Third Annual International Conference «Early Childhood Care and Education»

Qualitative Characteristics of Emotion Regulation Process in Adolescents with Mitral Valve Prolapse

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Abstract

The purpose of the study was to investigate into peculiarities of emotion regulation in MVP adolescents as subject to specificity of the system of semiotic mediation of emotions. The study comprised 36 adolescents with MVP, mean age was 17,1±0,8 and 40 healthy adolescents, mean age was 16,7±0,6. The method of psychological experiment and psychosemantic method provided methodological background for our study. The data of the study suggests a conclusion that MVP adolescents differ from healthy peers in more frequent use of the mechanism of emotional suppression, in both spontaneous and deliberate reactions. At that MVP adolescents appear to be more sensitive of frustrations, their emotional experience is characterized by greater diffusion. Obtained results indicate that means of emotion regulation in adolescence are closely related to peculiarities of semiotic mediation of emotions. If semantically loaded, the situation of frustration tends to be inadequately assessed by adolescents as excessively traumatizing, which leads to emotional diffusion that cannot be voluntarily regulated.

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Selection and/or peer-review under responsibility of Russian Psychological Society.

Keywords: Emotion regulation, Cognitive change, Emotional suppression, Frustration tolerance, Adolescents, Mitral valve prolapse

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1. Introduction: A landscape of challenges

Emotion regulation dwells among the most pressing issues of contemporary psychology [1], [2]. It is believed to be called forth mostly by practical interests. That is, present day society is remarkable for its stress-generating character and increasingly urgent demands on adaptive potential of an individual. Hence, studies of psychological factors and mechanisms ensuring stress resistance appear to be of paramount importance [1], [3].

The understanding that disturbance of emotion regulation is a grave psychological feature to be found among the patients with psychosomatic disorders, as well as the factor of predisposition to evolvement of psychosomatic disorders, are classical concepts of psychosomatics [4], [5]. However, despite all the years and dares that lie behind the study, the naming of particular psychological phenomena which reveal the innate character of disturbance of emotional regulation is believed to be far from being accomplished. The urgency is heightened by the fact that the list of somatic diseases, which clinical pattern would strongly suggests a psychological factor, is open for new items. Mitral valve prolapse (MVP) is only one of them.

MVP is among the key diseases of adolescence [6]. It is a valvular heart disease characterized by the prolapse of a mitral valve leaflet into the left atrium during ventricular systole [7]. Its frequency fluctuates from 3-5% with babies to 22-31% with adolescents [6]. An important factor, which helps detect MVP in adolescents lies with the clinical pattern of the disease. It suggests mostly psycho-vegetative complaints. Most frequent there come complaints about headaches (caused by overstrain and high emotional pressure), tachycardia, vertigo, short breath [8]. Cardiac pain is registered for 32-65% [7]. It is of atypical character, and may be cured with tranquilizers [6], [9]. According to published data, two thirds of MVP patients show signs of anxiety disorders. They display difficulty in realization of emotions and emotion regulation in stressful situations. It is the latter that usually trigger various cardiac complaints, which bring patients to the doctor [8], [9], [10]. It is reasonable to suggest that generation of MVP clinical pattern in adolescence may be traced to a number of psychological and physiological concerns specific for puberty, as well as emotional ‘hardship’, typical for adolescence [11]. Study of emotion regulation in adolescents with MVP, therefore, is rather vital for both practical and theoretical grounds.

Fundamental principles of the cultural-historical theory of mental development, and understanding of emotions as higher mental functions (HMF) provided a theoretical background for our study [12].

2. Emotions as higher mental functions and basic principles of emotion regulation disturbances

According to fundamental principles of the cultural-historical theory of L.S. Vygotsky, emotions as psychological phenomena fall into the class of higher mental functions. They display the following features: intravital social generation, hierarchical structure, semiotic and symbolic mediation, and voluntary regulation [10]. Emotions develop in ontogeny on the basis of natural affectivity through social interactions, within the system of certain cultural values and stereotypes. In the course of development emotions and corporal manifestations lose their ‘natural’ direct character. It is through this link of semiotic and symbolic mediation that emotions become arbitrarily regulated. This particular quality puts strictly apart affects and emotions [12], [13].

Disturbances in the process of socialization of emotions and corporal phenomena triggers further disturbances in the process of mediation of emotions (deficiency vs superfluity of mediation, or, presumably, distortions in mediation). Disturbance in mediation may result in such phenomena as emotional diffusion and declined ability for emotion regulation, when affect takes hold of an individual and runs out of control [13], it may also result in a low faculty of emotional reflection and retarded ability for emotion expression.

Study of emotion regulation in adolescence gains particular relevance within the described theoretical context since it is established as a period of crisis in mental development of personality.

3. Research objectives and methods
The purpose of the study was to investigate into peculiarities of emotion regulation in MVP adolescents as subject to specificity of the system of semiotic mediation of emotions.

The study comprised 36 adolescents with MVP, aged 16 to 18, mean age was 17.1±0.8 and 40 healthy adolescents, mean age was 16.7±0.6.

The method of psychological experiment and psychosemantic method provided methodological background for our study. To conduct the experiment we made use of the stimulus material applied in Rosenzweig Picture-Frustration Study. The method was specially modified for our purposes [14]. The procedure fell into three stages:

In the initial stage participants had to look through a succession of pictures illustrating certain frustrating situations, and select the situations, which they regarded as potentially traumatizing. As a next step (the second and third stages) the participants were presented in turn with each of the situations they selected.

In the second stage they had to assume the role of a certain character and answer the following questions:
- Why did you mark this particular situation as traumatizing? What makes it specially traumatic for you?
- What would you say in this particular situation? What would you think about, saying this?
- Could you think of an answer that would taper down for your own self the traumatizing character of the situation?

In the third stage participants were provided with 73 cards with the names of emotions written on them. They were instructed to select the words that unambiguously expressed their feelings in the situation in question [14].

The following parameters of emotional experience and emotion regulation were assessed: the frequency of situations, selected by the participants as traumatizing; attribution of responsibility for emergence and resolution of the situation; the degree of discrepancy between verbalized and non-verbalized emotional reactions, and a cognitive change (an ability to soften or completely transform emotional experiences) to taper off the traumatizing effect of the situation.

Psychosemantic study was to assess the intensity of emotional experience (by the number of emotional descriptors specially selected and attached to each situation), and modality of emotions experienced in frustration.

Statistical processing of the data was conducted with implication of various methods: calculation of mean values and the standard deviation; frequency analysis; certainty computation for distinctions between samples based on indicators of the probability of distinctions between indicators (Mann-Whitney U-test).

4. Results and their Discussion

4.1. Assessment of frequency in selection of traumatizing situations and emotional experiences in the group of MVP adolescents and healthy comparison subjects

This stage of our experiment was focused on assessment of sensibility of emotive situations exhibited by MVP adolescents as compared with that of healthy subjects. Data analysis revealed that MVP adolescents significantly more frequently (p< 0.001) would mark situations as potentially traumatizing (Table 1).

Table 1. Mean group indices for emotive situations and emotional descriptors, suggested by the participants

<table>
<thead>
<tr>
<th>Index</th>
<th>MVP adolescents, n=36</th>
<th>Healthy adolescents, n = 40</th>
<th>Significant difference on the U-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of chosen situations</td>
<td>11.23±1.81</td>
<td>5.82±1.26</td>
<td>p&lt; 0.001</td>
</tr>
<tr>
<td>Number of descriptors per situation</td>
<td>10.16±1.16</td>
<td>7.43±1.30</td>
<td>p&lt; 0.05</td>
</tr>
</tbody>
</table>

Thus, MVP adolescents identified from 8 to 12 situations as potentially traumatizing, while healthy participants similarly suggested from 5 to 7 situations. Context analysis of the selected situations showed that both groups would significantly more frequently identify as traumatizing situations of accusation. Analysis of
emotional descriptors showed that MVP patients significantly (p< 0.05) ‘outscored’ the control group in the number of descriptors chosen for rendering emotional experience of one particular situation (Table 1).

Modality analysis of the suggested descriptors for MVP adolescents brought forward such words as ‘offence’, ‘malice’, ‘grief’, ‘terror’, ‘anxiety’ as most frequent in description of emotional states. That is, negative emotions significantly prevailed. Positive or neutral descriptors were not in evidence (see Table 2).

The group of healthy participants would significantly more frequently use such descriptors as ‘dread’, ‘agitation’, ‘fright’, ‘resentment’, ‘bewilderment’, ‘indignation’. However, along with negative emotions they would suggest the descriptors of ‘amazement’, ‘laughter’, ‘joy’, ‘excitement’, etc. - that is, positive emotions (see Table 2).

Table 2. Frequency in representation of basic emotions in categorical structures of emotional experience by participants (%)

<table>
<thead>
<tr>
<th>Categories of emotional experiences</th>
<th>MVP adolescents, n=36</th>
<th>Healthy adolescents, n = 40</th>
<th>Significant difference on the U-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joy</td>
<td>0</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Anger</td>
<td>17</td>
<td>41</td>
<td>p&lt; 0.05</td>
</tr>
<tr>
<td>Shame</td>
<td>15</td>
<td>9</td>
<td>p&lt; 0.05</td>
</tr>
<tr>
<td>Contempt</td>
<td>7</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>Fear</td>
<td>23</td>
<td>12</td>
<td>p&lt; 0.05</td>
</tr>
<tr>
<td>Astonishment</td>
<td>7</td>
<td>27</td>
<td>p&lt; 0.001</td>
</tr>
<tr>
<td>Anguish</td>
<td>31</td>
<td>0</td>
<td>p&lt; 0.001</td>
</tr>
<tr>
<td>Total number</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Comparative analysis of obtained results revealed that MVP adolescents significantly differ from healthy subjects by broader representation in the structure of semantic areas of emotional categories of the ‘fright’ mode, and narrower representation of the ‘amazement’. Besides, only healthy subjects suggest descriptors of the ‘joy’ mode in the semantic structure of their emotional categories.

4.2. Analysis of semantic contents and direction of verbal and non-verbal reactions to frustration in MVP adolescents and healthy comparison subjects

Analysis of the data revealed that as for direction of their reactions, responses of most participants in both groups were of extrapunitive character (E), when an outward cause of frustration is denounced, frustrating character of the situation is accentuated, and resolution is expected to come from another person.

Table 3. Frequency analysis of the categorical structure of verbalized and non-verbalized reactions to frustration (%)
Index | Verbalized reactions to frustration | Non-verbalized reactions to frustration
--- | --- | ---
Categories | MVP adolescents, n=36 | Healthy adolescents, n = 40 | MVP adolescents, n=36 | Healthy adolescents, n = 40
O-D | 23.7 | 26.2 | 20.0 | 20.6
E-D | 46.1* ^ | 30.6 | 56.3* | 33.5
N-P | 30.2* | 43.2 | 23.7* | 45.9
Total number | 100 | 100 | 100 | 100
E | 42.0* ^ | 40.0 | 53.6* | 41.8
I | 24.6* ^ | 36.1 | 37.2 | 41.1
M | 33.4* ^ | 23.9 | 9.2* | 17.1
Total number | 100 | 100 | 100 | 100

* Differences are significant when compared the data of MVP adolescents and healthy adolescents (p<0.05);
^ Differences are significant when compared the data of verbalized and non-verbalized reactions to frustration in the same group (p<0.05).

At the same time, among MVP adolescents the structure of reactions to frustration was virtually opposite to that of healthy participants. They significantly (p< 0.05) differ from the control (standardized) group in frequency of the following categories: E-D, N-P, M and I. E-D categories (reactions focusing on ego-defence) and M (impunitive reactions) appear to be significantly (p< 0.05) more frequent among MVP adolescents than in the control group. However, responses which fall into N-P category (need-persistence reactions) and I (intrapunitive reactions) are significantly (p< 0.05) rarer than those in the control group. E-D and E categories happen to dominate in the structure of verbalized reactions to frustration among MVP adolescents (Table 3).

Comparative analysis of verbalized and non-verbalized reactions to frustration showed that MVP adolescents are more than healthy subjects prone to avoid open verbal revelations of their thoughts and feelings that emerge in the situation of frustration. Data analysis suggests that such evasiveness is achieved with the mechanism of emotional suppression. At that we may speak of suppression of not only socially unacceptable, aggressive responses within the structure of E-reactions, but of prohibition of I-reactions that suggest recognition of one’s blame and responsibility for resolution of the situation (see Table 3).

4.3. Analysis of cognitive change (softening and transformation of emotional experience) to taper off a traumatizing situation in adolescences of the compared groups

Content analysis of responses conditioned by cognitive control (when the task was to taper off arbitrarily the traumatizing effect of the situation) revealed that adolescents of both groups tend to transform the cognitive structure of emotions in the situation of frustration in the following three ways: suppression of emotions, reappraisal and transformation of emotional experience.

Suppression has no demand for complex cognitive processes and means of semantic and symbolic mediation. Suppression was displayed by MVP adolescents in 52% of answers, and for healthy participants - 29% of answers (p< 0.001).

Reappraisal suggests a change in cognitive structure of emotional experience to attach a new meaning to a traumatizing event as to taper off its traumatizing effect. To accomplish this a fully evolved system of personal reflection, as well as implication of complex cognitive operations, are required. Devaluation of a traumatizing event appeared to be the most popular version of reappraisal. It was displayed by MVP adolescents in 27% of answers, and for healthy participants - 38% of answers (p< 0.05).

Transformation is the process of conversion of cognitive structure of emotional experience that leads to a reversal in affective arousal. This is the most complicated form of emotional transformation. This may be
illustrated with such emotions as humour and irony. 21% of answers of MVP adolescents and 33% of answers of healthy participants suggested transformation (p< 0.05).

Data analysis revealed that transformation of emotional experience appears to be the most effective means for softening of a traumatizing situation. It may not work, however, unless you consider and anticipate the emotional reaction of the interlocutor.

5. Conclusions

Comparative analysis and interpretation of the data of our study suggests a conclusion that MVP adolescents differ from healthy peers in more frequent use of the mechanism of suppression of emotions, in both spontaneous and deliberate reactions. At that MVP adolescents appear to be more sensitive of frustrations, their emotional experience is characterized by greater diffusion. Obtained results indicate that means of emotion regulation in adolescence are closely related to peculiarities of semiotic mediation of emotions. If semantically loaded, the situation of frustration tends to be inadequately assessed by adolescents as excessively traumatizing, which leads to emotional diffusion that cannot be voluntary regulated.

The task of voluntary cognitive control introduced into our experiment, supplied the evidence that voluntary transformation of the structure of emotional experience appears to be potentially comprehensible for MVP adolescents. This conclusion is supported by a significantly rare resort to suppression of emotions in problem solving, when voluntary control over emotions was implied.

Consequently, obtained data lead to a conclusion that along with potential faculty for mediation and emotion regulation, in situations of frustration MVP adolescents differ from their healthy peers in disturbances of emotion regulation. The results make way for new strategies of psychotherapy for MVP adolescents and patients with anxiety disorders. They bring to light new perspectives for further investigation into emotion regulation in clinical psychology as well as in other fields of psychology [15], [16], [17].

References