Journal of Evidence-Based Psychotherapies,
Vol. 26, No. 1, March 2026, 163-190.

10.24193/jebp.2026.1.8

IMPROVING STUDENTS' SELF-ESTEEM WITH AN ONLINE GROUP INTERVENTION BASED ON THE FENNELL MODEL: AN OPEN-LABEL, UNCONTROLLED FEASIBILITY TRIAL

Luana M. Alexa[1]*, *Andrei Rusu*[1]

[1] Department of Psychology, West University of Timișoara, Romania

Abstract

Increasing self-esteem through an online intervention may be essential for students' psychological well-being and academic performance. Based on Melanie Fennell's cognitive model (1997, 2016), this study investigates the feasibility of an online intervention program aimed at improving students' self-esteem. After completing online screening, 33 students (M_{age} = 22 years, SD_{age} = 6.75; 70% females) with low or medium levels of self-esteem participated in this open-label uncontrolled pilot trial. The primary outcome measure was the Rosenberg Self-Esteem Scale (RSE). As part of the intervention program, we utilized psychoeducation and cognitive-behavioral techniques. Furthermore, due to the pandemic context in which the intervention's feasibility was tested, we delivered the intervention online, in working groups. Following this five-week program, participants exhibited higher levels of explicit self-esteem (d = .74) and lower levels of depression and anxiety as secondary outcomes (d = .46 for depression and d = .48 for anxiety). Despite inherent limitations, these results provide initial evidence supporting the feasibility of an online working group intervention aimed at improving students' self-esteem.

Keywords: Self-esteem, Internet-delivered intervention, Anxiety, Depression, Working groups

In the context of personal and professional development, as well as overall life satisfaction, numerous previous studies have emphasized the importance of maintaining a healthy level of self-esteem (Arslan, 2019; Coffey & Warren, 2020; Hawi & Samaha, 2017; Orth & Robins, 2022). This concept has been extensively

* Correspondence concerning this article should be addressed to Luana Alexa, West University of Timișoara, Department of Psychology, Bd. Vasile Pârvan no. 4, Timișoara, 300223, Timiș county, Romania.
Phone number: +40735722069
E-mail: alexa.luana@e-uvt.ro

studied over the years due to its influence on various aspects of life, including academic achievement (Giofrè et al., 2017). Furthermore, Rossi et al. (2020) highlighted how self-esteem can act as a buffer against mental health challenges, such as fear and loneliness. Despite the consistent emphasis on the significance of self-esteem, there is reduced evidence supporting online interventions aimed at enhancing students' self-esteem, particularly in digital learning environments. However, considering both short and longer-term implications, improving students' self-esteem should constantly be on the headline of the scholarly focus.

In the short term, the levels of self-esteem among students play a pivotal role in their academic success (Di Giunta et al., 2013; Keltikangas-Järvinen, 1992; Marsh et al., 2006; Pullmann & Allik, 2008). This aspect is of high actuality, since unfortunately, the percentage of individuals who successfully complete their higher education remains alarmingly low. According to Eurostat (2020), in Romania, only 25% of the 25-34-year-old population has achieved a high level of educational attainment, which falls far short of the EU-level target of 40.5%. Looking at the medium term, self-esteem significantly impacts career decision-making. Research by Javed and Tariq (2016) has shown that higher self-esteem is associated with fewer difficulties in making career decisions. In the long term, multiple previous studies have underscored the impact of self-esteem on mental health (Hiçdurmaz & Karahan, 2017; Sowislo & Orth, 2013; Triana et al., 2019). Additionally, students with higher scores on mental health assessments tend to perform less well academically across various measures (Jeffries & Salzer, 2020). In today's world, it is more important than ever to examine students' self-esteem due to the increased influence of social media and its impact on personal self-concept, especially since the COVID-19 pandemic (Polyakova et al., 2024). Jan et al. (2017) noted that spending just one hour on Facebook daily results in a 5.574-point decrease in an individual's self-esteem score.

Regarding existing interventions for boosting self-esteem, previous research has demonstrated their effectiveness. These interventions include mindfulness-based approaches (Randal et al., 2015), physical activity interventions (Liu et al., 2015), support groups (Adamson et al., 2019), and cognitive-behavioral therapy (CBT) interventions (Kolubinski et al., 2018; Morton et al., 2012; Swartzman et al, 2021). However, the unique challenges posed by the COVID-19 pandemic, such as social isolation and remote work environments, require a more tailored approach. Additionally, pandemic-related effects, such as increased online activity, heightened anxiety, and depressive symptoms (Hu et al., 2022), need specific attention. Therefore, while previous interventions have proven effective, the recent context demands a more customized approach.

In our study, we adopted the framework provided by the Fennell (1997, 2016) model for boosting self-esteem (see Appendix). This model was selected because it targets the cognitive processes that underlie low self-esteem, addressing the mechanisms that sustain negative self-beliefs rather than focusing solely on

clinical symptoms. This process-oriented focus makes the model particularly relevant for our non-clinical population, which exhibits subclinical low self-esteem, depression and anxiety rather than full-blown psychiatric conditions. Notably, applying the Fennell model in a non-clinical population represents a novel extension of its use, as most previous research has focused on clinical samples, and enables preventive as well as enhancement-focused interventions. In addition, having access to the worksheets and exercises from the author's self-help guide was an added advantage, as they facilitated the practical application of the model and offered participants concrete tools for self-reflection and practicing the proposed strategies. While this theoretical approach's efficacy was supported by a systematic review in 2018 (Kolubinski et al., 2018), the evidence was primarily derived from clinical populations.

The Fennell model posits that individuals form negative beliefs and assumptions about themselves and others based on early experiences, which Fennell termed "the bottom line." To protect their psychological well-being, people develop "rules for living" (e.g., "I must be perfect" or "I must be loved by everyone"). However, certain trigger situations challenge or break these rules and activate the "bottom line" (e.g., receiving a low grade or facing rejection). This activation leads to automatic negative beliefs, emotions (e.g., depression, anxiety), and unhelpful behaviors (e.g., avoidance or withdrawal). These emotions and behaviors, in turn, reinforce the negative thoughts, creating a vicious cycle. While this model forms the basis for CBT interventions aimed at improving self-esteem, its efficacy remains limited in many studies (Kolubinski et al., 2018; Taylor & Montgomery, 2007). This limitation may stem from the fact that many CBT interventions primarily target reducing clinical symptoms (e.g., anxiety and depression), with self-esteem improvement considered a secondary outcome (Crisp et al., 2014). Consequently, most research samples consist of clinical patients.

Chandra et al. (2019) emphasized the lack of methods to boost students' self-confidence and demonstrated the efficacy of self-instruction and cognitive restructuring techniques in group support settings. A systematic review by Suh et al. (2019) found no significant differences in outcomes between online and face-to-face delivery modalities in decreasing perfectionism dimensions, depression, and anxiety. Additionally, the shift to online teaching reduced opportunities for first-year students to establish strong relationships with peers and teachers. A recent meta-analysis by Harris and Orth (2020) confirmed the importance of social relationships in influencing self-esteem, leading us to opt for delivering our intervention in working groups.

Given the dearth of interventions designed specifically for students and considering the unique circumstances brought about by the COVID-19 pandemic, we developed an intervention aimed at enhancing students' self-esteem, which can be implemented today thanks to the accessibility provided by the online format. Moreover, Peyton et al. (2022) conclude that the pandemic does not pose a

fundamental threat to the generalizability of results from online experiments to other time periods. The five intervention modules are based on Melanie Fennell's cognitive behavioral techniques and exercises proposed in her self-help guide for improving self-esteem (Fennell, 2016), and were adapted for the online group format.

To assess the feasibility of this intervention, we conducted an open-label uncontrolled trial to measure participants' self-esteem before and after a five-week period during which they participated in one of our online working groups led by a clinical psychologist.

Therefore, we started our study with the following hypothesis:

H1: After the intervention, participants will report a significantly higher level of self-esteem, both (H1a) explicit and (H1b) implicit, compared to the initial assessment.

H2: After the intervention, participants will report significantly lower levels of depressive symptoms, compared to the initial assessment.

H3: After the intervention, participants will report significantly lower levels of anxiety symptoms, compared to the initial assessment.

H4: After the intervention, participants will report a significantly lower level of academic burnout, compared to the initial assessment.

H5: After the intervention, participants will report a significantly higher level of academic self-esteem, compared to the initial assessment.

Method

Study design

Through a one-arm, open-label, uncontrolled study, we assessed the feasibility of an online working group intervention aimed at enhancing students' self-esteem. The primary outcome targeted in the intervention was self-esteem, measured both explicitly and implicitly. Additionally, data on depressive symptoms, anxiety symptoms, academic burnout, and academic self-esteem were collected from students at the beginning and the end of the intervention.

Intervention programme

The group-based intervention was delivered by a clinical psychologist affiliated with the university, ensuring that the program was implemented by a professional with expertise. The five intervention modules were based on Melanie Fennell's cognitive-behavioral techniques and exercises proposed in her self-help guide for improving self-esteem (Fennell, 2016) and were adapted for the online group format. For each module, a detailed session plan was prepared, including exercises, timing, and discussion topics, to guide implementation and ensure

consistency across sessions. Session plans and related worksheets are available in Romanian upon request.

In the initial modules, our emphasis was on psychoeducation regarding the mechanisms involved in forming and maintaining low self-esteem. We introduced Fennell's model (Fennell, 1997; 2016) and provided college-specific examples. For instance, when discussing triggering situations, we referenced scenarios such as peer comparison, receiving low grades, or experiencing romantic rejection. Inspired by the Socratic Questioning method (Beck, 2011), in the online meetings we used open-ended questions to explore students' thoughts and self-value condition. As part of their homework between sessions, students were assigned specific worksheets to help them better understand their own vicious cycles of maintaining low self-esteem.

The concluding modules concentrated on combating self-criticism and fostering self-compassion, primarily through the utilization of the double standard technique (Leahy, 2003). Additionally, to address self-negative thoughts, students were instructed to recognize the negative beliefs underlying their conditions of worth, reassess them, and present new evidence supporting more adaptive beliefs (cognitive restructuring) using specific worksheets. All of these materials have been translated into Romanian from Melanie Fennell's guide (2016) and can be made available upon request.

A more detailed overview of the intervention is provided in the Appendix.

Participants and procedure

Following Billingham et al. (2013) recommendations, we estimated an initial sample size of 25 for adequate statistical power ($1\text{-}\beta = 0.80$) in performed paired samples t-tests for a moderate effect size ($d = 0.50$).

An email sent to all first-year students through the institutional address by the Career Counseling and Guidance Centre of the West University of Timișoara invited them to enroll in an online self-esteem-boosting program, by completing a Google forms with a force response setting activated in order to prevent missing data, resulting in 119 participants. After the registration period, the next step was to select participants for the online intervention. Following the data analysis of the initial screening, 65 students were invited to join one of the working groups, while the other 54 were invited to individual counseling sessions.

Participants' selection was based on the following eligibility criteria: low or moderate levels of self-esteem (i.e., scores <35 on the Rosenberg Self-Esteem Scale, RSES; Rosenberg, 1965) and low to moderate levels of depression and anxiety (i.e., scores <15 on the Patient Health Questionnaire 9, PHQ9; Kroenke et al., 2001, and scores <15 on the GAD-7; Spitzer et al., 2006). Students who did not meet these inclusion criteria (those with high self-esteem scores (ceiling effect) or clinical levels of depression or anxiety) were excluded from the group intervention. For ethical reasons, excluded students were not left without support. They were referred to

individual counseling services, where they could receive appropriate psychological assistance tailored to their needs. This measure ensured that all students had access to adequate care, even if they were not eligible for participation in the feasibility study.

Although initially, there were 65 eligible students, 32 dropped out of the program immediately after screening (they did not log in to any session), resulting in a final sample of 33 first-year students (M_{age} = 21.61, SD_{age} = 6.75, 70% females), distributed among 4 working groups, with a maximum of 9 participants in each. Figure 1 illustrates the flow of participants through the study.

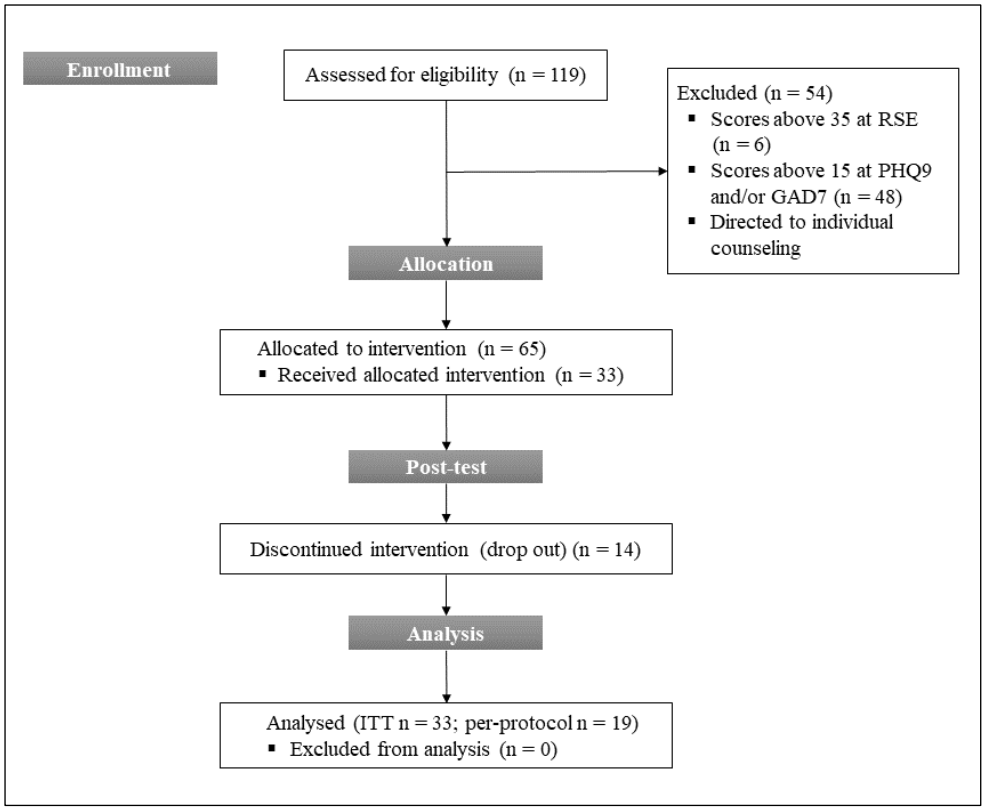

Figure 1. The flow of participants through the study

There was a weekly meeting with each working group for 1 hour and a half using the Zoom platform. The same psychologist coordinated all working groups to ensure delivery integrity for the intervention. At the end of the five weeks, 19 (42% dropout rate) participants completed the final set of questionnaires (post-test). The intervention program is described in Appendix.

Measures

Previous studies that used Fennell's model to tailor their intervention measured three primary psychological outcomes: self-esteem, depression, and anxiety (Brown et al., 2004; Rigby & Waite, 2006; Horrell et al., 2014; Pack & Condren, 2014; Beattie & Beattie, 2018; Berg et al., 2022).

Given the specificity of our sample, we also considered the three above-mentioned psychological outcomes, as well as academic self-esteem and academic burnout. Moreover, to our knowledge, no previous study that relies on Fennell's model considered implicit self-esteem as an outcome of the program. Given all these, we chose to include in our study the following scales:

Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) was used to measure explicit self-esteem. This scale was culturally adapted on the Romanian population, being part of the Clinical Assessment System instrument (David, 2020), and it is widely used on Romanian samples with optimal psychometric properties. The instrument contains ten items to which participants respond on a scale from 1 (total disagreement) to 4 (total agreement). A higher score represents a higher level of self-esteem. For this study, the scale had good internal consistency, Cronbach's $\alpha = .80$ pre-test and .86 post-test.

Name Letter Test (Nuttin, 1987) was used to measure implicit self-esteem. The test involves calculating the difference between the assessed attractiveness of a person's initials and the attractiveness of the same letters evaluated by others whose names do not contain those letters (Albers et al., 2009). The NLT had proper psychometric indices in previous studies conducted on Romanian undergraduate students, including an investigation in relation to rationality (Sava et al., 2011). On the sample of this study, the internal consistency was excellent, with Cronbach's $\alpha = .95$. pre-test and .97 post-test.

General Anxiety Disorder Scale - 7 (GAD7; Spitzer et al., 2006) was used to measure anxiety symptoms. The scale was validated for the Romanian population (Cotiga et al., 2023), as also successfully used in previous studies testing internet interventions for the local population (e.g., Isbășoiu et al., 2021). The instrument contains seven items to which participants respond on a scale from 0 (not at all) to 3 (nearly every day). A higher score represents an increased level of anxiety symptoms. On the sample of this study, the scale had acceptable internal consistency, with Cronbach's $\alpha = .72$ pretest and .77 post-test.

Patient Health Questionnaire Scale – 9 (PHQ9; Kroenke et al., 2001) was used to measure the severity of depressive symptoms. The scale was previously adapted to Romanian Type 2 Diabetes patients (Lupascu et al., 2019) and was also successfully used in previous studies on internet interventions with Romanian participants (e.g., Isbășoiu et al., 2021). The instrument contains nine items to which participants respond on a scale from 0 (not at all) to 3 (nearly every day), each

corresponding to a diagnostic criterion from DSM-IV. A higher score represents an increased level of depressive symptoms. On the sample of this study, the scale had poor internal consistency, Cronbach's α = .36 pre-test and .61 post-test.

Maslach Burnout Inventory-Student Survey (MBI-SS; Schaufeli et al., 2002) is a 16-item scale for measuring academic burnout. The instrument was previously used on Romanian undergraduate students, exhibiting proper psychometric properties (Paloș et al., 2019). Participants respond on a scale 7 points Likert scale, from 0 (never) to 6 (every day), measuring three dimensions of academic burnout, namely exhaustion (α = .76 pre-test and .90 post-test for this study), cynicism (α = .64 pre-test and .88 post-test for this study) and reduced efficacy (α = .78 pre-test and .89 post-test for this study).

Bachman's School Ability Self-Concept Index (Bachman, 1970) was used to measure specific (academic) self-esteem and consists of participants' answers to 3 questions. For the first two (*„How do you rate yourself in school ability compared with your peers?"* and "*How intelligent do you think you are compared to others your age?"*), participants answered on a 6-step Likert scale, where 1 = far below average and 6 = far above average. For the 3rd question (*„Compared to others your age, how important is it to you to be able to use your intelligence?"*), participants answered on a 5-step Likert scale, where 1 = much less important than average and 5 = much more important than average. A similar way of measuring specific self-esteem has been used by Rosenberg et al., (1995). Since this instrument was not already translated into Romanian, we used the standard back-translation approach to obtain the Romanian version of its items. In the present study, we had to eliminate item 3 to increase the scale's internal consistency (from .50 to .94). Thus, for the remaining two items, the scale had good/excellent internal consistency, Cronbach's α = .79 pre-test and .94 post-test.

Descriptive therapeutic factors. Given that the intervention was delivered in working groups, we considered it relevant to have an overview of particular factors that may improve personal indices in addition to the actual exercises of the intervention. Yalom and Leszcz (2005) point out the presence of 11 primary factors that facilitate the therapeutic process, namely: instillation of hope, universality, imparting information, altruism, the corrective recapitulation of the primary family group, development of socializing techniques, imitative behavior, interpersonal learning, group cohesiveness, catharsis, and existential factors. However, assuming the working group approach, not the psychotherapeutic one, the presence of some of these 11 factors could not be possible (e.g., corrective recapitulation of the primary family group). Thus, starting from a Q-sort with 60 items used to highlight the most relevant therapeutic factors used by the authors mentioned above (Yalom & Leszcz, 2005), we selected six items pertinent to the present study, each highlighting a factor (in the original research, each factor corresponds to 5 items, and the factor development of socialization techniques is divided into 2, resulting in 12 categories for Q-sort). These were *group cohesiveness* (belonging to and being accepted by a

group), *universality* (learning I am not the only one with my type of problem; "We are all in the same boat"), *guidance* (group members suggesting or advising something for me to do), *catharsis* (getting things off my chest), *self-understanding* (find out some causes and sources of my problems), *inoculating hope* (see how others solve problems similar to mine). In addition, we added three more items, each corresponding to some of the most used methods of intervention in the therapeutic process: *psychoeducation* (theoretical aspects presented during the meetings), *homework* (work materials between meetings), and *therapeutic relationship* (attitude of the group coordinator). For each of these nine factors, students had to rate from 1 to 5 the degree to which that factor contributed to the perceived increase in self-esteem (where 1 = did not contribute at all, and 5 = contributed a lot). Since this is not a validated instrument, we developed and used it only for a descriptive purpose.

System Usability Scale (SUS; Brooke, 1996) is a 10-item scale that provides an overview of subjective usability evaluations, used in this case to evaluate the Zoom platform, on a 5-step Likert scale (where 1 = strongly disagree and 5 = strongly agree). On the sample of this study, the scale shows good internal consistency, with Cronbach's $\alpha = .89$. It was previously used in a feasibility study for an internet intervention delivered to Romanian participants (Bodnaru et al., 2023). For this scale, the raw scores have to be standardized as follows: for odd items, 1 has to be extracted from the raw score, and for even ones, the raw score has to be extracted from number 5. The total score, multiplied by 2, has to be reported to 100 (Lewis, 2018). Values between 0 and 64 show that the platform used is unacceptable to users, values between 65 and 84 reflect the acceptance of the system by users, and values between 85 and 100 mean that users perceive the system/platform used as excellent (McLellan et al., 2012).

Finally, we asked our participants to rate on a 5-point scale their satisfaction with the program, the quality of information, and the pace of the intervention, where 1 stands for very unhappy/poor/slow and 5 for very satisfied/good/long.

Data analysis

The statistical analysis included data from 33 participants involved in at least one meeting. Given the large number of withdrawn participants (14 out of 33), we used both *per-protocol (PP)* and *intent-to-treat (ITT)* analyses. The ITT principle means that all participants are included in the final analysis, regardless of their path to the intervention. The missing data of those who withdrew are supplemented based on the *last observation carried forward (LOCF)* principle, assuming that outcomes from withdrawn participants did not change from the last observation until the end of treatment. Onte-tailed paired sample t-tests were used to analyze pre- to post-intervention changes for all outcomes.

Ethics and approval

The University Ethics Committee approved the study (57758/10.11.2020) before its initiation. The study was pre-registered in the ClinicalTrials.gov PRS (NCT04668287).

Results

Dropout

A total of 33 participants registered at least once in a working group session. Of these, 19 completed the final set of questionnaires, resulting in a 42% dropping rate. We compared the baseline data of those who finished the intervention with those who dropped out. The only significant difference between the two groups was for gender. In the completers group, 53% were females, compared with the dropouts, where 93% were females (see Table 1, for all baseline comparisons). No additional data or feedback was obtained from the 14 participants who did not complete the final set of questionnaires.

Table 1. Sample characteristics

Variable	Total ($N = 33$)	Comparison between completers ($N = 19$) and dropouts ($N = 14$)
Age *M(SD)*	21.61 (6.75)	t (16) = -1.050, p = .155
Gender (%)	70 % females	$\chi 2$ (1, 33) = 6.17, p = .013
Explicit self-esteem *M(SD)*	25.69 (4.30)	t (31) = -.505, p = .308
Implicit self-esteem *M(SD)*	0.30 (2.11)	t (31) = -.137, p = .446
Depression *M(SD)*	08.03 (2.89)	t (31) = .899, p = .187
Anxiety *M(SD)*	08.12 (3.69)	t (31) = .253, p = .401
Exhaustion *M(SD)*	10.24 (5.56)	t (31) = 1.038, p = .153
Cynicism *M(SD)*	09.09 (5.02)	t (31) = .645, p = .262
Inefficiency *M(SD)*	10.87 (6.73)	t (31) = .849, p = .201
Academic self-esteem *M(SD)*	10.66 (2.34)	t (31) = .269, p = .395

Outcomes

Following the intervention, participants reported a significantly higher level of explicit self-esteem (H1a) t (18) = -3.14, p = .003, with a medium to large effect size (d = .74). Although there were no significant results for implicit self-esteem (H1b): t (18) = -1.56, p = .067, d = .29 (the result is marginally significant). Thus, Hypothesis 1 was partially supported by the data.

Hypothesis 2 was supported by the results. Following the intervention, participants reported significantly lower levels of depressive symptoms: t (18) = 2.20, p = 0.02, with a small to moderate effect size (d = .46). Similarly, Hypothesis

3 was also supported by the statistical analysis. Following the intervention, participants reported significantly lower levels of anxiety symptoms, the results being as follows: t (18) = 2.15, p = .022 with a small to moderate effect size (d = .48).

Hypothesis 4 was not supported by the data, the level of burnout felt by participants was not reduced by the course of the intervention. Non-significant results were obtained on all three dimensions of burnout (exhaustion: t (18) = .186, p = .427, d = .04; cynicism: t (18) = -.774, p = .224, d = -.16 and inefficiency: t (18) = .346, p = .367, d = .07).

Results did not support Hypothesis 5 either. After the intervention, students did not report higher levels of academic self-esteem (t (18) = -0.741. p = .234, d = .16).

For subjective evaluations of Zoom platform usability, a score of 74.86 was obtained (N = 19, M = 74.86, SD = 22.66) using the formula presented in the methodology. This means the participants evaluated the Zoom platform that was used as acceptable and satisfactory.

Table 2. Paired sample T-test results (one-tailed) from *PP* analysis

	Pre-test		Post-test				
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
Explicit self-esteem	25.36	4.89	28.31	5.17	-3.14	.003	.74
Implicit self-esteem	0.26	2.29	1.33	1.35	-1.56	.067	.29
Depression	08.42	3.20	06.36	3.96	2.20	.020	.46
Anxiety	08.26	3.60	06.10	3.84	2.15	.022	.48
Exhaustion	11.10	6.22	10.89	7.01	0.18	.427	.04
Cynicism	09.57	5.28	10.73	7.94	-0.77	.224	-.16
Inefficiency	11.73	7.17	11.10	8.39	0.34	.367	.07
Academic self-esteem	11.00	2.72	11.57	2.52	-0.74	.234	.16

N = 19

Table 3. Paired sample T-test results (one-tailed) from *ITT* analysis

	Pre-test		Post-test				
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
Explicit self-esteem	25.69	4.30	27.39	4.60	-2.86	.003	.51
Implicit self-esteem	0.30	2.11	0.92	1.66	-1.54	.066	.30
Depression	08.03	2.89	06.84	3.40	2.11	.021	.29
Anxiety	08.12	3.69	06.87	3.93	2.07	.023	.35
Exhaustion	10.24	5.56	10.12	6.05	0.18	.426	.03
Cynicism	09.09	5.02	09.75	6.78	-0.78	.220	-.12
Inefficiency	10.87	6.73	10.51	7.45	0.34	.364	.05
Academic self-esteem	10.66	2.34	11.00	2.27	-0.74	.231	.12

N = 33

For each therapeutic factor, the average score was calculated. An average close to the maximum value (5) means that students have perceived this factor as contributing to increased self-esteem. We list them in order of their perceived importance: therapeutic relationship ($M = 4.79$, $SD = 0.14$), self-understanding ($M = 4.68$, $SD = 0.17$), group cohesiveness ($M = 4.3$, $SD = 0.23$), inoculating hope ($M = 4.37$, $SD = 0.23$), catharsis ($M = 4.32$, $SD = 0.24$), universality ($M = 4.32$, $SD = 0.24$), psychoeducation ($M = 4.16$, $SD = 0.19$), homework ($M = 3.84$, $SD = 0.20$), and guidance ($M = 2.89$, $SD = 0.32$).

Table 4. Descriptive statistics for participants' ratings of the therapeutic factors

	M	*SD*
Therapeutic relationship	4.79	0.14
Self-understanding	4.68	0.17
Group cohesiveness	4.37	0.23
Inoculating hope	4.37	0.23
Catharsis	4.32	0.24
Universality	4.32	0.24
Psychoeducation	4.16	0.19
Homework	3.84	0.20
Guidance	2.89	0.32

As for general opinions about the intervention, 63% of students declared very satisfied, and 37% were satisfied with the program. 74% evaluated the quality of information as very good and 26% good. The pace was perceived as problematic: 70% declared the program short/too short, while only 30% perceived the tempo as adequate.

Discussion

This study aimed to investigate the feasibility of an online intervention designed to enhance students' self-esteem, based on the Fennell model. The results demonstrate the potential of this intervention, as students reported significantly higher levels of explicit self-esteem. This suggests that the model is suitable even for non-patients, confirming the promising findings previously reported in the literature (Kolubinski et al., 2018). Following our five-week program, students reported increased explicit self-esteem and reduced levels of depression and anxiety. However, there was no statistically significant result for implicit self-esteem (only marginally). This may be because the therapeutic techniques used in the intervention primarily impact explicit cognitions and, to a lesser extent, the implicit ones. Similarly, Sava et al. (2011) found no significant relationship between implicit self-esteem and irrational beliefs, suggesting that the classical CBT technique of identifying and disputing irrational beliefs may not be suitable for boosting implicit

self-esteem. In this case, cognitive training techniques or other types of approaches directly targeting implicit self-attitudes might be more efficient. Also, as the authors further suggested, implicit self-esteem might actually play a moderating role (in our case) for the efficacy of the intervention (i.e., initial low levels of implicit self-esteem being a factor of vulnerability; Sava et al., 2011). Hence, in future randomized controlled trials focused on the efficacy of the current intervention, we could also investigate this hypothesis.

These results can be further explained by the dual process theory (Chaiken & Trope, 1999), which has been extended to neural systems (Satpute & Lieberman, 2006). According to this theory, we process information in two distinct ways: consciously and deliberately (through the reflective system) and automatically (through the reflexive system). Thus, interventions targeting explicit aspects may not necessarily affect implicit, automatic attitudes. Additionally, a meta-analysis by Krizan and Suls (2008) revealed a small association between explicit and implicit self-esteem ($r = .11$), which aligns with this theory.

However, we want to also highlight the risk of type II error regarding implicit self-esteem results (since the effect was marginally significant). First of all, the initial sample size estimation was computed for a moderate effect size. However, the obtained effect on this outcome was small (PP $d = .29$; ITT $d = .30$). Combined with the high dropout rate (for the PP analysis), this suggests the sample might have been underpowered for detecting the effect of the intervention on implicit self-esteem. Second of all, 2 participants from the final sample of 19 (and an additional one from the 14 who dropped out) had identical NLT scores at pre and post-test. Because there were no objective indications of outliers, we decided to keep them in data analysis to avoid distorting the results. However, running an additional analysis for this outcome without the 2 mentioned participants results in improving the *p*-value from .067 to .060, which is closer to the cut-off of .050. Moreover, as Hoorens (2014) revealed, the validity and reliability of the competing algorithms for estimating the name-letter effect is still a topic of discussion. Thus, the type of score might also have an impact on the obtained result. Hence, the result of implicit self-esteem should be interpreted with caution.

Our intervention was designed as an online group program, particularly given the pandemic context. In line with other group interventions aimed at emotional distress (Koutra et al., 2010), we achieved significant results in reducing anxiety and depression symptoms.

The decrease in depressive symptoms may be explained by the vulnerability model (Beck, 1967) which suggests that negative self-evaluation is a causal risk factor for depression. Therefore, increasing self-esteem reduces depressive symptoms. However, it is challenging to pinpoint whether the reduction in symptoms is solely due to increased self-esteem (Sowislo & Orth, 2013), the group format, or other factors. When asked about the most helpful aspects of the program, our participants emphasized their relationship with the coordinator and gaining a deeper

understanding of themselves. These findings align with the classic perspective on therapeutic alliances, which are considered a factor for change in relational therapy or a necessary but not sufficient condition in classical cognitive approaches. Strong alliances have consistently been associated with positive outcomes across various psychotherapeutic approaches, as evidenced by recent meta-analyses (Flückiger et al., 2018; Baier et al., 2020). Self-understanding was another critical aspect for our participants, which is also a fundamental therapeutic factor often emphasized in group therapy (Behenck et al., 2016; Lovett & Lovett, 1991).

Another secondary outcome examined in this study was academic burnout. Although prior research has shown a negative association between overall self-esteem and burnout (Kupcewicz & Jóźwik, 2020), we did not find significant results in the present study. Additionally, the statistical analysis did not support our expected results regarding specific (academic) self-esteem. This discrepancy could be attributed to the timing of the post-test data collection, which occurred just before the exam session. According to Serebrennikova and Makarov (2019), emotional burnout indicators tend to be higher one month before the examination session, with the highest levels immediately before this stressful period. Furthermore, our sample consisted of first-year undergraduates, and the novelty of the evaluation itself could have represented an additional potential source of stress.

Regarding general feedback on our intervention, students expressed high satisfaction with the program, and the quality of information provided was generally well-received. On the 5-point Likert scale, 15 students indicated that they were "very satisfied with the program" (option 5), while 8 students selected the fourth level, indicating that they were "satisfied with the program". Probably, the helpful aspects mentioned above (the relationship with the coordinator and gaining a deeper self-understanding), contributed to the overall satisfaction with the program. At the same time, some students noted that the program pace felt somewhat short, suggesting that while the content and support were appreciated, the duration of the intervention may need adjustment in future implementations. It is important to note that no qualitative data were collected beyond the Likert-scale ratings, which limits a more in-depth understanding of participants' experiences.

Although the feasibility of the intervention was tested in the specific context of the pandemic, low self-esteem among students continues to represent a significant issue, often co-occurring with symptoms of anxiety and depression (Cao & Liu, 2024). Therefore, the results of this study remain transferable to the current post-pandemic context. Moreover, the strategies employed, such as group counselling and cognitive restructuring techniques, retain their relevance in supporting students' well-being (Setiyowati et al., 2023). The skills fostered through the intervention, including the ability to manage anxious thoughts and to replace self-criticism with a more compassionate perspective, represent valuable resources for students' mental health. Overall, we truly consider that the intervention holds potential for supporting students' mental health in the post-pandemic context as well.

Limitations and future directions

The current study was an open-label, uncontrolled trial without follow-up measures. While this study suggests the promise of our proposed intervention, it must undergo randomized controlled trials to draw inferences about its efficacy. The absence of a control group impedes us from concluding that the changes in students' levels of explicit self-esteem, anxiety, and depression are caused by our intervention and not by other confounding variables, such as positive life events (e.g. new friends), faculty accommodation or passing hard partial exams. Hence, since through our study we found initial evidence for the feasibility of the intervention, future research should focus on testing its efficacy and effectiveness based on randomized controlled trial methodologies.

In addition to the study's inherent limitations, another concern is the dropout rate, which stood at 42%. It's worth noting that dropout rates are a common phenomenon in clinical interventions, particularly those delivered over the Internet. Melville et al. (2010) reported a mean dropout rate of 31%, influenced by various factors such as participants' initial expectations, psychological conditions, and treatment specifics, among others. Our data suggest a single difference between those who stayed and those who dropped: gender. This could result as a statistical artifact since there was an initial discrepancy in our sample distribution (70% females vs. 30% male), hence the higher probability of having more female than male dropouts. We also consider the pandemic context as a potential contributor to this rate. During the intervention period, all university courses were conducted online, which might have led some students to experience fatigue with excessive screen time. Indeed, this intervention should be tested in a context outside of social isolation. The online format primarily serves as a convenient means of connecting students from different faculties and universities. Moreover, since 70% of the students found the intervention to be too short, we recommend increasing the number of sessions to at least seven.

Also a limitation of this study is that the data was collected during the COVID-19 pandemic. We could not anticipate how the health status of participants and their loved ones might have affected our data, especially in terms of anxiety and depression rates. Furthermore, the economic impact of the pandemic, such as potential job loss or financial insecurity within their families, may have influenced participants' responses and behaviors. Therefore, we suggest assessing the practicality of this online intervention in the current, non-pandemic context.

Conclusions

The presented results suggest that our proposed intervention for improving self-esteem is feasible and well-received by university students. The program can be

further refined and implemented to enhance its impact on self-esteem and mental health, including the reduction of symptoms of depression and anxiety. With additional testing and development, this program has the potential to become an integral component of university counseling services.

Authors' Notes

Luana M. Alexa https://orcid.org/0009-0000-2731-0955
Andrei Rusu https://orcid.org/0000-0003-0036-4149

Funding: The work of Luana M. Alexa was supported by an internal grant from the Faculty of Sociology and Psychology (West University of Timișoara), no. 15636/15.03.2022. The work of Andrei Rusu was supported by funding from the NO Grants 2014-2021, under project contract no. 17⁄2020.

Acknowledgment. The authors declare there are no potential conflicts of interest associated with this publication.

Data availability. The data and all materials (e.g., presentations for participants, working sheets in Romanian) used in the program are available on request from the corresponding author.

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Appendix – Overview of the intervention

The intervention was designed for students based on Melanie Fennell's model and guide[1]. The main themes were discussed during five weekly meeting sessions with the students who passed the screening phase. There were four working groups, and each student was assigned to one depending on their academic schedule and preferences. All materials (PowerPoint presentations, working sheets) were translated into Romanian language. In addition, they were sent via e-mail weekly to those who were not present at one of the meetings.

Session 1

All first sessions began with the coordinator introducing herself and the program. Next, all participants were invited to introduce themself and tell more about their hopes and fears about the intervention. In addition, the group's rules were discussed, such as confidentiality, turning on the camera, having a notebook or something to write on, and whatever request was made by one participant or another.

After the introduction phase, the coordinator clarified the concept of "self-esteem" and pointed out some differences between this concept and similar others, such as "self-image," "self-concept," "self-confidence," and "self-efficacy."

Next, the coordinator presented the red flags that show low self-esteem, such as self-criticism, self-blame, and self-doubts, and what it means to have healthy self-esteem (a fundamental acceptance of who you are, with strengths and weaknesses).

Students were invited to participate in a game to balance the theoretical part with a more interactive and emotional one[2]. Each participant was asked to take a 10 or 50 lei bill (about 2 or 10 euros), fold it several times, and then unfold it. The coordinator pointed out that, as the bill, no matter how many imperfections someone has, the personal value remains the same. This metaphorical exercise was meant to show that unique value doesn't change, no matter how many spots a person has. For debriefing, every student shared their thoughts and feelings about the exercise and the now-and-here moment.

Next, the coordinator linked the ending of the first session with the second one by giving homework in which students should write down their negative beliefs about themselves.

[1] Fennell, M. (2016). *Overcoming low self-esteem: A self-help guide using cognitive behavioral techniques*. Hachette UK.

[2] Belmont, J. A. (2016). *103 activități de grup. Idei de tratament și strategii practice*. TREI: 159-160

Session 2

Session 2 began with a discussion about the negative beliefs previously identified by students, followed by the coordinator's explications of the CBT model.

From a list, students were asked to choose and note those early or late experiences that could have shaped how they see themselves and their beliefs about the self (such as high expectations, bullying, toxic relationships, etc.). Every student had the chance to share their experiences, thus facilitating normalization and cohesion of the group.

After a recap of the CBT model, the coordinator presented biases in thinking and how human beings tend to perceive only the information confirming their beliefs.

Ultimately, the coordinator presented what "rules of life" mean from Fannell's model and how they work. The main aim of the second meeting was to make students understand how low self-esteem develops and what rules they must follow to feel good about themselves (to be perfect, to be pleasant for everyone, to have absolute control over themselves, etc.) based on Fannell's model. Like the previous session, students received homework to note their own living rules, which must be respected to feel good about themselves.

The following scheme might resume all the theoretical parts explained in the second session:

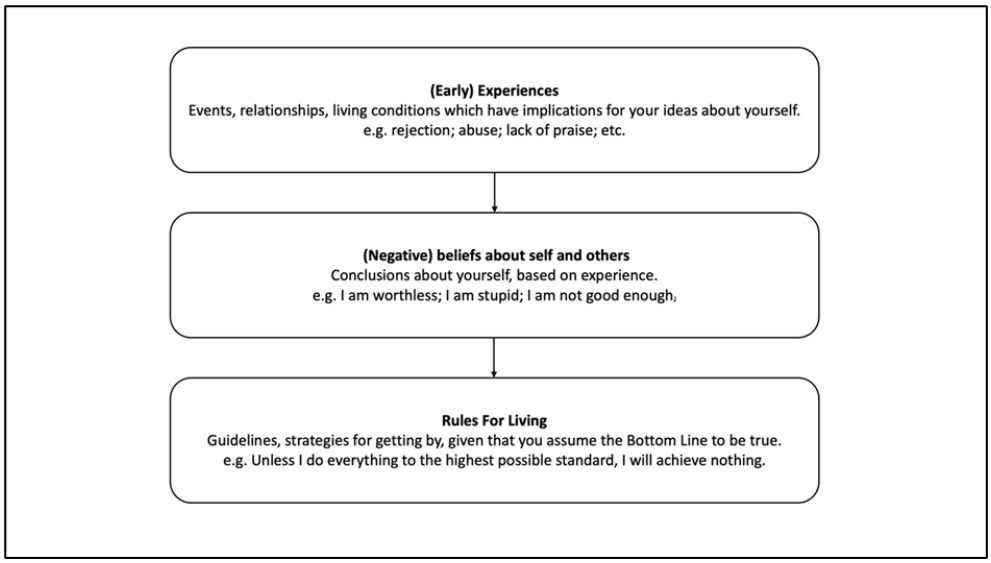

Figure 1. How a low self-esteem develops based on Melanie Fennell's model

The original name of the second box, "The Bottom Line" was replaced with the meaning of it („beliefs about self and others") due to a lack of proper translation into Romanian.

Session 3

The third meeting focused on understanding how low self-esteem is being maintained, resumed by the following scheme, which was explained to students step by step.

First, the coordinator presented trigger situations and invited participants, based on their identified rules for living, to think about those moments in which rules might be broken. Next, the students were taught about the CBT model of anxiety. They were asked to reflect, note, and discuss their unhelpful behavior, such as avoidance, success minimization, unnecessary precautions, etc.

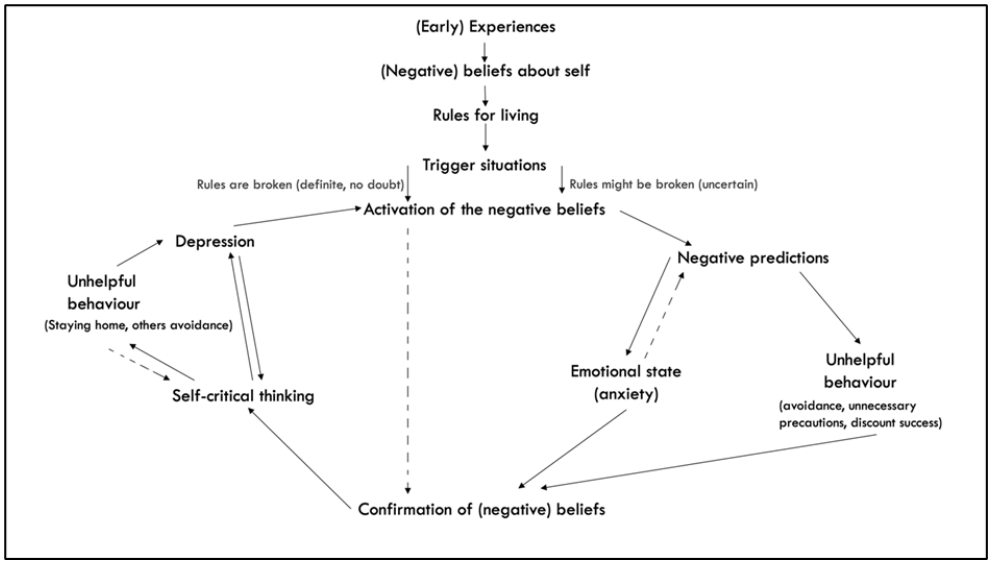

Figure 2. Melanie Fennell' cognitive model of low self-esteem

After that, the coordinator explained the other situation, in which the rules are certainly broken, a case in which negative beliefs are confirmed, and self-critical thoughts are activated. Consequently, negative feelings like sadness and hopelessness appear.

For homework, students were asked to map their vicious circle using a worksheet similar to Figure 2, plus blank boxes to write in.

Session 4

Session four started with checking homework and explaining to each student their vicious circle, followed by additional clarifications in case of unclear information.

Next, the coordinator pointed out that all participants have to break their vicious circle in two points (negative predictions and self-critical thinking), one for each situation (if rules for living might be broken or the rules are certainly broken). To achieve that, students were told about three steps to follow: *to be aware*, *to rethink,* and *to experience.*

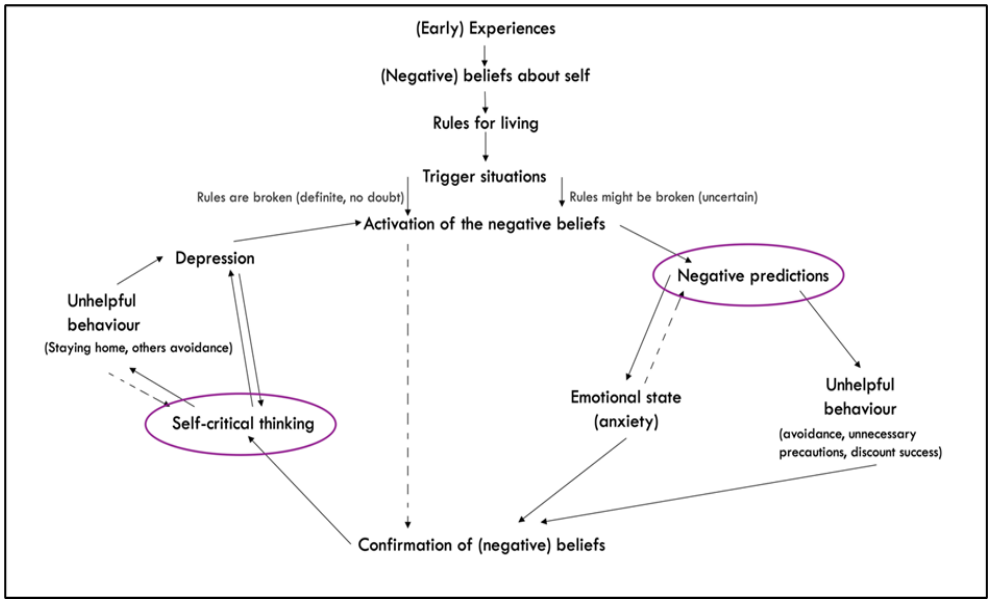

Figure 3. Points of action for breaking the vicious circle

To facilitate cognitive restructuring, students received worksheets based on those from Fannell's guide, one for anxious situations and one for self-critical situations. On the first page of each worksheet, there is table that guided them to record the context, emotions and bodily sensations, related thoughts, their intensity, and the behaviors that followed (awareness stage). Afterwards, for each situation (negative predictions or self-criticism), participants were introduced to a set of key questions meant to help them find alternatives to their initial thoughts. These questions were presented on the second page of the worksheets.

On page three, the focus shifted to the rethink stage. For anxious predictions, students recorded the situation and emotions, rated the credibility of their initial thoughts, and then generated alternative perspectives using the key questions. They

also planned small experiments to test these new perspectives and reflected on what they did differently, what the outcomes were, and what they had learned.

For self-criticism, the page guided participants to reconsider the strength of their self-critical thoughts, explore alternative perspectives, and assess how strongly they believed in them. They then reflected on the results: how they felt after seeing alternatives, how strongly they still believed in the critical thoughts, and what concrete actions or experiments they could try.

These worksheets were also offered as homework, giving participants the opportunity to practice the rethink process in real-life situations throughout the following week.

Session 5

The last meeting started with checking each student's worksheets and sharing the previous week's opinions, thoughts, and experiences. As in session 4, there were pointed ways and questions for themselves to make rules for living more flexibly and restructuring irrational thoughts about using CBT-specific techniques.

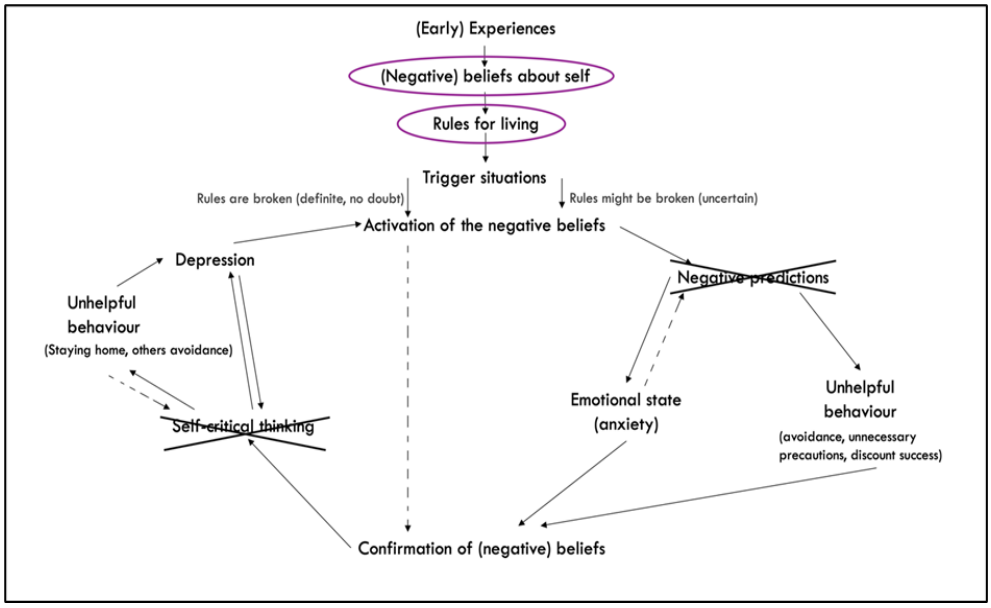

Figure 4. The main themes discussed in the last session of the intervention

After the theoretical part, students were invited to reflect on their own experiences in the group during the last five weeks and share with others the most relevant things they learned in the time they spent together. This reflective exercise not only reinforced learning but also provided an opportunity to consolidate

progress, recognize individual achievements, and highlight strategies they could continue to use beyond the sessions. The activity took up more than half of the session, giving each participant sufficient time and space to share their personal reflections, express their thoughts, and receive feedback from peers. This allowed for meaningful discussion, ensured that all voices were heard, and fostered a sense of closure and mutual support within the group.