



## Designing a questionnaire of socio-emotional competence of a personality (QSECP)

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### **ABSTRACT**

This article is devoted to the problem of diagnosing social and emotional competence. The study reflects the results of the development and psychometric analysis of psychodiagnostic tools that allow experimental testing of social and emotional competence and its structural characteristics.

Item Response Theory (IRT) methodology of the developed preliminary version of the questionnaire, provides an opportunity to evaluate it in terms of test items used to design the content of the test, psychometric analysis made it possible to determine the validity and reliability of the questionnaire, as well as to establish the main list of questions reflecting the content of the structural characteristics of social emotional competence.

The results presented in the article can be used in further psychological, pedagogical and sociological studies of topical problems of the formation of the socio-emotional competence of the individual. This questionnaire is necessary for further study of the structure of socio-emotional competence, the mechanisms of its formation, to improve the efficiency of people in various fields of activity. Of particular interest is the further study of the formation of the structure of socio-emotional competence, depending on the content of various activities and individual psychological characteristics of a personality.

**Keywords:** socio-emotional competence, IRT analysis, psychometric analysis, validity, reliability.

### **CONTENT OF THE RESEARCH**

In the scientific psychological environment, the concept of "competence" became widespread in the second half of the 20th century [Raven (2002); Chomsky (1965); White (1959) and others]. In the process of researching competence and its components, key competencies were identified, such as social competence and emotional competence [Delor (1996); Zeer (2002); Zimnyaya (2004); Izotova (2014); Comeda-Lutz (2018); Kondratova (2009); Barrett, Depinet (1991); Graham et al. (1987); Hutmaher (1996); McClelland (1973); Solovey, Mayer (1990); Wolf (1995)]. Studies of social and emotional competence served as the basis for the formation of ideas about social and emotional competence [Sergienko (2015); Denham (1986); Collie (2020); Kennedy (2018); Webster Stratton (2008); J. E. Zins, Elias (2006)]. An analysis of social competence studies allows us to establish that part of the structural characteristics of social competence are the components of emotional competence [Fattykhova (2005); Argyle (1969); Ewart et al. (2002); Oyserman, Salts (1993); Thomas (1994) and others]. An analysis of studies of emotional competence has made it possible to establish that the components of social competence constitute part of its structure [Goleman (2011); Frantsuzova (2016); Khakimova (2018); Yusupova (2006); Mayer et al. (1990) etc.].

A number of authors consider social, emotional and socio-emotional competence as interrelated, mutually intersecting, adjacent and isomorphic personality characteristics [Yusupov, Yusupova (2014); Kennedy (2018); Solavey, Mayer (1990)]. On the other hand, the analysis of approaches to the study of social and emotional competence of a number of authors allows us to establish that the content of social and emotional competence

includes components of social and emotional competence [Collie (2020) ; Denham (1986); Kennedy (2018); Webster Stratton (2008); Zins, Elias (2006)]. Later, when considering the structure of social and emotional competence, it turned out that their structural characteristics and the components that make up these structural characteristics are interconnected, partially intersect and form social and emotional competence [Gorbunova (2021, 2022); Gorbunova, Katkov (2021)].

The Analysis of studies of socio-emotional competence [Komyagina (2007); Shishov, Agapov (2002); Yusupov, Yusupova (2014); Webster-Stratton (2008); Zins, Elias (2006)], allows us to define socio-emotional competence as an integrative relationship between the social and emotional competence of a person, which is formed in the process of human development and reflects their ability to enter into effective social and interpersonal relationships, the ability of a person to recognize and manage their emotions and understand emotions other people, which allows you to successfully implement the goals and objectives of the activity [Galyuk (2003); Gorbunova (2020); Ivanov, Galyuk (2018); Sergienko (2015); Fatykhova (2005); Khakimova (2018); Yusupova (2006)].

The socio-emotional competence of a person is one of the new directions in the study of competence, and therefore the question arises of its diagnosis and measurement in experimental studies. Psychodiagnostic methods for measuring social competence [Golysheva (2016); Kunitsyna (1995); Prikhozhan(2007); Pushkareva (2011); Soldatova (2014)] and emotional competence (emotional intelligence) [Matveeva, Tarasova (2010); Sergienko et al. (2010); Fetiskin et al. (2002); Yusupova (2006)], developed within the framework of various psychological concepts, in this case are not valid for diagnosing socio-emotional competence. So, D.C. McClelland, in his article "Testing for Competence rather than for Intelligence", expresses reasonable criticism of the practice of using emotional intelligence tests to diagnose competence. In his opinion, cognitive abilities, unlike competencies, are too abstract to predict success in real and concrete activities [McClelland (1973)]. The diagnostics of social competence and emotional competence cannot be used to diagnose social and emotional competence, in any case it will be the diagnostics of social competence and emotional competence, which violates the basic principles of psychological testing [Anastazi (1982b); Kline (1994); Luchinin (2008) Rodionov, Bratishchenko (2014)]. Based on this, the diagnosis of social competence and emotional competence (emotional intelligence) separately within the framework of social and emotional competence loses its meaning. Today, in domestic psychology, there are no psychodiagnostic methods that allow measuring socio-emotional competence and adapted foreign tests. Socio-emotional competence requires the development of its own appropriate psychodiagnostic tools, and the present study is devoted to solving this research.

### **Designing a preliminary version of the socio-emotional competence questionnaire**

To develop a questionnaire for the socio-emotional competence of a person, a content analysis of studies of social, emotional and socio-emotional competence was carried out, during which the components that make up these psychological parameters were identified [Gorbunova (2021, 2022); Gorbunova, Katkov (2021)]. The components of social, emotional and socio-emotional competence identified in the process of content analysis, based on the relationship and similarity, were combined into groups (structural characteristics) that make up the structure of socio-emotional competence [Gorbunova (2021, 2022); Gorbunova, Katkov (2021)]. This made it possible to single out the main components of the structure of socio-emotional competence (structural characteristics): cultural component, activity component, interpersonal component, personal component, informational component, emotional-reflexive component, which were designated as competencies, which was the basis for the further development of the questionnaire for diagnosing social and emotional competence [Gorbunova, Katkov (2021)]. Identification of the structural components of socio-emotional competence and their content (components) became the basis for the development of a questionnaire for diagnosing socio-emotional competence. To develop a questionnaire that allows diagnosing social and emotional competence, a focus group was created, consisting of the heads of general educational organizations, educators with PhD degrees in pedagogical and psychological sciences, as well as psychologists in the amount of twenty-two people. The tasks of the group included checking and evaluating questions that reflect the content of the characteristics that make up the structure of socio-emotional competence, based on the components included in it, identified in a number of studies [Gorbunova (2021, 2022); Gorbunova, Katkov (2021)].

Based on the components that make up the structural characteristics of socio-emotional competence (competence), within the framework of the principles laid down by R.B. Cattell [Cattell (1946)], when compiling a 16-factor personality questionnaire (16PF), questions were formulated (from 14 to 17 questions), based on the components of each selected characteristic (competence) of socio-emotional competence.

The formulated questions for each structural characteristic of socio-emotional competence, after analysis by the focus group for obvious validity and validity by content, were reduced to twelve (for each structural characteristic) and formed the basis of the scales of the "Questionnaire for Social-Emotional Competence of the Personality" (QSECP):

1. Scale of cultural competence.
2. Scale of activity competence.

3. Scale of interpersonal competence.
4. Scale of personal competence.
5. Scale of information competence.
6. Scale of emotional-reflexive competence.

After identifying the scales of the questionnaire and their content, the definition of each scale was formulated. The scale of cultural competence characterizes the attitude of a person to society, to its cultural values, the possession of moral and legal norms, the culture of language and speech, the ability to use them in the process of life and activity, which is largely related to the hierarchy of values in society in general humanitarian knowledge. The scale of activity competence is the ability of a rational and high-quality organization of a person's productive professional activity, based on the goals and objectives that correspond to real requirements and the choice of adequate methods and methods to achieve the necessary results that contribute to its successful implementation. The scale of interpersonal competence reflects the ability of a person to work in a team, coordinating his actions with other people, build positive relationships in the process of interaction, create a positive psychological atmosphere in the team, and possess the necessary interpersonal skills. The scale of personal competence characterizes the qualities of a person's personality, manifested in his ability and readiness for the fullest realization of his personal potential, the successful solution of a wide range of life and professional tasks, productive life in general and productive professional activity. The scale of information competence determines the ability to independently search, analyze, select, process and transmit the necessary information using various communicative information technologies, make, predict and implement optimal decisions in various fields of activity. The scale of emotional-reflexive competence reflects a person's ability to understand their emotional experiences, control them, understand the emotional states of other people, analyze their own motives, thoughts and results of activity.

When forming the scales of the questionnaire for the structure of the socio-emotional competence of a person (hereinafter referred to as QSECP), rank scales were used to assess the level of severity of the corresponding characteristic: "Always" - rank 1, "Often" - rank 2, "Fifty-fifty" - rank 3, " Sometimes" - rank 4, "Never" - rank 5.

In further work on the creation of the QSECP questionnaire, the Item Response Theory (IRT) methodology was used [Orlova (2016); Rodionov, Bratishchenko (2014); Asparouhov, Vuthen (2016)]. Test item theory is applied to the design, analysis, and evaluation of tests, questionnaires, and similar measurement tools. In the development of the OSSECL IRT, analysis was used to get rid of bad, uninformative questions in the compilation of the questionnaire and to preserve the questions that make up its valid and reliable basis.

To analyze the preliminary version of the QSECP questionnaire, a sample of 102 heads of municipal educational organizations in the Perm Territory was created. After diagnosing the created sample of subjects, the results of the study served as the basis for IRT analysis (tests for normal distribution, correlation and factor analysis), psychometric analysis (tests for various types of validity and reliability).

### IRT analysis: graphical and statistical processing of the preliminary version of the questionnaire

After diagnosing the subjects with a preliminary version of the questionnaire, the results of the study were subjected to psychometric analysis. Statistical analysis of the results of the study was carried out using the statistical package IBM SPSS Statistics 26 for Mac OS Monterey 12.3 [Patsiorkovsky (2005)]

The differentiating capabilities of each question (vopr1 - vopr 72) of the [Orlova(2016)] questionnaire were tested by means of a histographic study, which made it possible to remove questions that have violations of the normal distribution in the form of asymmetry and kurtosis from the content of the questionnaire and save questions corresponding to the parameters of normal distribution (Fig. 1).

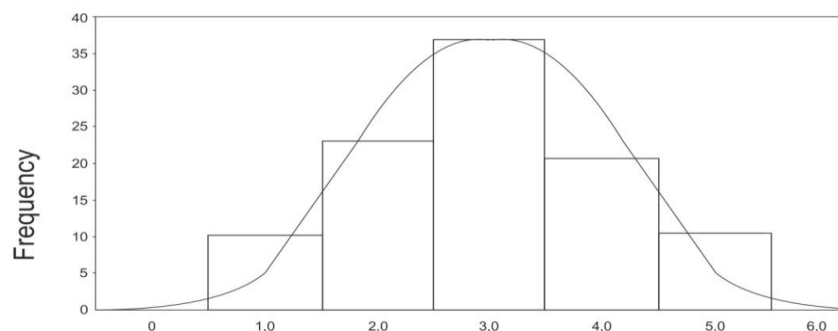


Figure 1. Histogram (an example based on questions from Scale 2).

Question 12. To what extent do you use the experience of other people in the course of your activity?  
After questions with asymmetric or excessive abnormalities of normal distribution were removed from the preliminary version of the QSECP questionnaire, the scales of the questionnaire (V1-V6) were tested for normal distribution parameters for each scale of the questionnaire (Table 1) using the Kolmogorov-Smirnov test [Kobzar (2006); Patsiorkovsky (2005)].

**Table 1. Kolmogorov-Smirnov criterion.**

Variables		Sc.1	Sc.2	Sc.3	Sc.4	Sc.5	Sc.6
N		102	102	102	102	102	102
Normal parameters distribution	Average	12,67	15,07	15,31	14,25	13,96	16,48
	Mean square deviations						
Greatest extreme discrepancies	Absolute	2,491	2,471	2,757	3,406	2,789	3,579
	Positive						
	Negative						
Criterion statistics		,131	,116	,112	,123	,111	,106
Asymptotic Significance (two-sided)		,131	,088	,093	,105	,082	,082

Asymptotic (achievable) level of significance  $P \leq 0.05$

- The distribution under test is normal.
- Liljefors Significance Correction.

Within each scale, using correlation analysis [Glass (; Patsiorkovsky (2005))] the level of interrelation of the questions that make up the content of each scale was determined, which made it possible to remove questions from each scale that did not have significant correlations and save questions related to each other (Table 2).

**Table 2. Spearman's rank correlation (example based on scale 2).**

Questions	Vopr. 9	Vopr. 10	Vopr. 11	Vopr. 12	Vopr. 13	Vopr. 14	Vopr. 15	Vopr. 16
Vopr. 9	1,000	,304	,408	,048	,167	,067	,141	,262
Vopr. 10	,304	1,000	,198	,062	,053	,149	,012	,323
Vopr. 11	,408	,198	1,000	-,065	,350	,124	,262	,248
Vopr. 12	,048	,062	,065	1,000	,006	,120	,167	,041
Vopr. 13	,167	,053	,350	,006	1,000	,067	,308	,266
Vopr. 14	,067	,149	,124	,120	,067	1,000	,227	,296
Vopr. 15	,141	,012	,262	,167	,308	,227	1,000	,258
Vopr. 16	,262	,323	,248	,041	,266	,296	,258	1,000

$r=0,165, P \leq 0,1; r=0,197, P \leq 0,05; r=0,256, P \leq 0,01; r=0,324, P \leq 0,0$

Also, to determine the level of interrelationships of questions in the scales, each scale was tested using factor analysis [Patsiorkovsky (2005)]. Factor selection method: Principal component analysis made it possible to obtain the simplest factor structure (Table 3).

**Table 3. Factor analysis. Extracted Components Matrix (example on the scale material 2).**

Questions	Factors		
	1	2	3
Vopr. 9	,635	-,253	,149
Vopr. 10	,501	-,639	,229
Vopr. 11	,658	,135	-,316
Vopr. 12	,862	,266	,084
Vopr. 13	,527	,553	-,261
Vopr. 14	,426	-,227	-,213
Vopr. 15	,707	,512	,196
Vopr. 16	,671	-,118	,110

All questions of Scale 2 fell into the first factor with weights at the significance level  $P \leq 0.001$ , which characterizes high convergent validity. All other questions of the scales of the preliminary version of the questionnaire were subjected to similar procedures.

IRT analysis of the scales of the QSECP questionnaire makes it possible to assess the level of participation of each question of each scale in the formation of the result of measuring the named characteristics of the socio-emotional competence of the individual. This allows us to determine the level of conventionality of the questions included in each scale (in our case, variables) of this questionnaire. Conventionality, in this case, is understood as the level of consistency of questions that reflect the content of the scale, which should subsequently increase the validity and reliability of the test methodology.

IRT analysis of each scale of this questionnaire makes it possible to remove questions that reduce the level of conventionality of the scale. Based on the IRT analysis, questions that did not differentiate the subjects, did not correspond to the rules of normal distribution, did not correlate with other questions of the scale, and did not fall into one factor of maximum variance in factor analysis were excluded from the scales of the questionnaire. In the final version of the questionnaire, each scale contained eight questions.

The final version of the QSECP questionnaire is presented below.

Instruction.

You will be asked a series of questions relating to behavior in various settings and situations. Read each question carefully and rate how typical it is for you: always, often, occasionally, sometimes or rarely by ticking the appropriate column of this question.

1. How important is it for each person, first of all, to form a humanistic worldview?
2. To what extent is it necessary to preserve traditions?
3. To what extent is it necessary to refer to the values and experience of previous generations?
4. How can you assess the level of culture of the person with whom you communicate for the first time?
5. To what extent, in your opinion, is it necessary for most people to form a culture of speech?
6. To what extent could you formulate the signs and criteria of culture?
7. To what extent, in your opinion, is it necessary for each person to form a holistic view of the era, country and people?
8. To what extent is it important to focus on the norms of morality and law when assessing the behavior of each person?
9. To what extent are you satisfied with the results of your own professional activity?
10. To what extent do you consider your activity to be creative?
11. How carefully do you analyze the purpose and objectives of the activity before proceeding with the execution?
12. To what extent do you use the experience of other people in the course of your activity?
13. How detailed do you think over the techniques and methods of activity before its implementation?
14. To what extent do you manage to build interpersonal interaction in the process of activity?
15. To what extent do you use an individual approach to each of the participants in joint activities?
16. To what extent do you manage to coordinate your actions with the actions of other people in the process of joint activities?
17. To what extent do you manage to build positive relationships with other people in the process of interaction?
18. How well do you manage to maintain good relationships with people in any situation?
19. To what extent do you manage to create a positive psychological atmosphere in the team?
20. How positively do you perceive criticism from colleagues?
21. To what extent do you successfully manage to solve problems that arise in a team?
22. How quickly do you manage to resolve conflicts that arise in a team?
23. How important is your opinion to your colleagues?
24. Does the team always fully agree with your position?
25. How confident are you when dealing with strangers?
26. To what extent can you assess your personal potential?
27. To what extent are you motivated to achieve the goal in any situation?
28. Are you always confident in your position?
29. How proactive and decisive are you in difficult situations?
30. To what extent do you have endurance in a critical situation?
31. Are you ready to take the initiative in any business?
32. To what extent are you ready for changes in your life?
33. How well do you deal with a large amount of information?
34. How often do you refer to documents of the legislative and regulatory framework in your activities?
35. To what extent are you focused on getting information from others?
36. To what extent are your computer literate?
37. How often do you use the Internet to get the information you need?

38. To what extent do you have the skills to search, analyze and select information?
39. How critical are you about the information you receive?
40. To what extent do you express the need for self-education?
41. How often do you try to figure out the causes of your experiences?
42. To what extent do you manage to control your emotions in different situations?
43. To what extent do you seek to understand the causes of other people's emotional experiences?
44. How often do you regret your involuntary emotional outbursts?
45. To what extent do you realize the reasons for satisfaction/dissatisfaction with the results of your activities?
46. To what extent do you empathize and sympathize with the experiences of other people?
47. How much do you feel about your failures?
48. To what extent can you predict the emotional reactions of other people?

Questionnaire scales:

1. Scale of cultural competence (questions 1-8).
2. Scale of activity competence (questions 9-16).
3. Scale of interpersonal competence (questions 17-24).
4. Scale of personal competence (questions 24-32).
5. Scale of information competence (questions 33-40).
6. Scale of emotional-reflexive competence (questions 41-48).

#### Psychometric analysis of the QSECP questionnaire

With the help of the final version of the questionnaire, a sample was diagnosed, consisting of 144 school principals in the city of Perm, the Perm region and Krasnokamsk (a satellite city of Perm).

The final version of the questionnaire was tested for reliability and validity. Reliability testing was carried out using Alpha Cronbach methods [Cronbach (1951); Schmitt (1996); Patsiorkovsky (2005)] and the splitting method [Anastazi (1982a); Kline (1994); Patsiorkovsky (2005)] for each scale of the questionnaire (Table 4, 5).

**Table 4. Reliability testing by Alpha Cronbach.**

Scales	Alpha Cronbach	Number of points
Scale 1	,762	8
Scale 2	,589	8
Scale 3	,780	8
Scale 4	,810	8
Scale 5	,595	8
Scale 6	,724	8

$\alpha > 0,500$ ;  $p \leq 0.05$

It should be noted that values of Cronbach's Alpha less than or equal to 0.500 are considered insufficient. Values greater than 0.500 can be used as an estimate of the internal consistency of the test scales [Cortina (1993)].

**Table 5. Reliability testing by splitting method.**

Scales	Total points	Split ratio	Correlation of split forms
Scale 1	8	4/4	,463
Scale 2	8	4/4	,341
Scale 3	8	4/4	,600
Scale 4	8	4/4	,681
Scale 5	8	4/4	,363
Scale 6	8	4/4	,888

$r = 0,324$ ,  $P \leq 0,001$

Both options for testing the reliability confirmed the reliability of the test method, however, it should be noted that the Cronbach's Alpha of Scale 2 and Scale 5 is at a level formally above insufficient.

Structural validity of the questionnaire [Anastasi (1982a); Kline (1994)] was tested using cluster analysis. Cluster analysis was implemented using a hierarchical model in a graphical version (dendrogram) and the "Farest Neighbor Distance" method with Euclid's square interval [Patsiorkovsky (2005)]. The results of cluster analysis (Fig. 2) characterize all scales of the questionnaire as corresponding to structural validity, as evidenced

by the difference-similarity gap on the abscissa scale in the range from 0 to 4 units. On the ordinate scale, all scales of the questionnaire are located equidistantly and in accordance with the difference-similarity.

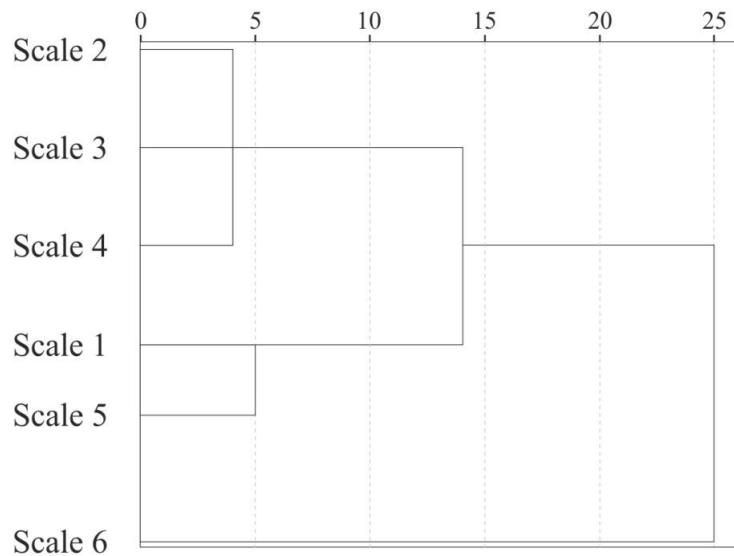


Figure 2. Difference-similarity dendrogram of questionnaire scales.

Structural validity of the questionnaire [Anastasi (1982a); Kline (1994)] was also verified by Principal Component Factor Analysis followed by Verimax rotation with Kaiser normalization (Table 6). The results of the factor analysis allow us to conclude that all scales of the questionnaire fell with significant weights into different factors: Scale 1 into the fourth factor, Scale 2 into the fifth factor, Scale 3 into the first factor, Scale 4 into the sixth factor, Scale 5 into the second factor and Scale 6 to the third factor. This indicates that all scales of the questionnaire constitute a construct of unrelated characteristics of social-emotional competence that measure its various competencies.

Table 6. Factor analysis. The matrix of extracted components.

Scales	Factors after rotation					
	1	2	3	4	5	6
Scale 1	,051	,170	,151	,957	,137	,102
Scale 2	,230	,149	,100	,159	,905	,265
Scale 3	,941	,052	,108	,051	,207	,234
Scale 4	,276	,195	,071	,122	,280	,887
Scale 5	,052	,958	,092	,170	,130	,159
Scale 6	,098	,088	,976	,143	,083	,058

The data presented in Table 6 make it possible to evaluate not only construct validity: each scale, having got into one factor with a significant weight, is present in other factors with irrelevant values, which characterizes the divergent validity of the test. This indicates that each scale, while measuring its own competence, does not measure other competencies.

Validity testing was also carried out using the criterion [Anastasi (1982a); Luchinin (2008)]. As a criterion, an expert assessment of a group of experts of 24 people (employees of municipal educational bodies) who knew and regularly communicated with the studied leaders of educational organizations participating in this experiment was used. The experts were asked to evaluate each head of a general education organization in terms of cultural competence, activity competence, interpersonal competence, personal competence, informational competence and emotional-reflexive competence. Before the evaluation procedure, each expert was provided with detailed characteristics for each assessed quality (definition of the scales of the QSECP questionnaire). The validity of the criterion was tested by correlating each scale of the QSECP questionnaire with the total assessment of experts for each characteristic, each head of a general education organization (Table 7).

Based on the fact that the formed socio-emotional competence is associated with the success of the activity, the total rating of educational organizations from 2015 to 2020, headed by the heads of educational organizations participating in the study, was chosen as the second criterion for validating the questionnaire (Table 7).



**Table 7. Criteria validity.**

Scales	Expert review	Rating
Scale 1	,297	,307
Scale 2	,334	,288
Scale 3	,321	,291
Scale 4	,284	,225
Scale 5	,365	,266
Scale 6	,223	,199

$r=0,197, P\leq 0,05; r=0,256, P\leq 0,01; r=0,324, P\leq 0,001$

All scales of the QSECP questionnaire meet the general requirements of criterion validity.

## CONCLUSION

The development, IRT and psychometric analysis of the QSECP questionnaire make it possible to use it for further research on the socio-emotional competence of an individual. The selected 6 areas of structural characteristics of socio-emotional competence are competencies that allow measuring and describing this characteristic of a person's personality. The study of the level of formation of the socio-emotional competence of the individual in the context of the scales of the questionnaire allows us to establish which structural characteristics of the socio-emotional competence are more pronounced and how effective they are in a person's life and activities, and which of them need to be improved (adjusted). The results obtained in the course of such a study will make it possible to create correctional programs aimed at increasing the level of formation of the socio-emotional competence of the individual.

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