expert with regard to communication style differences in 6 groups with 5–6 group members analyzed by a computer. There were considerable mistakes made in the intuitive interpretations. The expert did not always recognize correctly the differences in the four dimensions of the tested communication styles: occasionally, the expert missed subgroups whose members displayed similar communication styles that were quite different between the subgroups. This was the situation, above all, when the dimension of the emotional expression was important. Obviously, the human information processing is reaching its limitation. Even when some members were situated on quite different far away on three or four dimensions the computer identified this situation better that the expert. The computer identified clearly more contrasting pairs than the expert. Accordingly, there is still a lot more need for investigation and optimization of the instrument.

Conclusion

In practical terms, the instrument to survey the communication styles in working groups should not be understood as objective diagnostic by which an expert of a group certifies from the outside a "disturbed community" and so the company has an indication for team development and conflict moderation. With written assessments of working groups, the danger exists that the digital numbers for the judging of staff members or whole departments will be misused, e. g., for impeding on someone's career,

pay-increase or for rumors going around ("the team displays cock-fights, hostile camps, outsiders, etc.").

It should be no more (but also not less) than a confidentially handled guidance for the conflict work in groups to become aware of possible problems. It serves the sensitivity of conflict consultants and team developers for making directed and at the same time asking open questions to enable the group members to decide themselves whether they experience tensions or conflicts or not. With their independent decisions a common reconstruction can follow where they themselves compile and put to test new regulations for their communication and co-operation with the help of the team developer or consultant.

References

Bales, R. F., Cohen, S. P. (1979). *SYMLOG — A system for the multiple level observation of groups*. New York, The Free Press.

Bush, R. A. B., Folger, J. P. (1994). *The Promise of Mediation: Responding Conflict through Empowerment and Recognition*. San Francisco, Jossey-Bass.

Camp, J. (2012). *No: The Only Negotiating System*. Moscow, Dobraia kniga Publ. (In Russian)

Byrne, B. M. (2010). *Structural Equation Modeling with AMOS: Basic Conceptions, Applications and Programming*. New York, Routledge, Tayler & Francis.

DeVellis, R. F. (1991). *Scale Development: Theory and Applications*. Thousand Oaks, Sage.

Imamgalieva, L. A. (2017). Socio-labor conflicts and the business culture of the organization: the question of definitions. *Science. Society. State*, 5, 1 (17). Available at: https://esj.pnzgu.ru/files/esj.pnzgu.ru/imamgalieva_la_17_1_26.pdf (accessed: 29.12.2022). (In Russian)

Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics*. London, Sage.

Fischer, J. (2012). *Die Soziale Architektur von Gruppen. Anwendungsbeispiele des Gruppentests*. Saarbrücken, Akademiker Verlag.

Fisher, R., Ury, W., Patton, B. (2013). *Negotiations Without Defeat*. Harvard Method (2nd ed.). Moscow, Mann, Ivanov and Ferber Publ.

Fürntratt, E. (1969). Zur Bestimmung der Anzahl interpretierbarer gemeinsamer Faktoren in Faktorenanalysen psychologischer Daten. *Diagnostica*, 15, 62–75.

Gewohn, W. (2010). *Entwicklung und Evaluation eines computergestützten Verfahrens zur Objektivierung des Gruppentests* "*Die Soziale Architektur von Gruppen in der Teamentwicklung (SAG)*". Diplomarbeit am Fachbereich Psychologie. Hamburg, Universität.

Gizatullin, A. A. (2018). Strategies for resolving social conflicts in military units of the Russian ministry of defense. *Historical and Social Educational Idea*, 10, 2-2, 67–71. https://doi.org/10.17748/2075-9908-2018-10-2/2-67-71. (In Russian)

Gurieva, S. D., Udavikhina, U. A. (2014). Business game as an instrument of the study the styles of negotiations. In: *Proceedings of the 2nd European Conference on Education and Applied Psychology (Vienna, May 14, 2014)* (pp. 284–292). Vienna.

Gurieva, S., Udavikhina, U. (2015). Negotiating styles in situation of limited resources and ambiguity: "Short" and "long" communications. *Mediterranean Journal of Social Sciences*, 6, 4S2, 109–117. https://doi.org 10.5901/mjss.2015.v6n4s2p109

Gurieva, S., Borisova, M., Mikhalyuk, O., Dmitrieva, V., Odintsova, O., Kawabata, T. (2016). Trust as a mechanism of social regulation the modern youth's behaviour. *American Journal of Applied Sciences*, 13, 1, 100–110. https://doi.org/10.3844/ajassp.2016.100.110

Jollife, I. T. (2002). *Principal Component Analysis*. New York, Springer.

Korth, B. A. (1978). A significance test for congruence coefficients for Cattell's Factors matched by scanning. *Multivariate Behavioral Research*, 13, 419–430.

Kozlowski, S. W. J., Bell, B. S. (2003). Work groups and teams in organizations. In: Borman, W. C., Ilgen, D. R., Klimoski, R. J. (eds). *Handbook of Psychology: Industrial and Organizational Psychology,* vol. 12 (pp. 333–375). London, Wiley.

Kramer, M. W. (2004). *Managing uncertainty in organizational communication*. Mahwah, NJ, Lawrence Erlbaum Associates.

Langer, I., Schulz von Thun, F. (2007). *Messung komplexer Merkmale in Psychologie und Pädagogik: Ratingverfahren*. Münster, Waxmann.

Leary, T. (1957). *Interpersonal Diagnosis of Personality*. New York, Ronald Press.
Lyutens, F. (1999). *Organizational Behavior*. Moscow, INFRA-M Publ. (In Russian)
Mastenbroek, W. (1993). *Negotiate*. Kaluga, Kaluga Institute of Sociology Press. (In Russian)
Olson, D. H. (2000). Circumplex Model of Marital and Family Systems. *Journal of Family Therapy*, 22 (2), 144–167.
Redlich, A. (2012). Konfliktmoderation in Gruppen. Hamburg, Windmühle. (In Russian: Redlich, A., Mironov, E. (2009). *Moderatija Konfliktov v Organisatii*. St Petersburg, Rech Publ.).
Redlich A. (2009). Die Soziale Architektur von Gruppen in der Teamentwicklung. *Materialie 8, herausgegeben vom Alumni-Verein Psychologie Hamburg: Universität*. https://doi.org//10.13140/RG. 2.1.1113.6483
Redlich, A., Rogmann, J. J. (2012). Conflict Moderation: Facilitating Multiparty Conflict Resolution in Groups and Teams. In: Manichev, S. A., Redlich, A. (eds). *Embedding Mediation in Society: Theory — Research — Practice — Training* (pp. 119–130). St Petersburg, Dialogue Publ.; Frankfurt, Lang.
Samoilov, P. V., Sheremetov, A. Yu., Samoilov, V. M. (2015a). Economic-without danger as the basis for the national security of the Russian Federation. *Vestnik of Samara State University of Economics,* 2 (124), 6–10. (In Russian)
Samoilov, P. V., Fedoseev, A. I., Smarchkova, L. V., Zhitenev, S. L. (2015b). Conflict Management Crisis the situation in order to form the properties of the commercial organization in the conditions of market: survival. *Vestnik Voronezhskogo gosudarstvennogo universiteta inzhenernykh tekhnologii (Vestnik VGUIT)*, 4, 203–207. (In Russian)
Saucier, G., Ostendorf, F., Peabody, D. (2001). The Non-evaluative Circumplex of Personality Adjectives. *Journal of Personality*, 69, 537–582.
Steele, P. T., Beasor, T. *Business Negotiation: A Practical Workbook*. Moscow, 2004. (In Russian)
Tucker, R. L. (1951). A Method for Synthesis of Factor Analytic Studies. *Personnel research section report no. 984*. Washington, DC, Department of the Army.
Zinchenko, V. P. (1998). Psychology of trust. *Voprosy Filosofii*, 7, 76–93. (In Russian)

Received: October 28, 2022
Accepted: November 17, 2022

Authors' information:

Alexander Redlich — PhD in Psychology; redlich@uni-hamburg.de
Svetlana D. Gurieva — Dr. Sci. in Psychology, Professor; s.gurieva@spbu.ru

Создание инструмента для выявления конфликтов в рабочей группе

А. Редлих[1], С. Д. Гуриева[2a]

[1] Гамбургский университет,
Германия, 20146, Гамбург, Фон-Мелле-Парк, 5
[2] Санкт-Петербургский государственный университет,
Российская Федерация, 199034, Санкт-Петербург, Университетская наб., 7–9

Для цитирования: *Redlich A., Gurieva S. D.* Construction of instrument for identifying conflict in working team // Вестник Санкт-Петербургского университета. Психология. 2023. Т. 13. Вып. 1. С. 113–127. https://doi.org/10.21638/spbu16.2023.107

В современном обществе все сферы нашей работы и жизни пронизаны коммуникациями, которые влияют, определяют и конструируют наши показатели успешности, удовлетворенности. Процесс коммуникации может трансформироваться в различных направлениях от формирования долгосрочных, доверительных отношений до конфликтного противостояния, сопротивления. В связи с этим важно расширять знания об эффективных инструментах выявления, регулирования и формирования

[a] Автор для корреспонденции.

конструктивных взаимоотношений между коллективами, группами, нейтрализации негативных последствий зарождающегося или существующего конфликта. В данной статье представлена проблема изучения различных стилей общения между членами рабочих групп, что часто приводит к росту межгрупповых конфликтов. Это пагубно сказывается на межличностных отношениях и производительности труда. Предметом исследования является изучение стилей взаимодействия в коллективе, которые являются предикторами напряженности, ведущей к межгрупповому конфликту. Задача разработки данного инструмента основана на предположении, что различные стили общения между членами группы приводят к групповому динамическому напряжению, которое может быть стимулирующим и полезным для развития команды, но также и порождать конфликты. Основной вопрос исследования: как разработчики команд и консультанты по конфликтам могут выявлять различные стили общения в рабочих группах и лечить конфликты на самой ранней стадии? Цель данной работы — разработать инструмент для изучения стилей общения в рабочих группах. Описаны построение инструмента и контроль качества, начиная с теоретического обоснования, факторно-аналитической редукции 12 пунктов в 4 шкалы и контроля качества шкал. В результате получился простой в использовании инструмент с удовлетворительным качеством, который можно применять в группах с большим количеством членов. Он позволяет членам группы тщательно оценить различные стили общения и выявить соответствующие различия. На его основе члены группы могут напрямую обсуждать различия между стилями общения и в случае возникновения напряженной ситуации или конфликта конструктивно решать их. В результате это будет свидетельствовать о более эффективной работе в группе, проведении тренингов, экзаменов и дальнейшей оптимизации инструментов взаимодействия.

Ключевые слова: коммуникации, идентичность, рабочая группа, конфликт.

Статья поступила в редакцию 28 октября 2022 г.;
рекомендована к печати 17 ноября 2022 г.

Контактная информация:

Редлих Александр — д-р психол. наук, проф.; redlich@uni-hamburg.de
Гуриева Светлана Дзахотовна — д-р психол. наук, проф.; s.gurieva@spbu.ru