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**EMPATHY, ALEXITHYMIA, AND PSYCHOLOGICAL
MINDEDNESS: THE LATENT PROFILE ANALYSIS**

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Abstract

The current study investigates the association between empathy, alexithymia, and psychological mindedness within the group of university students. The sample included 228 female Russian elementary education department students who completed a Russian-language adaptations of Interpersonal Reactivity Index (IRI) for empathy measure, Toronto Alexithymia Test (TAS-20) and Psychological Mindedness Scale. The Latent Profile Analysis method identified three kinds of profiles, i.e., latent groups of participants, that are similar to each other and differ from another groups in terms of assessed indicators of empathy, alexithymia and psychological mindedness. The obtained profiles can be characterized as demonstrating "successful" (one profile, 97 persons) and "problematic" development of empathy (two profiles, 56 and 75 persons). The profile of "successful" development is characterized by high empathy, high psychological mindedness and low alexithymia. "Problematic" profiles differ from "successful" profile in high alexithymia and moderate or low empathy. Alexithymic persons from two "problematic" profiles groups differ among themselves in the interest in the meaning and motivation (subscale of Psychological mindedness Scale). A profile with higher scores on this scale shows higher empathy despite the higher level of alexithymia. A profile with low score of Interest in Meaning and Motivation shows lower empathy, including personal distress. The problem of factors that can mediate the influence of alexithymia as an intrapersonal emotional competence deficit on the development of empathy is discussed. Also, the identified profiles are discussed in terms of the prospects for the prevention of professional burnout and professional selection.

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1. Introduction

The problem of empathy regulation has been widely studied in the field of empathy research in recent years. It acquires special significance in the context of a professional and interpersonal burnout problem (so-called empathy fatigue), which has specific practical applications (Stebnicki, 2002; Neumann et al, 2011; Manczak et al, 2016). So, the issue of the relationship between empathic phenomena and mechanisms of emotion regulation raises. According the neuroscience “perception-action” hypothesis, the mechanism of empathy is based on the mirroring excitation of the same parts of the brain that are involved, when the emotion experienced by another person is experienced by the observer himself. The empathy "starts" with one's own vicarious experience of another's emotions, and then mostly automatic, involuntary vicarious response is "shaped" (or not shaped) up to a high order empathic response (Preston & de Waal, 2002; Keysers et al., 2014; Lamm & Majdandzic, 2015). Thus, the problem of factors of successful or unsuccessful development of high order empathic response becomes particularly important.

Numerous studies have shown the relationship between the high-level empathy with a developed ability to regulate emotions (Eisenberg, 2010; Taylor et al., 2013; Schipper & Petermann, 2013). Strategies of emotions regulation mediate the relationship between empathy and helping behavior (Lockwood et al, 2014, Hein et al., 2016). The link between emotional regulation and empathy deficits is traced in clinical populations (autistic, schizotypic spectrum, psychopathy, and so on) (Decety & Moriguchi, 2007; Beadle, 2013). In the ontogenesis of empathy, the gradual development of various forms of regulation, cognitive and motivational mediation of empathic reactions, starting with the Self-Other distinction and ending with the formation of a stable pro-social motivation is demonstrated (Hoffman, 2000; Zahn-Waxler, 2008).

Among the factors contributing to the formation of mature, regulated empathy, a special place is occupied by the characteristics of the ways of treating one's own emotions and feelings as an intrapersonal emotional competence.

2. Problem Statement

Alexithymia is a construct that reflects such shortcomings of emotional competence as difficulties in understanding, naming and describing one's own emotions. The so-called externally oriented thinking is included in this construct also. It reflects such a characteristic of persons with high alexithymia as difficulties in reliance to one's own feelings and taking them into account.

Many studies show the connections between alexithymia and empathy (Guttman & Laporte, 2002; Farrow & Woodruff, 2007; Moriguchi et al., 2007; Beadle, 2013). It is shown that the neurological areas associated with alexithymia and empathy largely coincide (Goerlich-Dobre et al., 2015). Some studies have shown the mediating role of alexithymia in the development of empathic deficits. In the case of depression (Hoffmann et al, 2016), autistic disorders and schizophrenia (Aaron et al., 2015) problems of empathy are observed only in combination with a high level of alexithymia. However, the nature of such connections is still not clear, the picture of the correlations obtained in the studies is quite heterogeneous. Negative links with different alexithymia features are usually found for high empathic concern and perspective taking, but positive links with alexithymia are found for both high and normal level of

personal distress (low order empathic phenomena) (Guttman & Laporte, 2002) and for the low level of personal distress also (FeldmanHall et al, 2013).

Alexithymia describes such deficits of emotional competence, which may have a different origin (Tabibnia & Zaidel, 2005; Moriguchi et al., 2007; Samur et al, 2013) and, accordingly, imply various ways of possible compensation of deficits, diverse effects for other aspects of emotional competence and empathy. We suggested that alexithymia can manifest itself in various combinations with dispositional characteristics of emotional competence and, via them, with empathy. One of such characteristics is expressed by the concept of psychological mindedness, which is defined as person's interest and ability to see relations among thoughts, feelings, and actions. As original definition emphasizes, this interest is connected “with the goal of learning the meanings and causes of own experiences and behaviours” (Appelbaum, 1973, p.36).

Higher psychologically minded persons are inclined to observe and reflect on their own internal life. They are interested in the meanings of their own and others' experiences and the motivation of actions, try to understand themselves and others. At the same time, they consider it important to share their feelings, to talk about problems – this is the guarantee of productive problem solving for them. This contributes to the formation of their openness to changes, of the mature tolerance for uncertainty.

Psychological mindedness measures are widely used in the psychotherapy and psychiatry treatment outcome studies. Both alexithymia (negatively) and psychological mindedness (positively) influence the better results of the treatment (McCallum et al, 2003). Higher psychologically minded patients were more likely to remain in treatment even when there was no relation of higher mindedness to better outcome (McCallum, 1990). But correlation between these two characteristics of emotional competence is close to zero (McCallum et al, 2003; Boylan, 2006).

Thus, at least in the sample of psychotherapy patients the psychologically minded person may or may not be alexithymic. At the same time, positive correlations between empathy and psychological mindedness are theoretically grounded (Choi-Kain & Gunderson, 2008), and were found in the sample of psychotherapists and students (Beitel et al., 2005). It can be assumed that the relationship between empathy and alexithymia is not direct but is mediated by dispositional characteristics of intrapersonal emotional competence.

Comprehension of this problem, in addition to its theoretical significance, is important for us in the context of the development of training and supervision programs for helping professionals facing the problem of professional burnout and empathy fatigue, and it also matters for professional selection.

3. Research Questions

Based on our suggestions, we formulated the following questions:

- Are there different configurations of the connection between empathy and alexithymia? Can the psychological mindedness as dispositional characteristic contribute to this connection?
- Is it possible to single out groups that differ in combinations of these variables? What variable can work as the differentiating factor for this division?

- How the peculiarities of these groups can be taken into account during the creation of empathy and emotional competence training programs for helping professionals?

4. Purpose of the Study

In connection with these questions, the purpose of our study was to examine latent profiles (groups) that might be found in the multidimensional space of empathy, alexithymia and psychological mindedness indicators in the homogeneous non-clinical sample of students who have chosen pedagogical education.

5. Research Methods

5.1. Participants

For this study, we recruited a total of 228 undergraduate students (education majors) attending Moscow Pedagogical University (all women; the age ranged from 18 to 30 years, $M = 19.57$, $SD = 1.57$)

5.2. Measures

We used three questionnaires to measure studied phenomena. All questionnaires were adapted for the Russian-language sample, demonstrated satisfactory psychometric properties and factor structure similar to their original English-language versions.

Interpersonal Reactivity Index (IRI) by Mark Davis (Davis, 1983) in its Russian-language adaptation by Budagovskaya and co-authors (Budagovskaya et al., 2013) was used for measuring empathy:

- includes 28 items (7 items per subscale – Perspective taking, Fantasy, Empathic concern, Personal distress)
- items are rated using a 5-point Likert scale whereby 1 = It does not suit me at all to 5 = It describes me very accurately.

Perspective Taking reflects the tendency to adopt the psychological point of view of other persons. This scale is supposed to measure cognitive component of empathy.

Fantasy taps respondents' tendencies to transpose themselves imaginatively into the feelings and actions of fictitious characters in books, movies, and plays. Despite including cognitive process in its description, this scale fails to correspond with cognitive component of empathy only (DeCorte et al., 2007; Koller & Lamm, 2015).

Empathic Concern scale assesses "other-oriented" feelings of sympathy and concern for suffering others.

Personal Distress measures "self-oriented" feelings of personal anxiety and unease in tense interpersonal situations. It's usually defined as low-order empathic phenomena, connected with problems of emotional regulation and pro-social motivation (Hoffman, 2000).

20-item Toronto Alexithymia Scale (TAS-20, Bagby et al., 1994) in its Russian-language adaptation by Starostina and co-authors (Starostina, et al., 2010) was used for measuring alexithymia:

- includes 20 items, 3 subscales – Difficulty Describing Feelings, Difficulty Identifying Feelings, Externally-Oriented Thinking, and Total Alexithymia Score

- items are rated using a 5-point Likert scale whereby 1 = strongly disagree and 5 = strongly agree
We didn't use Total Alexithymia score in this study.

Psychological Mindedness Scale (PMS, Conte, et al., 1996) in its Russian-language adaptation by Novikova and Kornilova (Novikova & Kornilova, 2013) was used for measuring psychological mindedness:

- includes 45 items, 5 subscales (Willingness to try to Understand Oneself and Others, Openness to New Ideas and Capacity for Change, Access to One's Feelings, Belief in the Benefits of Discussing One's Problems, Interest in Meaning and Motivation of Own and Others' Behavior)
- items are rated using a 4-point Likert scale whereby 1 = strongly disagree and 4 = strongly agree

5.3. Data analysis

We used a person-centered approach technique, Latent Profile Analysis (LPA) (Fraley & Raftery, 2007), to identify latent profiles, i.e. latent groups of participants that are similar to each other and differ from another group in terms of assessed indicators of empathy, alexithymia and psychological mindedness. LPA as a model-based technique tested the fit of each potential profile configuration to the fit of alternative models. We tested the fit of a total of 126 different models that differed in the number of latent profiles (from 1 to 9) and other parameters such as the equal vs. unequal variances across profiles, equal vs. unequal sizes of the latent profiles, etc. The best fit was obtained for the 3-profile solution that had the highest BIC value, suggesting that the participants in the study can be classified as having one of the three stable latent profiles of emotional competence indicators (see Figure 01).

To identify which measured scales divide the sample into these three profiles we used ANOVA and post-hoc pairwise t-test with correction for multiply comparisons. Results of this analysis are presented in Table 01. All scales demonstrated significant mean difference between identified profiles (groups) except the Psychological Mindedness scale "Belief in the Benefits of Discussing One's Problems".

6. Findings

Based on the procedure of Latent Profile Analysis, three types of profiles of empathy, alexithymia and psychological mindedness were identified (Fig. 01) We will discuss these profiles in the sequence of the group size.

Table 01. Descriptive statistics and ANOVA results

Scale	Gr1		Gr2		Gr3		ANOVA		p (pairwise t-test)		
	Mean	SD	Mean	SD	Mean	SD	F	p(F)	Gr1 vs. Gr2	Gr1 vs. Gr3	Gr2 vs. Gr3
Perspective taking	15.82	4.06	18.42	3.38	14.35	3.94	6.93	0.022	0.001	0.161	0.000
Fantasy	21.82	4.27	23.20	3.30	18.03	4.48	31.34	0.000	0.199	0.000	0.000
Empathic concern	19.93	3.99	21.70	3.49	17.75	4.25	12.30	0.003	0.056	0.018	0.000
Personal distress	17.18	4.32	14.44	4.74	13.09	3.98	26.68	0.000	0.004	0.000	0.199
Difficulty Identifying Feelings	24.70	4.95	14.69	4.73	15.75	5.28	68.87	0.000	0.000	0.000	0.505
Difficulty Describing Feelings	17.63	3.03	10.07	3.17	13.23	3.36	26.16	0.000	0.000	0.000	0.000
Externally-Oriented Thinking	16.43	4.43	13.26	2.92	19.21	3.86	19.80	0.000	0.000	0.000	0.000
Interest in Meaning and Motivation of Own and Others' Behavior	16.18	2.55	16.24	2.67	11.60	2.58	94.31	0.000	1.000	0.000	0.000
Access to One's Feelings	7.86	1.52	8.49	1.28	9.13	1.54	25.90	0.000	0.059	0.000	0.040
Belief in the Benefits of Discussing One's Problems	11.27	3.35	13.67	2.71	11.12	2.63	0.70	0.402	0.000	1.000	0.000
Willingness to try to Understand Oneself and Others	6.96	3.04	10.15	2.63	8.72	3.02	7.35	0.022	0.000	0.008	0.016
Openness to New Ideas and Capacity for Change	9.02	2.12	10.33	1.99	7.99	2.06	10.30	0.006	0.003	0.042	0.000

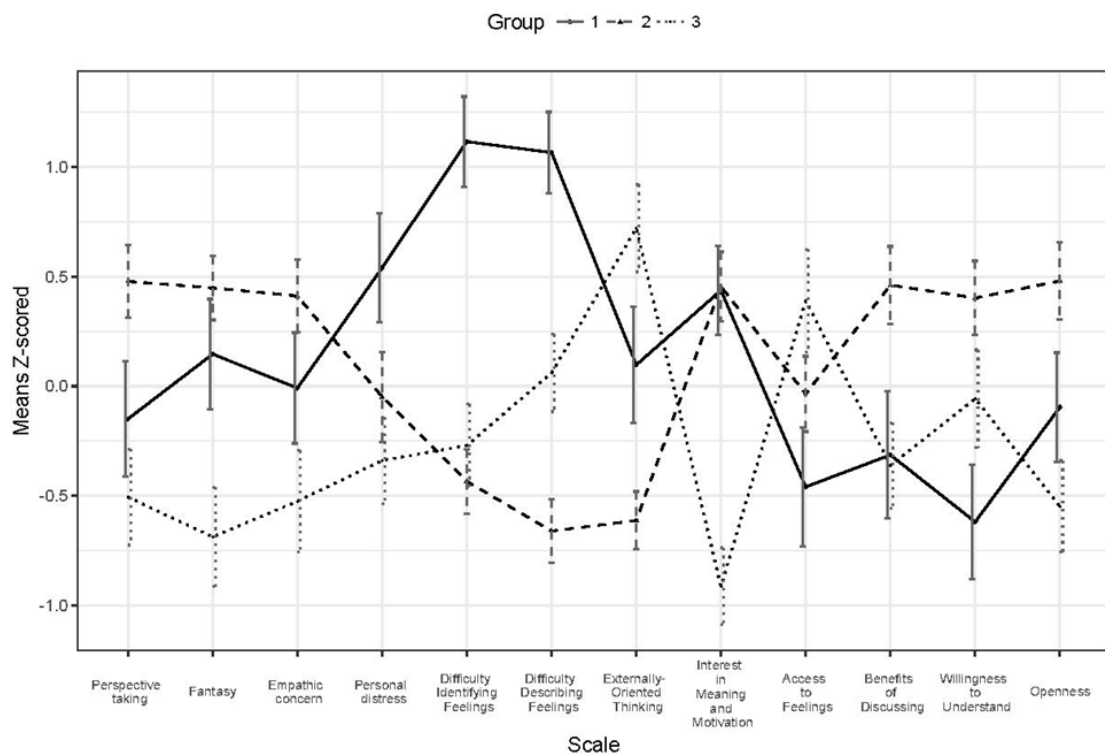


Figure 01. Empathy, Alexithymia, and Psychological Mindedness profiles

6.1. Profile 2 description

The 2nd profile was identified for the largest group in the sample (97 subjects). It is characterized by high empathy with an approximately equal high level of both its cognitive and affective components. Indicators of Perspective taking, Empathic concern and Fantasy are the highest in the total sample. However, Personal distress although significantly lower than for the 1st profile ($p=0.004$), does not significantly differ from the mean of the 3rd one (the tendency is – slightly higher than in the 3rd profile).

The level of all characteristics of alexithymia (TAS-20) is the lowest in the sample for the 2nd profile. For Difficulty describing Feelings and Externally-Oriented Thinking it differs from both profiles 1 and 3 (all $p<0.001$), for Difficulty Identifying Feelings significant difference exists for profile 1 ($p<0.001$).

Members of this group evaluate the benefits of discussing problems significantly most high in the sample and are most inclined and willing to discuss them according PMS measures (all differences are significant). They are almost opposite to 1st and 3rd groups in the level of recognition of benefits of discussing one's problem ($p<0.001$).

They do not differ from the members of the 1st group in the degree of Interest in the meanings and motivation of one's own and others' behaviour (PMS), but together with 1st profile group they are almost the opposite to the members of the 3rd group in this characteristic of psychological mindedness ($p<0.001$). They are also characterized by the Openness to New Ideas and Capacity for Change highest in the sample.

Thus, we have found a configuration of indicators in which low alexithymia corresponds with high empathy and moderately low personal distress. Moreover, this is a configuration with the highest high-order empathy associated with the lowest level of difficulty in describing feelings and externally-oriented thinking. Low-order empathic phenomena – personal distress - has an average level, comparing with other groups.

In general, one can characterize the 2nd profile as a manifestation of normally developed, well-regulated high-order empathy. The high level of perspective taking as a cognitive component of empathy, a good understanding of one's own and others' feelings and actions corresponds with active participation in interpersonal communication, which includes discussion of problems (according with high level of PMS scales: Willingness to try to Understand Oneself and Others, and Belief in the Benefits of Discussing One's Problems). Such high development of emotional competence may be among factors which contribute to the development of readiness for change and openness to new experiences and ideas (Openness to New Ideas and Capacity for Change scale of PMS).

In the context of our question about the prospects of helping professionals training and professional selection, it can be assumed that this group is 1) the most appropriate for professional requirements; 2) potentially receptive to the training of empathy and emotional competence, and this kind of training should be interesting to them. Considering the existing average level of personal distress, the main goal of the work on prevention of empathy fatigue and professional burnout can be to organize actions aimed at developing professionally adequate forms of empathy expression, of supporting children and their parents.

6.2. Profile 1 description

1st profile describes the smallest group in the sample (56 subjects). As can be seen from Fig. 01, the subjects included in this group have a very high level of such indicators of alexithymia, as Difficulty identifying feelings, and Difficulty describing feelings. They differ from the 2nd group, and from the 3rd ($p < 0.001$ for all). They are also characterized by the highest level of Personal distress in the sample, significantly different from profile 2 ($p = 0.004$) and as tendency from profile 3 ($p = 0.199$). However, other indicators, especially that of affective empathy, are quite high. They do not differ from the "favourable for empathy" second group in the levels of Empathic concern and Fantasy, but they have significantly lower level of Perspective taking than 2nd group ($p < 0.001$).

Thus, the relationship between empathy and alexithymia in this group is no longer simple. The highest alexithymia is not associated with lowest level of high-order empathy here. But highest alexithymia is associated with highest Personal distress.

This profile includes high level for Interest in Meaning and Motivation of Own and Others' Behaviour scale of PMS. The level of this scale for 1st profile coincidences with a "favourable for empathy" profile ($p = 1.000$). The 1st and 2nd groups together are diametrically opposed to the 3rd group here (the 3rd group shows the lowest level of all components of empathy, including personal distress). Perhaps, such a disposition as interest to "inner" world can promote empathic directedness of these individuals to others, despite the possible "chaotic" nature of their own emotional life. So, possible reason for the fact of absence of straightforward link between empathy and alexithymia in this profile may be found in the high interest in the meanings and motivation of behaviour as disposition to try to understand others.

In this group we can see the level of Empathic concern and Fantasy close to the level of empathy components in "favourable to empathy" 2nd group, but a lower level of Perspective taking and a high level of Personal distress along with high alexithymia. We can suggest that this is a picture of poorly regulated empathy. It can be assumed that with a high level of interest in the inner world, one's own and another's, the subjects of this group lack the means to cope with their own and empathically conditioned experiences. Perhaps it can be described already as a certain degree of interpersonal burnout: deficits in the ability to understand oneself and others lead to failures in attempts to understand and resulted in reluctance to try (this group has the lowest level of Willingness to try to Understand Oneself and Others). They deny the importance of discussing problems also and demonstrate low levels of openness to the new ideas and the desire for change (low score at Belief in the Benefits of Discussing One's Problems and Openness to New Ideas and Capacity for Change scales of Psychological Mindedness questionnaire). However, of course, the causal nature of these relationships requires further research.

In the context of our question about the prospects of professional training and selection, it can be assumed that this group is a "risk group". We cannot claim their unfitness to helping professional activity, considering their high interest in understanding oneself and others. However: 1) in case of inability to understand oneself this interest can lead to the desire to solve their own problems in professionally conditioned communication; 2) the difficulties of understanding oneself and others in intensive communication will amplify the symptoms of helplessness, empathic distress and closeness. Thus, the main goal of working with this group can be organizing actions aimed at developing all aspects of

emotional competence - the ability to understand oneself, to regulate one's own emotions, to find acceptable ways of expressing one's own feelings and empathic responses.

6.3. Profile 3 description

Members of the 3rd group are characterized by an extremely high level of Externally-oriented thinking ($p < 0.001$ for both 1st and 2nd profiles) and an extremely low level of Interest in meanings and motivation ($p < 0.001$ for both 1st and 2nd profiles). At the same time, they do not differ in level of the Difficulty identifying feelings from the 2nd group, they even excel other groups on the scale of Access to One's feelings of the Psychological Mindedness questionnaire ($p < 0.001$ and $p = 0.040$). They have rather high level of just the Difficulty describing feelings. So, we can say about low level of interest in understanding one's own and others' feelings, of paying attention to feelings and their details and nuances and taking them into consideration, but not about difficulties in identifying feelings and access to them. Like the 1st group, they do not believe in the benefits of discussing one's problem (PMS), but in this case they are not interested in understanding themselves and others in general.

Members of this group demonstrate the lowest empathy in the sample, including personal distress (for Empathic concern and Fantasy all differences are significant, for Perspective taking the difference with 2nd group only is significant, for Personal distress – with 1st group only). Probably, such low level of distress is associated with low emotionality in general.

We can assume that in this case we are dealing with dispositional rather than with operational deficits of emotional competence. Perhaps, unlike the 1st group, the members of this group "can, but do not want" to deal with own and other's experiences and feelings. The possible origin of these dispositional deficits must be specially grounded. The severity of such distortion of dispositions can reflect deep, basic operational deficits also, which did not fall into our consideration in this study.

From the point of view of the requirements for helping professionals, the question arises about the professional suitability of students with this profile. We can suggest the occasional character of their choice of this profession (primary school teacher). However, of course, this issue requires a deeper study. For example, it is possible to look for the connection of these features with the high degree of introvertedness or with their level of general intelligence development.

7. Conclusion

We hypothesized the existence of various configurations of connections between empathy, alexithymia, and psychological mindedness. Using the latent profiles analysis method, we identified three profiles in the sample of female students of pedagogical university. We look at psychological mindedness as at dispositional characteristic of emotional competence, which reflects interest, inclination and willingness to understand oneself and others, to discuss inner life and benefit from it. Based on our results we can suggest that dispositional characteristics can differentiate various configurations of correlations between empathy and alexithymia.

We described 3 profiles, obtained by the Latent Profiles Analysis method.

“Favourable for empathy” profile includes low level of alexithymia, high level of psychological mindedness, high level of both cognitive and affective empathy components (Perspective taking, Empathic concern and Fantasy), moderate level of Personal distress.

Profile of “poor regulated empathy” includes high level of alexithymia, high level of Personal Distress, reduced level of Perspective taking and good enough levels of Empathic concern and Fantasy. Alexithymic persons, having this profile, can be psychologically minded at least regarding their interest in own and other’s inner life. We suggested that this interest can help them to preserve relatively high level of empathy.

3rd profile has two main peaks: high level of Externally – oriented thinking and low level of Interest in meaning and motivation of own and others’ behaviour. Along with this they scored low in empathy, including Personal Distress. Severity of psychological mindedness decrease along with high number of persons with this kind of profile among female pedagogical students raise the question of detailed study of this profile peculiarities.

We discussed some goals for emotional competence and empathy training and issues of professional suitability regarding specificity of this profiles also.

The ambiguity of correlations between empathy and alexithymia obtained in different studies is discussed by empathy researchers (Guttman & Laporte, 2002; FeldmanHall et al., 2013, Aaron et al., 2015). Our study confirms not direct character of this connection. Alexithymic persons can vary in the level of interest in meaning and motivation of own and others’ behaviour and this difference corresponds with their difference in the level of affective empathy. The possible role of the level of interest in inner life as the mediator in the connections between empathy and alexithymia requires further study.

Relatively low level of personal distress usually considered as a “good result” of empathy development was found in profile with high alexithymia and very low interest in people’s inner life along with low indicators of high-order empathy. So, personal distress should be more thoroughly considered in the context of dispositional factors, including pro-social motivation.

The main limitations to our study are the gender, age and educational choice of students in our sample. Future research should involve a more diverse samples and a wider range of possible mediators of connection between empathy and alexithymia.

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