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Game-Based Assessment of Emotion Regulation Abilities in College Students. A Usability Study of the *REThink* Life Game Assessment System

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ABSTRACT

Even though it is well known that emotion regulation skills play a crucial role in mental health outcomes, researchers are still developing and testing new interventions for training those emotion regulation abilities in line with the latest technologies. The *REThink* Life Game is such an intervention, it is a standalone online therapeutic game developed to train emotion regulation abilities in college students, within its four levels, and it also has an embedded assessment system. The aim of the present study was to examine the usability of the assessment system of the *REThink* Life Game in college student population. In this vein, we used the Serious Game Evaluation Scale that was completed by 208 first year college students that played the assessment system of the game. Overall, our results show that the assessment system of the *REThink* Life therapeutic online game has good usability, and can be used to evaluate emotion regulation abilities in college students.

KEYWORDS

Game-based assessment; emotion-regulation; college students

1. Introduction

Emotion regulation abilities are of major importance for the mental health outcomes of individuals (Kraiss et al., 2020). Having proper emotion regulation abilities serves as a protective factor for developing mental health problems, especially emotional problems (such as anxiety, depression), and helps individuals better cope with difficult situations, and adopt healthy coping strategies (Gross & Muñoz, 1995; Mortazavizadeh & Forstmeier, 2018). These emotion regulation abilities can be developed and trained across lifespan, but there are certain periods when healthy emotion regulation strategies are required in order to overcome challenges and succeed (Gross & Muñoz, 1995). One such a period is college student lifetime. During the academic years, college students experience many challenges and their mental strength is most needed. Student population experiences a high prevalence of mental health issues, such as depression, anxiety and stress (Ballester et al., 2022; Torres Lancheros et al., 2023). These emotional disorders influence their academic performance, and also can make them prone to engage in unhealthy coping mechanisms, such as substance and alcohol use, risky behaviors (Sheldon et al., 2021).

The academic environment offers students both opportunities and stressors; the pressure of succeeding in their endeavors, the transition to adulthood, financial aspects and social interactions are among the most frequent stressors

(Cage et al., 2021; Póka & Barta, 2024). Hence, assessment, monitoring and intervention in terms of mental health support are essential in order to help them better cope with all stressors. There are already successful psychological interventions for this category of population, but the rate of engagement is still low (Bantjes et al., 2023). In our technology-driven society, digital tools for assessment and intervention in mental health are needed. These tools can help students enhance their mental health in a fun and appropriate way, in accordance with their interests and lifestyle, while reducing stigma related to mental health (Oliveira et al., 2021). There are already digital tools that were developed and tested for this population, such as mobile apps (David & David, 2019; Tomoiagă et al., 2024), and online programs, and their results are promising (Jadhakhan et al., 2022).

Recently, from the online therapeutic interventions categories, game-based therapeutic interventions became more popular. Therapeutic games are instruments developed to accommodate especially youth's interests and to be more suited to their environment, and life in general (Chan & Honey, 2022; Cheng & Ebrahimi, 2023). There are several therapeutic games that were tested in young adults/student population (see McGinnis et al., 2022), and results showed significant improvements after the use of the therapeutic

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game, in terms of distress and irrational beliefs (Tomoiagă & David, 2022).

Besides the effectiveness of the online interventions, a major concern is the engagement rate of students in these interventions. Even though we have successful and effective interventions, the engagement rate is still low, the dropout high, and the percent of students that need help and actually access it is very low (Cage et al., 2021). One way to overcome this, is to develop interventions that the targeted population consider to be interesting and suited to their needs and interests. Assessing usability of the digital tools developed based on research is essential for both scalability of that intervention, and also for the effectiveness. In the most recent systematic review (Oliveira et al., 2021) on psychological mobile apps for mental health, from 19 included studies, only six evaluated their usability using proper scales. In the same review, researchers argue about the high attrition rate (up to 50%) despite the fact that students received rewards for the completion (Oliveira et al., 2021). These results underline the importance of not only developing effective digital technologies for assessment and intervention, but also to assess its usability and adjust them in order to be suited to students' needs and increase the response rate and reduce attrition. Moreover, since, statistics show that 91% of young people play computer games (David et al., 2020), game-based intervention seem to be a promising solution to overcome the attrition and dropout problem of digital interventions.

The *REThink Life Game* is a 3D online therapeutic game designed to train emotion-regulation abilities of college students and adults. The game is based on the already validated *REThink Game* (David & Fodor, 2023) mobile version developed and tested for training emotion regulation abilities in children and adolescents, which was also tested on student population (Tomoiagă & David, 2022). The *REThink Life Game* is an adapted and extended version of the original game, adjusted to be suited to students and adults (i.e., real characters for recognizing emotions and not cartoons). The game's content is based on the rational-emotive behavioral therapy (REBT; Ellis, 1995) and the unified protocol (Barlow et al., 2010), and it is composed of four levels, with each level having three sublevels which increase in difficulty as the game progresses.

The game's levels train emotion regulation strategies considered relevant for mental health in REBT, and also in line with Gross' theory of emotion regulation (Gross, 2015). In terms of emotion regulation strategies, Gross' Emotion Regulation Model (Gross, 2015), and REBT curricula both emphasize cognitive and behavioral techniques for managing emotions effectively. Gross's model highlights strategies such as cognitive reappraisal, and response modulation. Similarly, REBE uses strategies like disputing irrational beliefs, where individuals identify and challenge distorted thoughts, and cognitive change, which involves replacing irrational beliefs with rational alternatives. Both approaches also incorporate problem-solving and relaxation-based techniques to enhance emotional awareness and self-regulation, helping individuals proactively manage stress and difficult emotions. Also, the *REThink Life Game* includes principles of game-based

learning by including principles of gaming and actions to enhance learning experiences.

Also, the *REThink Life Game* includes principles of game-based learning by including principles of gaming and actions to enhance learning experiences. The game was enriched with several customizable features such as choosing the avatar, receiving guidance, that can connect the link between game-based actions and players real life, and receiving personalized intervention upon evaluation. Based on their answers, a score is computed which represents their level of ability for each level. The guidance in the game is provided by Optimizer who offers the players support, exercises and introspection opportunities in order to help them personalize the intervention and its content to their lives. The game has an embedded validated assessment system (David & Tomoiaga, under review) for the evaluation of the emotion-regulation abilities composed of a sublevel from each level. We have also tested the usability of the mobile *REThink Game* version in a population of children and adolescents and results showed above average results for all subscales measured, proving its good usability (Iuga et al., 2023). Moreover, a study conducted by Bischops et al. (2024) examining the efficacy of the *REThink* game in German children with chronic conditions reported outcomes consistent with our findings, further demonstrating its cross-cultural efficacy.

The *REThink Life Game* assessment system comprises four levels, each designed to measure a specific emotion regulation ability. Level 1 assesses players' ability of emotion recognition. The player's mission is to select the correct answer between an emotion and a neutral state. Level 2 assesses players' mindfulness ability. They are presented with a beautiful scenery featuring various elements such as flowers, birds and trees. The players' mission is to count how many butterflies are shown on the screen. Level 3 assesses players' frustration tolerance ability. In this level, the players are challenged to prevent the Irrationalizer's allies from reaching Retman's helpers by taping on the helpers as quickly as possible. Players have the option to abandon the mission if they find it too challenging. Level 4 assesses player's attention towards positive bias. In this level, players are tasked with identifying as quickly as possible smiling faces in a classroom setting among other faces that display disgust (see Figure 1). Based on their answers, a score is computed which represents their level of ability for each level.

The game is available for players on the STEAM platform, it is accessible on Windows devices and it is in Romanian language, to be further developed in other languages.

The *REThink Life Game* with its customizable features and embedded assessment system based on which players can receive personalized intervention, is one of a kind. To date, there is no other therapeutic game grounded in solid psychotherapeutic approach to include both assessment and intervention for emotion regulation abilities in youths and young adults.

The aim of the present study was to examine the usability of the Assessment System of the *REThink Life Game* in first year college students.



Figure 1. The RETHink Life Game Assessment System.

2. Methods

2.1. Participants

Participants in this study were 208 first year students ($Mage = 19.47$, $SD = 1.68$), 143 of them reporting to be of female gender, that played the RETHink Life Game Assessment System as a part of a more complex study testing the validity of the assessment system along with other psychological validated instruments.

Participants in this study were 208 first year students ($Mage = 19.47$, $SD = 1.68$), 143 of them reporting to be of female gender, that played the RETHink Life Game Assessment System as a part of a more complex study testing the validity of the assessment system along with other psychological validated instruments. Participants were recruited from several faculties from the BBU university by promoting the opportunity at their lectures. Those willing to enroll signed an informed consent that described every step of the project and measurements used. Then, college students that entered the study completed the baseline assessment, and then received the game-based assessment. Following the game-based assessment, they were asked to complete the usability assessment. The only inclusion criteria for the study were to be enrolled as a first-year student in BBU university. There were no exclusion criteria.

2.2. Procedure

Students completed the RETHink Life Game all in a university classroom and then completed the standardized questionnaires on Qualtrics platform. All the study's procedure took place one time. The study was performed in two sessions, one in June 2023 and one in October 2023. Prior to playing the RETHink Life Game, all participants completed an informed consent and were helped to access the game by a research assistant.

2.3. Measurement

To assess the students' usability of the game we used the Serious Game Evaluation Scale (SGES; Fokides et al., 2019) which is a self-report measure developed to assess the usability of a game, by evaluating players' perspective regarding several aspects of the game within its twelve factors. The scale has 53 items, rated on a Likert scale of

5 points, ranging from "Strongly Agree" to "Strongly Disagree." In this study, we used all subscales besides "Subjective realism." The "Presence" subscale evaluates the extent to which the game makes the user be mindful and present in the gameplay and story. The "Enjoyment" subscale evaluates the pleasure for playing that the game has from the users' perspective. The "Subjective learning effectiveness" subscale evaluates the users' perception about the game's ability to teach, explain and ease the learning process. The "Subjective narration adequacy" subscale evaluates the users' perception regarding the game's story. The "Subjective Feedback Quality" subscale evaluates the user's perception about the received feedback regarding their actions in the game. The "Subjective audiovisual quality" subscale is evaluating the quality of the sound, music and graphics from the game. The "Subjective relevance to personal interests" subscale evaluates the extent to which the user perceived that the game provides relevant content. The "Subjective learning goal clarity" subscale evaluates the player's perception regarding the purpose of the game and the clarity of the tasks. The "Subjective ease of use" subscale evaluates the players perception about the difficulty of learning the game play. The "Subjective of adequacy of the learning material" subscale evaluates the players' perceptions regarding the concepts presented in the game. And the "Motivation" subscale evaluates the player's perception about the game's capacity for motivating users to access it more.

We chose to use the SGES scale in order to assess the usability of the game as opposed to other popular measures for usability, due to the scale's capacity to assess distinct aspects of game interventions rather than general aspects for usability of a digital tool. The scale has been validated by Fokides and collabs in 2019, where they computed both Confirmatory Factor Analysis (CFA) and Exploratory Factor Analysis (EFA) with results showing adequate loadings for each factor, adequate factorial structure for discriminant and convergent validity, as well as high internal consistencies for each subscale (Fokides et al., 2019).

The scale has good psychometric proprieties, with good internal consistency in our study, with Cronbach's Alpha ranging from 0.71 to 0.91. The "Presence" subscale had an Cronbach's Alpha of 0.74, the "Enjoyment" subscale had an Cronbach's Alpha of 0.85, the "Subjective learning effectiveness" subscale had an Cronbach's Alpha of 0.91, the "Subjective narration adequacy" subscale had an Cronbach's

Alpha of 0.87, the “Subjective Feedback Quality” subscale had an Cronbach’s Alpha of 0.80, the “Subjective audiovisual quality” subscale had an Cronbach’s Alpha of 0.89, “Subjective relevance to personal interests” subscale had an Cronbach’s Alpha of 0.77, “Subjective learning goal clarity” subscale had an Cronbach’s Alpha of 0.87, the “Subjective ease of use” subscale had an Cronbach’s Alpha of 0.76, the “Subjective of adequacy of the learning material” subscale had an Cronbach’s Alpha of 0.71, “Motivation” subscale had an Cronbach’s Alpha of 0.74. The scale does not have norms, so the scores will be interpreted in relation to the mean.

Besides SGES, we also integrated in the survey that the students completed several questions regarding each level of the game (they completed the questions with regard to each level) to assess several specific aspects. The questions were rated on a Liker scale with 5 points, where higher score represent greater agreement with the statement. The questions were: “I found the level difficult” (Q1), “The purpose of the level was easily identified” (Q2), and “The instructions for the level were clear” (Q3). We included an additional question for level 3 since its purpose was to assess the frustration tolerance “The third level was annoying” (Q4), to assess if the task included in the third level was indeed generating negative emotions for players.

2.4. Data analysis

To analyze the data, we first computed each subscale of the SGES instrument and reversed items that needed. Then, we performed descriptive statistics for each subscale of the instrument, *t*-tests to analyze differences between male and female students regarding their evaluation, and regression analysis to assess if students’ ages predict usability scores, as well as interaction between age and gender. All analyses were performed using SPSS Software.

3. Results

3.1. Descriptive statistics

From the total of 208 participants, we had 63 students that identified as male, and 143 students that identified as females, and two students did not declare their gender. The mean age of students was =19,47, *SD* = 1.68.

3.2. Results on usability

The detailed results for our analysis using SGES are presented in details in Table 1 and a graphical representation of means in Figure 2. Overall, all scores on every subscale are above average, indicating good usability. We obtained a mean of 3.25 on Presence subscale, a mean of 3.48 for Enjoyment subscale, a mean of 3.28 for Subjective learning effectiveness subscale, a mean of 3.61 for the Subjective narration adequacy subscale, a mean of 3.82 for Subjective feedback quality subscale, a mean of 3.50 Subjective audiovisual fidelity subscale, a mean of 3.47 Subjective relevance to

Table 1. Detailed results of the RETHink Life Game on SGES.

	<i>N</i>	<i>M</i>	<i>SD</i>
Presence	208	3.25	0.923
Enjoyment	208	3.48	0.890
Subjective learning effectiveness	208	3.28	0.969
Subjective narration adequacy	208	3.61	0.993
Subjective feedback quality	208	3.82	0.925
Subjective audiovisual fidelity	208	3.50	0.898
Subjective relevance to personal interests	208	3.47	0.914
Subjective learning goal clarity	208	3.97	0.974
Subjective ease of use	208	3.67	0.782
Subjective adequacy of the learning material	208	3.24	0.956
Motivation	208	3.25	0.923

N: sample size; *M*: mean, *SD*: standard deviation.

personal interests subscale, a mean of 3.97 for Subjective learning goal clarity subscale, a mean of 3.67 for the Subjective ease of use subscale, a mean of 3.24 for the Subjective adequacy of the learning material subscale, and a mean of 3.25 Motivation subscale.

The highest score we obtained was for the Subjective learning goal clarity subscale ($M = 3.97$, $SD = 0.974$) which means that the participants considered that the game clearly states and explains the goals and subjects for all 4 levels. The lowest score we obtained was for the Subjective adequacy of the learning material subscale ($M = 3.24$, $SD = 0.956$), which even though is an above average score, suggest that the learning materials can be improved in the game. All means and standard deviation for each subscale are presented in Table 1.

Participants also completed several questions regarding each level. The results for Level 1 showed a mean of 1.82 ($SD = 1.05$) for Q1, indicating that the level was not perceived as being difficult, a mean of 3.92 ($SD = 1.13$), indicating that the purpose of the level was clear for Q2 and a mean of 4.00 ($SD = 1.12$) for Q3 indicating that the instructions were accurate and easy to understand.

For Level 2, we obtained a mean of 1.97 ($SD = 1.07$) for Q1, indicating that players did not find the level difficult, a mean of 3.75 ($SD = 1.17$) for Q2, indicating that students evaluated the purpose of the level as clear, and a mean of 3.87 ($SD = 1.07$) for Q3 indicating that the instructions for the actions that needs to be performed are clear and accurate.

For the third level, we had a mean of 2.30 ($SD = 1.15$) for Q1, indicating that the third level was evaluated as having a medium difficulty, a mean of 3.52 ($SD = 1.18$) for Q2, indicating that the third level’s purpose was easy to recognize, and a mean of 3.54 ($SD = 1.18$) for Q3 indicating that the instruction for the game’s task was clear. For the additional question that was employed at this level, Q4, we obtained a mean of 3.00 ($SD = 1.26$) indicating that the evaluation for the degree of frustration generated by the game level was above average.

For Level 4, we obtained a mean of 2.15 ($SD = 1.14$) for Q1, indicating that this level is considered more difficult than the first two, a mean of 3.85 ($SD = 1.16$) for Q2, indicating that the purpose of the level was easily identified and a mean of 3.86 ($SD = 1.18$) for Q3, indicating that the instructions for the tasks assigned in this level was clear.

From all these evaluations, Level 1 was evaluated as being the easiest, while Level 3 was evaluated as the hardest (measured by Q1). Regarding the ease of identifying the level’s

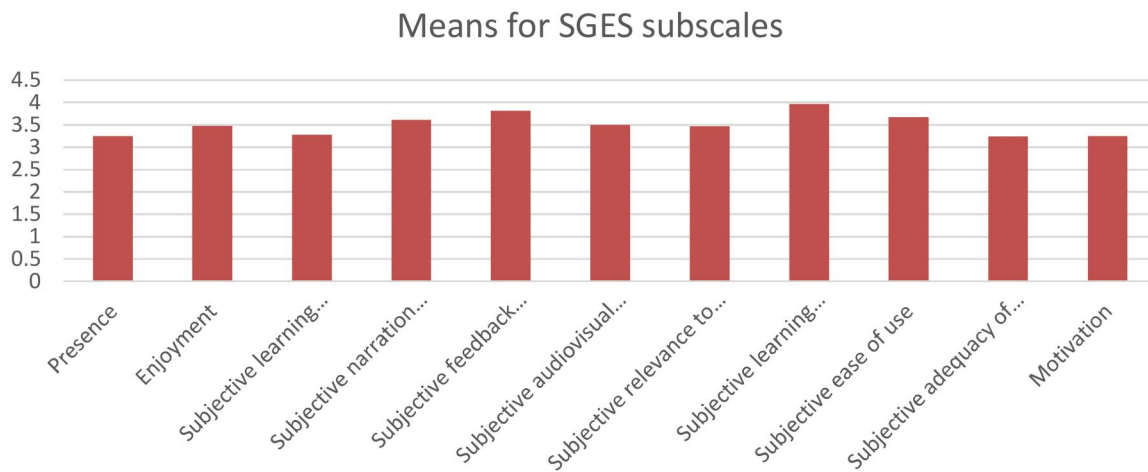


Figure 2. Graphical representation of means for SGES subscales.

Table 2. Means (*M*), standard deviation (*SD*) for each subscale for male and female participants, and Cohen's *d* for gender differences on SGES subscales.

	<i>M</i> (<i>SD</i>) Female (<i>n</i> = 143)	<i>M</i> (<i>SD</i>) Male (<i>n</i> = 63)	Cohen's <i>d</i>
Presence	3.29 (0.965)	3.17 (0.834)	0.13
Enjoyment	3.54 (0.920)	3.38 (0.814)	0.18
Subjective learning effectiveness	3.37 (0.990)	3.08 (0.905)	0.30
Subjective narration adequacy	3.71 (0.982)	3.40 (0.985)	0.31
Subjective feedback quality	3.93 (0.919)	3.57 (0.897)	0.39
Subjective audiovisual fidelity	3.59 (0.895)	3.31 (0.879)	0.31
Subjective relevance to personal interests	3.54 (0.928)	3.30 (0.881)	0.26
Subjective learning goal clarity	4.05 (0.978)	3.80 (0.961)	0.25
Subjective ease of use	3.76 (0.793)	3.50 (0.740)	0.33
Subjective adequacy of the learning material	3.68 (0.911)	3.42 (0.753)	0.28
Motivation	3.30 (0.986)	3.10 (0.893)	0.21

purpose (measured with Q2), Level 1 was rated the highest and Level 3 the lowest (even though all evaluations are above average) and with regard to the third questions (proper instructions) again Level 1 was rated the highest and Level 3 the lowest.

3.3. Gender differences

Next, we performed *t*-tests in order to determine if there are differences between male college students and female college students in terms of their evaluations. Our result showed no significant differences between evaluations female participants and male participants on any subscale of SGES all *ps* > 0.05. There is a tendency for female participants to report higher usability compared with male participants, but there is no statistically significant difference between their evaluations. Moreover, the sample is biased towards female participants that could explain the slightly higher scores on their side. The means, standard deviations and Cohen's *d* for differences between genders are presented in Table 2.

3.4. Age differences

We performed regression analysis to determine if age of the participants is a significant predictor for usability evaluations. The result of the analysis showed no significant result, meaning that age is not a significant predictor (all *ps* > 0.05)

for this population in terms of usability using SGES scale of the assessment system included in the *REThink* Life Game.

3.5. Age and gender differences

Finally, we computed a new age x gender variable and use it in the regression analysis along with age and gender variables. We tested if the interaction between age and gender revealed any significant differences in usability scores. The results of the analysis did not yield any significant results for any subscales, meaning that the interaction between age and gender is not a significant moderator for the tested population in terms of usability evaluation with SGES scale of the assessment system included in the *REThink* Life Game.

4. Discussion

The aim of the study was to assess the usability of the Assessment System of the *REThink* Life Game in student population. Overall, our results show above average scores for all usability subscales used, proving that the Assessment System of the *REThink* Life Game is not only a valid innovative measure for emotional abilities in college students, but also possess above average usability, thus making it more prone to be used by targeted population.

The highest score that we obtained was for the Subjective learning goal clarity subscale which indicates that the game's purposes are very well stated which is a very important aspect for a therapeutic intervention, so users are aware of the abilities that will be trained. The lowest score even though above average was obtained for Subjective adequacy of the learning material subscale which can be explained by the fact that the game's content was adjusted to assess emotion regulation abilities in student population which includes individuals with very high and also with very low abilities, thus the evaluations may vary.

For the subscales that target the game format (Presence, Enjoyment, Subjective audiovisual fidelity, Subjective narration adequacy, Subjective feedback quality subscale, and Ease of use subscales) we obtained high scores that indicate that the story, characters, graphics and overall format has good quality with high usability scores. These results are important because students are more prone into using or accessing instruments and/or games that they perceive as having a pleasant format. This also increase their motivation (a subscale where the evaluation was also high) for using and accessing the instrument or intervention. Being a game-based therapeutic assessment instrument, having good evaluations for the format is important, considering that the aim of instruments is to fit in their interests (gaming) and thus, to be considered a fun and enjoyable way to access psychological instruments.

For the subscales targeting the content of the game and learning purpose (Subjective learning effectiveness subscale and Subjective relevance to personal interests' subscale) we also obtained high evaluations, results that are important considering that the game is a therapeutic one and needs to be accepted by the users. Also, the fact that players perceived that the game can be effective as a tool for assessing emotional regulation abilities and also that emotion-regulation domain is relevant for student population is a very important finding with implications to the access and attrition rate.

In terms of the specific questions that we included in the survey, regarding difficulty, level's goal and instructions for each level, all results were above average indicating that the assessment system of the game is accessible to all college students, regardless of their levels of emotion-regulation abilities, has clear goals and proper instructions for the tasks needed in each level. With regard to these questions, the best rated level on all aspects was Level 1 which is the level about emotion recognition. This result can be explained by the fact that emotion recognition ability is a less complicated ability especially for college students, and the task was to distinguish between a natural and an emotional state, thus their evaluation for this level. The level with the lowest scores (even though above average) was level 3, and these results can be explained by the fact that the level was developed to trigger frustration intolerance and thus, perceived as more difficult and less clear. The evaluation for the frustration induction at this level was also above average which is in line with its development purpose.

The fact that we did not obtain any significant differences in terms of usability ratings among college students with different age or gender is again a strong result that confirms the assessment system as being universal for evaluating emotion regulation abilities in college students.

Our results are in line with those obtained in literature for digital interventions (Chan & Honey, 2022; Oliveira et al., 2021) and with the results obtained on children and adolescents using the mobile version on the game (Iuga et al., 2023). These results proved that the online therapeutic games are suitable, accepted with high usability, thus being promising interventions also for student population.

4.1. Implications

This study has implications for research and practice. For research purposes it offers researchers evidence for the usability and the acceptability of a game-based assessment instrument for emotional abilities in college student population, that can not only advance assessment in mental health, but also be easily incorporated in digital systems to facilitate the process and enlarge the access. From the practical point of view, it offers practitioners evidence about the usability of the instrument so they can incorporate the assessment system of the game for evaluating patients in their private practice.

This assessment system can offer relevant information and personalized indications for training emotion regulation abilities in college students with the *REThink Life* game. The assessment system can also be scaled up and integrated in a virtual clinic for college students, where they can access the assessment system and then play the *REThink life* intervention, based on the recommendation received. This type of scaling up, can allow students to access real-time evaluation and personalized intervention. Additionally, game-based assessment system can also overcome some barriers such as costs, stigma or logistical difficulties.

4.2. Limitation & future directions

As limitations, we can mention the fact that students did not evaluate each individual level on the *SGES* scale and future studies should include separate evaluations for each game level if the levels are to be used by themselves. Also, the fact that *SGES* does not have norms to interpret the results against is considered a limitation and future studies should first standardize the instrument or use other and/or multiple instruments for assessing the usability of the Assessment System of the *REThink Life Game*.

Moreover, the fact that we relied our conclusions based on a single self-reported instrument, is a limitation. Future studies should integrate multiple instruments for assessing usability such as qualitative interviews or usage indicators, an also assess long term usability. In addition, even though there are studies using *REThink Game* in other cultures (Bischops et al., 2024), the results of our study are limited to Romanian population in terms of generalizability and future studies should assess usability of this game-based

assessment instrument in other populations and cultures and, also test the *REThink* Life embedded in other types of platforms for other types of population to test its adaptability in other contexts

5. Conclusion

In conclusion, the *REThink* Life Game Assessment System is a valid and accepted game-based instrument for assessing emotion regulation abilities in student population, with good usability in first year college students. The engaging and interactive game-based design enables a more accurate and appealing evaluation of emotional abilities, known for their impact of the development of mental health problems. The valid game-based assessment of emotion regulation opens tremendous possibilities for wide-scale personalized prevention and intervention programs that can foster emotional resilience and adaptive emotion regulation strategies, and thus improve the mental health and emotional well-being of the youths.

Ethical approval

All procedures performed in study involving human participants were in accordance with the ethical standards of the institutional research committee.

Authors Contributions

The first author was involved in the implementation coordination, intervention development, conceptualization, supervision, acquiring the funding and revision of the manuscript, and the second author data collection, analysis and writing the manuscript

Informed consent

Informed consent was obtained from all participants included in the study.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data transparency

This study result from an original dataset and no study using the present data was published. We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study. All data analyses were performed using the SPSS statistical software programs

Data availability statement

All data and research materials are available by emailing the corresponding author upon a reasonable request.

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