Title page

EMOTION REGULATION IN YOUTH WITH OBESITY

A Brief Emotion Regulation Training in Children and Adolescents with Obesity:

A Feasibility Study

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ABSTRACT

Background: Recent studies emphasize the role of emotion dysregulation as an underlying mechanism initiating and maintaining emotional eating in obesity. Since multidisciplinary obesity treatment (MOT) does not directly address emotion regulation (ER), the current study aimed to investigate the feasibility of an ER training in children and adolescents with obesity on top of MOT. Feasibility was evaluated multi-informant on relevant parameters e.g. practicability, satisfaction, change in affect and homework compliance. Methods: Participants (N = 50, M_age = 12.26, 60.7% girls) with obesity received a brief ER training and were assigned to one out of three conditions to learn a specific ER strategy (i.e., Cognitive reappraisal, Distraction or Acceptance). Afterwards the ER strategy was further trained by a homework assignment during 5 consecutive days. Children and adolescents, trainers and as well as the educators of the treatment center completed a feasibility questionnaire. Results: The training was positively evaluated by different informants for 11 of 19 feasibility criteria. Only one implementation barrier was reported regarding homework compliance. Furthermore, some important considerations could be taken into account e.g. session length and motivation. Conclusions: Reports suggest that, with some modifications, it is feasible to implement an ER training on top of MOT. In addition, future training protocols should focus on other essential components of ER (e.g., emotional awareness, emotional flexibility).

Keywords: emotion regulation, obesity, youth, treatment, feasibility

INTRODUCTION

Worldwide more than 10% of children and adolescents struggle with overweight and a quarter of them have obesity [1, 2]. This is of great concern, since the associated physical complaints are well-known precursors of cardiovascular diseases [3]. Moreover, even in childhood, this condition is associated with psychosocial problems such as a low self-esteem and behavioural problems. Specifically these emotional problems will complicate both adopting and maintaining a healthy life-style, leading to vicious circles [3, 4].

Kaplan and Kaplan (1957) [5] state that human (eating) behaviour is often driven to reduce and regulate stress or negative affect. This emotion *dys*regulation process is also the central mechanism proposed in the affect regulation model explaining the development of binge eating [6]. This model proposes that various forms of uncontrolled (over)eating behaviour reduce stress-related arousal and thus can be seen as maladaptive coping responses to negative affect.

Currently, growing evidence indicates that emotion dysregulation processes also lead to emotional eating in *youth* and should receive more attention in treatment [7, 8]. Adequate emotion regulation is a complex skill which requires (1) basic ER competences, such as emotional awareness, and (2) flexible use of adequate ER strategies [9, 10]. While the use of some ER strategies (e.g. cognitive reappraisal), reduces negative affect and is associated with psychological well-being (i.e., adaptive strategies) [11], other strategies (e.g. rumination) only have brief positive effects on experienced emotions and are associated with enduring negative affect and various psychological problems (e.g., depression, addiction, anxiety, eating- en weight related disorders) in the long term (i. e., maladaptive strategies) [11, 12]. From a developmental perspective adolescence is characterized by elevated emotionality and lower cognitive control [13]. Moreover, a recent study [14] indicates that adolescents between 12 and 15 regulate their emotions by using more maladaptive and fewer adaptive ER strategies (i.e., maladaptive shift) explaining why symptoms of psychopathology simultaneously emerge, certainly in youth with obesity [15].

The current recommended multidisciplinary obesity treatment (MOT) includes advices on diet, physical activity, and changes in life-style behavior [16]. However, emotion regulation is not a main focus of MOT [17]. Nonetheless, targeting fundamental mechanisms such as emotion dysregulation may significantly impact emotional eating and contribute to consistent and long-term weight-maintenance [18]. This is highly indicated since a recent study in youth with obesity shows that current inpatient MOT leads to significant (short-term) weight loss but does not have significant effects on emotion regulation or emotional eating [12].

OBJECTIVES

Since emotion regulation plays a crucial role in eating- and weight-related pathology [12] and (early) adolescence appears to be a vulnerable period [14], research investigating whether and how ER can be trained in youth with obesity can provide important insights for future treatment avenues. Although observational studies might point at relevant components in the treatment of youth obesity, few intervention studies are available [19]. Therefore, the primary aim of the current study is to investigate whether it is feasible to train specific adaptive ER strategies (i.e., Cognitive Reappraisal, Distraction, or Acceptance), homework assignments included, in children and adolescents with obesity. The feasibility/acceptability will be evaluated for different parameters e.g. practicability, satisfaction, change in affect and homework compliance via multiple informants (i.e. children and adolescents, trainers, educators). In addition, preliminary efficacy will be explored using an experimental design.

METHODS

Participants

Participants were children and adolescents with obesity between 9 and 15 years old (M_{age} = 12.26, SD = 1.72; 60.7% girls) enrolled in a one-year inpatient multidisciplinary obesity treatment (MOT) program. All participants were hospitalized in the same centre (convenient sample) and were invited to participate in the current study immediately after enrolment. Of 54 eligible children and adolescents, four did not participate due to illness or early discontinuation of the treatment program. Body measurements (i.e. weight and length) were assessed by a physician. The adjusted Body Mass Index (BMI), a relative weight index taking into account age and sex, was calculated [20]. The mean adjusted BMI¹ of the participating children and adolescents was 182.64% (SD = 32.02) with a minimum of 140.62% and maximum of 296.63%. The current study received the approval of the Ethical Committee of Ghent University. Parents filled out informed consent and youth gave active assent.

Measurements

Emotion regulation was measured through of the Fragebogen zur Erhebung der Emotionsregulation bei Kindern und Jugendlichen (FEEL-KJ; translation by [21]) for youth between 8 to 18. It includes 90 items that are presented on a 5-point Likert scale (1 = almost never, 2 = rarely, 3 = occasionally, 4 = often, 5 = almost always). In total

¹ Interpretation Adjusted BMI: < 85% = underweight; between 90 and 120% = normal weight; between 120 and 140% = overweight; between 140 and 160% = severe overweight; >160% = obesity.

15 ER strategies are measured. The FEEL-KJ is considered reliable and valid with an acceptable to good internal consistency for all subscales [21]. To interpreted the results, total scores are converted to T-scores (i.e., T-score < 40 = poor use).

In the current study, a shortened version of the FEEL-KJ was used to measure 'Cognitive Reappraisal', 'Distraction' and 'Acceptance' (see procedure). This specific subset of ER strategies was selected as they are the focus of the current ER training sessions. Each of the strategies was assessed with 6 items. For example: "*When I'm sad/angry/anxious, I tell myself that it is not that bad*" to measure Cognitive Reappraisal; "*When I'm sad/angry/anxious, I do something I like*" to measure Distraction; and "*When I'm sad/angry/anxious, I accept this feeling*" to measure Acceptance. Cronbach's alphas reveal satisfying reliability of .80 for Cognitive Reappraisal, .77 for Distraction, and .78 for Acceptance.

Feasibility of the training: Feasibility was measured by standardized items based on existing guidelines and the translated "Barriers to Treatment Participation Scale" [22]. Items regarding satisfaction and practicability of the training were rated by three different informants on a 5-point Likert scale from [1] totally disagree, [2] disagree, [3] neutral, [4] agree to [5] totally agree. In total, 7 items had to be filled out by the children and adolescents (N = 50), 3 items by the trainers (N = 2), and 4 items by the educators (N = 4) of the treatment center. A combination of positively formulated (e.g. *the trainer supported me during the training)* and negatively formulated (e.g. *The training program was too long*) questions was used. Furthermore, for the trainers and educators of the treatment center, there was also the possibility to provide written unstructured feedback on open questions e.g. "which barriers did you face while organizing and planning the training?". Finally, feasibility of the homework assignment was tracked using a questionnaire of 5 items filled out by the children and

adolescents (e.g. *I was motivated to do the homework assignment*). This questionnaire was filled out for 5 consecutive days (i.e. each time after they completed the 10 minute homework assignment). Next to the questionnaire, completion rate of the 5 day homework assignment was an additional feasibility criterion. All informants filled out the questionnaires independently.

Change in affect: Change in positive and negative affect was measured through Visual Analogue Scales (VAS). Feelings of happiness, sadness, anxiety and anger were scored on a scale from zero (not present) to hundred (very present) [23] before and after different phases during the training (see figure 1).

Procedure

Three strategies were selected to train (a) Cognitive Reappraisal, the capacity to reinterpret or have a positive perspective on the situation and decrease negative affect and/or increase positive affect [24], (b) Distraction, the ability to intentionally shift attention away from the negative emotion to decrease negative affect and/or increase positive affect [24] and (c) Acceptance, the competence to experience feelings and physical perceptions in a non-judgmental way. This strategy aims to decrease the intensity of the emotion and physical perceptions [24]. A two-hour ER training procedure was divided into several phases which are numbered sequentially (see figure 1).

Phase O

After giving informed consent (IC), children and adolescents filled out the online version of the shortened FEEL-KJ (P0). Next, participants were assigned to one of three conditions to learn one specific adaptive ER strategy: the Cognitive reappraisal condition (n=14), the Distraction condition (n=19), or the Acceptance condition (n=17).

Because of the small sample size, a technique similar to block randomization was performed to avoid imbalance among groups [25]. More specifically, participants were sequentially and randomly assigned to one out of three conditions. Within each specific ER condition, children and adolescents were assigned to small training groups of four to five children and adolescents. In total 11 training groups could be assembled and the two leading researchers of Ghent University (EB; TDB) were randomly assigned to the different groups.

Phase 1-6

The instructions and design of the current ER training was based on the training of Wante et al. (2013) [24]. Phase 1 (P1) started with an introduction and was identical for each ER condition. Participants received a booklet with psychoeducation and worksheets. Next, a psychoeducation video clip was shown (i.e., relationship between feelings, thoughts, behaviour) and two introductory exercises on interoceptive awareness i.e., a body scan and breathing exercise were performed to make sure participants were aware of their feelings in order to move on to the second phase of the training.

During the second phase of the training (P2), participants learned one specific strategy depending on the condition they were assigned to: (a) Cognitive Reappraisal, participants learned to both recognize their thoughts and determine whether they are helpful or non-helpful. Moreover, they practiced to reinterpreted non-helpful thoughts into helpful; (b) Distraction, participants brainstormed about fun activities that would enable them to distract themselves from negative feelings (e.g., drawing, walking or cooking) and (c) Acceptance, the functionality of negative emotions was explained (e.g. anxiety prepares you for possible threat). Participants were stimulated to formulate

personalized sentences to use in difficult situations and to help them to accept their feelings. Worksheets were used to make it more personally relevant. At the end of P2 participants rated various positive and negative affective states (VAS_P2).

In the third phase (P3) of the training, participants were told they would now practice what they learned and were presented a mood inducing video clip 'Father & Daughter' [26]. In previous research, this short film was evaluated as effective in inducing feelings of sadness [24]. To measure affect after seeing the video clip participants immediately rated various positive and negative affective states (VAS_P3).

In phase 4 (P4), participants were instructed to (further) regulate the induced affect by using the learned adaptive ER strategy. Afterwards participants rated various positive and negative affective states (VAS_P4).

Finally, in phase5 (P5), all groups received a progressive muscle relaxation exercise to make sure that participants were relaxed before leaving the training. Afterwards they rated various positive and negative affective states (VAS_P5).At the end of the training session (P6) children and adolescents, trainers and educators filled out feasibility questionnaires.

Phase 7

Participants were asked to fill out a homework assignment for five consecutive days. This consisted of two parts. In the first part, they started with listening to two clips: (a) a psychoeducation video clip on the relationship between feelings, thoughts and behaviour and (b) an audio clip with specific instructions to perform a breathing exercise and afterwards rate their feelings. To stimulate homework compliance, participants temporarily received a smartphone with the clips on it and a day-by-day guide in a booklet. The second part of the homework assignment was an exercise related to the learned adaptive ER strategy. These exercises were different between conditions but identical to the ones during the ER training. Daily, they were asked to rate the feasibility of the homework assignment through a 3-item questionnaire, in the booklet.

Data Analysis

The Statistical Package for Social Science (SPSS) version 22.0 was used to (1) analyze possible group differences with one-way ANOVA (i.e., age and adjusted BMI) and a chi-square test of independence (i.e., sex) and (2) obtain descriptive statistics regarding the shortened FEEL-KJ and feasibility. As all participants had the option to (strongly) agree or disagree with the proposed questions, but were also able to give a neutral response, it was determined a priori that the criteria were deemed to be feasible or acceptable if $\geq 60\%$ of the participants responded to a) agree or disagree with the negatively formulated questions. On the opposite, if $\geq 60\%$ of the participants responded to a) agree or disagree with the negatively formulated questions and b) strongly disagree or disagree with the negatively formulated questions and b) strongly disagree or disagree with the positively formulated questions, the item was categorized as an implementation barrier [27, 28].

To test possible differences between the ER conditions in responses regarding the feasibility questionnaire, a non-parametric Kruskal-Wallis H test was used. Finally, to determine whether affect (i.e., happiness and sadness) changes over time (i.e., at P3 and P4) depending on the ER strategies (i.e., cognitive reappraisal, distraction and acceptance), a repeated measures ANOVA was used with ER condition as betweensubjects factors and time as within-subjects factor. Effect sizes (ESs) were measured using the partial eta squared (η_p^2) with $\eta_p^2 = 0.01$ considered as small, $\eta_p^2 = 0.06$ considered as medium, and $\eta_p^2 = 0.14$ considered as large ESs. Statistical significance was set at 0.05 for all analyses.

RESULTS

Preliminary analyses

First, by performing a one-way ANOVA, ER conditions were compared and no significant differences for age (F(2, 47) = .36, p = .70) and adjusted BMI (F(2, 47) = 1.70, p = .19) were found. A chi-square test of independence showed that there was no significant association between sex and ER condition, X^2 (2, N = 50) = 1.23, p = .53. Second, pre-training scores on the three adaptive ER strategies subscales, measured with the shortened FEEL-KJ, were converted into T-scores based on the Flemish population standards [21]. Based on the T-scores obtained in the current sample, descriptive analysis revealed that 28% report poor use of on 'Cognitive Reappraisal', 56% report poor use of 'Distraction', and 54% report poor us of 'Acceptance'.

Main analyses

Reports of the children and adolescents on feasibility can be found in table 1. Furthermore, a one-way ANOVA compared the three conditions and no significant differences were found for the items of the feasibility questionnaire. A Kruskal-Wallis H test showed that there was a statistically significant difference in feeling like they had to share too much personal information with the trainer (i.e., item 5) between the different ER conditions, $\chi 2(2) = 8.32$, p = .01, with a mean score of 35.04 for Cognitive Reappraisal, 20.89 for Distraction and 22.79 for Acceptance. *Reports on the homework assignment* can be found in table 2. In addition, homework was completed by 54% of the participants on day one, by 48% on day two 46% on day three by, by 28% on day four, and by 14% on day five. As less than 60% of the participants completed the 5 day homework assignment, this criteria was evaluated as an implementation barrier.

Reports of the trainers on feasibility across training groups can be found in table 3. Furthermore, the unstructured part revealed that trainers evaluated the duration of the training as too long as they observed that some participants experienced difficulties to focus at the end of the training and started to annoy and disturb other participants.

Reports by the educators on feasibility are presented in table 4. Additionally, in the unstructured part they stated it was difficult to plan the group training because of multiple other activities and appointments (e.g., physical therapy, psychological counselling, school) the participants have. Educators also indicated that supervising the homework assignment was not an extra effort as the goal and instructions were clear for the participants.

Exploratory analyses on the preliminary efficacy of the ER training

Regarding happiness before and after the mood induction, a significant main effect of time (i.e., $M_{decrease}$ = 37, SD = 37.18), F(2, 47) = 47.68, p < .00, $\eta_p^2 = .50$ but no significant Time × ER Condition interaction, F(2, 47) = .01, p > .05, $\eta_p^2 = .01$ was found. Furthermore, for sadness before and after the mood induction, a significant main effect of time (i.e., $M_{increase}$ = 28.52, SD = 32.03), F(2, 47) = 37.30, p < .00, $\eta_p^2 = .44$, but no significant Time × ER Condition interaction, F(2, 47) = .01, p > .05, $\eta_p^2 = .00$ was found. Regarding happiness after the mood induction and after using the ER strategy, a significant main effect of time (i.e., $M_{increase}$ = 27, SD = 30.15), F(2,47) = 37.56, p < .00, $\eta_p^2 = .44$ but no significant Time × ER Condition interaction, F(2, 47) = .01, p > .05, $\eta_p^2 = .01$ was found. Furthermore, for sadness after the mood induction and after using the ER strategy, a significant main effect of time (i.e., $M_{decrease}$ = 25.52, SD = 29.46), F(2,47) = 35.83, p < .00, $\eta_p^2 = .43$, but no significant Time × ER Condition interaction, F(2, 47) = 2.02, p > .05, $\eta_p^2 = .08$ was found.

DISCUSSION

Emotion (dys)regulation appears to be an important underlying mechanism initiating and maintaining emotional eating in obesity. Since current multidisciplinary obesity treatment (MOT) often do not directly address emotion regulation (ER), it can be an added value to include an additional ER training. Therefore, the aim of the current study was to evaluate the feasibility of an ER training in children and adolescents focusing on well-known ER strategies (i.e., Cognitive Reappraisal, Distraction, and Acceptance). A priori benchmarks were determined at a cut off score of 60% to categorize criteria as either feasible/acceptable or an implementation barrier [27, 28]. Taking into account all multi-informant reports, a positive evaluation was given to 11 of the 19 feasibility criteria. Although none of the criteria regarding the training itself could be categorized as implementation barriers, homework compliance did seem to be a barrier. The majority of the participants did not experience any difficulties in participating the training and evaluated the psychoeducation via a video clip as easy to understand. Although the trainer was someone unfamiliar (i.e., one of the main investigators), no negative feeling towards the trainer were reported. Those participants who filled out the assignment indicated that it was easy to understand, and required only a small amount of time. Trainers reported that participants reacted positively during the training and participated well. Finally, educators of the treatment center considered the ER training as an added value to MOT.

In addition, data on the shortened FEEL-KJ revealed that more than half of the sample reported poor use of 'Distraction' and 'Acceptance'. This strengthens our rationale that adaptive ER is (1) not well-established in youth with obesity and (2) should serve as a crucial additional component to MOT.

Finally, these findings tentatively suggest that, when children and adolescents were brought in a sad mood, they were able to decrease the induced negative affect and increase positive affect and these effects could be due to applying the trained ER strategy (i.e. cognitive reappraisal, distraction or acceptance). However, as this assumption is rather complex to disentangle, some important remarks regarding the current study procedure should be considered (see limitations, 3th remark). These results are both promising and consistent to prior research using a similar ER training in children and adolescents within the general population [24].

Limitations

Some important considerations need to be addressed. First, almost half of the participants responded neutral to whether the training met their expectations in terms of being able to handle their feelings. Since research shows that treatment expectancies can lead to a more constructive attitude towards treatment sessions, this is an important finding [29]. A more extensive psychoeducation phase including a clear rationale is recommended as this may activate positive attitudes towards training sessions.

Second, although less than 60% of the participants rated the two-hour ER training as too long, trainers reported in the unstructured feedback section loss of

attention by the end of the training. As this could compromise the satisfaction, it is recommended to include a mid-session break. To our knowledge little research has been done on the recommended session length of psychotherapy treatment. However, existing studies in adult populations show that one hour of psychotherapy on a frequent basis significantly increases therapy success in comparison to two hours of psychotherapy indicating that quantity does not add up to quality [30]. In addition, the educators of the treatment center indicated that the organization of the group trainings was a barrier suggesting also the necessity shorter training sessions.

Third, it is important to note that ER strategies can be divided in antecedentfocused strategies that are used before emotional responses are fully activated (e.g., distraction and reappraisal) and response-focused strategies that are used when emotional responses have been generated (e.g., suppression) [31]. However, in the current experiment, the different phases (i.e., experiencing negative affect and regulating this affect) were sequentially and thus artificially planned without distinguishing between the three strategies. Although our procedure was equal or similar to existing research in children and adolescents [24] and changes in mood corresponded with the different phases, the results regarding effectiveness should be interpreted. Furthermore, it is highly recommended for future research to let participants report on the use of ER strategies during and after emotional situations making this type of research more in line with existing theoretical frameworks [31] and generalizable to real-life contexts [32].

Fourth, persisting in homework compliance was only feasible for a small proportion of the participants as only 14% completed the assignments for five consecutive days. Lack of homework compliance is a well-known treatment barrier

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among intervention research and future research should try to overcome this barrier (see below) [33]. Of note is that the homework data were difficult to collect and only youth who started the homework assignments (53%) rated feasibility. To be able to draw conclusions on why participants did not start the homework assignment, future research could conduct a general survey (or focus group) for all participants.

Finally, although a predetermined research protocol was strictly followed, the current study was not pre-registered. As pre-registration reduces the risk of bias and increases transparency, this has to be taken into account for future research.

Suggestions for future research

It is strongly suggested to further study the feasibility and effectiveness of an extensive ER training with multiple sessions combining various well-evaluated ER components, using a randomized controlled trial. It will be crucial to investigate the causal effects on weight loss and psychological well-being. Some recommendations for future research are presented:

First, previous research shows that emotional eating in obesity is not only linked to a lack of adaptive ER strategies but also is associated with (1) high levels of alexithymia, in which difficulties in describing and verbalizing feelings are present and (2) decreased interoceptive awareness, in which awareness of feelings of hunger is lacking [34]. Therefore, we recommend to include (1) a longer psychoeducation phase and (2) an extensive awareness training in which children and adolescents learn to be aware of their feelings and experience these emotions in a non-judgmental way [10]. In Phase 2 of the current training, all participants received a brief psychoeducation session with attention on awareness which was well-evaluated. Also recent findings emphasize the importance of (emotional) awareness as a necessary basic competence before successfully learning and applying ER strategies [35].

Second, it is also necessary to focus on emotional flexibility. Ideally, children and adolescents should be trained in multiple ER strategies and learn that (1) the specific situation provoking the emotion co-determines the strategy and (2) to evaluate oneself and adapt the strategy if necessary [9].

Finally, as mentioned above, completing homework assignments is crucial to ensure transfer of the learned skills to real-life situations. Both quantity and quality of homework is a predictor of therapy success [36]. However, research shows that persistence and adherence to homework assignments remains an important treatment barrier [33]. To overcome this barrier, this study already used video clips on a smartphone to make the homework assignment more attractive. Nevertheless, we assume that offering a smartphone used in research is a somewhat old-fashioned format and less accessible or attractive than an Mobile App on their own smartphone. [37].

DECLARATIONS

Conflicts of interest statement

We have no conflicts of interest to disclose.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability statement

The data that support the findings of this study are available from the corresponding author, E.B, upon reasonable request.

Ethics approval

This study was approved by the Ethical Committee of the Faculty of Psychology and Educational Sciences, Ghent University.

Consent to participate

Before taking part in the study, all participants gave active assent and their parents filled out informed consent. Specifically for the children and adolescents a version of the assent form was provided using understandable language and the possibility to ask the researchers questions.

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Figure 1.

Procedure of the current study, spread over 7 phases (T1-T7)



Note. VAS=Visual Analogue Scales ER=emotion regulation

Table 1:

Feasibility of the training evaluated by the youngsters

	1		2		3		4		5		Total	
	%	N	%	N	%	N	%	N	%	N	М	SD
1. It was easy for me to come to the training*	6.0	3	2.0	1	18.0	9	30.0	15	44.0	22	4.04	1.12
2. The group size was all right	2.0	1	12.0	6	28.0	14	26.0	13	32.0	16	3.74	1.10
3. The training met my expectations to learn deal with my feelings	8.0	4	8.0	4	44.0	22	24.0	12	16.0	8	3.32	1.10
4. The movie clip about feelings was easy to understand*	6.0	3	6.0	3	22.0	11	32.0	16	34.0	17	3.78	1.15
5. I had to share too much personal information with the trainer*	44.0	22	22.0	11	24.0	12	4.0	2	6.0	3	2.06	1.18
6. The training took too long	12.0	6	18.0	9	34.0	17	16.0	8	2.0	10	3.14	1.28
7. I did not like the trainer from Ghent University*	48.0	24	24.0	12	14.0	7	8.0	4	6.0	3	2.00	1.22

Note. Strongly disagree (1), disagree (2), neutral (3), agree (4), strongly agree (5); *item is feasible or acceptable since ≥60% of participants responded to a) agree or

strongly agree with the positively formulated questions or b) strongly disagree or disagree with the negatively formulated questions.

Table 2:

Overall feasibility of the homework assignment evaluated by the youngsters

	1		2		3		4		5		Total	
	%	N	%	N	%	N	%	N	%	N	М	SD
1. I had the time to complete the homework assignment	1.0	1	6.1	6	18.4	18	17.3	17	57.1	56	4.23	1.02
2. I was motivated to do the homework assignment	11.2	11	14.3	14	26.5	26	19.4	19	28.6	28	3.40	1.34
3. It took too long to do the homework assignment	44.9	44	25.5	25	19.4	19	8.2	8	2.0	2	1.97	1.08
4. The homework assignment was too difficult	45.9	45	21.4	21	24.5	24	3.1	3	5.1	5	2.00	1.40
5. The homework assignment was entertaining	10.2	10	15.3	15	23.5	23	17.3	17	33.7	33	3.49	1.36

Note. Mean feasibility day 1 to 5 for youngsters who filled out the questionnaire (N = 98; $N_{max} = 250$); Strongly disagree (1), disagree (2), neutral (3), agree (4), strongly

agree (5)

Table 3:

Feasibility of the training evaluated by the trainers across training groups

	1		2	3			4		5		То	tal
	%	N	%	N	%	N	%	N	%	N	М	SD
1. The youngsters reacted positively to the training*	0.0	0	0.0	0	27.3	3	73.7	8	0.0	0	3.73	0.47
2. The youngsters reacted positively to the homework assignment	0.0	0	0.0	0	54.5	6	45.5	5	0.0	0	3.45	0.52
3. The youngsters participated well*	0.0	0	18.2	2	9.1	1	72.7	8	0.0	0	3.54	0.82

Note. Strongly disagree (1), disagree (2), neutral (3), agree (4), strongly agree (5); *item is feasible or acceptable since ≥60% of participants responded to a) agree or

strongly agree with the positively formulated questions or b) strongly disagree or disagree with the negatively formulated questions.

Table 4:

Feasibility of the training evaluated by the educators of the treatment center

	1		2		3		4		5		Total	
	%	N	%	N	%	N	%	N	%	N	М	SD
1. I spoke positively about the training to the youngsters*	0.0	0	0.0	0	25	1	50	2	25	1	4.00	.82
2. I encouraged the youngsters to participate	0.0	0	0.0	0	50	2	25	1	25	1	3.75	.96
3. The training required a lot of extra effort	0.0	0	25	1	25	1	25	1	25	1	3.50	1.29
4. I find the emotion regulation training to be an added value*	0.0	0	25	1	0.0	0	50	2	25	1	3.75	1.26

Note. Strongly disagree (1), disagree (2), neutral (3), agree (4), strongly agree (5); *item is feasible or acceptable since ≥60% of participants responded to a) agree or

strongly agree with the positively formulated questions or b) strongly disagree or disagree with the negatively formulated questions.