The Design of a Prototype Therapeutic Computer Training Program for Suicidal Adolescents: A Pilot Project

Yiling Yang

Integrated Program in Neuroscience
Faculty of Medicine
McGill University

Montreal, Quebec, Canada
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ABSTRACT

Adolescent suicide is a serious social issue, but the current health care system cannot guarantee dissemination of effective psychotherapies to everyone in need. This project is an attempt to develop a computerized therapeutic program for suicidal adolescents as a supplement to traditional psychotherapy. The program is built upon the Dialectical Behavior Therapy (DBT) and is offered after the 20-week DBT skills training to practice and reinforce the behavioral skills acquired. The exploratory development process has beheld the evolution of the program from didactic to interactive, from skills-based to story-oriented, from unrealistic 3D ambition to practical PowerPoint prototype, from common sense to scientific content, and has resulted in a basic, simple, yet feasible and clinically usable fifth version. In the pilot evaluation study, patients expressed their favor of the current version, and the results indicated a potential effectiveness in reducing dysfunctional coping behaviors, although the exact clinical efficacy remains to be validated. This project has contributed to the knowledge on how to deliver traditional treatment via computer medium, and has laid a foundation for future improvement and implementation. If the model is validated, it will have the potential to be integrated into the traditional DBT and to provide additional care and support for the adolescent patients.

RÉSUMÉ

Le suicide chez les adolescents est un problème social d'envergure. Malgré ceci, le système de soins et de santé actuel peut difficilement fournir de façon efficace, des services de psychothérapie pour tous ceux qui en ont besoin. Le projet actuel a pour but de développer un programme thérapeutique informatisé pour les adolescents suicidaires en tant que complément à la psychothérapie traditionnelle. Le programme est basé sur la thérapie comportementale dialectique (TCD) et il est offert suite à l'entraînement de 20 semaines de TCD afin de permettre la pratique et le renforcement des compétences comportementales qui auront été acquises. Le processus de développement exploratoire du projet a permis de passer d'un programme didactique à un programme interactif, basé sur les compétences, et fondé sur des scénarios. Il s'agit d'un programme qui aspire à utiliser des prototypes 3D, mais qui pour des raisons pratiques a été développé sur une plate-forme PowerPoint dans un premier temps. Initialement basé sur un contenu simple, le contenu scientifique a été élaboré davantage. Ceci a donc donné lieu à une cinquième version du programme qui est simple, sans artifice, prête à être utilisée cliniquement. Dans l'étude pilote d'évaluation de ce programme, les patients ont fait part de leur préférence pour la version actuelle, et les résultats ont montré une efficacité potentielle à réduire certains comportements dysfonctionnels, bien que l'efficacité clinique exacte reste à être validée. Ce projet a contribué aux connaissances sur la façon d'administrer le traitement traditionnel à l'aide d'un ordinateur, et a établi une base pour son amélioration et sa future mise en œuvre. Lorsque le modèle sera validé, il aura le potentiel d'être intégré

dans la TCD traditionnelle et de fournir des soins supplémentaires et un soutien pour les patients adolescents.

Chapter 1 INTRODUCTION

1.1 Background

Adolescent suicide is a major public health problem. Per 100,000 people, the worldwide annual suicide rate is 0.5 for females and 0.9 for males between age 5 and 14, and that suicide rate increases to 12.0 for females and 14.2 for males between age 15 and 24 (Pelkonen and Marttunen, 2003, Bridge et al., 2006). In accordance with the increase of suicide deaths during adolescence, suicide attempts also grow significantly, with a peak between 16 and 18 years of age, and decline markedly after 19 (Lewinsohn et al., 1996). It is estimated that the highest prevalence of suicide attempts across the lifespan exists during adolescence (Miller et al., 2006). Disturbingly, among the 10 to 19 years of age, suicide is the second leading cause of death in Canada and third in the United States (Anderson, 2002). The high risk for suicide-related behaviors during adolescence deserves immediate intervention.

Although mental disorders, in particular, mood and personality disorders have been recognized as a major risk factor for suicidal behaviors (Miller et al., 2006, Davidson and Linnoila, 2013), the current health care system cannot guarantee access to effective treatment for everyone in need. Evidence-based psychotherapies such as cognitive behavioral therapy (CBT), interpersonal therapy (IP) and dialectical behavior therapy (DBT) require highly specialized practitioners, and the treatment cycle can be as long as years, but the available trained therapists and staff are limited (Kazdin, 2011). Furthermore, primary care patients can often identify one or more perceived barriers that prevent them from actively seeking for treatments. These barriers include stigma, lack of motivation, negative evaluation of psychotherapy, time constraints and etc. (Mohr et al., 2010). To improve the situation, new approaches are needed to ensure dissemination of effective evidence-based therapies. In 2007, the UK government formulated a

"stepped model of care" which advocated that "the least instructive, most effective intervention should be provided first" (NCCMH, 2009). This model emphasized the "low-intensity" psychological interventions including guided or self-help CBT in either booklet or computerized format.

In this context, the aim of the present project was to design a therapeutic computer training program for suicidal adolescents. The target patients are depression adolescents with borderline symptoms. These patients are characterized by severe emotion dysregulation and are highly impulsive and suicidal. Unlike existing computerized therapies, most of which are based on traditional CBT (Kaltenthaler et al., 2006), our program is built on adolescent DBT (Linehan, 1993, Miller et al., 2006), and more specifically, the version of adolescent DBT developed at the Douglas Mental Health University Institute (Mbekou et al., 2011). At this early stage of development, the program is intended to be adjunct to the standard DBT by serving as a practice tool and refresher after the 20-week DBT skills training. After the current model is validated, there is great potential to improve the program into a fully independent self-help DBT program.

1.2 Computerized Psychotherapy

Computerized therapies for common mental health problems, or behavioral intervention technologies (BIT) in general, have been increasingly studied to address the unmet need for traditional interventions (Mohr et al., 2013). Varieties of technologies including videoconferencing, telephone, instant messaging and email have been adopted to computerize the traditional CBT, and their effectiveness has been validated through clinical trials (Kaltenthaler et al., 2006, Mohr et al., 2013). While some programs provide information-based didactic tutoring (Andersson et al., 2005, Carlbring et al., 2006), others supplement the basic

therapeutic content with audio, video and animation, and many also include additional features such as activity monitoring, psychological testing, and online therapist support. Reviewed below are some of the popular and validated computerized CBT programs (*MoodGym*, *SPARX*, *Beating the Blues*, *Cope*, and *Overcoming Depression*), specifically for depression patients. They provide insights on the format, structure, effectiveness, and improvement for our program.

MoodGym

MoodGym is a web-based depression prevention program for adolescents. It aims at helping people identify and overcome emotional problems, and develop coping skills. To deliver the ideas of CBT, the program is divided into five modules: Module 1 starts with a brief introduction to CBT and focuses on why people experience negative feelings. Module 2 describes the common cognitive schemas leading to negative thinking. In Module 3, users are shown the methods to change the warped thoughts. Module 4 provides several relaxation techniques. Module 5 works to maintain a good interpersonal relationship. A web-friendly depression assessment, the Goldberg Anxiety and Depression Scale, is administered at the beginning of each module to monitor the performance.

An innovative aspect that distinguishes *MoodGym* from narrative teaching is the introduction of several virtual characters that model the common depression symptoms and experiences. These characters accompany the participant throughout the modules by providing illustration, giving testimonials, and introducing contexts. Although the characters are presented in very simple pictures and texts, they help create an interesting and carefree atmosphere where users do not experience a stressful involvement, because the focus is shifted toward others who may have similar problems with the patients themselves.

In a randomized controlled trial (Christensen et al., 2004), participants with increased symptoms of depression were randomly allocated to three treatments: (1) *Bluepages*, a website with information on depression, (2) *MoodGym*, and (3) control group using a placebo which did not involve any therapeutic content. They found that, in terms of effectiveness, both *Bluepages* and *MoodGym* were effective in reducing depression symptoms and there was no difference between the two conditions. In terms of knowledge about depression, *Bluepages* induced significant increase in psychological, medical and lifestyle literacy.

It is interesting to note that a psycho-education website, *Bluepages*, induced the same level of improvement as a computer training program, *MoodGym*. This could be explained by the fact that *MoodGym* is essentially a knowledge-based program which does not differ qualitatively from the information website. More importantly, it suggested that what really drives the clinical effectiveness is the therapeutic content, be it the information on *Bluepages* or training in *MoodGym*. How the program is presented only supplements rather than substitutes what content is presented, and it is the treatment content that should be prioritized in the development of such programs.

SPARX

SPARX (Smart, Positive, Active, Realistic, X-factor thoughts) is an interactive fantasy computer game designed to deliver CBT for adolescents with mild to moderate depression. In the 3D game environment, the user plays the role of an avatar and undertakes a series of challenges to "restore the world's balance" by defeating the enemy called GNATs (Gloomy Negative Automatic Thoughts). The game consists of seven levels, or "provinces", each set within a fantasy world of a different theme. For example, level 3 is presented in the "volcano province" and is about "dealing with emotions". It teaches the user emotion regulation techniques and

interpersonal skills. The CBT-based skills covered in the entire game include relaxation skills, problem solving, activity scheduling, challenging and replacing negative thinking and social skills (Fleming et al., 2012). At the beginning of each level, a genie guide appears to introduce the level, put the game into context, and check the homework from the previous level. At the end of the level, the guide appears again to review the level and communicate on skills generalization.

The effectiveness of *SPARX* has been evaluated by a large randomized controlled trial (Merry et al., 2012). A total of 187 adolescents aged between 12 and 19 seeking help for depression were recruited and randomized to receive either *SPARX* treatment or treatment as usual. Data were collected before and after the intervention and three months after the treatment. Compared with traditional psychotherapy, *SPARX* led to a significantly more reduction on the children's depression rating scale and higher remission rates, evidencing its clinical potential. Another study (Fleming et al., 2012) evaluated *SPARX* on students in alternative education programs, who were excluded from mainstream education systems because of higher rates of depression and other mental health problems. Significant improvement in depression was replicated, despite no effects on several secondary measurements such as hopelessness, anxiety and quality of life. Overall, *SPARX* appears to be effective for adolescent depression, and is a potential alternative to traditional therapy.

Beating the Blues

Beating the Blues is an online self-help program for mild to moderate depression and anxiety in all ages. It conveys the knowledge of effective coping and realistic thinking, and helps patients set up personal goals to change the life style and ways of thinking. The program consists

of eight sessions. After each session, a report is generated and sent to the therapist for assessment.

The demo on the website gives a glimpse of the program. It starts with a voice-recorded introduction to basic CBT, depression, and anxiety. Then the patient is asked to write down the pleasurable activities they have done in the past week, and to think of an activity that they sometimes enjoy but haven't done lately. Video excerpts of other patients are provided to share experiences and to offer suggestions. In the end, the program helps the patients set up a plan of activities for the coming week.

A series of studies have examined the clinical efficacy and cost effectiveness of *Beating the Blues*. Proudfoot et al. (2004) conducted a randomized control test of 247 patients. Multiple follow-up assessments in 6 months were measured. The program induced significant improvement on all the response variables, and in average, patients dropped from "moderate and severe" depression to close to normal after the treatment. Surprisingly, the improvement was even greater than traditional treatment. Another study (McCrone et al., 2004) investigating the cost effectiveness estimated that the probability of *Beating the Blues* being more cost-effective was 80% percent.

Cope

Cope is a CBT-based program designed for non-severe depression patients. It combines an Interactive Voice Response (IVR) system and booklet-based learning. The 3-month program consists of five modules that address topics including basic CBT, assertive communication, and expression of positive and negative feelings. The patients can make phone calls to a computer-based response system located in Wisconsin, USA, and the interviews are conducted by pressing the keys on the telephone keyboard. The IVR system also monitors the patients' severity level

and suicidal risk. Reports will be sent to a clinician if a high risk is detected, and the patient will be forced to stop the program until the clinician gives permission.

In an early study (Osgood-Hynes et al., 1998), all 41 patients recruited completed the *Cope* program, and 64% were considered responders based on a more than 50% reduction in the Hamilton Rating Scale for Depression. Interestingly, 68% of the phone calls were made out of regular office hours, and the improvement was positively correlated with the length of calling. In addition to the effectiveness, the results indicated that the computerized psychotherapy could overcome the time restriction imposed by therapists' 9-to-5 working schedule to provide wider support in mental healthcare.

Overcoming Depression

Overcoming Depression is a CD-ROM-based self-help computer program aimed at depression and anxiety. The goal of the program is to communicate CBT in an easily accessible and jargon-free manner. The program has six sessions, 45 minutes each. Multiple communication media, including texts, cartoons, animations, interactive questions, sound and videos are applied. Patients are expected to complete the therapy alone, and only a clinical worker is available to answer inquires. Whitefield et al. (2006) evaluated the effectiveness of the program on depression patients referred by general practitioners. After six weeks' treatment they found that the average Beck Depression Inventory score dropped from 28.15 to 20.00, and maintained at normal range over the 3-month follow-up. However, the study did not have a control group so it was unclear whether the effect was comparable to treatments as usual. Furthermore, it is noteworthy that the take-up rate of the program was only 20%, much lower than other programs such as *Beating the Blues* (Proudfoot et al., 2003).

In summary, the available therapeutic software packages and their evaluation studies established the feasibility and effectiveness of computerized therapy for common mental health problems. They also provide insights on how this approach could be improved. For example, the program could be more interactive and less narrative. The majority of existing programs are didactic in nature, and the format is hardly more than a virtual "classroom" for knowledge-based teaching. The real power of virtual reality and computer technology lie in the involvement of and interaction with the users, and thus could be utilized for practice-based learning. In this sense, the *SPARX* is an excellent exception in that it integrates the training into a virtual fictional 3D world, and indirectly conveys the CBT through game-like fantasy scenarios. This is especially appealing to the digital native adolescents. However, it should be noted that the therapeutic content should always be the priority and that the entertaining format should be the secondary objective. The study of *MoodGym* showed that a psycho-education website could be as effective as a computer training program, emphasizing the central role of the quality of treatment content. Visual effects, virtual reality or interactive features serve to support the delivery of therapeutic content instead of being what all a program is about. In this context, an effective and scientific approach to enhance traditional therapy using computer technology, more specifically in this project, to support practicing DBT skills, remains to be explored. The majority of existing programs still focus on what the adaptive behavioral skills are or what an effective therapy is, but we wanted to create a program that enhances patients' behavioral capacity by using the skills directly. The power of computer technology could be utilized to simulate the real difficult situations, and by incorporating treatment strategies into these virtual situations, we hope it could help patients to become more skilful and comfortable when they are faced with similar situations

in their life. The effective way of integrating therapeutic materials with virtual scenarios is the aim of the current project.

1.3 Dialectical Behavior Therapy

The theoretical foundation of our program is the dialectical behavior therapy (DBT) (Linehan, 1993). DBT was originally developed to treat chronic suicidal borderline personality disorder (BPD) patients who did not respond to traditional CBT. Traditional CBT had an inherent focus on change, and certain patients found it especially invalidating. Throughout the therapy the emphasis was on the wrong and problematic nature of patient's behavior, so they either withdrew from the treatment or became extremely emotional. Frequently, the patients' behavior reversely reinforced the therapist for ineffective treatment in a way that the patients "punished" the therapist with anger or withdrawal if the therapist focused on treatment, and that they only agreed to cooperate if the therapist discussed what they liked to hear. This vicious patient-therapist dynamics not only failed to help the patient but also exhausted the therapist.

To reverse the vicious cycle, early DBT developers introduced the validation strategy to counterbalance with the excessive push on change. Under this strategy, it should be recognized that the reason why patients took their life was not because they chose to cope in a wrong way. Rather, they were trying their best to solve the problem, but simply did not have the behavioral capacity to find a better solution. Suicidal behaviors ended up being the best option at hand, and were ineffective but a valid solution to the difficulties they were living through. Changing their behaviors was only possible by accepting them as valid and reasonable, and at the same time, if the patients wanted to solve the problem effectively and to live a better life, they had to work on change. Within a dialectical balance between acceptance and change, both the therapist and the

patient avoided rigidity and worked on synthetic dynamic relation. It was through this dynamic movement of the therapist-patient relation that the treatment objective was achieved.

DBT considers suicide related behaviors as an explicit and direct treatment target. Under the DBT assumption, the pathology for suicidal behaviors is a systematic dysregulation of emotion. This includes either a biologically predisposed highly vulnerable emotion processing system, or the failure to acquire sufficient emotional tutoring and support from within the environment, and more frequently, both biological and environmental etiology. An emotionally vulnerable individual grown within an invalidating environment never learns how to label, regulate or trust their emotions. Consequently, one major function of DBT is to provide and enhance the patients' emotion regulation capability through DBT skills training.

As a comprehensive treatment, DBT has five critical functions: improving the motivation to the therapy, enhancing behavioral capabilities, ensuring new capabilities are generalized to all environments, structuring the environment to support the treatment, and providing support to the therapist to avoid burning down. These five functions are achieved through four major modes of treatment, including: (1) individual psychotherapy which oversees the progress and manages severe problems; (2) group skills training which help patients to acquire the adaptive behavioral skills; (3) skills generalization such as telephone consultation, out-of-session coaching, homework and etc; and (4) therapist meeting that increase the therapist's motivation and capacities.

Although originally developed for borderline personality disorder, DBT has been adapted for many other mental disorders including adolescent depression. Rather than BPD in particular, the direct treatment target of DBT was more the dysfunctional emotion and suicidal behaviors in general, which have been associated with multiple adolescent psychopathologies (McLaughlin et

al., 2011). Borderline symptoms and features including impulsivity and suicide-related behaviors are highly prevalent in young patients, despite the absence of a full-fledged diagnosis with BPD. This provides the common foundation to adapt DBT from borderline patients to suicidal adolescents. Moreover, considering that the adult DBT is too intensive and time consuming for adolescents, adaption of DBT for adolescent patients is then not only theoretically feasible but also necessary.

The adaptations of DBT for adolescents consist of the following four aspects (Miller et al., 2006). First, the length of DBT is shortened from 1 – 2 years to 16 – 20 weeks, because the long intensive treatment period is difficult for youths to commit. For those who still exhibit difficulties after treatment, an optional 16-week "graduate group" is available and can be repeated multiple rounds. Second, besides the original dialectical dilemmas proposed by Linehan (1993), Miller et al. (2006) identified three additional adolescent-specific dilemmas. They found that patients, parents and even therapists often vacillate between the polarities of excessively leniency vs. authoritarian control, normalizing pathological behaviors vs. pathologizing normative behaviors, and forcing autonomy vs. fostering dependence. The dialectical tensions along these three dimensions have been included as treatment targets in the adolescent DBT. Third, to address these new dilemmas, an additional skills training module, *Walking the Middle Path*, is added to the original DBT skills training modules. In this module, behavioral principles and validation strategies are taught to find a balance and synthesis in each dilemma. Lastly, since the adolescents have close attachment and interaction with their parents, the parents are included into the therapy. The multifamily skills training, for example, teach the family members the same skills as the patients. This helps to enhance the generalization and reinforcement of skills out of

the therapy sessions, and to re-structure the adolescents' environment. For the individual therapy, however, parents' participation is on a case-by-case basis.

The clinical efficacy of the adapted adolescent version of DBT has been evidenced by empirical studies. For example, by comparing the pre-post effect among adolescent patients, several studies demonstrated significant improvement in BPD symptoms (Miller et al., 2000, Fleischhaker et al., 2011), suicidal ideation and/or self-injurious thoughts (James et al., 2008, Woodberry and Popenoe, 2008, Fleischhaker et al., 2011, James et al., 2011), and depression and hopelessness scales (James et al., 2008, Woodberry and Popenoe, 2008, James et al., 2011). Notably, all the DBT skills taught in the skills training were rated from moderately to extremely helpful, among which the mindfulness and distress tolerance skills were rated most helpful (Miller et al., 2000). In the follow-up studies, the gains from the adapted DBT were shown to sustain for at least 8 months (James et al., 2008) or one year (Fleischhaker et al., 2011). These studies established empirical foundation for the adolescent version of DBT, and lent theoretical support to further computerization of the treatment.

At the present stage, the computer training program serves to supplement the adolescent DBT developed at the Douglas Mental Health University Institute (Mbekou et al., 2011). This version of DBT consists of a six-month introduction and initial evaluation, 20-week individual sessions and multifamily group skills training, and six-month individual follow-up sessions. It is during the 20-week training that the DBT skills are taught. These skills are categorized into five modules (Figure 1), including the *Core Mindfulness*, *Emotion Regulation*, *Interpersonal Effectiveness*, *Distress Tolerance*, and *Walking the Middle Path*. Our program will be offered after the patients complete the 20-week sessions during the follow-up period, and is expected to

allow patients to practice and to refresh on the DBT skills acquired, and thus to provide an additional layer of care.

CORE MINDFULNESS	1. Wise mind	INTERPERSONAL EFFECTIVENESS	14. Accepting/Refusing a request
	2. Observe		15. D.E.A.R. M.A.N.
	3. Describe		16. G.I.V.E.
	4. Participate		17. F.A.S.T.
	5. Non-judgmentally		18. Cheerleading statements
	6. One-mindfully	DISTRESS TOLERANCE	19. A.C.C.E.P.T.S.
	7. Effectively		20. Self-soothe
EMOTION REGULATION	8. Observe & describe emotions		21. Pros and cons
	9. P.L.E.A.S.E.		22. I.M.P.R.O.V.E. the moment
	10. Building mastery	WALKING THE MIDDLE PATH	23. Validate self
	11. Engaging in pleasant activities		24. Validate someone else
	12. Acting-opposite to emotion		25. Think dialectically
	13. Being mindful of emotions		26. Act dialectically

Figure 1: List of DBT behavioral skills (Mbekou, V., Mikedis, Th., Zanga, J., Malinski, C., Jodoin, M., Janelle, A., Stolow, D. & Renaud, J. (2011). DBT Multifamily Skills Training Group for Adolescents. Adapted from Linehan (1993) and Miller et al. (2007). Douglas Mental Health University Institute, Montreal.)

Chapter 2 METHODS

This section is an account of the program development process from the very first version to the current fifth version. This process has witnessed the evolution of our concept and methodology in delivering psychotherapy through a computer medium. It was a transformation from a common sense-like development towards scientific content and rigor. The last part of this session describes the experimental procedure of a pilot evaluation study to assess the prototype program's clinical potential and to gather participants' feedback.

2.1 Version 1

The first impression of the project was as simple and clear as its title: "*The Design of a Prototype Therapeutic Computer Training Program for Suicidal Adolescents*". The task of treating adolescent suicidal behaviors using virtual reality technology was unambiguous. In the context of the DBT at the Douglas Hospital Depression Clinic (Mbekou et al., 2011) , this objective was easily converted to helping the adolescent patients to learn and to practice the DBT skills, because increasing behavioral capacity through DBT skills is one of the core components of this therapy. The project intended to use virtual reality to achieve the therapeutic objective, and therefore, the innovative and difficult part appeared to be the technical issue.

After the task was clarified, the next step was the implementation: how to present the DBT skills in a virtual reality environment. Given a list of the DBT skills, a natural and straightforward idea was to cover these skill items one after another, but to present them in a different format from what the patients had seen in the therapist's sessions.

The first DBT skill on the list – and the most fundamental one – is the concept of the "*wise mind*". The idea is to distinguish among three states of mind: (1) the emotional mind, activated when the "hot" emotions are in control; (2) the reasonable mind, the "cold" rational

thinking; and (3) the wise mind, the integration of both logic and emotion. In contrast to pathological impulsive behaviors, the wise mind emphasizes the down-regulation of impulsivity and encourages the rational evaluation of the situation, the internal feelings, and the consequences of one's reaction.

The goal of being interactive was attempted by designing a series of situations taking place in a virtual town (Figure 2) and asking the participant for their responses. Specifically, we created a 3D virtual environment using the Unity3D game engine. The participant, or the player in the game space, was instructed to navigate within the environment. At specific locations, an event was triggered and the participant was introduced to some conflict or stressful situations. These situations were based on clinical cases and reflected the actual scenarios that patients often failed to cope well with. To convey the idea of the "wise mind", we presented three possible responses to the given situation, each corresponding to one of three states of mind. The participant was asked to determine whether the given responses were "emotional", "reasonable", or "wise". Correct choices were rewarded with the accumulation of scores. In the virtual environment, there were five situations in total, all in the same format. Although we did not teach the concept of "wise mind" explicitly, the participant should be able to get the idea through the practice.

Figure 2: Screenshots of Version 1

Despite the structural simplicity and visual attractiveness, this version was clearly problematic. First of all, due to technical limitations, it was beyond our expertise to create humanoid 3D models and complex animations to visualize the situations. Therefore, although the stories were situated in a 3D environment, the scenarios were described with texts only. The amount of texts in the program accumulated to the level that might be unpleasant for the young patients. Second, the program barely involved the participants, neither emotionally nor behaviorally. The sequential events and the dry texts could not relate to the participants. Their only involvement was the mouse click in response to the multiple choices, which was far from interactive. More importantly, the whole program covered only one single skill. Despite being conceptually straightforward to design one skill at a time, programming a whole environment just for one learning item was neither necessary nor economic. The participants had already

learned the DBT materials in detail during the 20-week sessions, so there was no need to repeat. Furthermore, all five scenarios in the virtual environment followed the same pattern and were on the same topic. The enormous redundancy lacked the variability to keep participants' attention. These lessons quickly led us to the second version.

2.2 Version 2

The drawbacks of teaching one skill at a time emerged in Version 1. In fact, this approach was not only unnecessary but also infeasible. While dealing with the "*wise mind*" skill was possible, it soon became increasingly difficult and unrealistic to implement subsequent DBT skills individually. For example, we would have to design a series of scenarios exclusively for the "observe" skill to practice how to notice one's emotional experience, and yet more scenarios for the "one-mindfully" skill which suggested focusing on one thing at a time. The interrelatedness of these individual items became prominent, so it was practically impossible to create scenarios exclusively for any one of them while ignoring others. An obvious solution was then to group multiple skills into one session. Because the DBT skills were organized into five modules, we naturally decided to switch from one skill to one module.

We started from the first module, the *Core Mindfulness*, and investigated how to integrate the mindfulness skills into one program. In addition to the idea of "*wise mind*", this module also included three "*what*" skills (to "*observe*" one's emotions, to "*describe*" the experience with words, and to "*participate*" in the situation as one with his/her emotions) and three "*how*" skills (to evaluate "*non-judgmentally*", to participate "*one-mindfully*", and to act "*effectively*").

The next question was how to present these highly inter-related mindfulness skills into one session. To tackle this issue, we re-organized the basic ideas of these skills into a "three-step" model whereby participants could follow these steps to apply the skills. Step 1 was "to

observe non-judgmentally". This step suggested that one take a non-judgmental stance to observe and to describe the internal emotions. By taking a step back and inspecting on what was happening in the mind, one would be able to calm down and think rather than acting impulsively. The focus of this step was one's internal feelings. Step 2 was "to dissociate thoughts from facts", or to realize what was the actual situation and what was one's thoughts and feelings. In contrast to the first step, Step 2 emphasized the recognition and dissociation of the internal feelings and external situation. Step 3 was "to do only what is effective". Built upon the inspection of the emotions and the situation from the previous two steps, Step 3 proposed the "wise" evaluation of the possible consequences of one's behavior and the adoption of an effective long-term solution, rather than rushing for immediate satisfaction. Implied in these steps were the individual DBT skills in the mindfulness module, and this ordered reorganization enabled easier presentation on a computer.

In the program, our theoretical model was situated in a virtual "emotion museum" (Figure 3). The "three steps" were naturally mapped to the three floors within the museum building, each level corresponding to one step of emotional processing. As the participant was walking from the first to the third floor, she would cover all the three steps within a single conflict situation. Unlike Version 1 where the participant herself was the character in the situation, a third person's perspective was adopted through which the participant watched or read the experience of another person in the story. The story was about how the character failed to use the DBT skills and violated our three-step model, thereby resulting in unwanted consequence. Afterwards, the participant was asked how they would react in the same situation, and was brought to another three steps, or practically, the three floors on the other side of the museum building. The point was to raise awareness of different consequences of one's ways of coping.

Figure 3: Screenshots of Version 2

Despite the conceptual improvement, there were considerable issues with this version. Most prominently, the participant, the situation, and the museum environment were completely dissociated. Although the participant was navigating in the museum, she was not interacting with the environment, and consequently, the virtual space became no more than an empty placeholder. The situation, likewise, did not happen on site, but was only presented in text in the museum. The interaction between the participant and the situation, again, was limited because she was literally reading a story of a random character. In this sense, the power of virtual reality was not fulfilled because the program focused on the "virtual" - the environment - rather than the "reality" - the interaction.

2.3 Version 3

We started the third version with a major objective of getting the participant involved into the situation, at least emotionally. Instead of simply describing the situation with texts, we attempted to visualize the character's internal experiences. Take the "weight gain" scenario for example, where the character could not accept the fact that she had gained weight. In addition to the situation itself, we illustrated with pictures how an emotionally vulnerable individual would think (Figure 4). She might imagine how much junk food she had accumulated in her body, how her self-image was distorted and inflated in the mirror, how her classmates might laugh at her or talk in her back, and more dramatically, how the "bad" teacher might show discrimination against her. In this way, the participant not only was introduced to the situation, but also had a sense of the internal emotional events that the character was experiencing. These emotional fluctuations and thoughts were made characteristic of the impulsivity and sensitivity of the patients themselves, and therefore could be easily relatable.

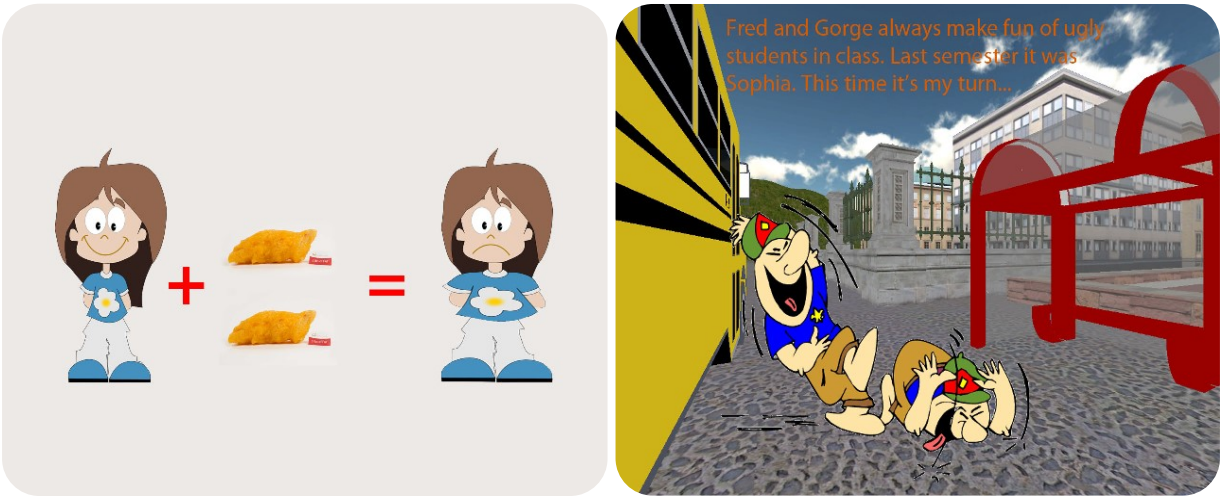


Figure 4: Screenshots of Version 3

Besides, the program was set in two virtual spaces (Figure 5), one for scenario introduction, and the other for DBT couching. When an emotional situation took place in "reality" space, the participant was transferred into an imaginary "wise mind" space where they learned to take a moment to think and to survey the situation from a global perspective. Implied behind this was the concept of the "*wise mind*", which encouraged observing and describing the situation from a nonjudgmental and one-mindful stance. In our program, this "wise mind" space is depicted as a "wise-mind planet". An imaginary alien character on this planet would introduce the "story" of this planet as well as two neighboring planets, the "emotional planet" and the "reasonable planet". It was through this figurative narration that the mindfulness skills were implied.

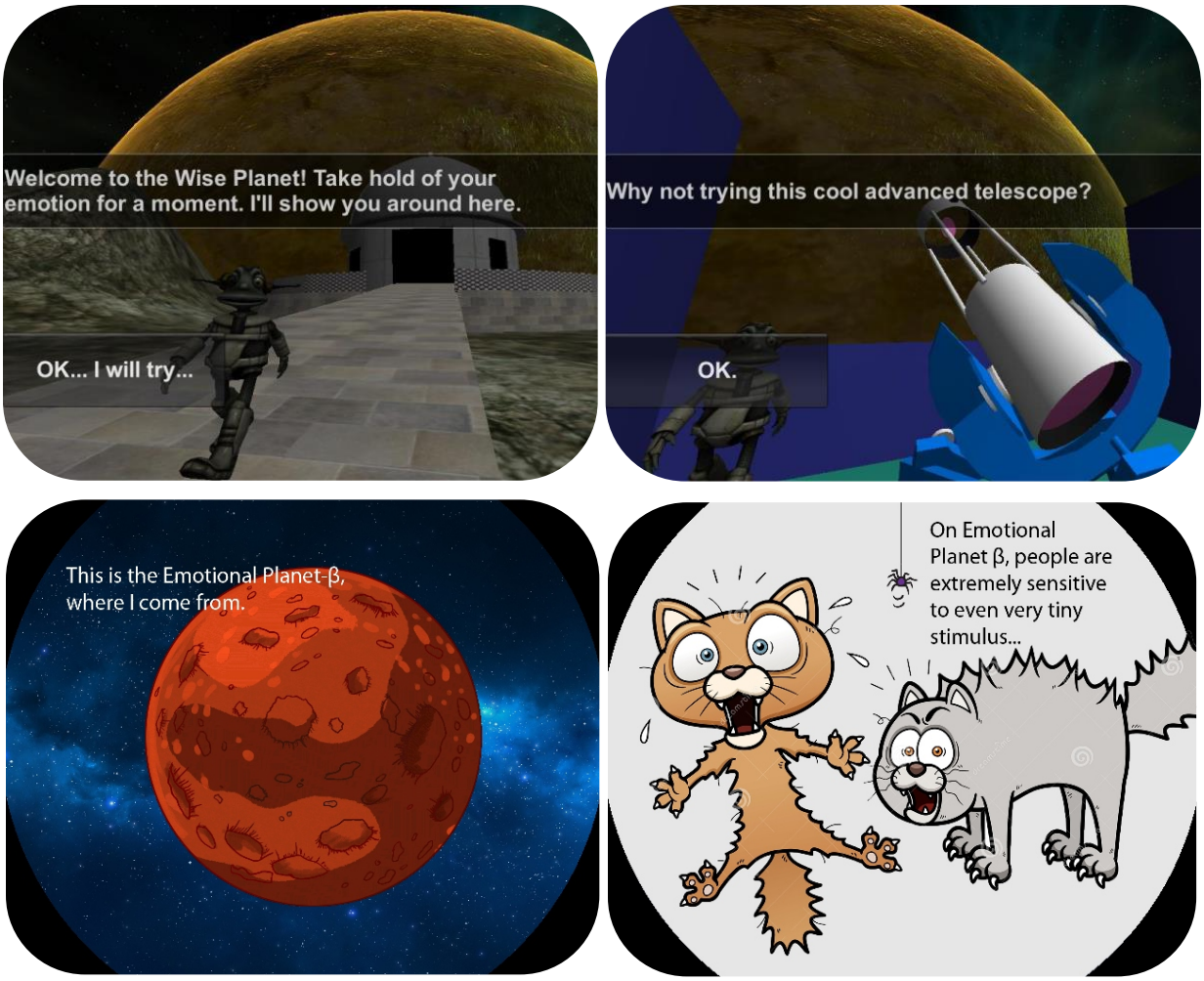


Figure 5: Screenshots of Version 3

Although we liked the improvements in this version, such as the image presentation of internal emotions, the more delicate teaching of the DBT skills, and the fictional style, a few more problems became obstructive. First of all, the approach was appealing for the first one or two scenarios, but was unsustainable with increasing scenarios, mostly because the program was still "skills-oriented" rather than "scenario-oriented". On one hand, we expected the fictional alien character to teach something in general, e.g., the "three planets", such that after multiple scenarios, all the skills in a module could be covered. On the other hand, each scenario was very specific, and involved a distinct set of skills. As a result, the difficulty of designing specific scenarios for certain skills re-appeared. We were essentially still focusing on covering the DBT

skills rather than resolving the conflict in the situations. Second, from the participant's perspective, this structure might be unfriendly. It created an awkward feeling of repetitively transferring between peacefulness and emotionality, leaving the distressing impression of being treated as abnormal. Last but not least, from a practical perspective, a blend of 2D and 3D contents was difficult to implement with Unity3D, which specialized in 3D creation. With the increase of content, the difficulty to program grew rapidly to a progress-limiting obstacle due to lack of expertise in game programming. All factors combined, we decided to re-evaluate our strategies.

2.4 Intermediate Summary

The early versions converged on several effective strategies with which we could continue. First, the DBT skills should be embedded in representative scenarios. These scenarios were supposed to demonstrate how the relevant DBT skills could be applied to solve the conflicts, and thus served as a virtual simulation of reality for the participants to practice the behavioral skills. Although this principle was adopted in all three versions, a more effective way of integrating the DBT skills remained to be explored. Second, the DBT skills should be combined instead of taught individually. The program was intended as a post-DBT supplement, when the patients already completed the 20-week skills training. Repetition of the whole learning process was therefore unnecessary. From a practical point of view, the behavioral skills were highly coupled and were used in a spontaneously holistic manner, so designing a scenario for any individual DBT skill (Version 1) was extremely unrealistic, if not impossible. Third, visualizing the consequences of the DBT skills use was critical. Patients lacked the ability to see the consequences of their behavior and other options before taking impulsive actions. For this reason, it is important to present what one's behavior might lead to, especially the contrast

between skillful and ineffective ways of coping, as we attempted in Version 2. Fourth, details of the contents should be prioritized despite technical limitations. From the simple text description (Version 1), and steps of actions (Version 2), to picture illustration of emotions and thoughts (Version 3), accumulating details were enriched, and this should be continued in versions to come. Although presenting these materials in 3D was difficult for us, the content was what therapeutic effectiveness relied upon and thus should always be the priority, while the mode of presentation could be substituted. These lessons prepared for the fourth version.

2.5 Version 4

The forth version was a methodological shift from "skills-driven" to "story-driven". Instead of adapting situations for particular DBT skills, as in Versions 1 to 3, we switched to fitting DBT skills into the situations. Besides the issues with the skills-driven approach above, it should also be recognized that the DBT skills are not essentially idiosyncratic or specialized capabilities that deserve specially tailored situations. In contrast, they are present in any situation in life. Healthy people are too habituated to be aware of using them spontaneously, but patients did not successfully develop or acquire them early in life. As a result, therapists in the standard treatment must dissect the healthy emotion regulation into the DBT skills, the same way as teaching swimming by analyzing individual movements before they are consolidated into procedural memory. In the training program that serves as a practice, the focus on situations enables the naturalistic integration of these skills and realistic simulation of actual life events. This requires the design of stories that are not only real but also relatable to the patients.

Under this guideline, the structure of Version 4 was a series of situations forming a storyline (Figure 6). In each situation, the participant was shown how the character reacted in a dysfunctional way and lead to an undesired consequence. Then the participant was asked to use

the DBT skills to change the consequence. They were offered three groups of DBT skills to choose from (Figure 7). One group represented the best set of skills in the current situation; others contained various numbers of irrelevant skill items. The rationale was such that the participant could actively pick the DBT skills of their choice in contrast to previous versions where they were given the skills passively. This change created a subtle but important transition from "relearning" to "practicing". Associated with the choices were various consequences, all different from the earlier undesired one, so that the participant learned how these DBT skills could have an effect. Throughout the program, the participant was essentially working on re-directing the storyline via choosing different combinations of DBT skills. The increased emphasis on storyline, nevertheless, posed greater technical difficulty in programming. As a compromise, we decided to present the program on PowerPoint slides, which allowed us to focus on the expertise in therapeutic content design at this early stage, while still reserving the possibility to seek technical support for 3D implementation later on.

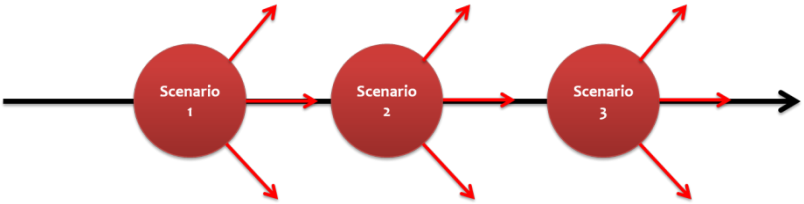


Figure 6: Structure of Version 4

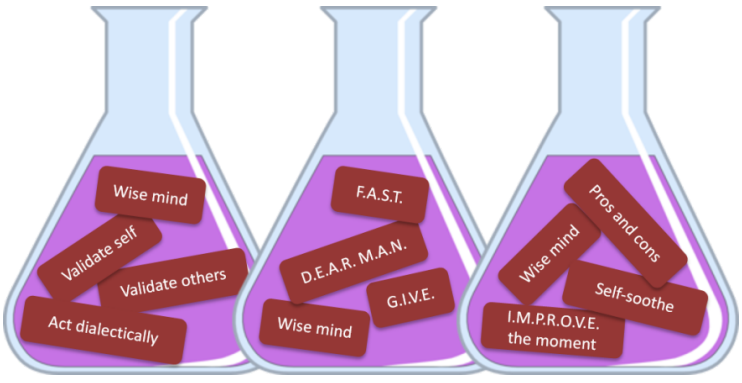


Figure 7: Skills selection in Version 4. Among the three sets of DBT skills options, skill set #1 represents the most effective skills in the given situation, and the other two contain various numbers of irrelevant skills.

We developed six independent series of situations, each around one theme (1-*Curfew*; 2-*Internet Lover*; 3-*Dance Class*; 4-*Parent Meeting*; 5-*Exchange Program*; 6-*Family Vacation*). However, problems with this approach emerged. First of all, although multiple scenarios were expected to flow naturally, the multiple-choice design made it difficult to control the flow of storyline. In response to an event, each set of DBT skills would lead to a divergent result depending on the participant's choice. Meanwhile, these divergent developments had to be re-unified such that the overall plot followed the pre-determined storyline. A tweak would result when the participant's choice led to a good consequence but we frequently had to drag it back on track to prepare for a next conflict event. Such distortion produced a less naturalistic and realistic storyline than expected. Second, not all choices corresponded to a presentable consequence. As aforementioned, the three choices differed in the number of irrelevant DBT skills. For the most relevant and effective combination, we could easily visualize how applying these skills made a change. However, for the choices with irrelevant skills, it was difficult or impossible because the skills simply had nothing to do with the situation, so faking such scenarios reduced the realistic quality even further. Third, because all the events were associated with some emotional difficulty, linking several of them together became emotionally exhausting and stressful. Fourth, the situations were often related with or conditional upon one another, so it was inconsistent with the DBT idea of one-mindfulness, which promoted focusing on only one thing at a time. Last of all, by showing only the simple reactions of the character (the consequences) in response to the participant's choice of DBT skills, this version lacked the more delicate illustration of how the skills were applied. Therefore, its educational power was limited.

2.6 Version 5

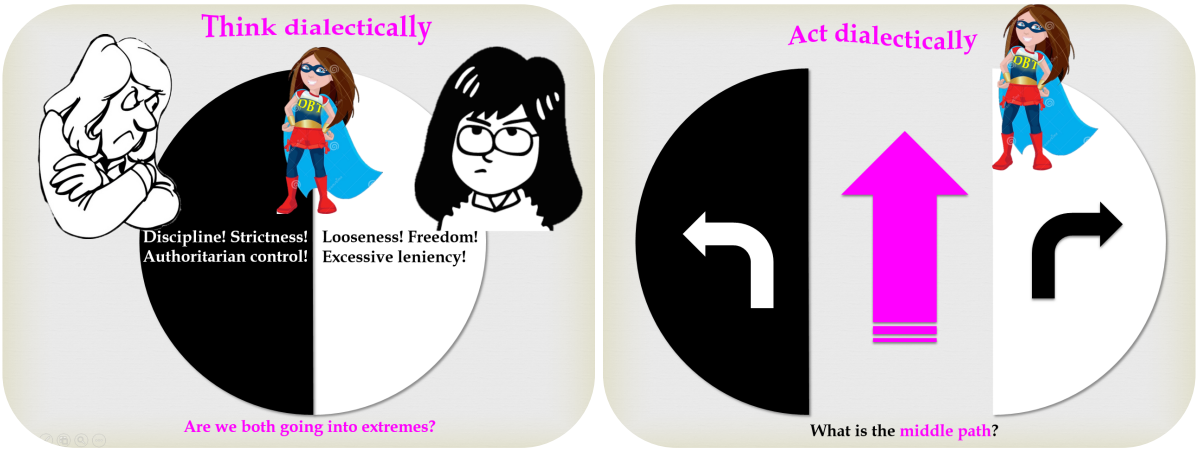
Built on previous attempts, the fifth version is the most recent version. In terms of the general structure, it differs from the fourth version in two most significant aspects. The first is the elimination of the multiple-scenario structure and the focus on one single scenario in each task, thus circumventing the difficulty of storyline control and implying the one-mindfulness concept on problem solving. Among all the six scenarios that the current version has, common adolescent issues with regard to parents, peers and the school are included. Specifically, the first task, *Curfew*, deals with effectively negotiating with parents about late outing after the curfew. The second task, *Internet Lover*, is about dating strangers on the Internet. The third task, *Dance Class*, involves finding a middle path between mom's strict control and the daughter's desire to keep a romantic relation, where the character lies to her mom about taking a dance course in order to hang out with her mate. The fourth task, *Family Vacation*, is related to resolving a misunderstanding between parents and the child, in which the parents mistakenly blame the daughter for not being actively involved in the family activity, the family vacation. The fifth task, *Physics Class*, tells the story of skipping the class to drink under peer pressure. The last task, *Red Ink*, focuses on viewing a situation from multiple perspectives in the case of a strict teacher who always gives harsh comments on students' works. Each task emphasizes a group of DBT skills, and all six tasks combined cover all the skills in DBT (Figure 8). In Figure 8, the core mindfulness module is "excluded" because these skills are so fundamental that they underline all other skills. We teach it by implying the concepts rather than explicitly separating them. The PowerPoint slides for the entire six tasks are attached in APPENDIX A.

Modules	DBT Skills	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
CORE MINDFULNESS	1. Wise mind						
	2. Observe (Just notice your experience)						
	3. Describe (Put words on your experience)						
	4. Participate (Become one with your experience)						
	5. Non-judgmentally (Don't judge, just state the facts)						
	6. One-mindfully (Focus on one thing at a time)						
	7. Effectively (Focus on what works)						
EMOTION REGULATION	8. Observe and describe emotions	✓	✓		✓	✓	✓
	9. PLEASE (Reduce emotional vulnerability)	•	✓				
	10. Building mastery	•				•	
	11. Engaging in and planning pleasant activities				✓		✓
	12. Acting-opposite to current emotion		✓		✓		✓
	13. Bing mindful of emotions	✓	✓		✓	✓	✓
INTERPERSONAL EFFECTIVENESS	14. Making/Accepting or Refusing a request	✓		✓	•	✓	
	15. DEAR MAN (Getting what you want)		•	✓	•	✓	
	16. GIVE (Improving the relationship)	✓		✓		✓	
	17. FAST (Keeping your self-respect)	✓		✓		✓	•
	18. Cheerleading statements for worry thoughts					✓	•
DISTRESS TOLERANCE	19. ACCEPT (Distract)				✓		✓
	20. Self-soothe (5 senses)			•	✓		
	21. Pros and cons	✓			✓		✓
	22. Improve the moment			•		•	
WALKING THE MIDDLE PATH	23. Validate self	✓	✓	✓	✓	✓	✓
	24. Validate someone else	✓		✓	✓	✓	✓
	25. Think and act dialectically (Non black and white)			✓	✓		✓
COUNTS		8	5	7	10	9	9

Figure 8: DBT skills coverage in Version 5. "√" marks the relevant skills that are actually applied in each task. "•" marks the irrelevant skills that are only given as options. "*Core Mindfulness*" module is not explicitly included but these skills are implicitly applied throughout the program. (Mbekou, V., Mikedis, Th., Zanga, J., Malinski, C., Jodoin, M., Janelle, A., Stolow, D. & Renaud, J. (2011). DBT Multifamily Skills Training Group for Adolescents. Adapted from Linehan (1993) and Miller et al. (2007) Douglas Mental Health University Institute, Montreal).

The second structural difference is the more detailed introduction to the scenario and more elaborate presentation of the DBT skills. We borrowed the strategy from Version 2 where two contrasting consequences stemmed from a situation were shown, illustrating the dysfunctional strategy and the DBT-way of coping respectively. It is through the comparison of these two lines of development that the effect of DBT skills use emerges. To be more specific, given in the first place is the undesired coping strategy leading to a negative consequence. In this

process, the approach of Version 3 is adopted to demonstrate in detail the triggering cues, the character's internal emotions, other people's reactions, and how these together result in a crisis. Then the participant is asked to help the character resolve this crisis with their DBT skills, redirecting the situation toward a second and more constructive result. Here, the similar approach from Version 3 is generalized to demonstrate step by step how each individual DBT skill is applied, in contrast to Version 4 where only the result was given. Also different from previous versions, the skills are presented in terms of how they are used rather than what they are (Figure 9). Take the "*to observe and describe emotions*" skill as an example, we visualize a clear flow chart of the emotional fluctuations, from triggers to thoughts, from urges to actions, as oppose to simply offering the theoretical definition. On the other hand, as the most fundamental concepts, the *Core Mindfulness* skills are implied throughout the process instead of explicitly narrated. In summary, the current version consists of two contrasting storylines stemming from the same scenario, connected by the selection of effective DBT skills, all of which are presented in more considerable depth than previous versions.



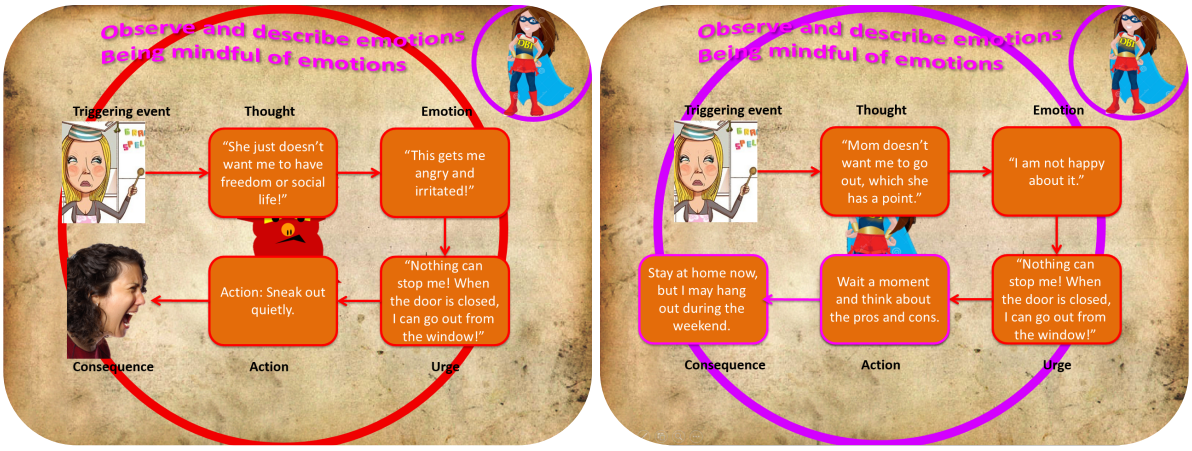


Figure 9: Presentation of DBT skills in Version 5

To make the program more entertaining, we situated the realistic scenarios into a fictional setting. The participant, or the user of the program, is assumed to be a "superhero" equipped with the DBT skills (Figure 10). She lands on an imaginary "emotional planet" where native people have difficulty regulating their emotions and behave in an emotional and impulsive way. The goal is to transform this "emotional planet" into a "wise-mind planet" through the use of DBT skills. The participant will witness how the characters fail to cope effectively with some "emotional" emergencies (negative consequences), which are the scenarios we designed. Her task is to travel back in time to the beginning of the events, and to use the DBT skills to help these people find better coping solutions. This will lead to better endings of the situations (positive consequences). As they progress, they are not only changing the way people behave in the situations, but also helping to change the planet into a more peaceful-looking "wise-mind planet". In addition to the entertainment considerations, this design also fits the general purpose of the program, that is, to practice instead of relearn the DBT skills. The user is assumed to have acquired these skills already, so it coincides with the role of a "superhero" with super powers. Furthermore, from the superhero's point of view, the participant is watching the situation from a third person's perspective. Her task is to help others, i.e., the characters on the planet, who suffer

from similar emotional crises as he or she used to experience. This perspective reduces the psychological burden and stigma that address all the behavioural problems towards the participant, such that she can feel free to assume a more active role in the program. Overall, such a fictional design not only aims to be fun, but also creates a supportive and validating atmosphere to promote DBT skills use.

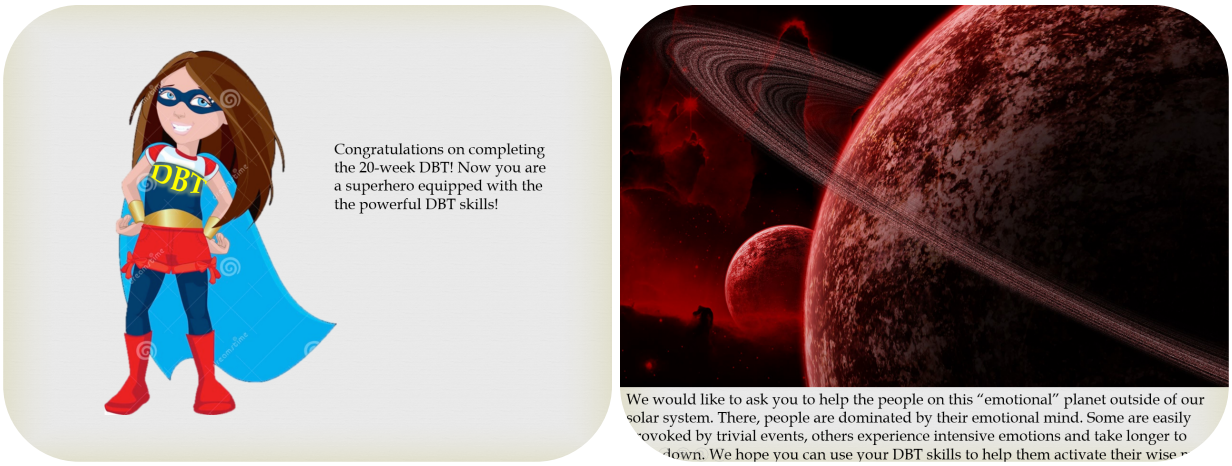


Figure 10: Superhero and fictional planet in Version 5

Linking the negative and positive paths of each situation is a skills selection step (Figure 11). Given a subset of DBT skills, the participants are asked to choose the ones that can help the character in the current situation. Unlike Version 4 where they are given multiple groups of skills to choose the best group, here they have to consider all the skills offered and to formulate their own optimal combination. To make the exercise easier and more constrained, some suggestive guidelines are provided as for the character's preferred reactions. These guidelines correspond to the functions of different DBT skills, so essentially the participants' task is to match the DBT skills items to their function categories. In this way, the guidelines not only match the functions of the DBT skills, but also reflect the problems or objectives in the situation, such that they establish a link between the DBT skills and the situation. For example, in the case of negotiating with the parent on curfew time, one guideline is to choose the skills that "*get what she wants*

while maintaining her self-respect", which implies the interpersonal effectiveness skills of "*G.I.V.E.*" and "*F.A.S.T.*". Another example is to "*make sense of her own feelings while also trying to understand her mom*", and this reminds them of the validation skills. The simple exercise does not expect to examine right or wrong answers, but is an opportunity to reflect on the materials learned, to think about the situation, and finally to decide what DBT skills can help.

Figure 11: Skills-matching exercise and hints in Version 5

2.7 Evaluation

A preliminary pilot study was performed to evaluate the quality of the program. The study served two objectives. The first and primary objective was to obtain feedback from participants, which would provide guidelines for future improvement and implementation. The secondary objective was to assess the clinical effectiveness of the program tentatively. We were

interested in whether the program would help increase DBT skills use. The study was approved by the Research Ethics Board (REB) of the Douglas Mental Health University Institute. The protocol, questionnaires, consent forms and ethics approval are attached in APPENDICES C to G.

Participants were recruited from the current DBT cohort of 17 adolescent patients at the Depression Clinic of the Douglas Mental Health University Institute. All the patients were female. These patients completed the 20-week DBT individual sessions and multifamily group skills training in late April 2014, and started the six months' individual follow-up sessions. During this follow-up period, they were invited to be tested on our prototype training program which intended to be a supplement to standard DBT for skills practice. The recruited participants were divided into experimental and control groups, with a relatively larger experimental group so that more patients could give feedback on the program. The group assignment was not perfectly randomized, because the principal goal was to keep as many participants as possible. In cases where the patients were not willing to use the program, we still offered the opportunity to participate as a control, compromising the randomization in favour of increasing the sample size. One participant from the previous year was also included. We ended up having 10 participants in the experimental group and 5 in the control.

During the study (Figure 12), both the experimental and control groups continued their DBT individual follow-up sessions as usual, and only the experimental group were given the training program. The current version consisted of six tasks divided into three weekly sessions. Each session took about 40 minutes to complete, and was followed by an "in house" questionnaire that inquired the participants' feedback on each individual task. The entire program therefore took three weeks. Prior and posterior to the three-week period, both

experimental and control groups were given a Dialectical Behavior Therapy Ways of Coping Checklist (DBT-WCCL) (Neacsiu et al., 2010), a measure of DBT skills use. The pre-study DBT-WCCL scores were taken from the DBT because this questionnaire was part of the standard testing battery for post-DBT evaluation.

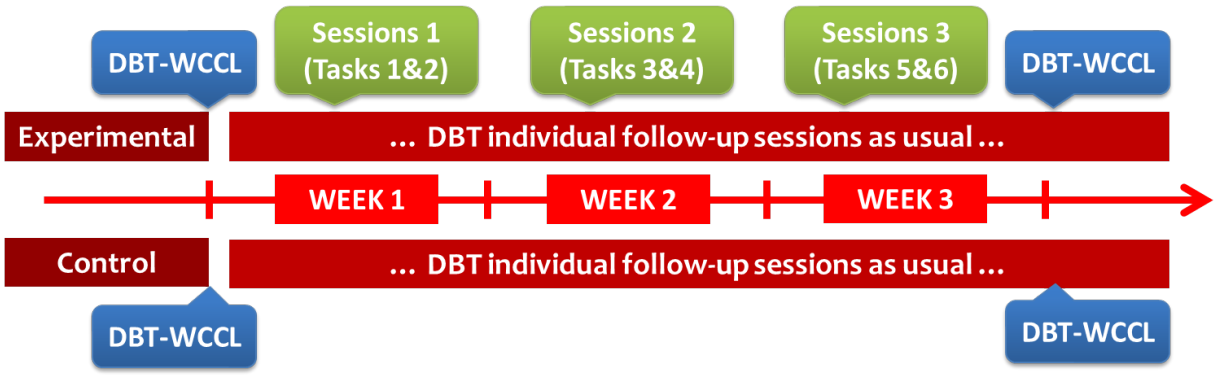


Figure 12: Illustration of the evaluation study procedure.

Chapter 3 RESULTS

Considering that a large body of the data are qualitative and subjective, the analysis and results are organized as follows. First of all, we quote representational testimonials from the participants' verbal reports to reflect their opinions faithfully. Based on the verbal reports, a rank of elements that received the most concentrated positive and negative comments was produced. Detailed accounts of the participants' subjective feedbacks were organized into each task and different components of the program, and can be found in APPENDIX B. Second, we present the descriptive statistics of the participants' subjective ratings on various components of the program to reflect its overall quality. These components include the scenario, the skills-matching exercise, perceived level of easiness, entertainment, and etc. Also presented are the participants' scores in the exercises. Third, we performed an in-depth statistical analysis to investigate the potential effectiveness of the program, and the tri-lateral relations among the age, DBT skills use (DBT-WCCL), and subjective preferences.

3.1 Qualitative Analysis and Testimonials

After the participants completed each individual task, we invited them to give subjective comments on the program. We also specifically probed for what they liked and disliked, what they had learned, and their expectations on such computer-based training program in general. Their verbal reports were audio-recorded upon informed consent, and were later transcribed for qualitative analysis. The following are selected representative feedback, both positive and negative. For confidentiality, the participant numbers are assigned arbitrarily throughout the thesis.

Participant 1: "*It's a good program. It helps to see the different skills in different situations. It helped me remember the skills instead of having to go look in my binder.*"

Participant 2: "*I think it's pretty cool. I see how definitely it will be helpful. I think the situation is definitely a possible situation. I think the only part that I find kind of repetitive is the being mindful of emotions. They are a bit repetitive and I was kind of confused at some point, but towards the end I realized that there was more of a pattern, because at first I just thought that was a mistake or something that was repeating.*"

Participant 3: "*I really like it, even without the whole animation or even without it being a legitimate video game… I would use it just as a slide show, and it would be helpful. It doesn't need anything else.*"

Some typical negative comments:

Participant 4: "*I think it was a good idea. There was something that was 'in' about. Number one was that Kate and her mom kept changing the way they looked. It was not really a big deal but it was bugging the heck out, so it was kind of confusing. Also I found that the end part when it was like 'oh yeah you did it', what you had to do was kind of I found it was too hard to be like this this this. It should be more flowy. It was like 'you get this', 'you get that'. I felt I was talked down to, I guess. It was so clear that it looked like a kindergarten kid kind of thing, so it was not giving me as much credit as I have.*"

Participant 5: "*I think it's interesting but it's still like the same activity every time. There's only one activity throughout the whole entire thing. So it's like reading, reading, reading, match, and then reading, reading, reading… It's always the same like matching things. Maybe it could be something that mixed up.*"

Participant 6: "*It doesn't happen in your everyday life, but I find that sometimes things in DBT happen every day. This doesn't help me because I don't really go through this issue with my*

parents or whatever. But I think it's maybe also how you present it. But obviously lying to my parents about where I am might be something that I do every day. Not every day but often."

We pooled all the comments together and analyzed what the participants liked and disliked the most, the most commented elements of which are given below. Detailed accounts of these elements follow in the next session.

Top five "Likes":

(1) *Scenarios*: Participants thought that the virtual situations were realistic and that the character's personal feelings were reasonable and relatable.

(2) *Skills use*: All the participants said the program was helpful in practicing the DBT skills they learned and that the format was a "pleasant surprise".

(3) *Length*: The length of each session is reasonable. It is difficult to keep adolescent patients sitting quietly for a long time. The current length of 10 – 15 min per task is considered acceptable.

(4) *Fun*: Participants found the program funny and that it was presented in an entertaining way.

(5) *Easiness*: Participants liked that the exercise was not challenging. They did not have the unpleasant experience of being tested. The hints to each skills option were highly praised.

Top five "Dislikes":

(1) *Scenarios*: Despite being liked the most, scenarios were prone to divergent comments. Some participants did comment that certain situations and the characters' reactions were too dramatic to be relatable.

(2) *Age target*: The program and the style were perceived by some as too childish for their age. Age-specific presentation was recommended.

(3) *Repetitive and few activities*: The current exercise was helpful but there was only one activity in each task. The same structure repeated throughout the six tasks.

(4) *Exercise on different pages*: In some tasks, the skills options and the function categories were put on two slides due to extensive content. Participants found it difficult to have to flip back and forth between pages.

(5) *Inconsistent images*: The images in the program were collected from the Internet for the purpose of illustration, thus lacking the professional quality. Frequently, the same character was shown with different pictures depending on their action and situation. Some participants found it confusing.

(6) *Other miscellaneous elements* include being unserious, inconsistent wording with DBT, repeated content and format, long storyline and etc.

3.2 Descriptive Analysis

(1) Scenarios: Are the scenarios realistic?

As the principal canvas of the program, the scenarios are the most prominent element of the program and received the most extensive comments. When probed to give free comments, most participants focused on the story *per se*. Their subjective ratings for all the six scenarios as well as the average are shown in Figure 13. Although the majority of participants could relate to the situations and found the characters' reactions and thoughts understandable, individual variance was large. The same scenario often received conflicting comments.

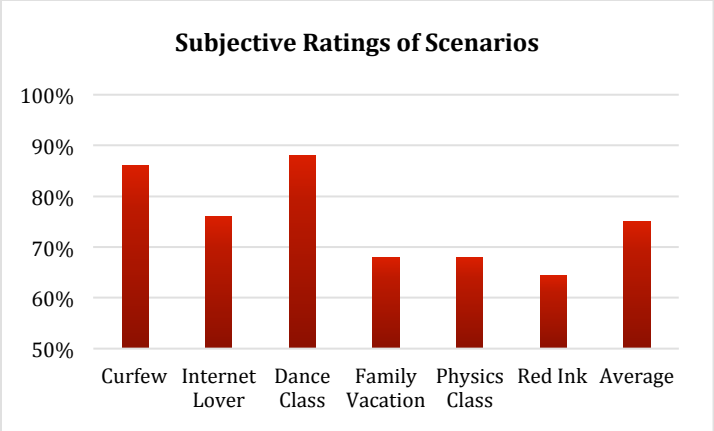


Figure 13: Subjective Ratings of Scenarios

Take the *Family Vacation* task as an example. In the scenario, Jenny's parents take the daughter on a family vacation. On the road, being excited about the trip, Jenny keeps interacting with her friends on the phone or over the Internet. The parents cannot understand the way Jenny expresses her joy, and blames her for being absent-minded from the family. Hearing this, Jenny throws her iPad out of the car window and her tantrum destroys the whole day. Some participants found Jenny's reactions intense and exaggerated. For example:

"*I don't find her reactions relatable or realistic. They are too extreme.*"

"*The situation is not realistic because she threw the iPad out of the window. I thought both parents were too calm to the child.*"

Some recognized that certain aspects were exaggerated but found it largely acceptable (when asked if the girl's reaction is exaggerated):

"A *little bit, for my age. I don't know how everyone else reacted but I would never throw a tantrum. I have boundaries when I am in public, so even I want to throw the table or whatever, I would never actually do that. I have seen it happen, but not for me.*"

"*The scenario was a little too much. No one would throw their iPad through a window. It was like…you know, I found it a little funny, you know. Too realistic isn't fun either. I liked it anyway, a little less than the others because it was more difficult.*"

Still other participants could totally relate to the situation:

"*I really liked it, because it happened multiple times. I actually had those situations happened. When my parents thought I was upset, it made me more upset. Also when I was upset and I was actually upset, I used all the skills to make sure that everyone else had a good day. I liked that the girl was kind of too obsessed with her phone to talking where she was and what was happening. I get that making everyone else' day a bad day. I would remain angry and I would not talk to anybody, and I stay on my phone and I wouldn't eat or anything. I think this one was really good. I like this one the best, because my parents had those reactions as well.*" This participant's comment was unexpected because she contributed many negative comments to all other tasks but surprisingly praised for this one.

Another participant said: "*That happens to me a lot. When people accuse me of being unhappy, I get really unhappy. I get really upset. It happens with my parents, too, where I ruined days, so I could definitely relate to that. I might not destroy a whole kitchen or stuff like that, I would definitely yell a lot. Definitely destroy things. This slide show is like the most helpful for me because it happens on a daily basis. It does happen a lot. I don't even think it's too extreme or even exaggerated. It is a little exaggerated but I don't think it's a bad thing.*"

In the creation of the scenarios, we intentionally stretched them to be more dramatic. One of the marked features of borderline symptom is extreme reaction to even trivial stimulus. We thus intended to reflect such behavioral pattern in the scenarios, but in a less serious and more dramatically extreme way to avoid judging or stigmatizing the patients. In reality, patients are often better at recognizing problems in others' behaviors than solving their own issues. Although they claim to have boundaries and not to act in certain ways, it is their "unbounded" behaviors that teach us how to design the scenarios. Moreover, even if the reactions were considered too

extreme, most often they found the thoughts and feelings accurate, and could get the idea to complete the program, thus still got the training. Therefore, despite some negative comments, there was no need for major modifications with respect to the contents of the scenarios.

(2) Skills-matching exercise: Are the choices easy?

Despite the simple structure of the skills-matching exercise, most participants liked it, especially when it was put in context of a scenario. When asked what they liked about the program, many participants spontaneously answered, "*I liked the activity*". For example, "*I liked choosing skills. It reminds you of the skills learned. I liked seeing good results of using her skills learned. No criticism. (I) really liked the game*". To complete the exercise, the participants had to reflect on what they learned from DBT and thus it helped to reinforce the knowledge. For example, a participant commented: "*I do need to think a little bit. There's still thinking involved. I don't think they are too difficult.*" One thing welcomed in particular was the hints. Realizing the difficulty of remembering all the skills items, we provided the option to click on the choices to display the hints or definitions. A participant praised: "*I liked the fact that you can click on the definitions. It's really helpful when you don't remember.*" Another participant made the same point multiple times: "*I like that they show you the definition, again. That's so cool.*" This feedback supported the satisfactory fulfillment of the program's objective to refresh the DBT skills learned.

Negative comments on the exercise centered on two aspects. The first was the repetitive format. The activity was the same for all the six tasks, but some participants were expecting more diverse exercises. For example:

"*I think it's interesting but it's still like the same activity every time.*"

"*It was the same as the other one. It would be cool if it changed a little bit, so it's like I'm not doing the exact same activity, so like doing something different to get me…not out of my comfort zone but just refreshing it up. Now it's the same format all the time.*" The second complaint was that there was only one single activity in each task. Some participants commented:

"*I thought there was gonna be a lot more.* (Experimenter: '*More exercise?*') *Yeah.*"

"*I liked the activity and liked using the DBT skills. I wanted more interactions, more than one activity.*"

We agree that there should be more interesting activities, and this will be a focus of change in the next version. Interestingly, patients' opinions are frequently divergent. When another participant was asked explicitly whether there should have been more activities, she said "*No. You can always do two (tasks) if ever.*"

We coined two parameters to quantify the performance in the skills-matching exercise. The first, the absolute score (AS), measured the accuracy of matching the skills options to the function categories, thus characterizing the ability to remember and identify the DBT skills. As aforementioned, among the given skills were some irrelevant items to the situation. To measure the participants' ability to identify the relevant and helpful skills in a situation, we used a second parameter: the relevant skills score (RSS). As long as a skill was correctly identified as relevant or irrelevant, a point was counted to RSS regardless of the exact function category. By definition, the RSS was a simplified version of the AS, and had inherently higher scores.

Figure 14 shows in percentage the AS, RSS, and participants' subjective rating of easiness. In terms of the AS, participants achieved higher than 75% correct in three tasks, i.e., *Curfew* (94%), *Dance Class* (84%), and *Physics Class* (77%), while in the other three tasks the scores were lower, for the following two reasons. For the tasks *Family Vacation* and *Red Ink*, we

tried a different way of phrasing the exercises. Unlike other tasks where the functions or categories were described in very specific details, e.g., "*(pick the skills) that can help her communicate effectively with her mom while still maintaining her own self-respect*", in these two tasks, we only provided broad and general categories, such as "*to regulate her emotions*", "*to help her tolerate the distress*", and "*to keep an effective interpersonal relationship*". Although these abstract function categories matched the DBT modules to which the skills belonged, the participants found it difficult to remember these modules and thus performed worse. Indeed, this is reflected in their verbal feedback:

"*Categories are not very detailed so I got confused sometimes when doing the activity.*"

"*I liked it anyway, a little less than the others, because it was more difficult. The activity was more difficult.*"

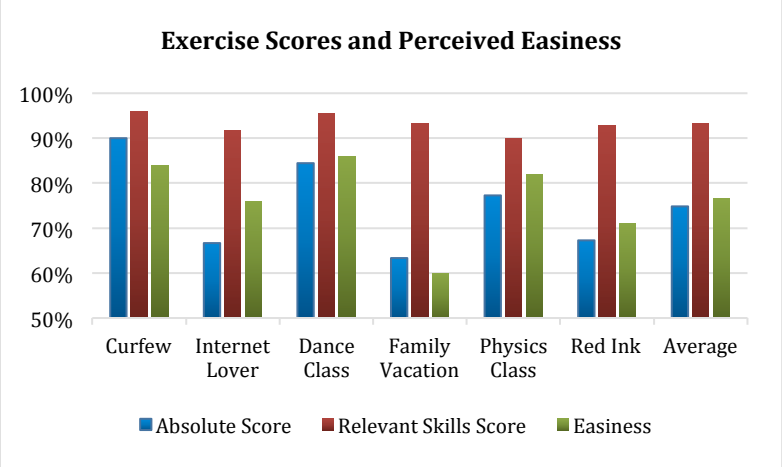


Figure 14: Exercise Scores and Subjective Ratings on Easiness. Absolute score (AS): the performance in identifying the skills options into their function categories. Relevant Skills Score (RSS): the performance of recognizing helpful and relevant skills options regardless of the accurate function groups. Easiness: subjectively perceived level of easiness in scales 1 to 5.

For the second task, *Internet Lover*, the low score could be attributed to the fewer skills options available. In other tasks, an average of 10.6 skills options were given, but in this one, there was only 6, leading to the amplification of performance due to the elevated weight of each

option in percentage. Whether the performance is accurate or not, it will be amplified. The activity itself was not markedly more difficult than others. Indeed, the subjectively rated easiness of this task was 76%, close to average (77%). However, the absolute score in this task was only 67%, much lower than the average of 75%. Furthermore, this particular task had the largest disparity (measured by the absolute difference of AS and perceived easiness, both in percentage) between actual performance and perceived easiness (9.3%). This is 1.5 times higher than the second highest task (6.0%) and more than twice the average (4.4%). The disproportionate difference possibly supported an external attribution of the low AS, such as the score calculation process.

The RSS was higher than 90% in all the six tasks, reaching an average of 93.2%, so participants were able to identify at least what DBT skills were helpful in each situation at higher accuracy than AS. Furthermore, there was a significantly positive correlation between AS and subjectively rated easiness ($r = 0.857$, $p = 0.029$, $N = 6$; Figure 15) for the six tasks, indicating a consistency between perceived easiness and actual performance. No such relation was found for RSS (data not shown).

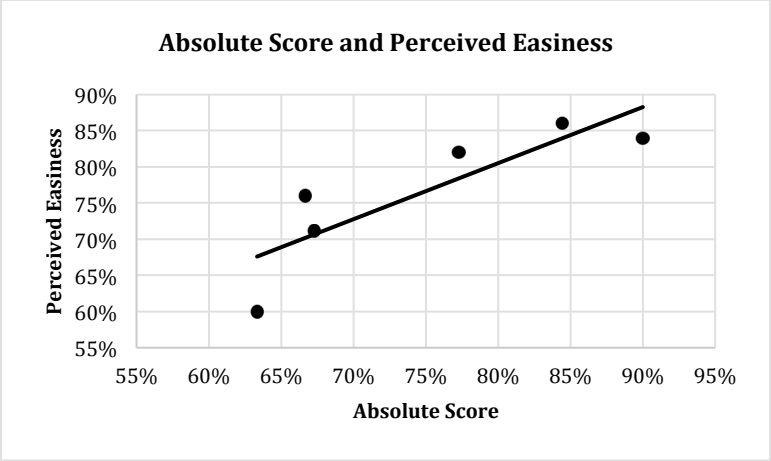


Figure 15: Correlation between Absolute Score (AS) and Easiness ($r = 0.857$, $p = 0.029$, $N = 6$)

Lastly, it should be emphasized that the purpose of the exercises was not to examine the participants' performance, so the exercise scores may or may not be of value. The principal objective of the program is to practice the DBT skills, so the exercises were designed only to help refresh the skills acquired and to serve as a link between the DBT skills and the situations. Performing the analysis above was for quality control only. In fact, during the study, experimenters were explicitly required to avoid wordings such as "correct/incorrect", "right/wrong", and even "matching skills into categories". This was to avoid reinforcing the dichotomous either-right-or-wrong judgments on the DBT skills and the situation, which is one of the fundamental principles of DBT. Despite the imperfect choices and the difficulty, they still had to think over the skills and thus refresh their knowledge. As participants said, after the hardest task (*Family Vacation*):

"*I reviewed my skills. It was more difficult. It made me work a little more.*"

"*I really liked that you had to match the skills to the categories, although it was kind of confusing. The wording might…should probably be better for the question? But I liked the idea that I was able to remember so that to reinforce everything I learned.*"

(3) Other individual elements

The participants were also invited to rate on other aspects of the program, including (1) skills: "*Are the skills helpful in the scenario?*", (2) presentation: "I*s the presentation clear and easy to understand?*", (3) length: "*Is the length of the task good?*", (4) entertainment: "*Is the format interesting?*", (5) benefit: "*Does it help you practice the DBT skills?*", and (6) overall quality: "*How would you rate this task in general?*". These ratings were averaged among all participants for each task, and then an overall average of all tasks was calculated. The results are shown in Figure 16.

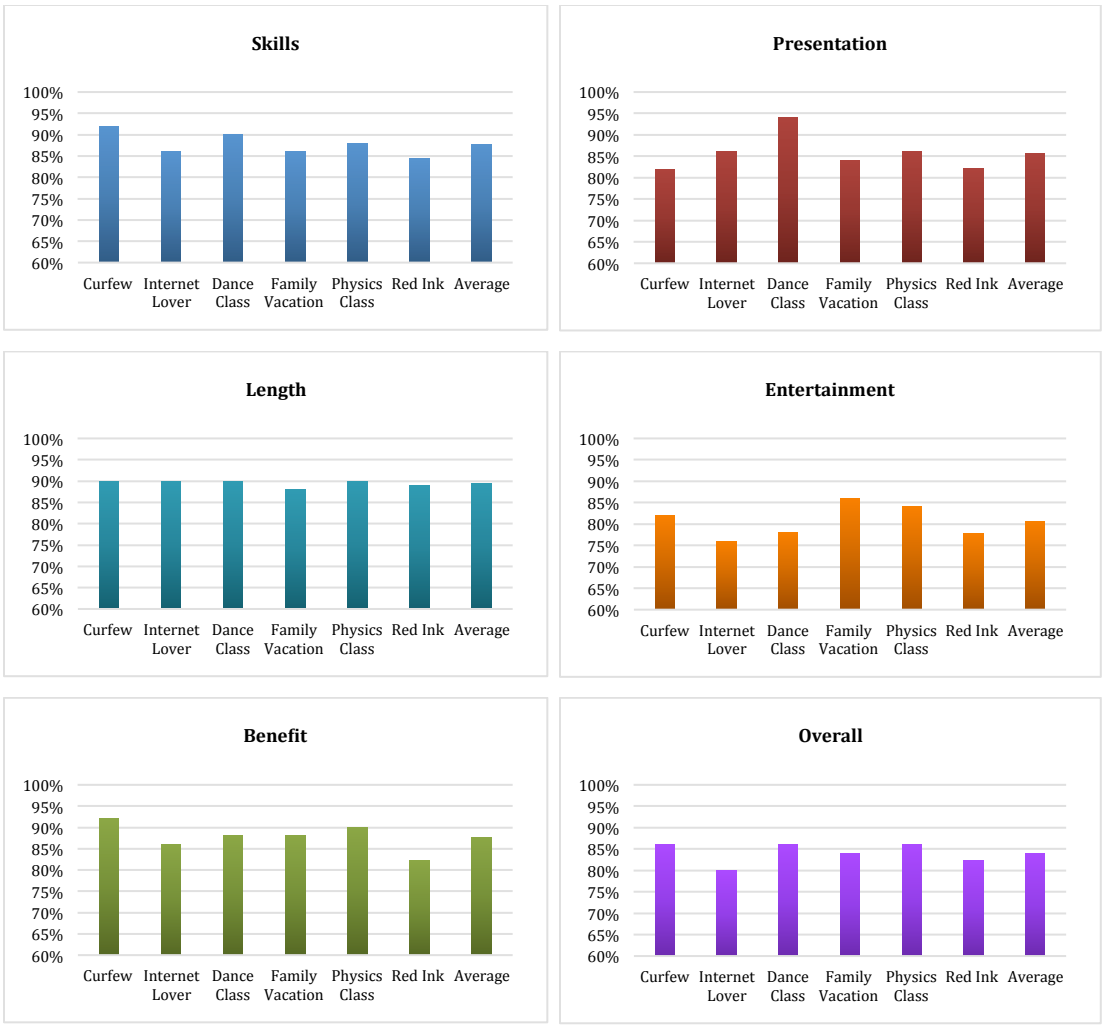


Figure 16: Subjective Ratings on Different Elements of the Program

In terms of the presentation, many participants thought it was clear, funny, and helpful, both the program as a whole and specific details. Extracted below are some of the positive comments:

"*I liked that it's interactive. I like that there are different images. It's interesting to look at. It's not all static.* When talking about the beginning of Task 1 (*Curfew*) where it started with an 'emergency': *Here I was a bit confused, because it wasn't in the context of the situation. As you went along you understand. It's good because it catches your attention right away: 'oh let me think, something is going on.' I think this slide is pretty helpful to introduce you to the situation.*"

"*Nice pictures. I thought it was gonna be multiple choices, so this animated design was a pleasant surprise.*"

"*I like the fact that you could turn…you know how you say the word Yeah, change the planet. It's pretty cool. I liked…I don't know the word… There's a part related to the consequences, the processing, yeah the chart showing the flow of emotions. I liked how it changed that.*"

In the meanwhile, negative comments on the presentation focused on four specific aspects. First of all, some participants thought the format was too young for their ages. For example, "*Maybe just the images, they are a little juvenile, but they're still OK, and they make me laugh sometimes at the images.*" "*I feel it childish, too, like how it's presented to you.*" Despite the surprise, in the next version we should be more careful with the age target. More on this point is discussed in the next session. Second, in some tasks, the skills matching exercise spanned onto two pages. This incurred a surprising amount of complaints because the participants had to flip back and forth. Third, the images of a character were not consistent and the same character looked differently depending on her situation and action. At this early stage of development, we could only collect images from the Internet for the demonstration, so we were not able to ensure consistent character models. This issue could be solved by professional designers in the future, but is hardly evitable at this early stage. The last thing extensively mentioned was the repetition in the presentation of "*observing and describing emotions*" skill. In the PowerPoint animation, the participants had to click the mouse multiple times to complete the flow chart of emotions, which they felt repetitive but skill liked the detailed illustration.

For the other individual components, participants' feedbacks were not particularly abundant or divergent. The results in Figure 16 generally reflects that the participants were very satisfied with the length of each task (10-15min), found the program interesting to use, and

believed the program was very helpful to reinforce the skills learned. Further elaboration may be unnecessary.

3.3 Inferential Analysis

(1) Age and subjective evaluation: Do younger teenagers like the program better?

Among the first few participants we tested, older adolescents tended to think the scenario too childish and to dislike the program, but younger participants appreciated the program better. We therefore asked if there was a negative relation between the age and subjective evaluation. To characterize the participants' evaluation irrespective of tasks, we averaged each individual's subjective ratings over the six tasks, resulting in one's impressions on the program in general. Quite unexpectedly, the result was opposite to our hypothesis. The age was positively correlated with the rating on scenarios ($r = 0.644$, $p = 0.044$, $N = 10$; Figure 17), suggesting that older adolescents actually liked the scenarios better.

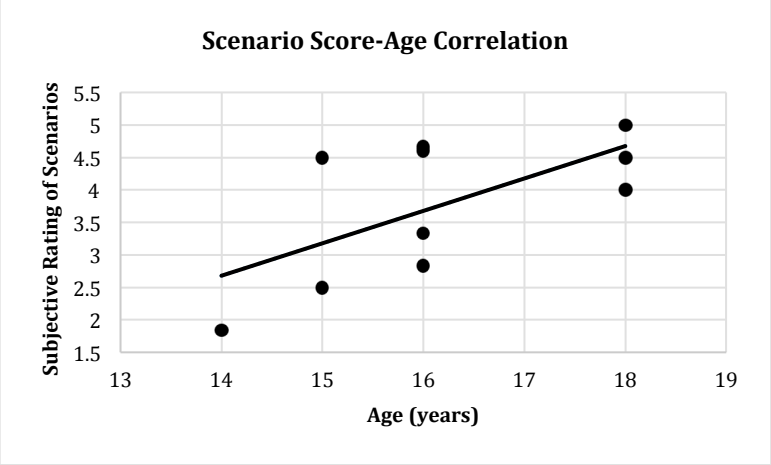
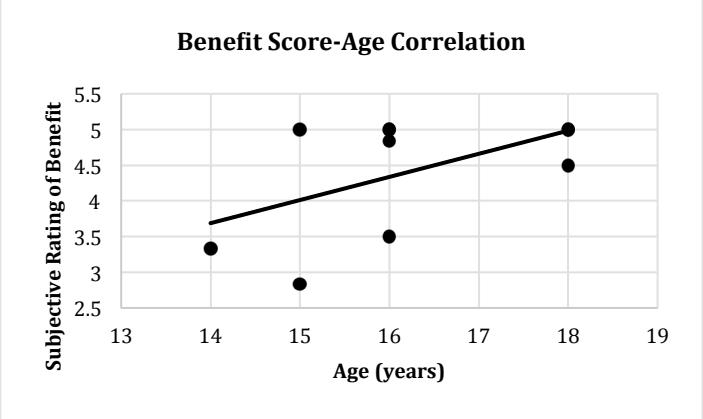


Figure 17: Correlation between the Age and Subjective Rating on the Scenarios ($r = 0.644$, $p = 0.044$, $N = 10$)

A similar trend seemed to hold for several other subjective evaluation scores, although not significantly (Figure 18). For example, there was a week positive correlation between the age

and the rating of the helpfulness of DBT skills in the scenarios ($r = 0.540$, $p = 0.107$, $N = 10$). In terms of how beneficial the participants felt about the program, it also displayed a weak positive correlation with age ($r = 0.537$, $p = 0.109$, $N = 10$). If this was real, then older adolescents seemed to give more credit to the program's effectiveness. Again, with regard to overall rating, this trend still existed, although again not significantly ($r = 0.499$, $p = 0.142$, $N = 10$).



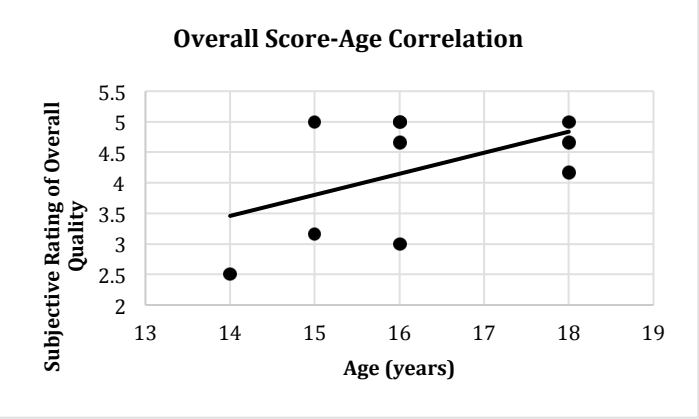


Figure 18: Relations between the age and subjective ratings on skills ($r = 0.540$, $p = 0.107$, $N = 10$), benefit ($r = 0.537$, $p = 0.109$, $N = 10$), and overall quality ($r = 0.499$, $p = 0.142$, $N = 10$).

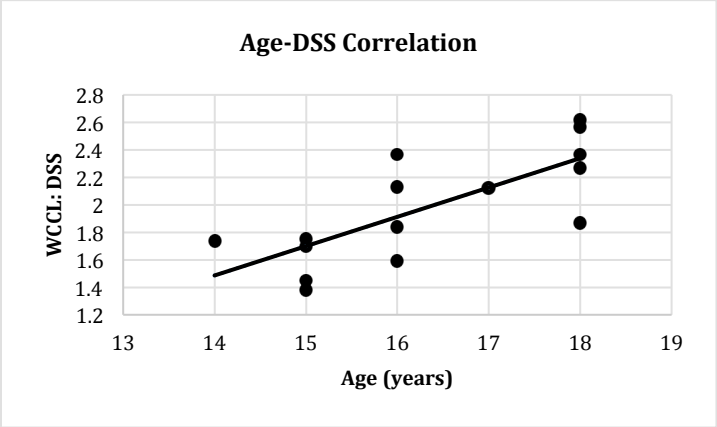
The result seems counterintuitive, especially considering that many elements of the program were indeed more appropriate for younger ages of adolescence, but it could be some underlying psychological factors that dominated the relation instead of the mechanistic chronological age. Adolescents show rapid and highly variant levels of psychological development with respect to maturity, identity, self-control, emotion stability, so the age alone may not be able to explain all the individual variances. Also, the patients' wellbeing at the time of the study could potentially play a role, which was what we investigated next.

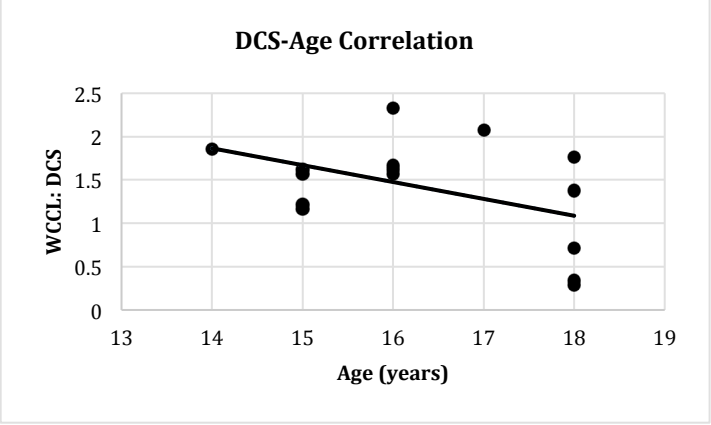
(2) Age and DBT-WCCL: Do older adolescents behave better?

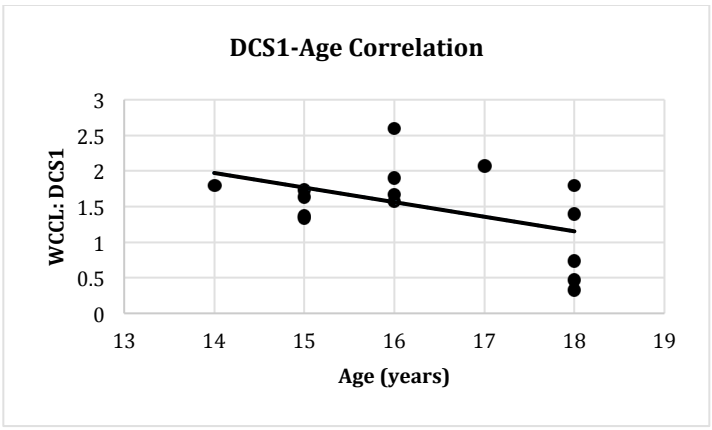
Deviating from the program itself, we first tentatively looked at whether there was relation between the age and post-DBT behavioral performance in terms of DBT skills use, measured by the DBT Ways of Coping Checklist (DBT-WCCL). The DBT-WCCL measures DBT skills use and coping methods with two subscales: the DBT Skills Subscale (DSS) that measures coping via DBT skills, and the Dysfunctional Coping Subscale (DCS) that measures coping via dysfunctional means. The DCS further contains two factors, one refers to dysfunctional behavior in general (DCS1), and the other refers more specifically to coping via blaming others (DCS2). DCS is a combination of both to contrast the DBT skills use.

To get a better picture of the post-DBT coping performance, we averaged our two measures of WCCL in attempt to produce a more general indicator, although still limited. We found that the DSS displayed a significant positive correlation the age ($r = 0.753$, $p = 0.001$, $N = 15$; Figure 19), indicating that older adolescent patients tended to use DBT skills more than the younger. Supporting this relation, all the measures of unskilful coping showed negative correlation with the age (DCS: $r = -0.463$, $p = 0.082$; DCS1: $r = -0.477$, $p = 0.072$; DCS2: $r =$ -

0.367, $p = 0.179$; $N = 15$), although none of them were statistically significant. Among these patients, there seemed to be an improvement in performance in terms of more effective coping behaviors and less problematic coping strategies, with increasing age. This could possibly be explained by the growing psychological development during adolescence. For example, older adolescents could have higher learning capacity so that they had acquired the DBT skills better, or they displayed more maturity and self-control to refrain from impulsive and ineffective behaviors. However, these speculations need empirical support.







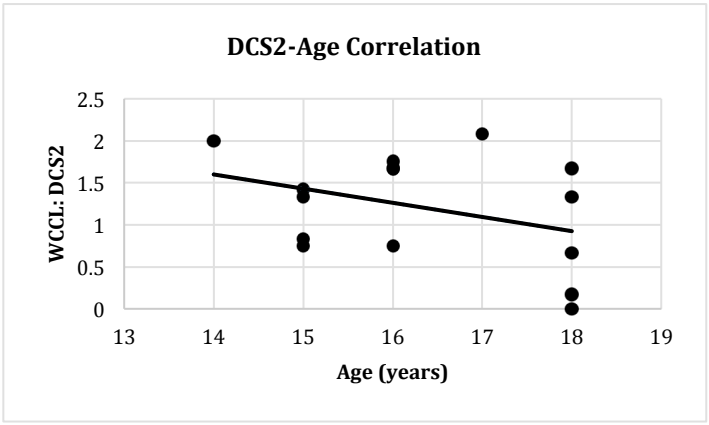


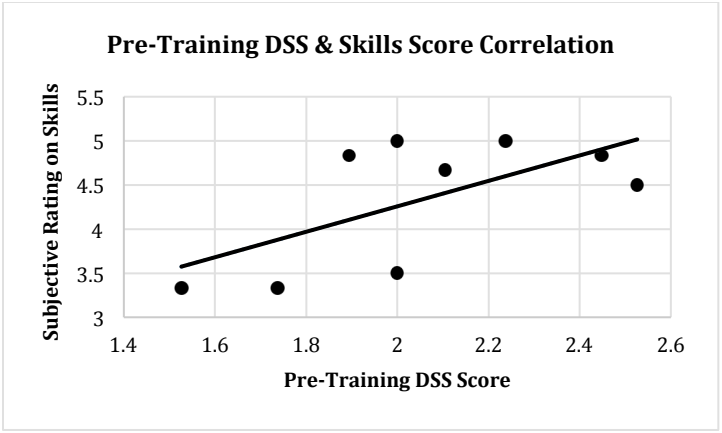
Figure 19: Relation between the age and WCCL subscales (DSS: $r = 0.753$, $p = 0.001$; DCS: $r = -0.463$, $p = 0.082$; DCS1: $r = -0.477$, $p = 0.072$; DCS2: $r = -0.367$, $p = 0.179$; $N = 15$)

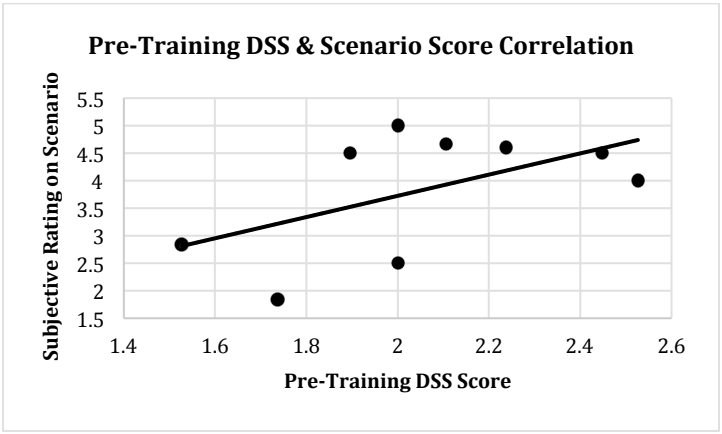
We were cautious in the interpretation due to obvious limitations. First of all, WCCL is no more than a measure of DBT skills use, not a universal measure of behavioral performance or a rigorous measure of post-treatment clinical status, and not even close to general wellbeing. New measures could be introduced in future study. Second, the patients were unstable, so the WCCL might not capture a representative picture. Averaging between the two available measures could be a compromised solution, but increasing the measurements of WCCL would provide more information. They did, however, inform that associated with the age might be some psychological and developmental factors that might underlie the counterintuitive relation we observed in Figures 17 and 18. This led us to explore if the WCCL scores at the time of entering the training program had any relation with the participants' preference.

(3) Pre-training WCCL and subjective evaluations: Healthier adolescents like the program better?

Results from previous sessions have indicated that older adolescent participants tended to (1) like the program better, and (2) use more DBT skills and less ineffective coping strategies. We asked whether it was the ways of coping, rather than the age, that mediated the subjective preference on the program. We hypothesized that better performing adolescents would appreciate our program better because the DBT ways of coping in the program were more relatable to them, while more dysfunctional participants would not like as much.

We correlated the pre-training WCCL scores with subjective ratings. Although there was no significant result, some trends were worth reporting. We found a positive correlation between the pre-training DSS and participants' feeling of how helpful the DBT skills were in the given situations ($r = 0.637$, $p = 0.065$, $N = 9$; Figure 20), suggesting that participants who understood the DBT skills better or spontaneously used more DBT skills before the training were more likely to find the given DBT skills helpful in the virtual situations. Similar relations were found with subjective ratings on the scenarios ($r = 0.544$, $p = 0.130$, $N = 9$), the benefit ($r = 0.533$, $p = 0.140$, $N = 9$), and overall quality of the program ($r = 0.533$, $p = 0.122$, $N = 9$), so those who used more DBT ways of coping were more likely to like the program and find the program beneficial. If these results were true, then the participants' pre-training performance could probably have an effect on their experience with the program. No such relations were found with other variables. Considering the sample size, we do need further research before drawing a conclusion on how the pre-training behavioral performance would have an effect on the subjective experience during the training program.


Pre-Training DSS & Skills Score Correlation
Subjective Rating on Skills
5.5
5
4.5
4
3.5
3
1.4
1.6
1.8
2
2.2
2.4
2.6
Pre-Training DSS Score


Pre-Training DSS & Scenario Score Correlation
Subjective Rating on Scenario
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1.4
1.6
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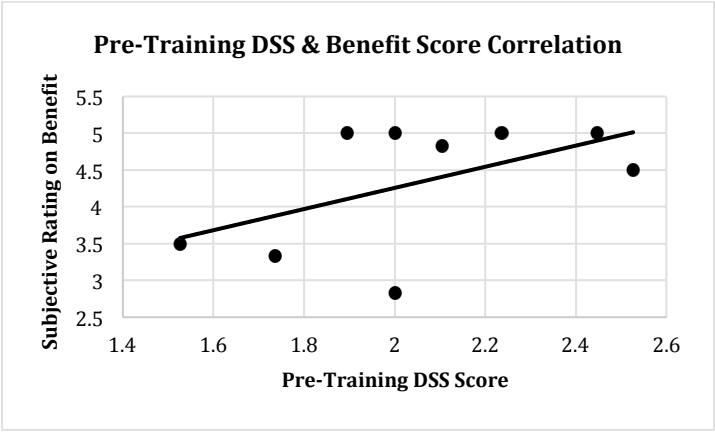
2
2.2
2.4
2.6
Pre-Training DSS Score


Pre-Training DSS & Benefit Score Correlation
Subjective Rating on Benefit
5.5
5
4.5
4
3.5
3
2.5
1.4
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1.8
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Pre-Training DSS Score

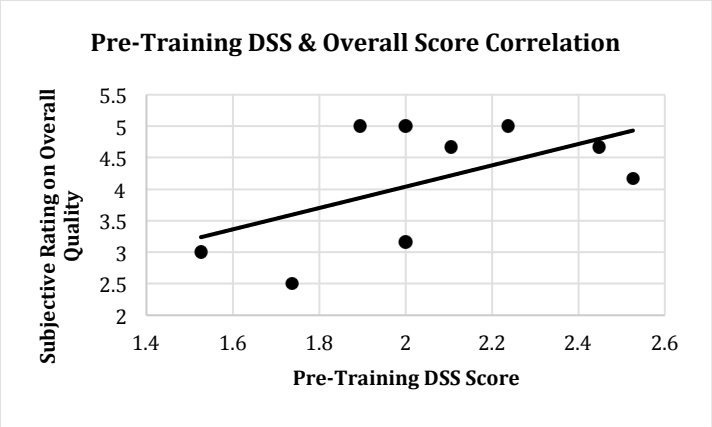


Figure 20: Relation between pre-training DSS and subjective ratings on the skills ($r = 0.637$, $p = 0.065$, $N = 9$), the scenarios ($r = 0.544$, $p = 0.130$, $N = 9$), the benefit ($r = 0.533$, $p = 0.140$, $N = 9$), and overall quality of the program ($r = 0.533$, $p = 0.122$, $N = 9$).

(4) Pre-Post WCCL Change: Is the program effective?

Practicing the DBT skills was the primary purpose of the training program, and we expected that the program could help promote DBT skills use. Since the DBT-WCCL measures coping via DBT skills and dysfunctional means, we asked if the training program induced any change in the WCCL scores.

We first looked at whether the DBT skills use was different between experimental and control groups after the training was completed. To make sure that the two groups started at the same level, we compared the pre-training WCCL scores, and indeed, there was no difference (DSS: $t = 1.088$, $p = 0.300$; DCS: $t = 0.990$, $p = 0.365$; DCS1: $t = 1.030$, $p = 0.325$; DCS2: $t = 0.964$, $p = 0.377$; Figure 21) between control (DSS: 1.822 ± 0.212; DCS: 1.071 ± 0.388; DCS1: 1.117 ± 0.380; DCS2: 0.958 ± 0.448; $N = 4$) and experimental (DSS: 2.053 ± 0.107; DCS: 1.519 ± 0.231; DCS1: 1.541 ± 0.218; DCS2: 1.463 ± 0.270; $N = 9$) participants. After the training, we still did not observe any significant difference (DSS: $t = 0.532$, $p = 0.610$; DCS: $t = 0.000$, $p = 1.000$; DCS1: $t = -0.113$, $p = 0.912$; DCS2: $t = 0.321$, $p = 0.753$; Figure 22) between the control (DSS: 1.971 ± 0.173; DCS: 1.324 ± 0.341; DCS1: 1.467 ± 0.380; DCS2: 0.967 ± 0.309; $N = 5$)

and experimental (DSS: 2.118 ± 0.178; DCS: 1.324 ± 0.154; DCS1: 1.427 ± 0.169; DCS2: 1.067 ± 0.159; $N = 10$) groups.

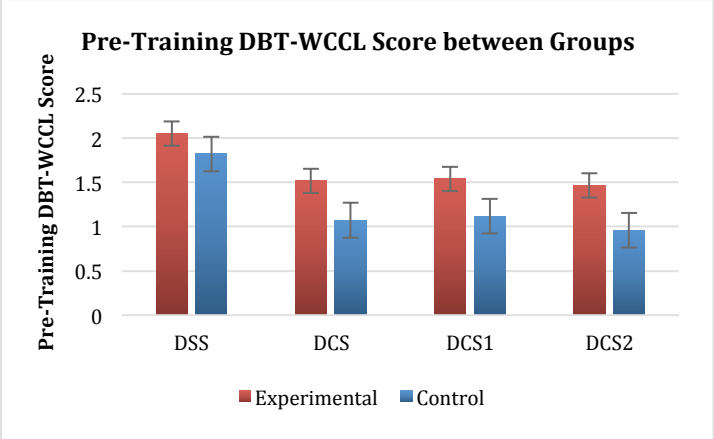


Figure 21: Pre-training DBT-WCCL compared between control (DSS: 1.822 ± 0.212; DCS: 1.071 ± 0.388; DCS1: 1.117 ± 0.380; DCS2: 0.958 ± 0.448; $N = 4$) and experimental (DSS: 2.053 ± 0.107; DCS: 1.519 ± 0.231; DCS1: 1.541 ± 0.218; DCS2: 1.463 ± 0.270; $N = 9$) groups. No difference was found (DSS: $t = 1.088$, $p = 0.300$; DCS: $t = 0.990$, $p = 0.365$; DCS1: $t = 1.030$, $p = 0.325$; DCS2: $t = 0.964$, $p = 0.377$).

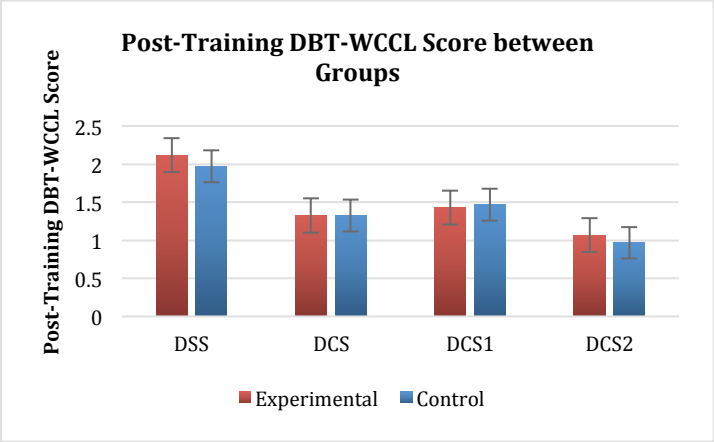
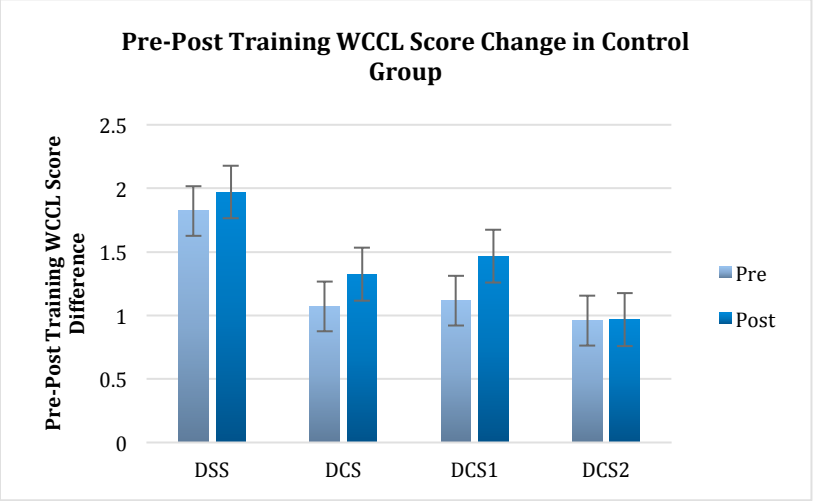


Figure 22: Post-training DBT-WCCL compared between control (DSS: 1.971 ± 0.173; DCS: 1.324 ± 0.341; DCS1: 1.467 ± 0.380; DCS2: 0.967 ± 0.309; N = 5) and experimental (DSS: 2.118 ± 0.178; DCS: 1.324 ± 0.154; DCS1: 1.427 ± 0.169; DCS2: 1.067 ± 0.159; N = 10) groups. No difference was found.

Then we explored within-group changes for the control and experimental groups separately. For the control participants, there was no significant change before and after the

period of the study (DSS: t = -1.317, p = 0.279; DCS: t = -1.411, p = 0.253; DCS1: t = -1.830, p = 0.165; DCS2: t = 0.577, p = 0.604; N = 4; Figure 23). For the experimental, no significant change was observed either (DSS: t = -0.681, p = 0.515; DCS: t = 1.367, p = 0.209; DCS1: t = 1.020, p = 0.337; DCS2: t = 2.212, p = 0.058; N = 9). Despite the non-significant results, we noticed in Figure 23 that the control participants showed a trend of increased dysfunctional coping behaviors (e.g., DCS and DCS1), but this trend was opposite in the experimental groups (e.g., DCS, DCS1 and DCS2). Notably, for those who used the training program, the decrease in DCS2 was close to significant (t = 2.212, p = 0.058, N = 9). This inspired us to compare the relative pre-post (post minus pre) changes between the two groups.



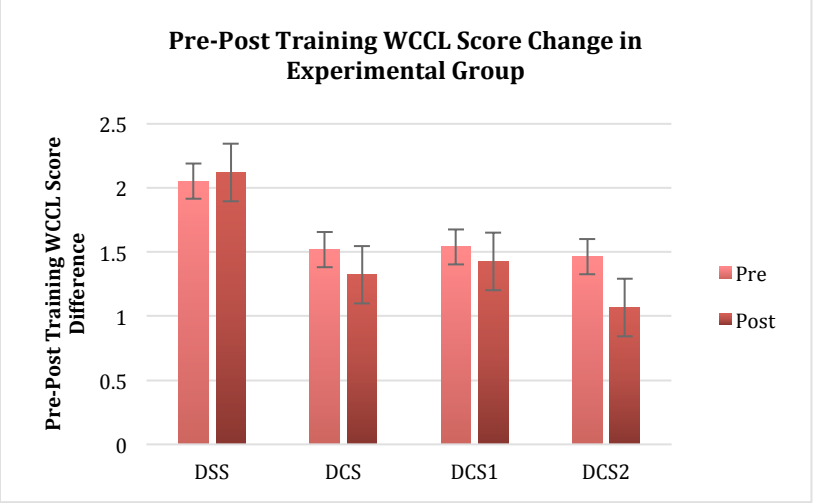


Figure 23: Within-group difference before and after the training. No significant change was found for either control (DSS: t = -1.317, p = 0.279; DCS: t = -1.411, p = 0.253; DCS1: t = -1.830, p = 0.165; DCS2: t = 0.577, p = 0.604; N = 4) or experimental (DSS: t = -0.681, p = 0.515; DCS: t = 1.367, p = 0.209; DCS1: t = 1.020, p = 0.337; DCS2: t = 2.212, p = 0.058; N = 9) groups. However, note the trend towards improved function in the experimental group and a reverse trend in the control group.

We calculated the changes in WCCL scores for each participant and compared the changes between the two groups. The result was shown in Figure 24. Although no individual WCCL score change was significantly different (DSS: t = -0.716, p = 0.489; DCS: t = -1.884, p = 0.086; DCS1: t = -1.850, p = 0.091; DCS2: t = -1.136, p = 0.280) between control (DSS: 0.279 ± 0.212; DCS: 0.179 ± 0.127; DCS1: 0.283 ± 0.155; DCS2: -0.833 ± 0.144; N = 4) and experimental (DSS: 0.096 ± 0.142; DCS: -0.307 ± 0.224; DCS1: -0.244 ± 0.240; DCS2: -0.463 ± 0.209; N = 9) groups, the direction of change seemed to differ. During the study period, the control participants had a 23.5% increase in DCS and 31.3% increase in DCS1, possibly suggesting a relapse in unskilful coping behaviors. In contrast, the experimental participants had decreases of 12.8% in DCS, 7% in DCS1, and 27.1% in DCS2, indicating a trend of reducing dysfunctional coping strategies. The difference in the changes in DCS (t = -1.884, p = 0.086) and DCS1 (t = -1.850, p = 0.091) were close to statistical significance.

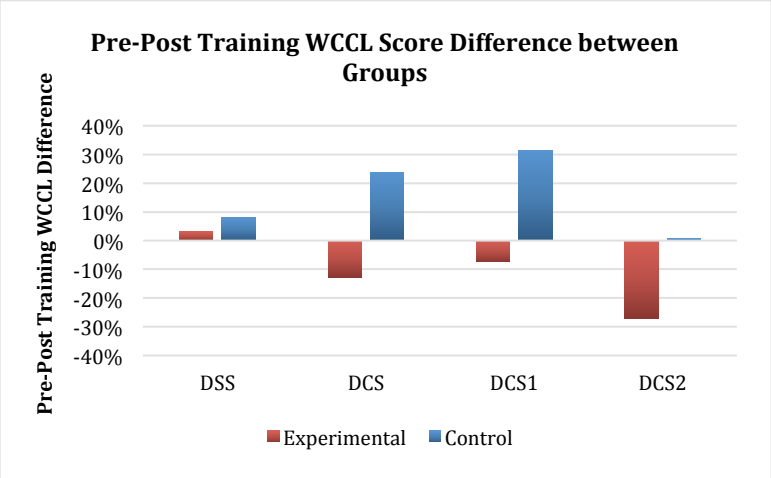
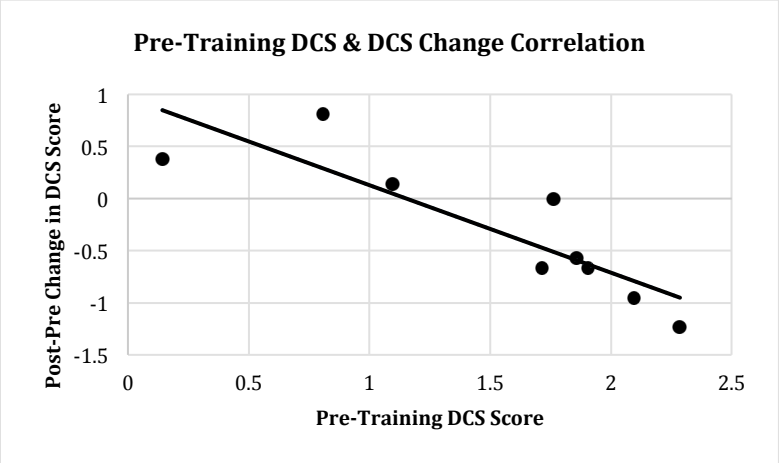
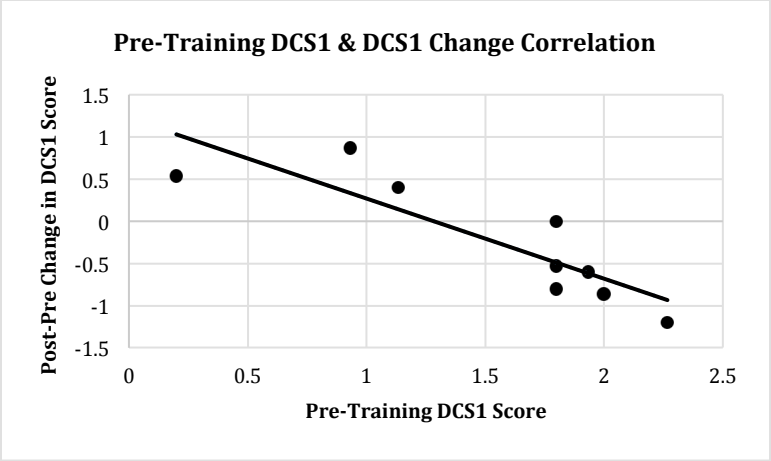


Figure 24: Changes in WCCL scores compared between control (DSS: 0.279 ± 0.212; DCS: 0.179 ± 0.127; DCS1: 0.283 ± 0.155; DCS2: -0.833 ± 0.144; $N = 4$) and experimental (DSS: 0.096 ± 0.142; DCS: -0.307 ± 0.224; DCS1: -0.244 ± 0.240; DCS2: -0.463 ± 0.209; $N = 9$) groups. No significant difference was observed (DSS: $t = -0.716$, $p = 0.489$; DCS: $t = -1.884$, $p = 0.086$; DCS1: $t = -1.850$, $p = 0.091$; DCS2: $t = -1.136$, $p = 0.280$).

In terms of the DBT skills use (DSS), we did not find any marked difference in any of the comparisons. This could be due to the plateau effect after the 20-week intensive DBT skills training and individual sessions. The study was conducted right after this 20-week period. Perhaps at this time the participants were in the best state, so it could be difficult to induce further improvement in terms of DBT skills use. Plausible indirect evidence to the plateau hypothesis is shown in FIGURE 25, where we analyzed the relation between pre-training WCCL scores and their changes after the training. We found that all the dysfunctional coping subscales of WCCL (DCS: $r = -0.866$, $p = 0.003$; DCS1: $r = -0.865$, $p = 0.003$; DCS2: $r = -0.801$, $p = 0.010$; $N = 9$) had a significantly negative correlation with the changes in themselves after the training. It suggested that the more dysfunctional coping the participants displayed at the time of entering the training, the more reduction in ineffective behaviors they could achieve. Conversely, if the participants were performing pretty well, they might not gain more improvement after the training. No such relation was observed for DSS.





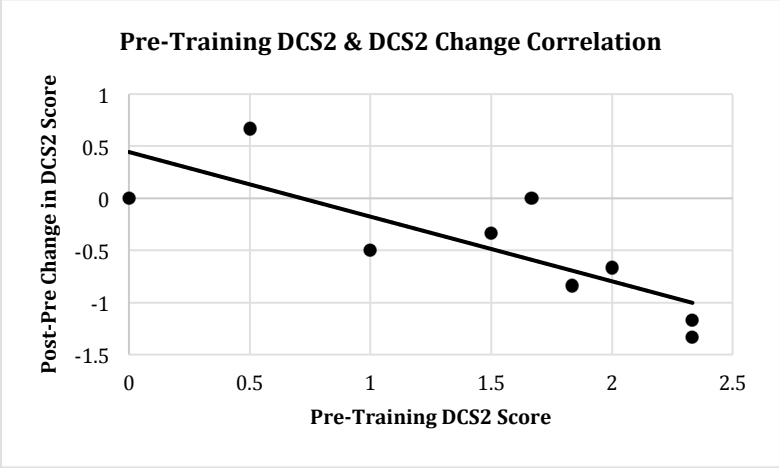


Figure 25: Relation between pre-training WCCL scores and post-training changes. DCS: r = -0.866, p = 0.003; DCS1: r = -0.865, p = 0.003; DCS2: r = -0.801, p = 0.010; N = 9.

However, if our result was true, patients seemed to show a trend of increased dysfunctional means of coping right after the end of the 20-week training. This undesired trend seemed to be reversed in the patients who received our computer training program as a supplement, and as a result, these patients used less ineffective coping strategies. Accordingly, the result appeared to show that the major effect of our program was more to reduce dysfunctional behaviors than promoting DBT skills use. A possible reason might lie in how the program was presented. In each task, we always started with a surprising unfortunate consequence of a situation, before asking the participant to "travel back in time" and to find out how the situation ended up this way. Only after this was the participant asked to use the DBT

skills to change the consequence. It was possible that the negative consequences resulted from dysfunctional means of coping caught more attention and primed deeper impression, so the participants learned better to avoid ineffective behaviors than to use DBT skills. Again, we would like to remain conservative in interpreting the results at this early stage of the study. It could be more likely that this trend would disappear with a larger sample size and better experimental design.

Chapter 4 DISCUSSIONS

In this project, we developed a prototype DBT-based computer training program for suicidal depression adolescents with borderline symptoms. The program serves to supplement the 20-week DBT as a tool to practice the DBT skills and to promote adaptive emotion regulation, so previous knowledge of DBT skills is assumed. During the course of development, we have been exploring an approach to deliver therapeutic content via computer medium in an effective, integrative, and attractive way. The trials and errors have experienced the transformation of the program from didactic to interactive, from skills-based to story-oriented, from unrealistic 3D ambition to practical PowerPoint prototype, from common sense to scientific content. The exploration has resulted in a rudimentary, artless, yet feasible and clinically usable fifth version. We conducted a pilot evaluation project to assess its clinical potential and to obtain feedback from patients. Both qualitative and quantitative analyses supported the participants' favor over the current version and its potential clinical effectiveness. Therefore, the project has laid good foundation for future improvement and implementation.

In the preliminary evaluation study, some interesting findings are worth noting. Although the program did not elicit observably increased DBT skills use, the patients who received this additional training seemed to show a distinct trend in coping behaviors compared with those who only underwent treatment as usual. While the control patients displayed a rise in dysfunctional ways of coping through the period of the study, the experimental patients exhibited a decline in the coping via ineffective means, probably suggesting an effect of the training in reducing problem-center coping strategies. This might be explained by the way of presentation whereby negative consequences resulted from ineffective actions were placed more prominently in the program, thus leading to the participants' enhanced awareness of avoiding them in reality. In

addition, we also found that older adolescents and those who already tended to use more DBT skills were more likely to enjoy the program. However, the exact relations between the age, ways of coping, and participants' subjective experience with the program remained to be validated. Also, the exact effectiveness of the program needs further investigation.

In preparation for the sixth version, some preferable features and design principles in the current version could be inherited. First of all, the scenario-based approach proved more effective than the skills-based one. The DBT ways of emotion regulation are a "normal" instead of an "abnormally-skillful" process, and are involved in any situations. As an extension to the 20-week DBT where this process is dissected into considerable details as individual DBT skills, the program assembles them back together into their "natural" state. This analysis-to-synthesis transition under the backdrop of virtual scenarios serves as buffer zone between the classroom and reality for skills practice. Second, the bigger background of a superhero transforming the planet harbors all the scenarios under one roof. This design creates an imaginative and fictional environment to be appealing to adolescents. It also re-directs the attention from "treating my behavioral problem" to "assisting others", thus reducing the sense of stigma and encouraging a more active involvement. The participants indeed indicated that they did not want to feel focused or problematized, so this third person's perspective could be helpful.

Third, instead of demanding on certain behavioral patterns, the current program simply shows the contrasting consequences associated with different coping strategies to a situation. In this way, the program essentially offers choices while leaving the participants to decide what states of mind (emotional mind, reasonable mind, or wise mind) they would like to "activate" in similar situations in reality. The effective strategies are then suggested instead of dictated. It also helps patients learn to consider multiple solutions and to envision their consequences in the long

term, rather than jumping to the conclusion impulsively. As the data show, the participants liked to see the "good results" of the situation after using the DBT skills.

Fourth, in terms of presenting the DBT skills, we suggest continuation with the current detailed yet indirect approach. Neither is it necessary nor effective to narrate simply the definitions, but the best way is to show them in practice. To reinforce the idea of "wise mind", for example, we illustrated how the character "wait and think", "ask what is effective", "reiterate her goal", and "weigh the pros and cons", rather than giving lines of explanation. For the skill of "to observe and describe emotions", we designed a growing flow chart that dissected the pathway from the triggering event to the action, and then the idea was clear without a definition. For the skill of "to think dialectically", we promoted a holistic perspective by demonstrating the conflicting positions and dilemma of the situation through the character's thought. Therefore, the concepts are clarified through the application, and analyzing the details of the thinking process contributes to a more skillful integration. Participants indeed expressed their preference on this way of presentation.

Last but not the least, with regard to the skills-matching exercise, participants thought that it was a good refresher and practice. A good program should be a combination of both suggestive and didactic learning. Compared to the above-mentioned implicit demonstration of the skills, this exercise exposes the learning points explicitly. In particular, the hints to individual skill choices offer the opportunity to refresh on the definitions. The participants commented that they relied heavily on these hints to complete the exercise and to reflect on the old knowledge. Consequently, in the next version, this brief but effective didactic design could be continued.

In the meantime, some changes should be implemented and issues be tackled in the sixth version based on the results of the present study. Although all the negative comments and raised

issues constituted only the minority of the participants' opinions, we value their input to improve the program. For clarity and easiness of implementation, suggested modifications are listed point by point.

(1) *More realistic scenarios*. The patients prefer the situations that they can relate to at the most personal level. For the Internet Lover task where the character dates a stranger from the Internet, for example, some participants found it unrealistic because they grew up being taught not to meet strangers on the Internet. Furthermore, the scenarios in the current program focus more on patient-parents and patient-teacher relations, but some participants expected to see more scenarios dealing with peers, such as friendship, romantic relations, and schoolmates. Therefore, in the next version, expertise with first-hand clinical experience would be valuable in designing more realistic situations, with special emphasis on inter-peer relationships.

(2) *Reasonable exaggeration*. Some participants complained about the exaggeration, such as throwing iPad out of the window, throwing a tantrum at the park, and drinking during school time, but we exaggerated the situations intentionally. The extreme actions and dramatic situation not only reflect the problematic behaviors in a humorous and indirect way, but also make the program catchier. Although patients claimed they would never act this way, it was these overactive and even more extreme behaviors that brought them to DBT. While this similar style could be kept, we probably need to work on how to keep the exaggeration within the participants' comfort zone.

(3) *Age-appropriateness*. It was unanticipated that many participants thought the program juvenile and childish, both the scenarios and the presentation. With regard to the exaggeration, some participants thought it was possible for the 13-14 years old but probably not for 18-19. Others said the images in the program were too young for their age, although the situations *per*

se could be real. While the current scenarios can still be kept, we can present them with more mature-looking characters and images. In theory, it will also be helpful to consider the psychological development of the adolescent patients, not just their chronological age.

(4) *Diverse ways of presentation*. Although the current approach is helpful in practicing the DBT skills, the single repeating mode would be not sustainable with increasing number of tasks, if they all would follow the same structure. Exploring more ways to integrate the DBT skills into the scenarios would be necessary.

(5) *Automatized feedback*. After the participants made the skills choices, the experimenter had to provide feedback on them. Because at present the program is delivered through PowerPoint slides, it is technically impermissible to provide customized and flexible responses to the participants' individual choices. If the program is expected to be self-help eventually, the feedback should ideally be automatized and incorporated into the program.

(6) *Accurate wording*. To better remind participants of the DBT learning process, we adopted many visual features reminiscent of the DBT learning materials. However, we focused more on visual elements than the wording consistency with DBT. This is especially true for the skills-matching exercise. The description of function categories and skills hints need optimization to be more accurate and consistent with DBT nomenclature.

(7) *Changing the planet, more dynamically*. Participants liked the idea of a superhero changing the planet, but only when asked explicitly, because most of the time this larger picture was neglected. Participants tended to focus only on the scenarios, and forgot their imaginative role as a superhero. This could partially be attributed to the current mode of presentation. Difficult to be incorporated into PowerPoint slides, the changing planet could only be visualized with

Photoshop, and therefore, it was separated from the main program. A more dynamic method to present this fictional background will be needed to completely fulfill its expected function.

(8) *Parents' responsibility*. The current program emphasizes only the problematic behaviors of the patients (by means of the characters in the scenarios), but under the DBT assumption, both the patients and their environment, e.g., parents, and even teachers and friends, share the responsibility for the patients' dysfunction. Accordingly, in addition to using DBT skills to change the characters' behavior, we could probably create a parallel component that asks to change the parents' or teacher's actions as well. Alternatively, there could be a separate version of the program intended to parents only.

(9) *Multimedia*. The current version as a prototype only uses static pictures to present the program. More dynamic elements such as audio sounds fly-over, video clips, or animations will facilitate the presentation.

(10) *Gender neutrality*. We addressed the fictional "superhero" as "superwoman" because all participants in the study and most patients in general are girls. Apparently, a "superman" version should be prepared in the case of male patients. However, some female participants stated that even girls did not like to be addressed as "superwoman", and that a gender-neutral title like "superhero" was more appropriate. This does not apply to the stories' characters, as the participants pointed out, whom the superhero is supposed to help.

(11) *Skills-matching exercise on the same page*. Due to the amount of material, we sometimes separated the skills-matching exercise onto two slides, one for the function categories, and the other for skills options. Participants found it confusing to have to flip back and forth. This seemingly trivial point constituted the single most-commented complaint, suggesting that we be more careful with regards to this point.

(12) *Consistent characters' appearance*. Some participants found it distracting that the same character had different appearances. This is an inherent problem with the current mode of presentation, because we could only download images from the Internet rather than having consistent characters models.

This was a preliminary study only, which gave preliminary results. Some limitations in experimental design hindered the interpretation and generalization of the results. First and foremost, the small sample size significantly limited the statistical power to produce truly significant effects. Participants could only be recruited from the current cohort of 17 patients in DBT, which was already small sample to start with. Discontent of participation, dropping out, and missing data further deteriorated the statistical capacity, leading to a highly sensible dataset. We performed preliminary analysis as the testing went on, and predictably, the results could be easily changed and even reversed with the ongoing addition of new data. Changes to the conclusions would probably not be surprising if more participants were to be included. The second, group assignment was not randomized. The recruitment started with a randomization procedure, but if a patient was unwilling to do the training program, we still offered the opportunity to participate as a control, to avoid losing participants. Usually less well patients tended to refuse to participate, so assigning these patients into control would likely result in a confounded comparison group. This might explain why the control group displayed a trend of increased DCS subscale, thus blurring our interpretation. Third, although the program is designed for post-DBT use, it is not clear how the 20-week DBT skills training actually affect the effectiveness and performance. The present study could not tell how the program might benefit people with no DBT experience, nor did it investigate DBT-naive users' performance on the skills-matching exercise, although we emphasize that correctness is not a principal goal of

the program. Therefore, accompanied with Version 6 will be an improved experimental design to evaluate its effectiveness.

The new evaluation study can still adopt an experimental and a control group, but the study procedure should be improved (Figure 26). Like the current study, participants will be recruited from the DBT cohort, but the randomized group assignment should be completed before the start of 20-week DBT skills training. The control participants will follow the standard DBT procedure as usual, from the initial evaluation to skills training to the follow-up. For the experimental participants, on top of the DBT as usual, they will receive the training program Version 6 twice, one before and one after the 20-week skills training period. The first training will enable us to evaluate the effectiveness and performance on DBT-naive people, because at this time the participants will have no knowledge of DBT skills. The second training, like the present study, will assess the effectiveness as a supplement to the standard therapy. To measure performance in terms of DBT skills use, the DBT-WCCL will need to be administered prior and posterior to each training for experimental and at equal time points for the control.

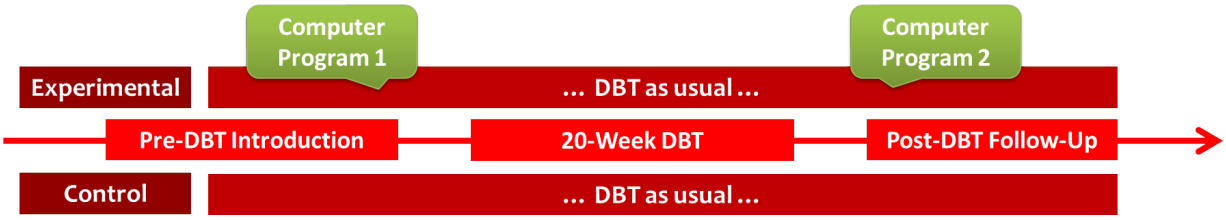


Figure 26: Illustration of the procedure of the improved evaluation study. The Version 6 training program will be given to the experimental participants twice, once before and once after the 20-week DBT.

Ideally, the two training periods should be closely flanking the 20-week DBT. For one thing, DBT-WCCL will be part of the pre- and post-DBT testing battery, so repeated testing can be reduced. Specifically, pre-DBT testing can be used as post-Training 1 measure, and post-DBT testing as pre-Training 2 measure. For another reason, the second training can be started right

after the 20-week DBT together with the regular weekly individual follow-up. In this way, the supplementary training program will be continuous with the DBT, and will avoid potential complications caused by the gap between the end of 20-week DBT and the start of the computer training program. Similar reasons may also hold for the study prior to DBT.

Following the end of the second training, there can be a follow-up measure of DBT skills use at around three months later. This time point will be around one month to the end of DBT standard follow-up. The measure at this point can potentially reflect the persistence of the effect of the training program, if any.

In summary, the present project was an attempt to deliver effective psychotherapy in a computer format, and more specifically, to provide DBT-based behavioral skills training as a supplement to traditional treatment. The current preliminary version was rudimentary in format but preferable in content and potentially clinical effectiveness. The experience accumulated through the development will be helpful in the next-step implementation. A more rigorous evaluation study will be needed to further assess its clinical effectiveness to elucidate the unsettled issues in the current study.

LIST OF REFERENCES

Anderson RN (2002) Deaths: leading causes for 2000. National vital statistics reports : from the Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System 50:1-85.

Andersson G, Bergstrom J, Hollandare F, Carlbring P, Kaldo V, Ekselius L (2005) Internet-based self-help for depression: randomised controlled trial. The British journal of psychiatry : the journal of mental science 187:456-461.

Bridge JA, Goldstein TR, Brent DA (2006) Adolescent suicide and suicidal behavior. Journal of child psychology and psychiatry, and allied disciplines 47:372-394.

Carlbring P, Bohman S, Brunt S, Buhrman M, Westling BE, Ekselius L, Andersson G (2006) Remote treatment of panic disorder: a randomized trial of internet-based cognitive behavior therapy supplemented with telephone calls. The American journal of psychiatry 163:2119-2125.

Christensen H, Griffiths KM, Jorm AF (2004) Delivering interventions for depression by using the internet: randomised controlled trial. Bmj 328:265.

Davidson L, Linnoila M (2013) Risk factors for youth suicide: Taylor & Francis.

Fleischhaker C, Böhme R, Sixt B, Brück C, Schneider C, Schulz E (2011) Dialectical behavioral therapy for adolescents (DBT-A): a clinical trial for patients with suicidal and self-injurious behavior and borderline symptoms with a one-year follow-up. Child and adolescent psychiatry and mental health 5:3.

Fleming T, Dixon R, Frampton C, Merry S (2012) A pragmatic randomized controlled trial of computerized CBT (SPARX) for symptoms of depression among adolescents excluded from mainstream education. Behavioural and cognitive psychotherapy 40:529-541.

James AC, Taylor A, Winmill L, Alfoadari K (2008) A Preliminary Community Study of Dialectical Behaviour Therapy (DBT) with Adolescent Females Demonstrating Persistent, Deliberate Self-Harm (DSH). Child and Adolescent Mental Health 13:148-152.

James AC, Winmill L, Anderson C, Alfoadari K (2011) A preliminary study of an extension of a community dialectic behaviour therapy (DBT) programme to adolescents in the looked after care system. Child and Adolescent Mental Health 16:9-13.

Kaltenthaler E, Brazier J, De Nigris E, Tumur I, Ferriter M, Beverley C, Parry G, Rooney G, Sutcliffe P (2006) Computerised cognitive behaviour therapy for depression and anxiety update: a systematic review and economic evaluation. Health technology assessment 10:iii, xi-xiv, 1-168.

Katz LY, Fotti SA, Postl L (2009) Cognitive-behavioral therapy and dialectical behavior therapy; adaptations required to treat adolescents. Psychiatric Clinics of North America 32:95-109.

Kazdin AE (2011) Evidence-based treatment research: Advances, limitations, and next steps. American Psychologist 66:685.

Lewinsohn PM, Rohde P, Seeley JR (1996) Adolescent suicidal ideation and attempts: Prevalence, risk factors, and clinical implications. Clinical Psychology: Science and Practice 3:25-46.

Linehan M (1993) Cognitive behavioral treatment of borderline personality disorder: Guilford Press.

MacPherson HA, Cheavens JS, Fristad MA (2013) Dialectical Behavior Therapy for Adolescents: Theory, Treatment Adaptations, and Empirical Outcomes. Clinical child and family psychology review 1-22.

Mbekou V, Mikedis, Th., Zanga, J., Malinski, C., Jodoin, M., Janelle, A., Stolow, D. & Renaud, J. (2011) DBT Multifamily Skills Training Group for Adolescents. Douglas Mental Health University Institute, Montreal.

McCrone P, Knapp M, Proudfoot J, Ryden C, Cavanagh K, Shapiro DA, Ilson S, Gray JA, Goldberg D, Mann A, Marks I, Everitt B, Tylee A (2004) Cost-effectiveness of computerised cognitive-behavioural therapy for anxiety and depression in primary care: randomised controlled trial. The British journal of psychiatry : the journal of mental science 185:55-62.

McLaughlin KA, Hatzenbuehler ML, Mennin DS, Nolen-Hoeksema S (2011) Emotion dysregulation and adolescent psychopathology: A prospective study. Behaviour research and therapy 49:544-554.

Merry SN, Stasiak K, Shepherd M, Frampton C, Fleming T, Lucassen MF (2012) The effectiveness of SPARX, a computerised self help intervention for adolescents seeking help for depression: randomised controlled non-inferiority trial. Bmj 344:e2598.

Miller AL, Rathus JH, Linehan MM (2006) Dialectical behavior therapy with suicidal adolescents: Guilford Press.

Miller AL, Wyman SE, Huppert JD, Glassman SL, Rathus JH (2000) Analysis of behavioral skills utilized by suicidal adolescents receiving dialectical behavior therapy. Cognitive and Behavioral Practice 7:183-187.

Mohr DC, Burns MN, Schueller SM, Clarke G, Klinkman M (2013) Behavioral Intervention Technologies: Evidence review and recommendations for future research in mental health. General hospital psychiatry 35:332-338.

Mohr DC, Ho J, Duffecy J, Baron KG, Lehman KA, Jin L, Reifler D (2010) Perceived barriers to psychological treatments and their relationship to depression. Journal of clinical psychology 66:394-409.

NCCMH NCCfMH (2009) NICE clinical guideline 90: Depression - The treatment and management of depression in adults.

Neacsiu AD, Rizvi SL, Vitaliano PP, Lynch TR, Linehan MM (2010) The dialectical behavior therapy ways of coping checklist: Development and psychometric properties. Journal of clinical psychology 66:563-582.

Osgood-Hynes DJ, Greist JH, Marks IM, Baer L, Heneman SW, Wenzel KW, Manzo PA, Parkin JR, Spierings CJ, Dottl SL, Vitse HM (1998) Self-administered psychotherapy for depression using a telephone-accessed computer system plus booklets: an open U.S.-U.K. study. The Journal of clinical psychiatry 59:358-365.

Pelkonen M, Marttunen M (2003) Child and adolescent suicide: epidemiology, risk factors, and approaches to prevention. Paediatric drugs 5:243-265.

Proudfoot J, Goldberg D, Mann A, Everitt B, Marks I, Gray J (2003) Computerized, interactive, multimedia cognitive-behavioural program for anxiety and depression in general practice. Psychological medicine 33:217-227.

Proudfoot J, Ryden C, Everitt B, Shapiro DA, Goldberg D, Mann A, Tylee A, Marks I, Gray JA (2004) Clinical efficacy of computerised cognitive-behavioural therapy for anxiety and depression in primary care: randomised controlled trial. The British journal of psychiatry : the journal of mental science 185:46-54.

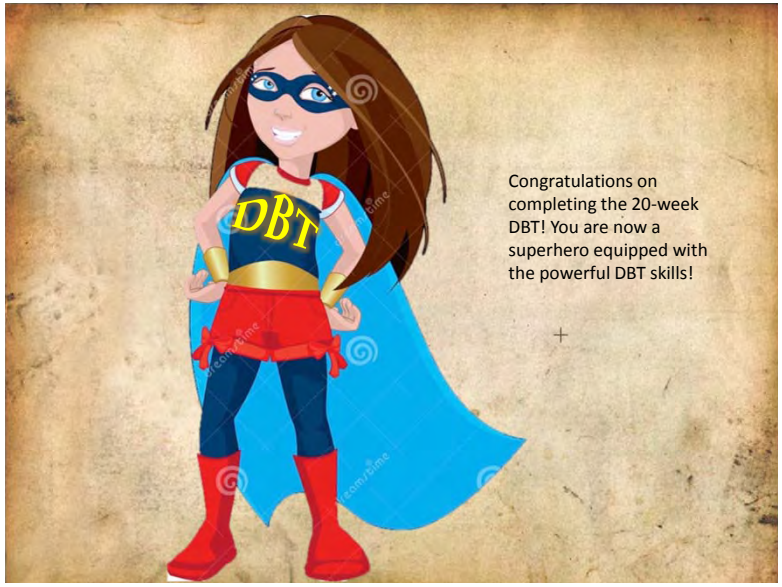
Whitfield G, Hinshelwood R, Pashely A, Campsie L, Williams C (2006) The Impact of a Novel Computerized CBT CD Rom (Overcoming Depression) Offered to Patients Referred to Clinical Psyschology. Behavioural and cognitive psychotherapy 34:1.

Woodberry KA, Popenoe EJ (2008) Implementing dialectical behavior therapy with adolescents and their families in a community outpatient clinic. Cognitive and Behavioral Practice 15:277-286.

APPENDIX A: DBT Computer Training Program Slides

Curfew

Task 1: Curfew



Congratulations on completing the 20-week DBT! You are now a superhero equipped with the powerful DBT skills!

Now we would like you to help the people on this "emotional" planet outside of our solar system. There, people have difficulties regulating their emotions. Some of them are easily provoked by stressful events, others have over-intensive emotional experience and take a long time to calm down. We hope you can use your DBT skills to help these people activate their wise mind!

Once you land on this planet, you will see some emotional emergencies where people fail to cope well with various situations in their life. We would like you to pick the DBT skills of your choice to help them use their wise mind to find a better solution in each situation.

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Task 1: Curfew

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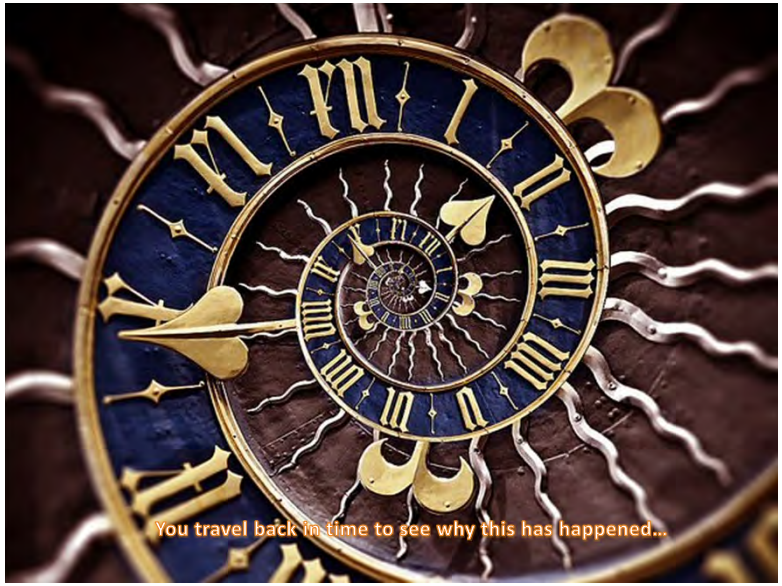
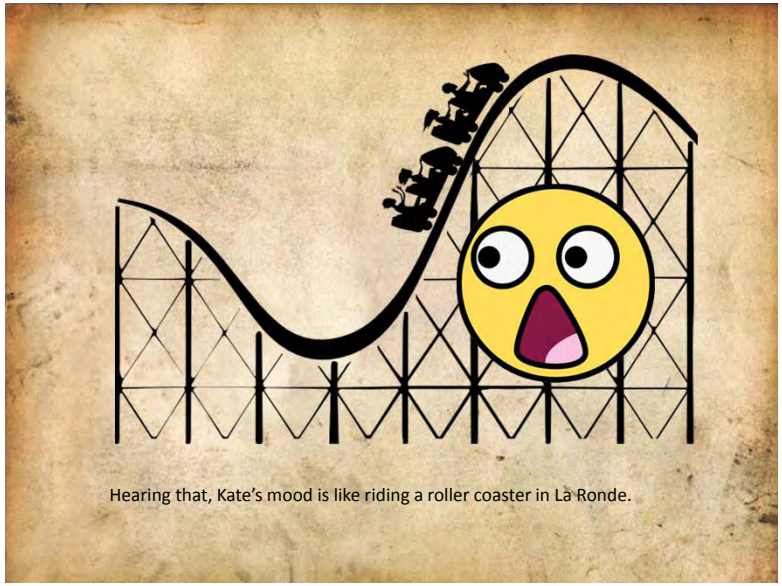


APPENDIX A: DBT Computer Training Program Slides

Task 1: Curfew



APPENDIX A: DBT Computer Training Program Slides

Task 1: Curfew

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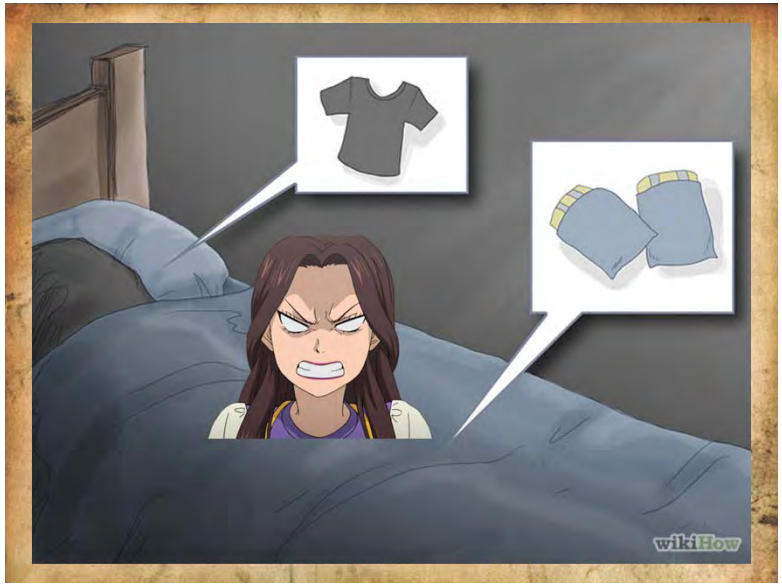
Task 1: Curfew



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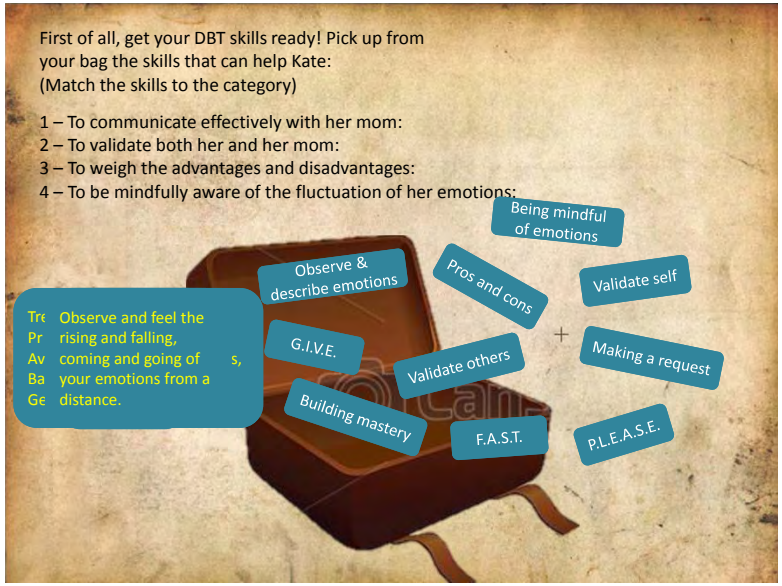
Task 1: Curfew



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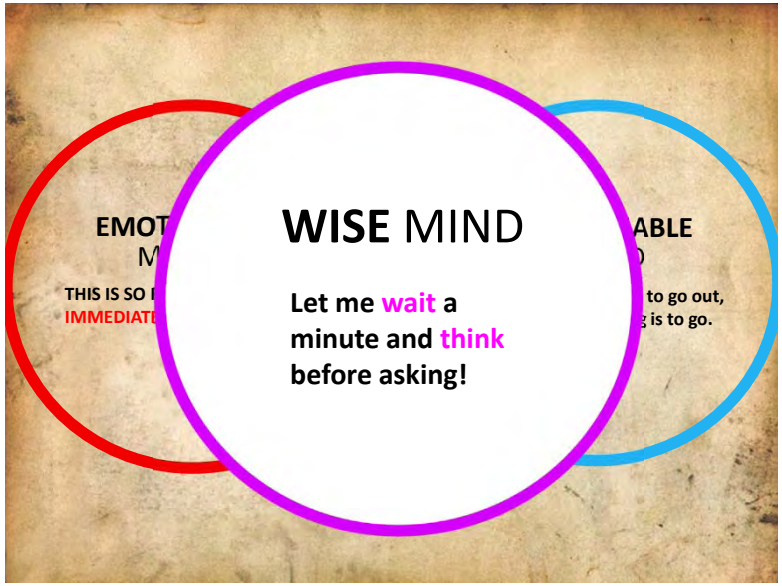
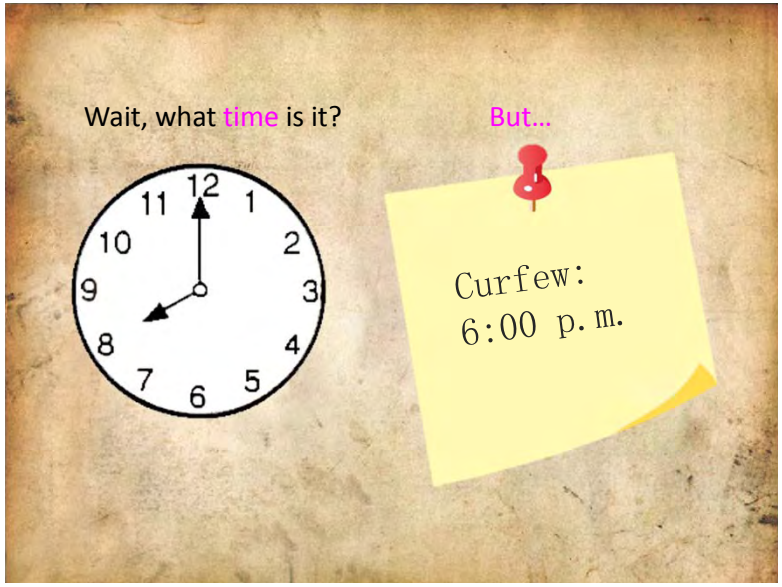


APPENDIX A: DBT Computer Training Program Slides

Before **making a request**, a few things to consider:

☑**Priorities:** Is my objective important to me?
☑**Capability:** Is my mom able to give me what I want?
☐**Timing:** Is it a good time to ask?
☐**My Rights:** Is my request legitimate and acceptable?
…

Task 1: Curfew

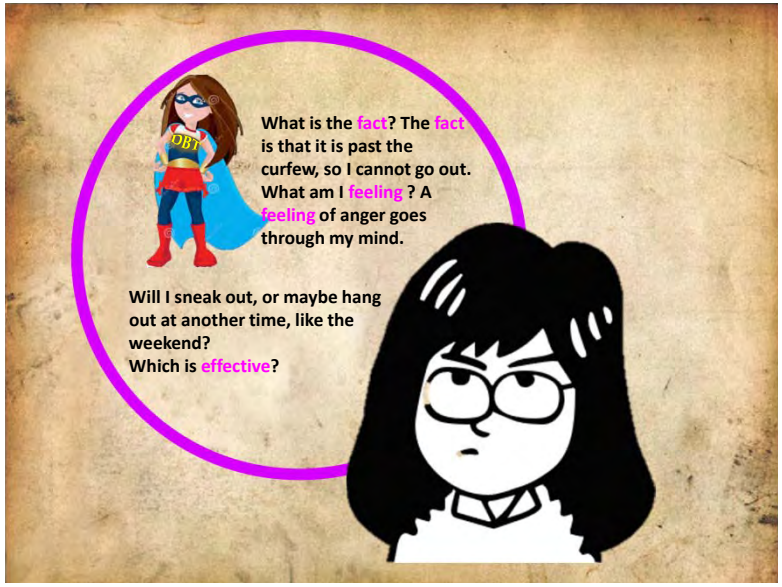


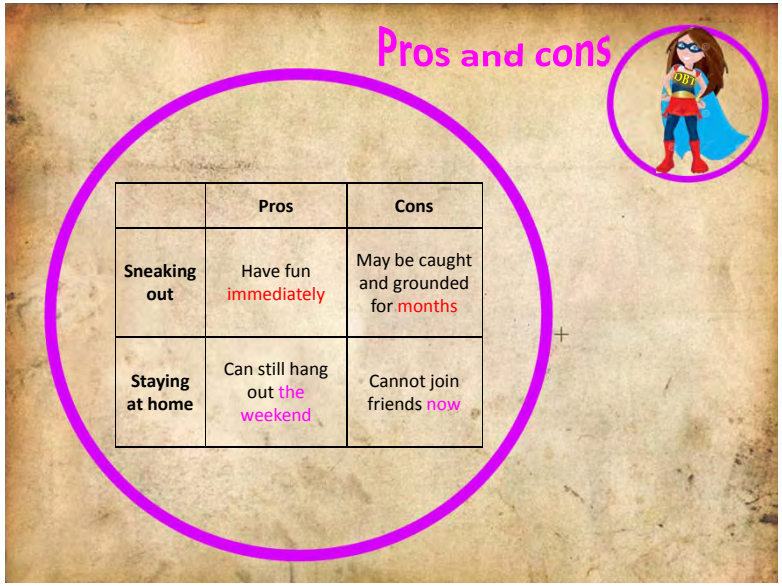
Making a request

This may not be a good time, although I can try gently.

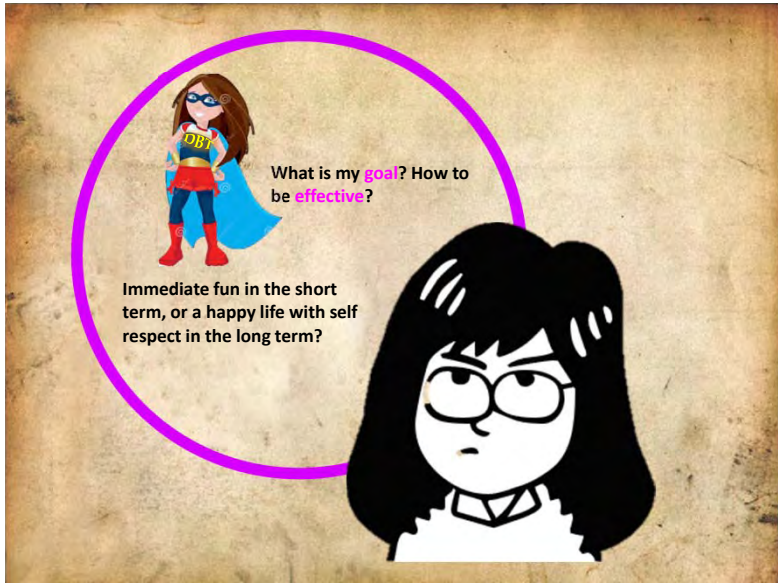
APPENDIX A: DBT Computer Training Program Slides

Task 1: Curfew

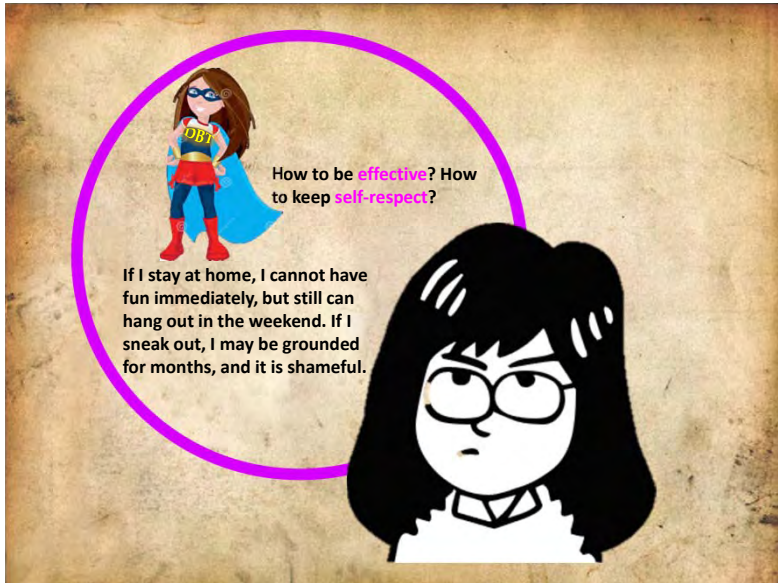




	Pros	Cons
Sneaking out	Have fun immediately	May be caught and grounded for months
Staying at home	Can still hang out the weekend	Cannot join friends now



APPENDIX A: DBT Computer Training Program Slides



Task 1: Curfew

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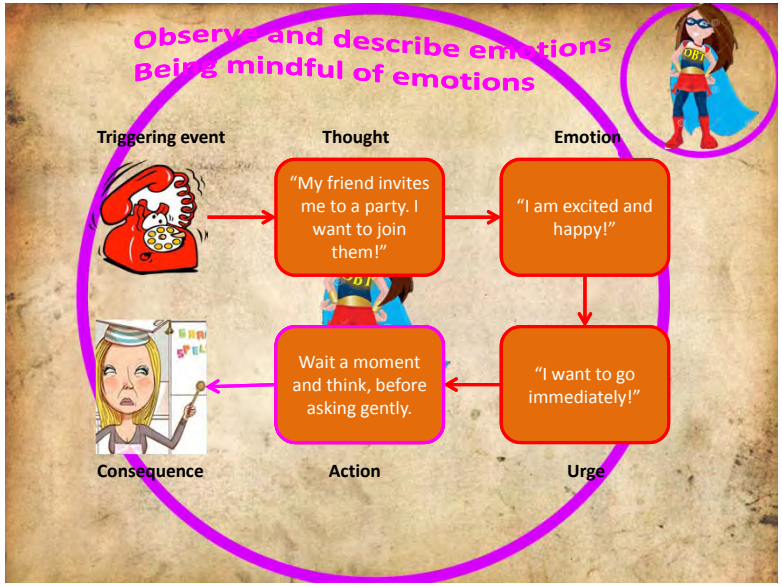

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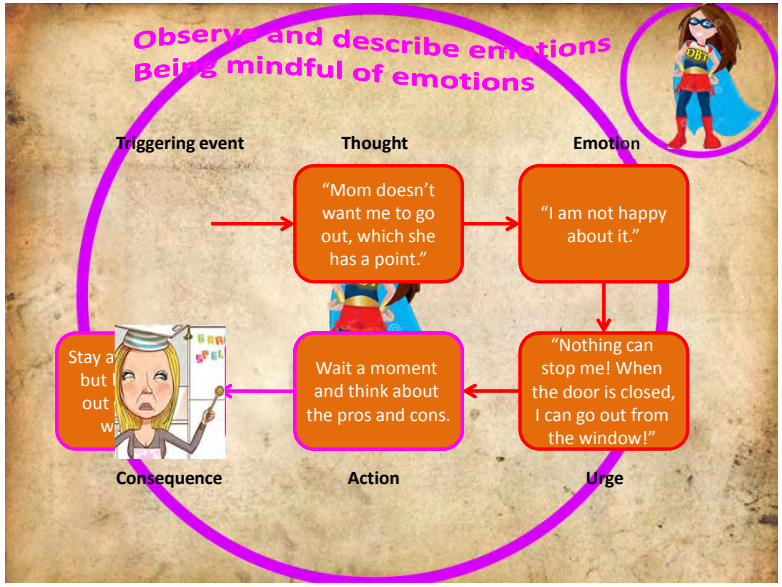

APPENDIX A: DBT Computer Training Program Slides

Task 1: Curfew

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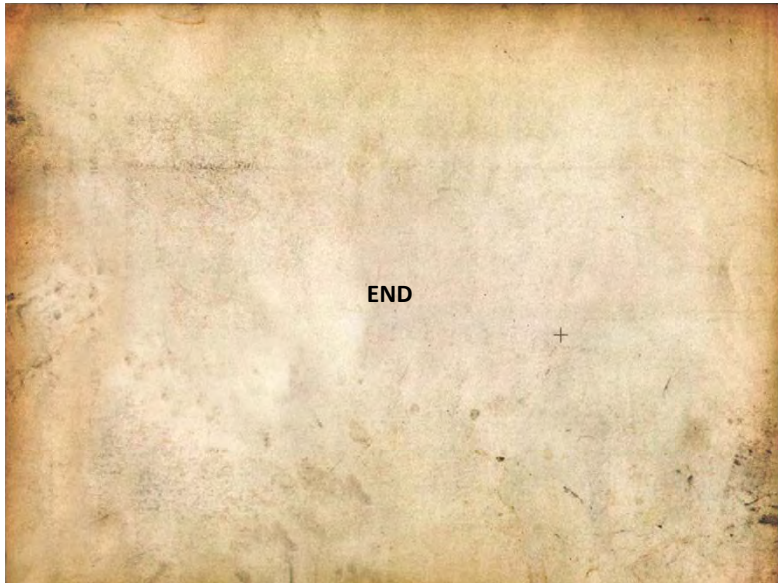
Task 1: Curfew



APPENDIX A: DBT Computer Training Program Slides

Internet Lover

This is a red emotional planet outside of our earth. On this planet, people are dominated by their emotional mind. Some of them are easily provoked by trivial events, others have very intensive emotional experiences and take a long time to calm down. We would like you to use your DBT skills to help the people activate their wise mind.

Task 2: Internet Lover

Congratulations on completing the 20-week DBT! You are now a superhero equipped with the powerful DBT skills!

Once you land on this planet, you will see some emotional emergencies. In these situations, impulsive emotions have taken over people's mind and have lead to unwanted consequences. We would like you to choose the DBT skills to help them use their wise mind to find a better coping solution.

APPENDIX A: DBT Computer Training Program Slides

With your DBT skills, you are not only changing the way people behave in these situations, but also transforming the planet into a peaceful and beautiful wise-minded planet. Let's get started and see how you can make a difference!

Task 2: Internet Lover

Emergency!!

You see that a girl, Mary, is suffering from extreme sadness. Waves of horrible memories flow wildly through her mind.

She tries to forget about her experiences by consuming a lot of alcohol, expecting a relief from her sadness and fear.

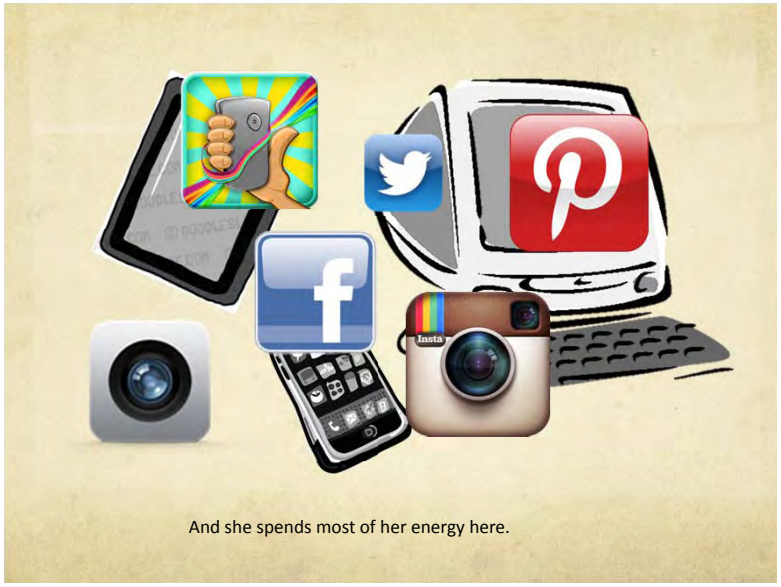
APPENDIX A: DBT Computer Training Program Slides

Task 2: Internet Lover

APPENDIX A: DBT Computer Training Program Slides

After Mary makes this "decision", her life becomes like this.

Task 2: Internet Lover



And she spends most of her energy here.

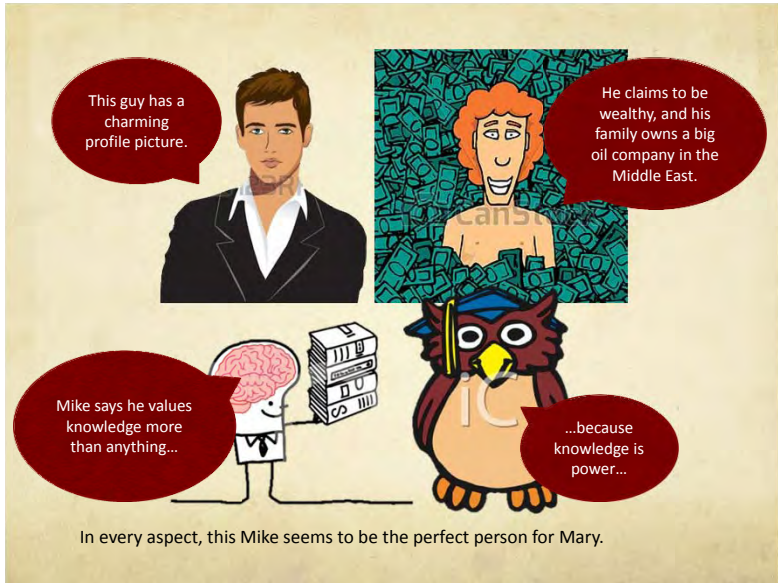
After a few days like this, Mary feels tired, blue, and low-spirited, but she doesn't want to stop because she hasn't found a boyfriend yet…

…until one day…

APPENDIX A: DBT Computer Training Program Slides

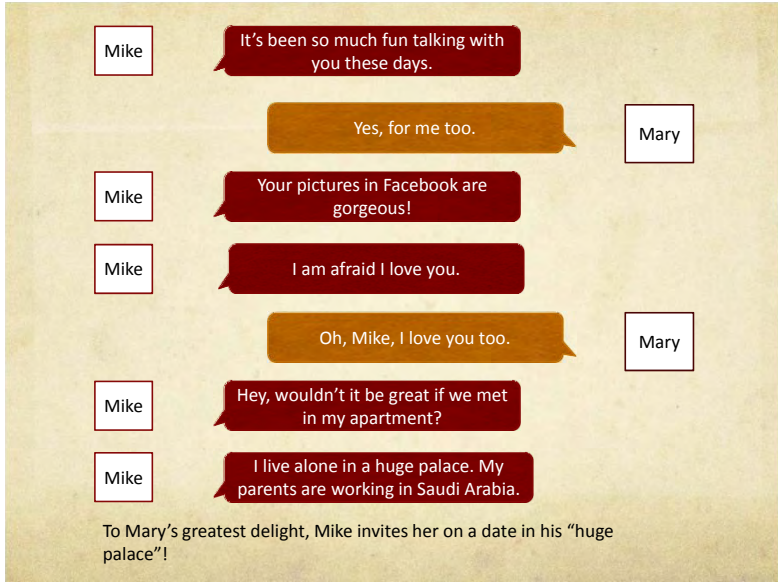
A total stranger named Mike, sends a friend request to Mary on Facebook, and starts to chat happily with her. Surprisingly, Mary finds this guy very interesting, and she feels that Mikes also enjoys chatting with her.

Task 2: Internet Lover



In every aspect, this Mike seems to be the perfect person for Mary.

In no time, chatting with Mike quickly becomes the only important thing in Mary's life. She immediately shows much higher morale, but finds it even harder to leave the computer.



To Mary's greatest delight, Mike invites her on a date in his "huge palace"!

APPENDIX A: DBT Computer Training Program Slides

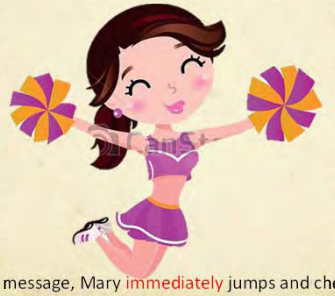
Mike

This is my address. Any time.

"20000 Shakespeare South, Mellontown."

See you in half an hour.

Mary



Looking at the message, Mary immediately jumps and cheers. She easily agrees to meet with Mike without any hesitation.

Task 2: Internet Lover

She quickly puts on some of her mom's makeup and puts on her sexiest dress. In no time, she is on her way.

Life seems to have lit up suddenly! On the road, Mary keeps imaging how she can boast to her silly friends about her perfect boyfriend, and how awesome his gorgeous palace is.

When Mary arrives at Mike's place, she curiously finds out that it doesn't look like a huge palace… Actually it is a little shabby…

APPENDIX A: DBT Computer Training Program Slides

Task 2: Internet Lover

She is so excited to see her prospective boyfriend that she does not even stop when the address has guided her to such a creepy door.

Mary knocks on the door, and asks if Mike lives here. The handsome young “Mike” turns out to be…

Only now does Mary realizes that all those beautiful words and images were pure deceptions…

She wants to escape, but unfortunately it is too late…

APPENDIX A: DBT Computer Training Program Slides

Shocked and frightened, all those horrible memories flow wildly through her mind.

Task 2: Internet Lover

This is how Mary has come to this sad and unfortunate situation.

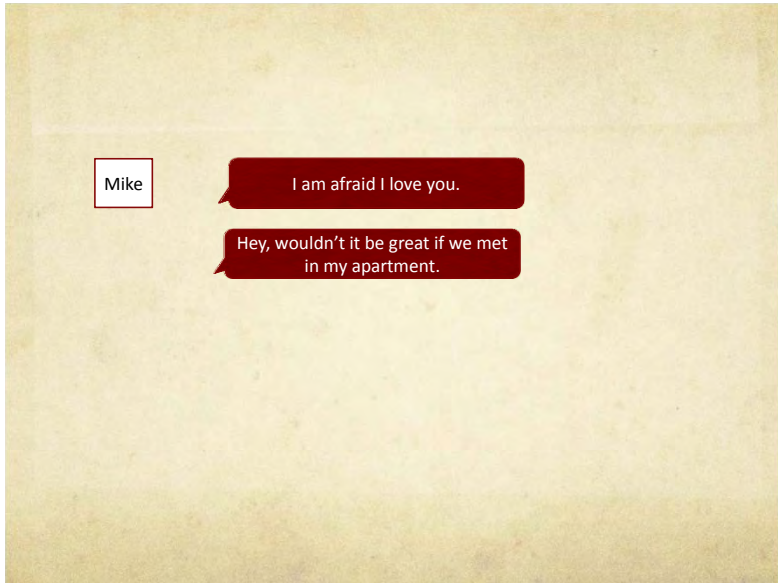
In fact, Mary could have totally avoided such unfortunate situation.

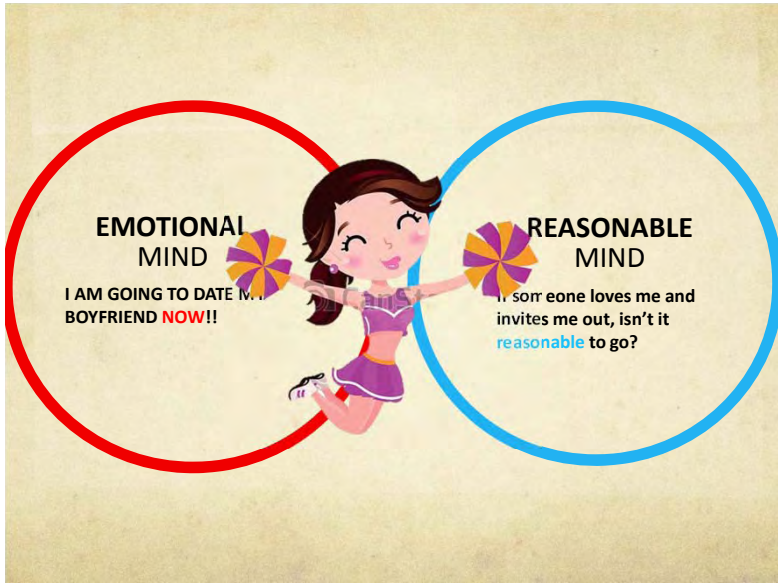
It is your time to make a difference! Use your DBT skills to activate her wise mind, and re-direct her to a better outcome!

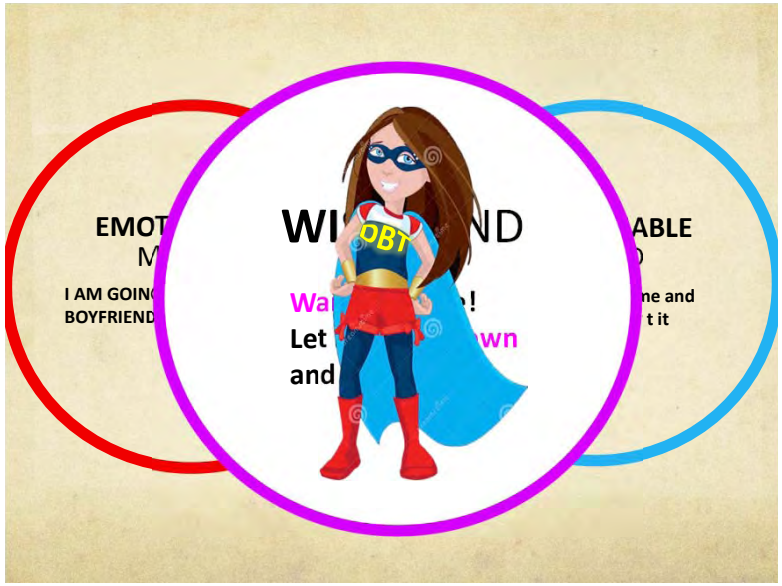
First of all, get your DBT skills ready! Pick the DBT skills that can help Mary from your magic box:
1 - To validate her own feelings and thoughts:
2 - To reduce her emotional vulnerability:
3 - To regulate her emotions effectively:

APPENDIX A: DBT Computer Training Program Slides

Task 2: Internet Lover

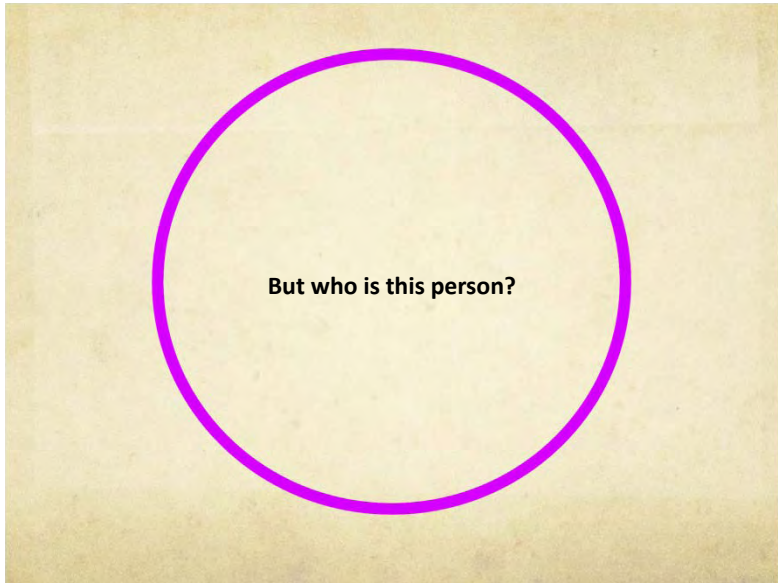


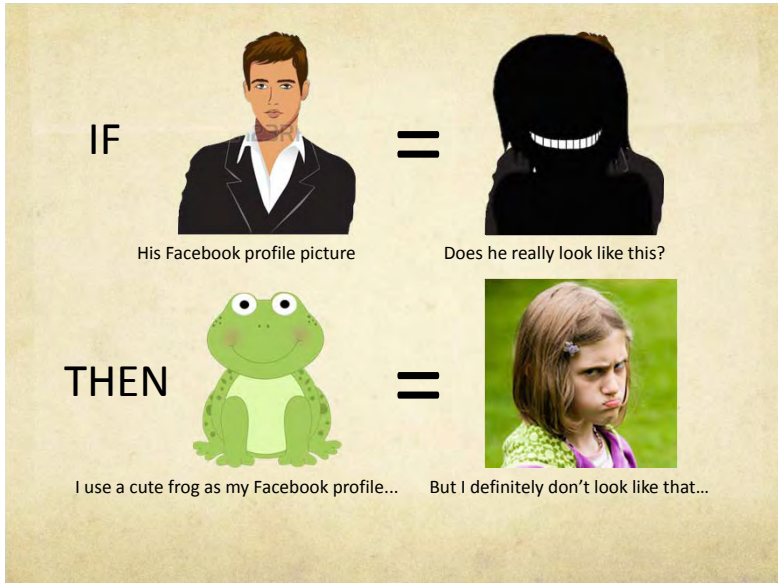


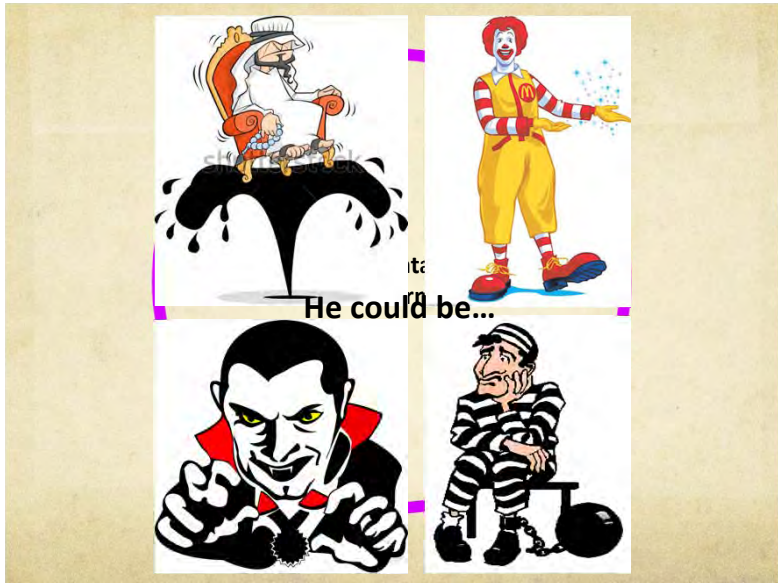


APPENDIX A: DBT Computer Training Program Slides

Task 2: Internet Lover







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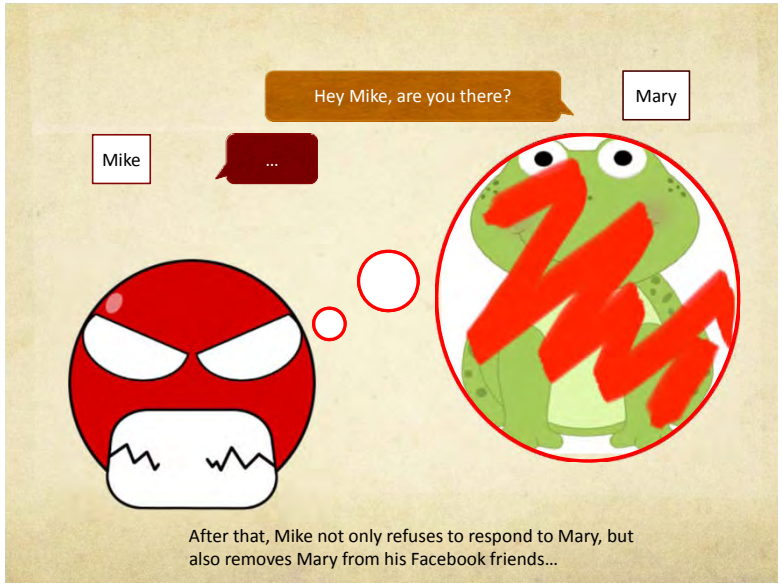
Task 2: Internet Lover



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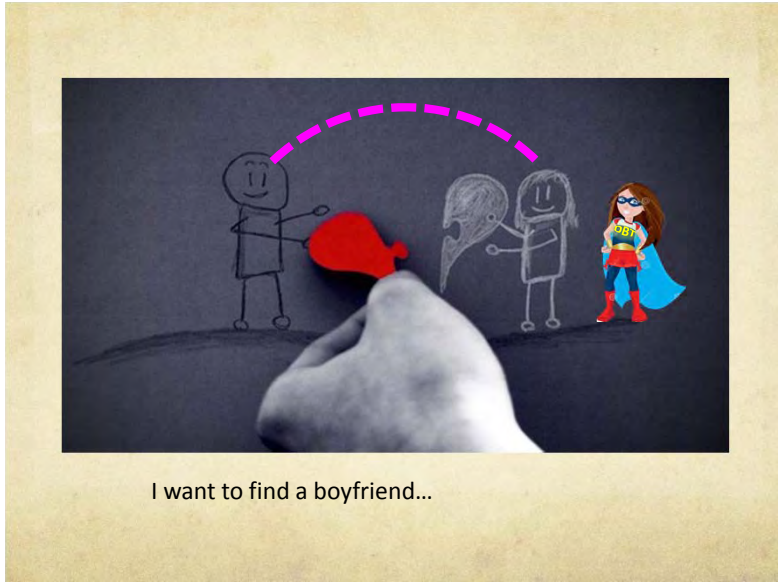
Task 2: Internet Lover



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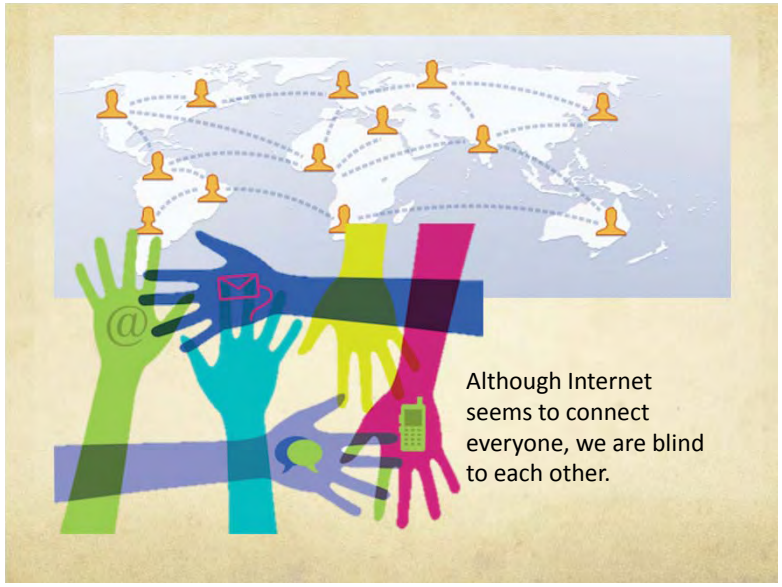

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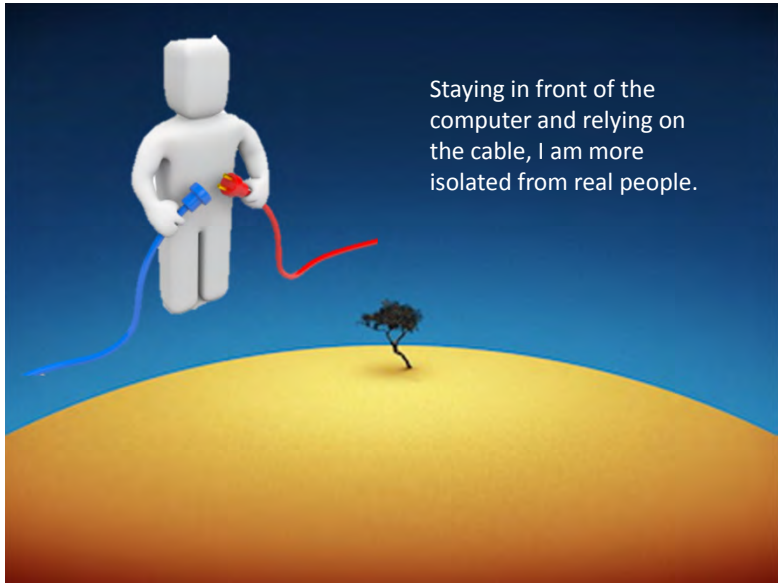

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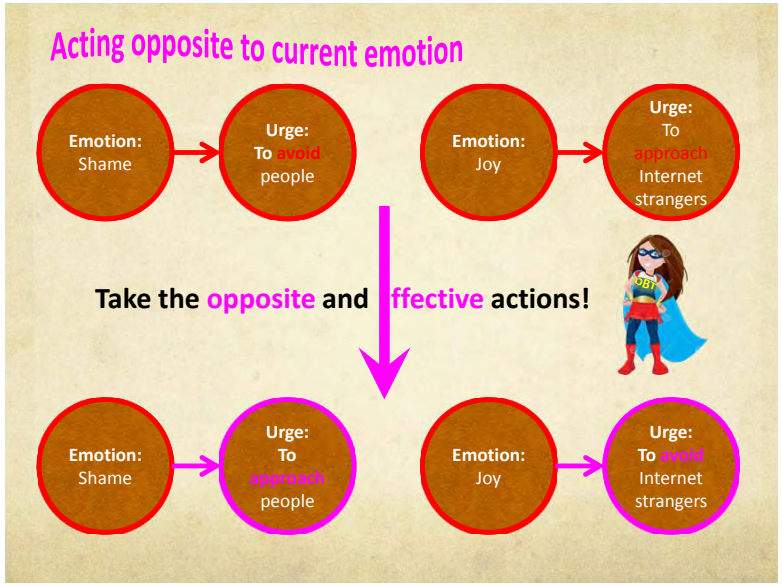
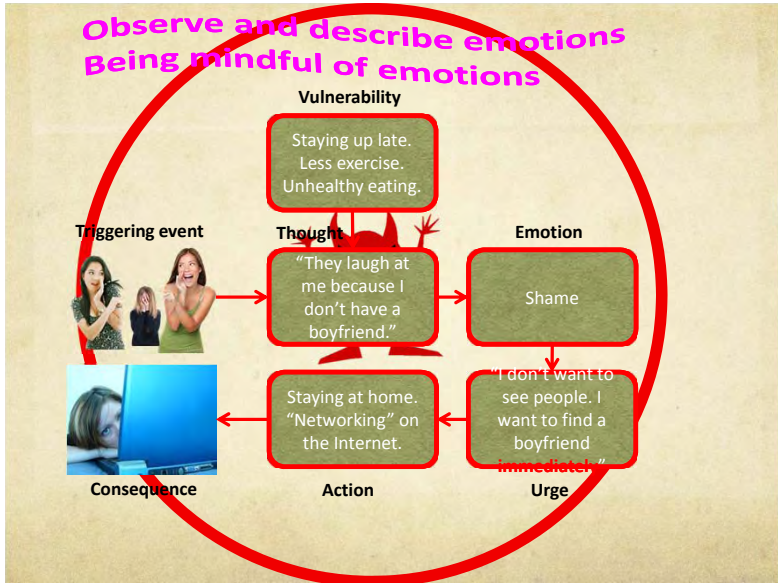
Task 2: Internet Lover





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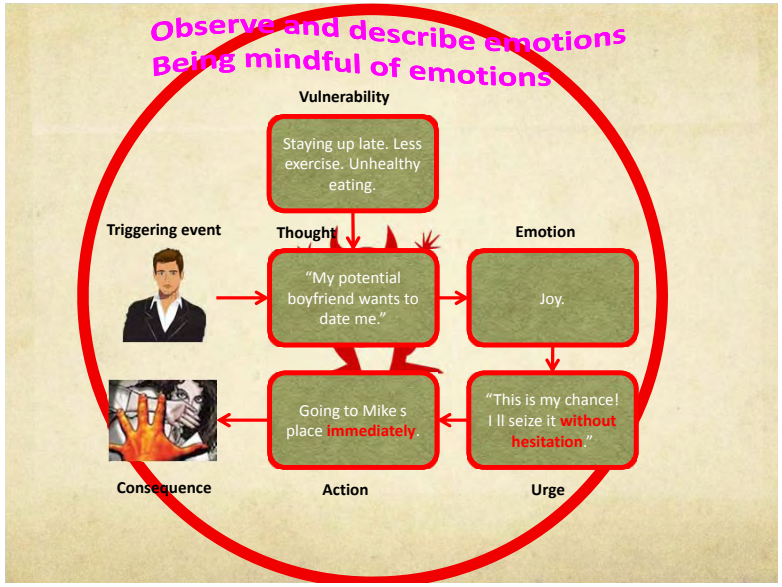
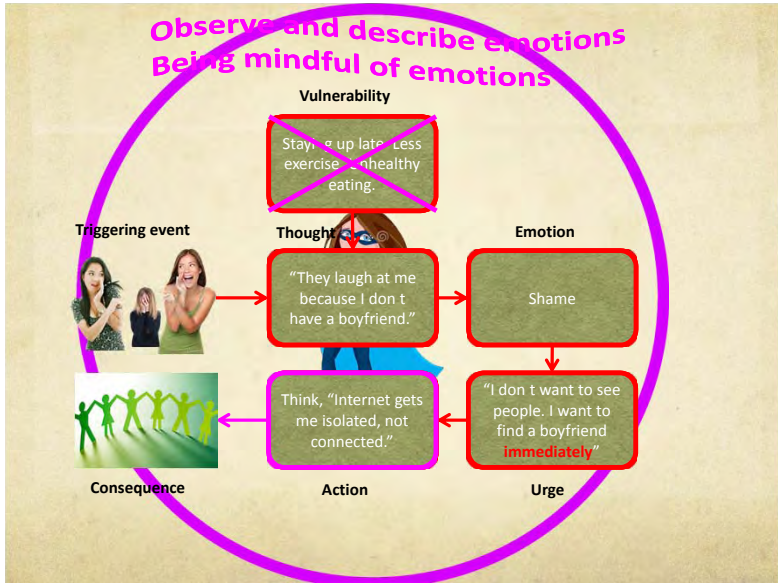
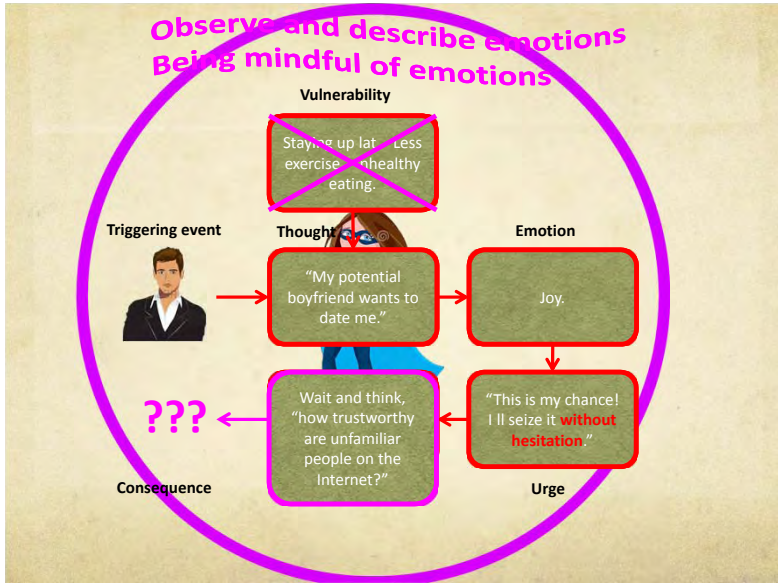
Task 2: Internet Lover







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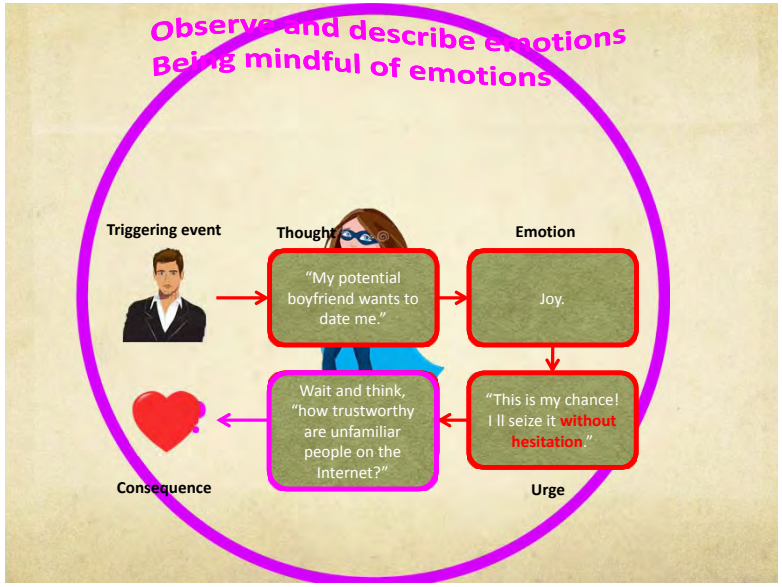

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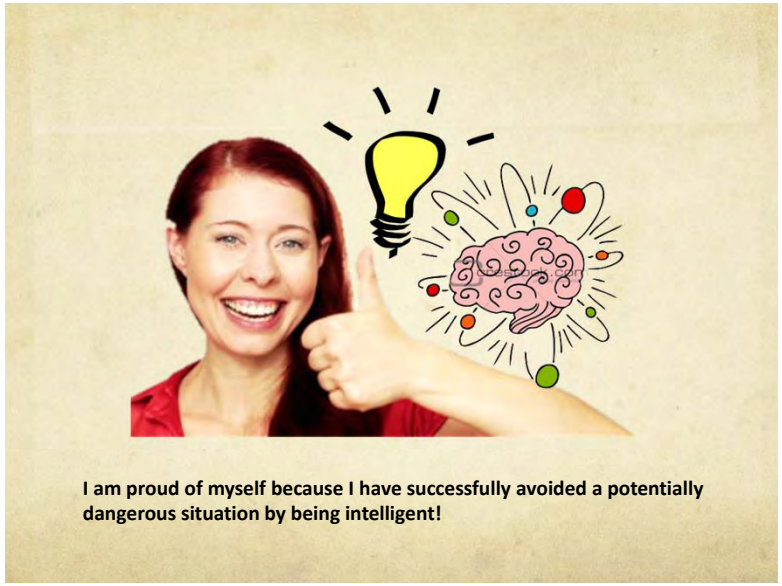


APPENDIX A: DBT Computer Training Program Slides

Task 2: Internet Lover

APPENDIX A: DBT Computer Training Program Slides

Task 2: Internet Lover

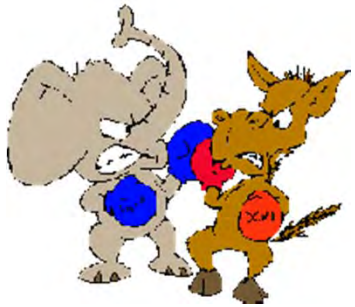
APPENDIX A: DBT Computer Training Program Slides

Dance Class

We would like to ask you to help the people on this "emotional" planet outside of our solar system There, people are dominated by their emotional mind Some are easily provoked by trivial events, others experience intensive emotions and take longer to calm down We hope you can use your DBT skills to help them activate their wise mind!

Task 3: Dance Class

Congratulations on completing the 20-week DBT! Now you are a superhero equipped with the the powerful DBT skills!



When you arrive on the planet, you will see some emotional emergencies where people fail to cope effectively with a situation in their life We would like you to pick the DBT skills of your choice to help the people find a wiser solution, and to change the consequences of the situation

APPENDIX A: DBT Computer Training Program Slides

By using your DBT skills, you are not only changing the way people behave, but also transforming the planet into a more peaceful and beautiful wise-minded place! Let's see how you can make a big difference!

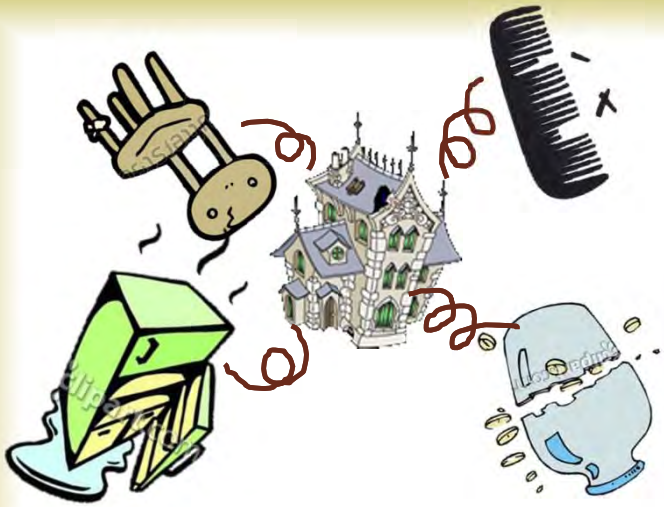
Task 3: Dance Class

An emotional emergency is happening in town!
Go and see what's going on!

Why is Alice's mom so mad?
Who is Jimmy?

What's wrong with Alice's private life?

APPENDIX A: DBT Computer Training Program Slides



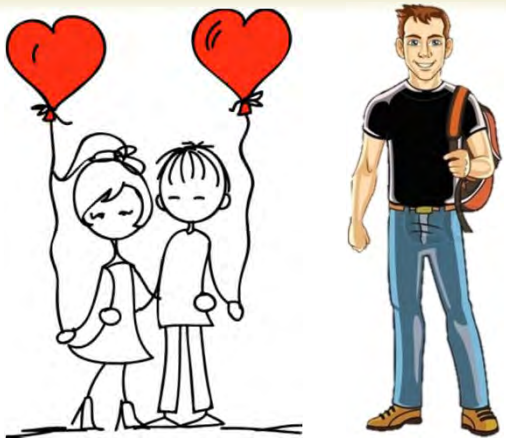
It looks as if the house is experiencing an earthquake…

Task 3: Dance Class

Alice's mom is among those strict old-fashioned mothers who prohibit adolescent romance of any form

Well, Alice is like most adolescents of her age who have developed pretty strong immunity to this sort of preaching…

APPENDIX A: DBT Computer Training Program Slides



In fact, Alice has been doing the opposite of what her mother has said for a while Yes, the guy's name is Jimmy

Task 3: Dance Class

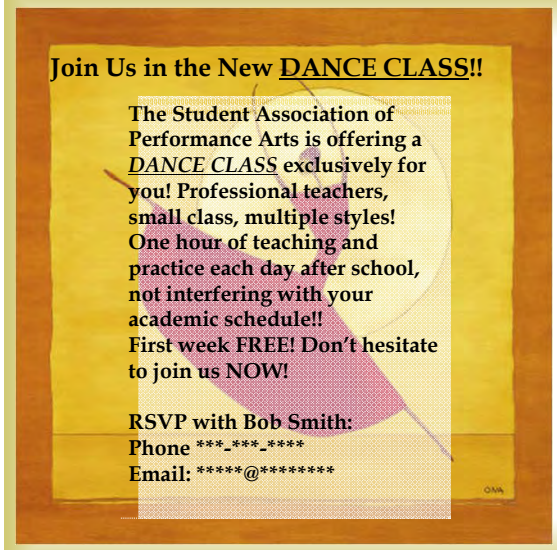
Ever since they met two years ago, they have been sticking with each other wherever they go

However, this can happen only during school time, because…

She thinks her mom is too strict with her This is what has been bothering Alice the most What she wants is to be with Jimmy every day and to do whatever they want

APPENDIX A: DBT Computer Training Program Slides

Task 3: Dance Class



One day, a dance class poster comes to Jimmy's attention The schedule looks especially appealing one hour each day after school…

In math class, Jimmy passes a note to Alice to tell her what he is thinking

Hi sweet heart, let's register for the dance class together. This way we can spend more time together after school. Let me know what you think.
Love you.
J.

This is perhaps Alice's most exciting moment in math class! Without any thought, she immediately agrees with this amazing idea!

APPENDIX A: DBT Computer Training Program Slides

Hi sweet heart, let's register for the dance class together. This way we can spend more time together after school. Let me know what you think.
Love you.
J.

Genius! That's a brilliant idea!

Task 3: Dance Class

Despite being quite skeptical, Alice's mom usually does not deny her daughter's "good will" to learn something she likes…

Although the class is only one hour every day, Alice and Jimmy enjoy this extra 60 minutes of being together They don't care how awkward their dancing is…

APPENDIX A: DBT Computer Training Program Slides

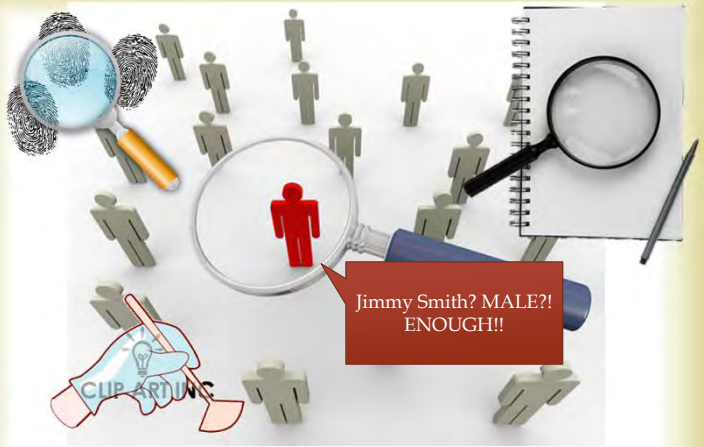
One week later, they don't even bother to go to the dance class any more…

Instead, they either go watch a movie, or have a stroll on the lawn behind the school yard

Task 3: Dance Class

Your daughter Alice hasn't been present at the dance classes recently…

Things change when the dance teacher calls her mom to find out whether everything is good with Alice because she has been absent for a few weeks



Her mom immediately carries out an extensive investigation She believes there is only one truth, and she has rapidly found it…

YOU ARE STRICTLY PROHIBITED FROM MEETING JIMMY… OR ANY OTHER BOY!!

NO DANCE CLASS! NO GOING OUT ON THE WEEKEND! GROUNDED FOR THREE MONTHS!

This is why Alice's mom is so mad at her daughter…

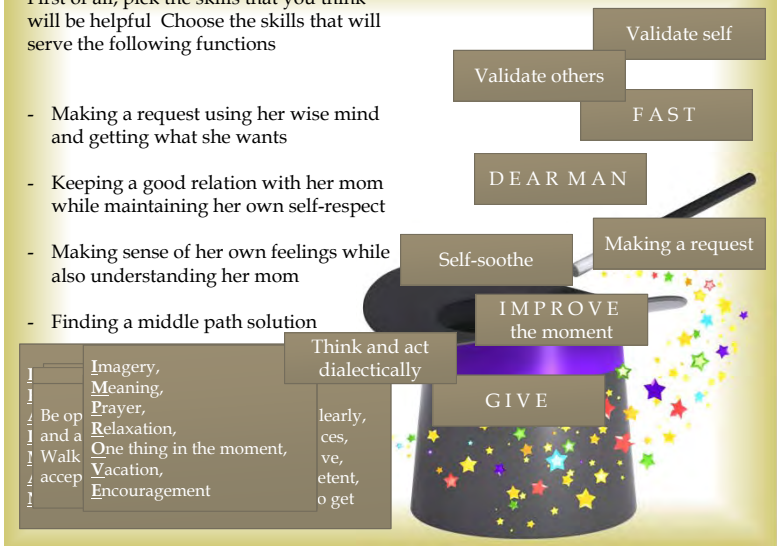
APPENDIX A: DBT Computer Training Program Slides

As you have seen, Alice's strategy to spend more time with Jimmy is not quite "sustainable" Now it's your time to make a difference! Please help her with your DBT skills!

Task 3: Dance Class

First of all, pick the skills that you think will be helpful Choose the skills that will serve the following functions

- Making a request using her wise mind and getting what she wants
- Keeping a good relation with her mom while maintaining her own self-respect
- Making sense of her own feelings while also understanding her mom
- Finding a middle path solution



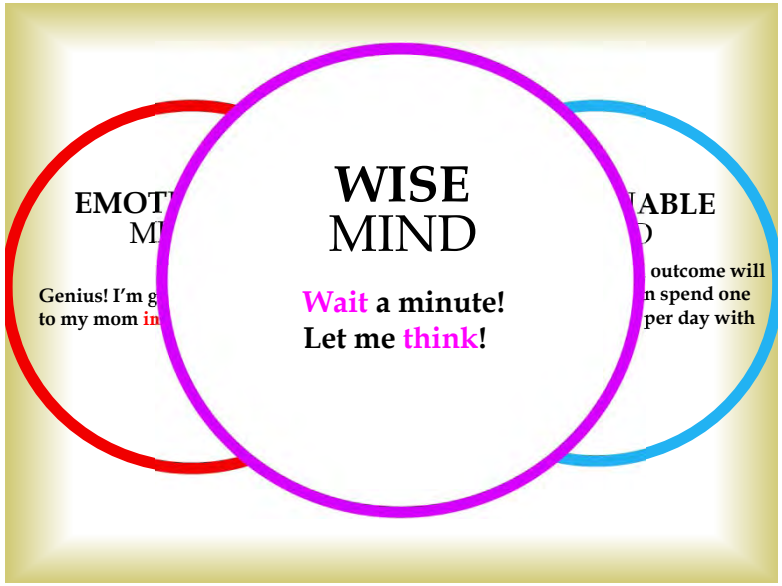
And most importantly, what STATE OF MIND do you want to activate for her?

In math class, Jimmy passes a note to Alice to tell her what he is thinking

APPENDIX A: DBT Computer Training Program Slides

Hi sweet heart, let's register for the dance class together. This way we can spend more time together after school.
Let me know what you think.
Love you.
J.

Task 3: Dance Class



APPENDIX A: DBT Computer Training Program Slides

But before **making a request**, here are a few things to consider:

☑**Priorities:** Is my objective important to me?
☑**Capability:** Is my mom able to give me what I want?
☐**My Rights:** Is my request legitimate and acceptable?
☐**Self-respect:** Is my need real? Do I feel comfortable asking for what I need?
…

Task 3: Dance Class

What I am requesting…

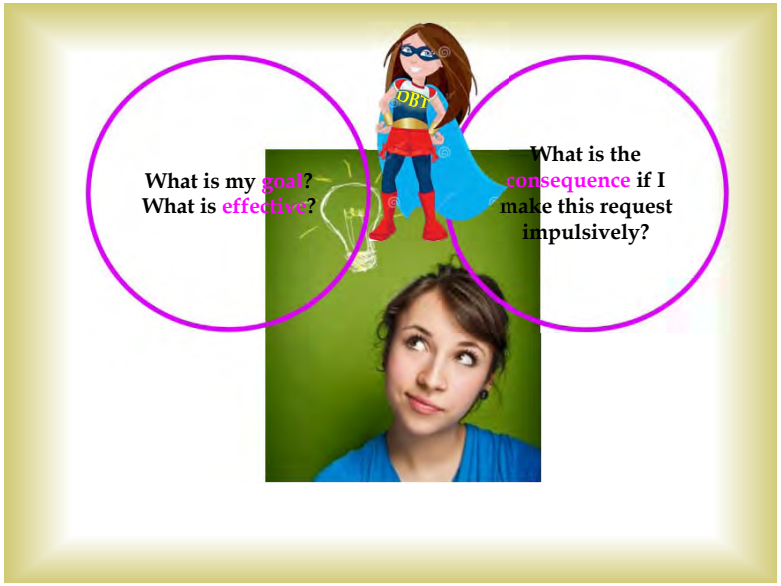
≠

What I am actually planning…

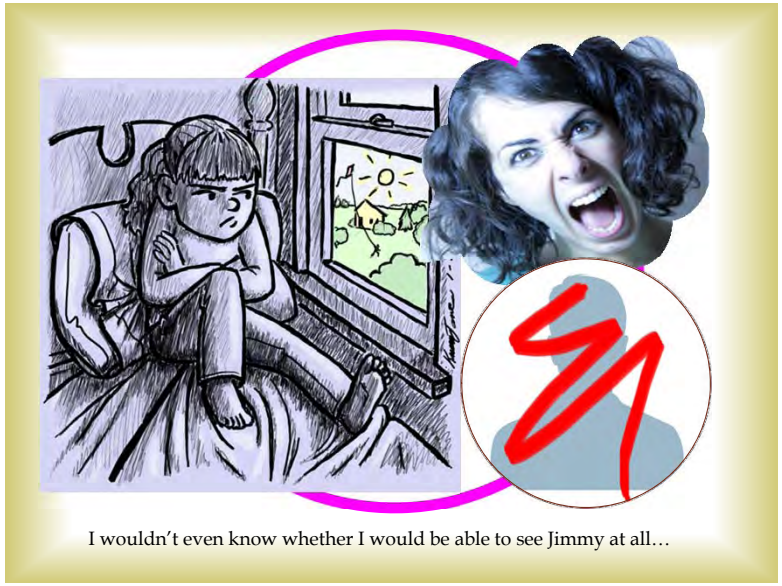
Lying doesn't win me respect, but will only take away Mom's last piece of trust in me…

But it is the perfect excuse to be with Jimmy every day! You must seize this opportunity RIGHT NOW, or the registration will be closed!

APPENDIX A: DBT Computer Training Program Slides

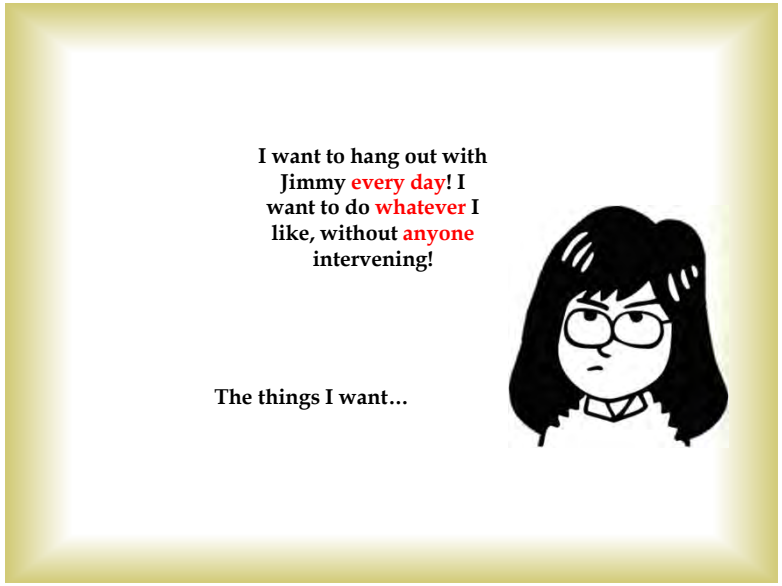


Task 3: Dance Class



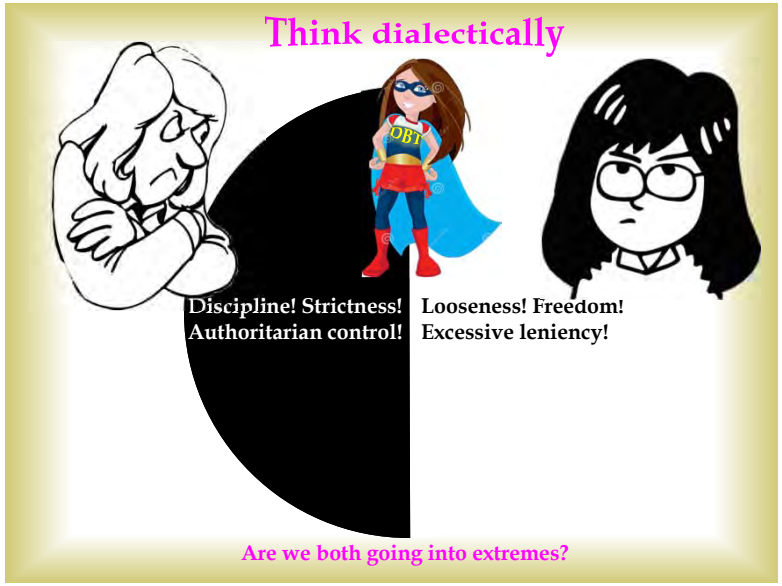
APPENDIX A: DBT Computer Training Program Slides

Task 3: Dance Class

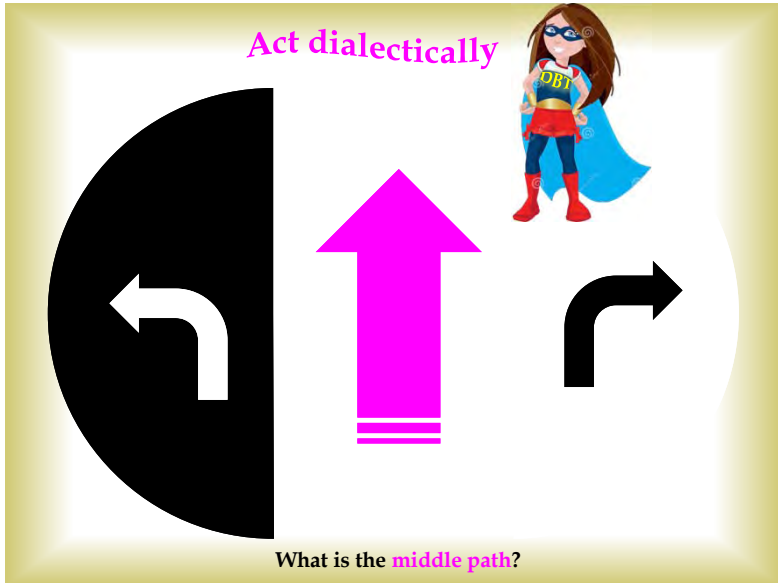


APPENDIX A: DBT Computer Training Program Slides

Task 3: Dance Class



APPENDIX A: DBT Computer Training Program Slides



Task 3: Dance Class

APPENDIX A: DBT Computer Training Program Slides

Although my mom is strict, she seems to be OK with that…

Task 3: Dance Class

Congratulations! With the help of your DBT skills, Alice and her mom have avoided a conflict and have come to an effective mutual agreement!

In the past, I thought my mom was the most stubborn woman in the world and she never allowed me to do anything I wanted…

APPENDIX A: DBT Computer Training Program Slides

But this time, when we try to understand each other , I find my mom is actually a reasonable person and easy to approach…

Task 3: Dance Class

Imagine how terrible it would be if I had told that lie Consequently, I would have been grounded for months! I would never have seen Jimmy again!

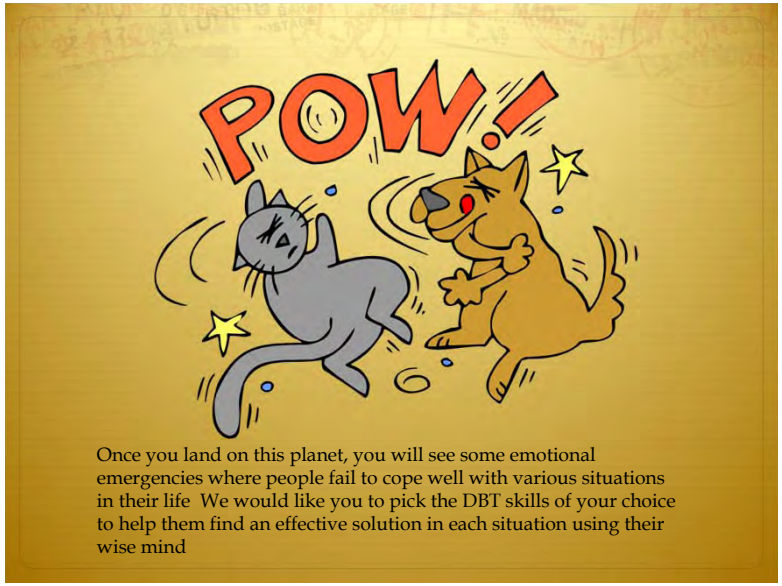
Now, we can still be together at school!

What's more, we can also hang out in the weekend!

Thank you for helping Alice activate her wise mind! Instead of being taken over by her impulsive emotional mind, she is able to calm herself down and find out a hidden middle path! By being truthful, Alice can also negotiate effectively with her mom while complying with clear and consistent rules

APPENDIX A: DBT Compter Training Program Slides

Task 4: Family Vacation



APPENDIX A: DBT Compter Training Program Slides

With the help of your DBT skills, you are not only changing the way people behave in the situation, but also are transforming the planet into a peaceful and beautiful "wise-minded planet" Let's get started and see how you can make a difference!

Task 4: Family Vacation

Emergency! Go and see what's going on!

An iPad is thrown violently out of the car This little vehicle shakes when a sharp scream bursts out of it

APPENDIX A: DBT Compter Training Program Slides

It starts as a great day Jenny's mom and dad decide to take this day off and drive out of town to have a family vacation!

Task 4: Family Vacation

Jenny's mom expects that this will be a great family bonding activity

For her dad, this trip will give him a deep breath from his busy daily work

For Jenny, lots of fun things and tasty food are waiting for her!

Everyone agrees that this will be a wonderful day!

Jenny: Hi Emily! How are you doing?

Emily: Fine but bored You? What are you doing?

Jenny: Couldn't be better! On a vacation out of town!

Emily: So cool! I wish I could be there!

Sitting in the back seat, sometimes Jenny texts her friends about her amazing trip She feels great when her friends are jealous of her!

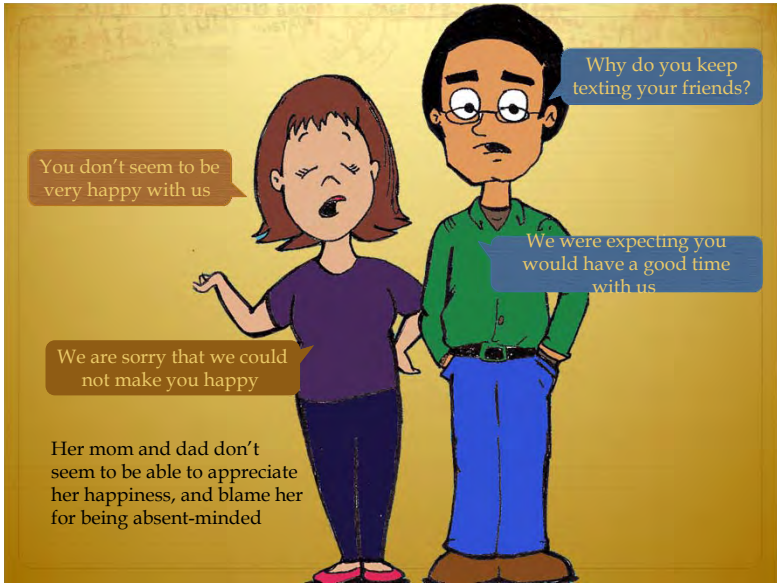
APPENDIX A: DBT Compter Training Program Slides

Sometimes she takes pictures of the beautiful scenery outside the car and posts them on Facebook Many of her friends have immediately clicked "Like"

Task 4: Family Vacation

Or she takes selfies and shares them on Instagram, so that her friends will know how happy she is at the moment

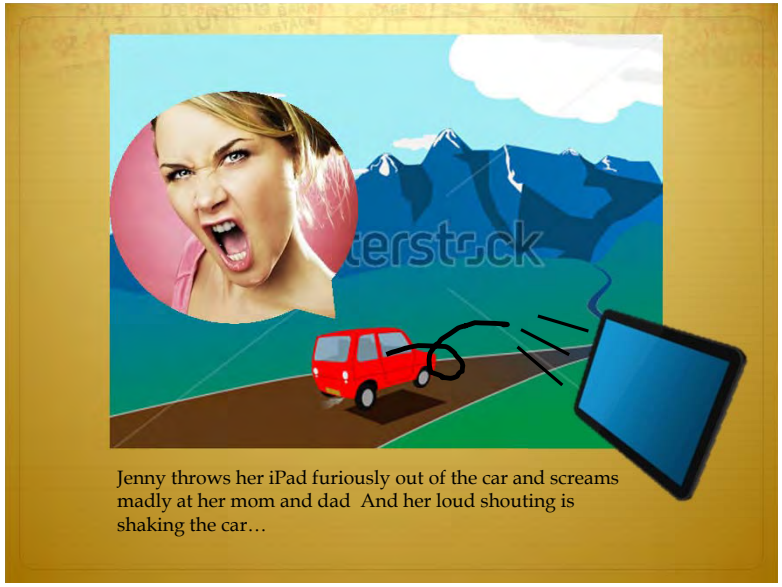
However, Jenny is so busy sharing her exciting experience with her friends that she seems to have neglected her mom and dad sitting in the front seats

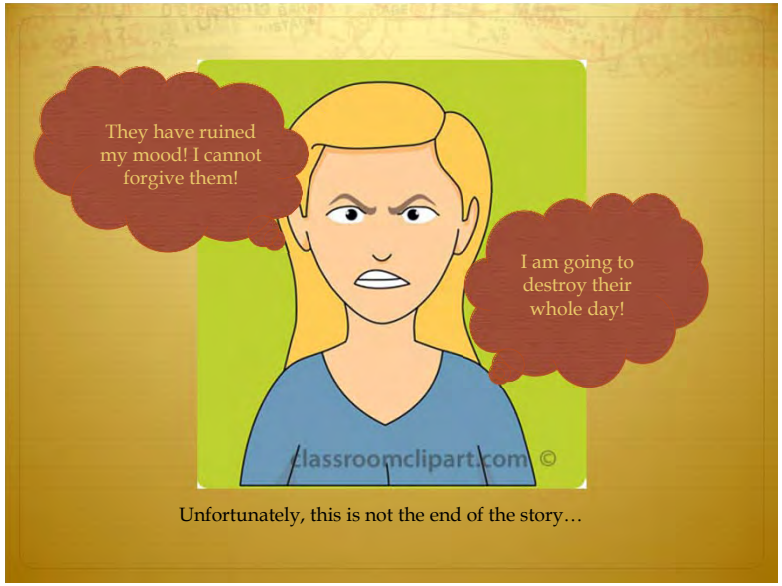


Her mom and dad don't seem to be able to appreciate her happiness, and blame her for being absent-minded

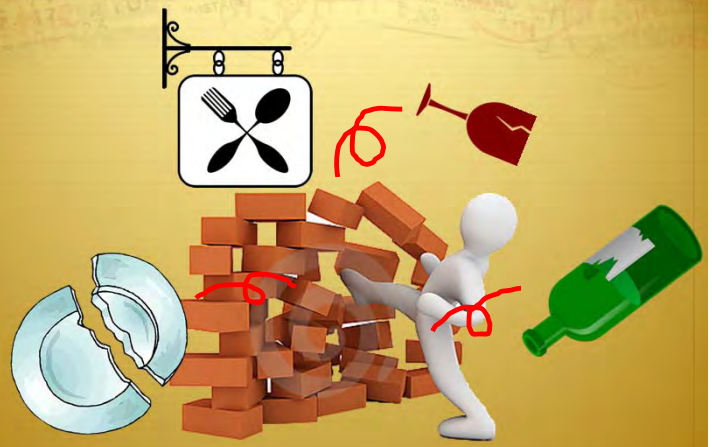
APPENDIX A: DBT Compter Training Program Slides

Task 4: Family Vacation





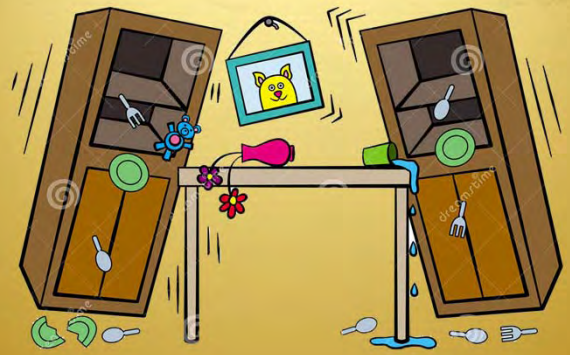
APPENDIX A: DBT Compter Training Program Slides



On top of that, at the restaurant, Jenny violently overturns the table and breaks the dishes and glasses

Task 4: Family Vacation

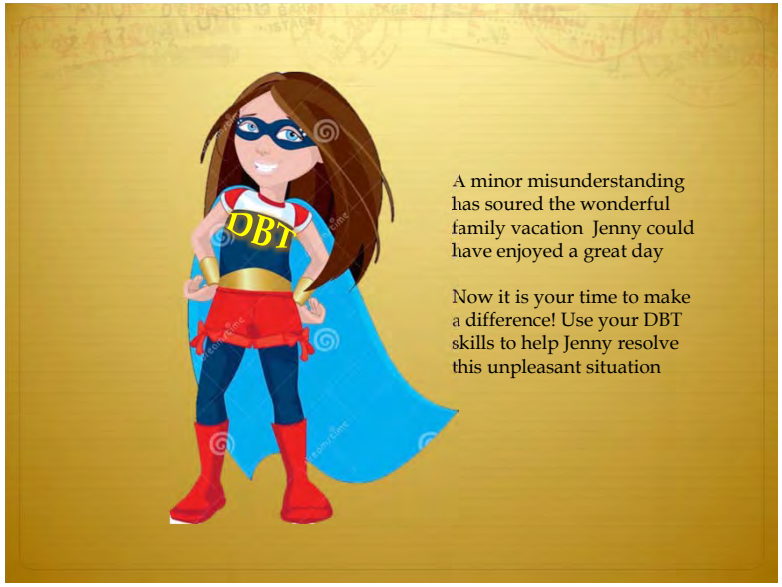
Jenny's mom and dad are so pissed off and stressed out that they have no interest for the rest of the day They want to do nothing but end this trip immediately



Even back at home, Jenny does not stop her retaliatory destruction Her home looks like it has undergone a massive earthquake

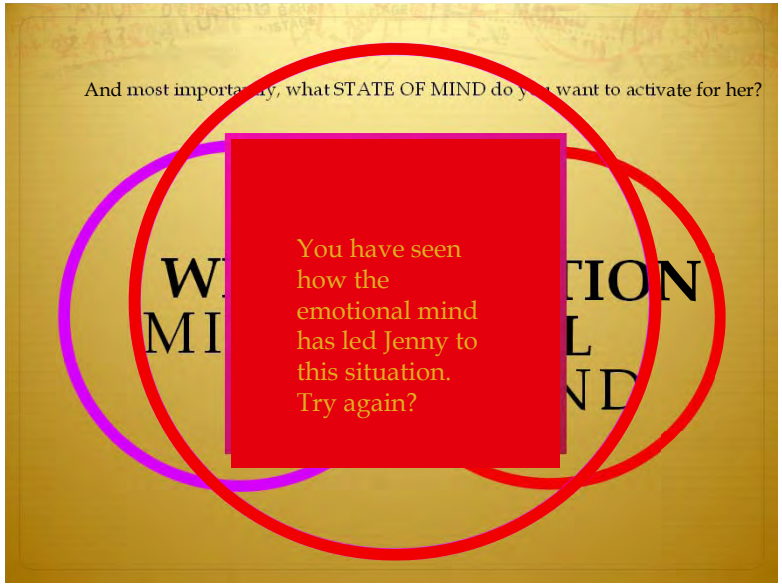
To everyone's disappointment, this day could not have be worse…

APPENDIX A: DBT Compter Training Program Slides

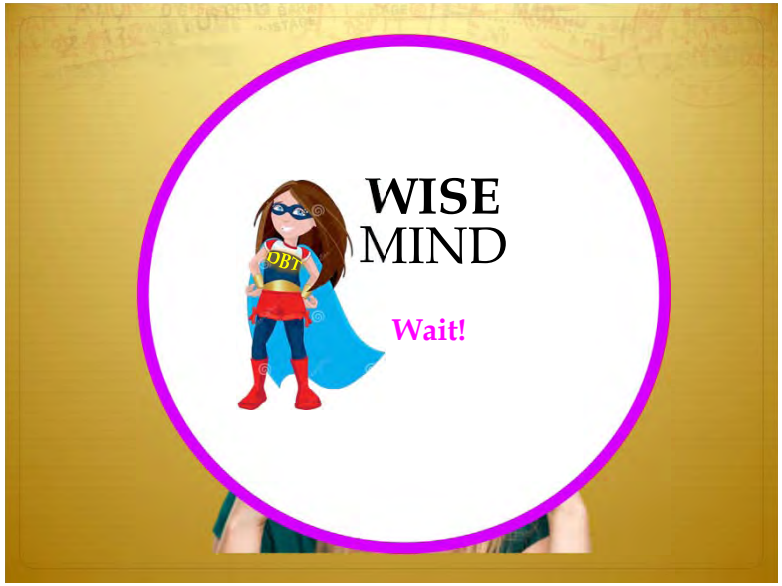


Task 4: Family Vacation

APPENDIX A: DBT Compter Training Program Slides

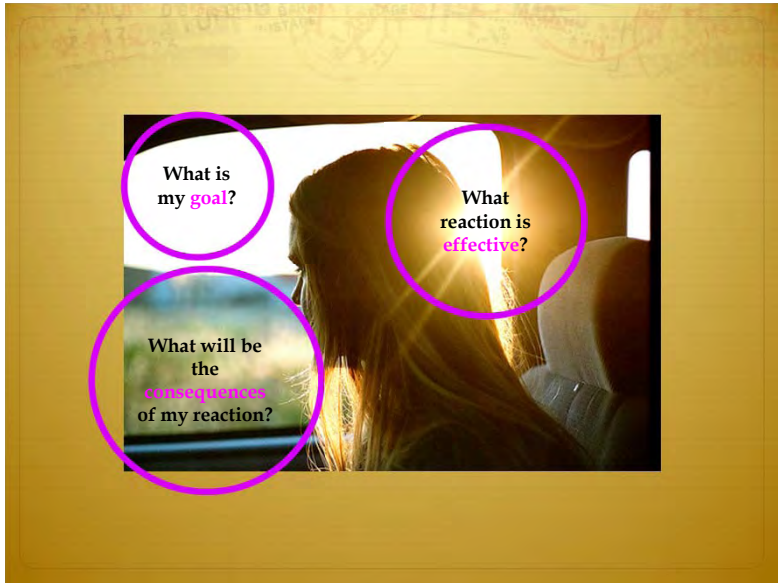


Task 4: Family Vacation



APPENDIX A: DBT Compter Training Program Slides

Task 4: Family Vacation



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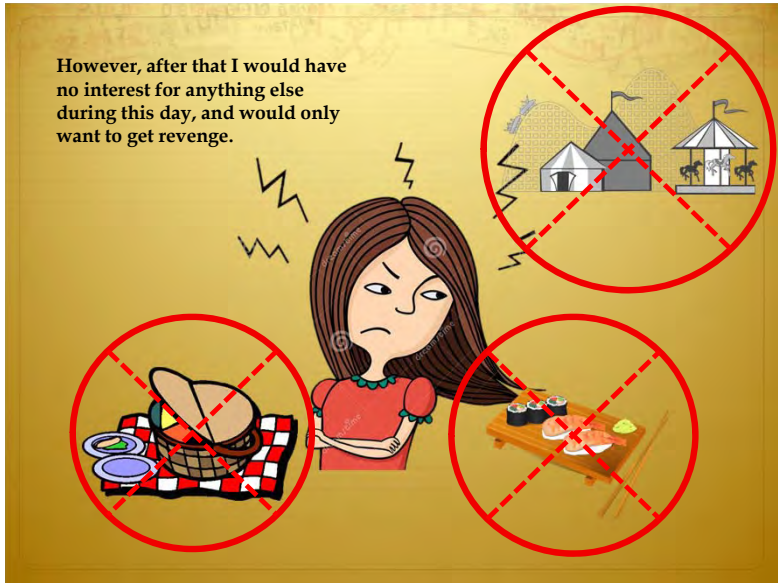


Task 4: Family Vacation

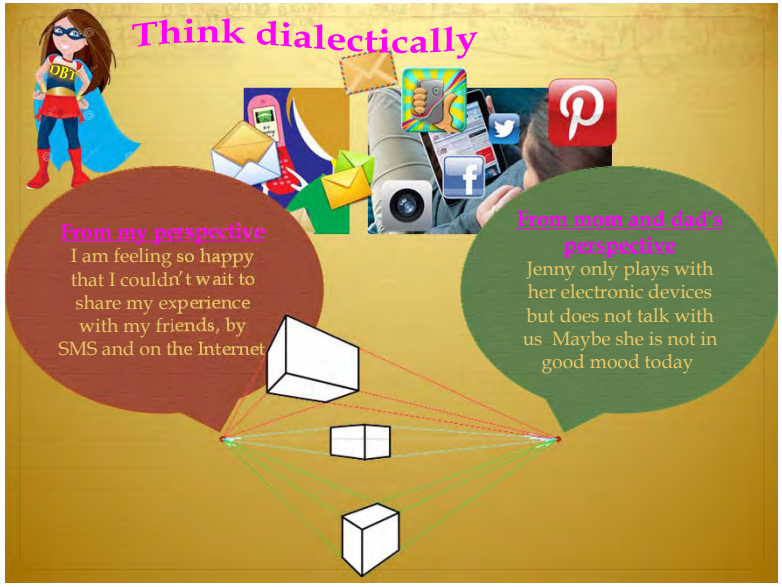
Pros and cons

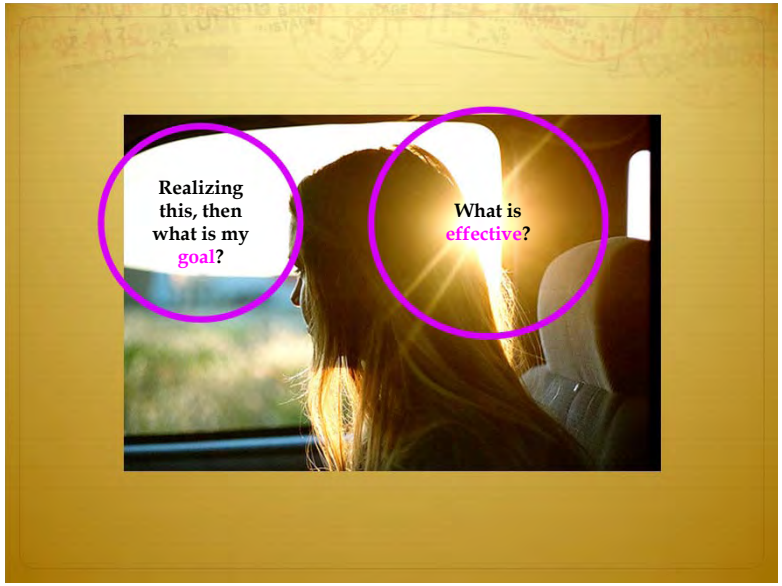
	Pros	Cons
Throwing the tantrum	Feel relieved immediately	Will not have a good time today or in the future
Tolerating the anger	Can enjoy the vacation and have a good relationship with my parents	May not be comfortable at the moment

Tolerating my anger seems to be a better deal in the long-term!

APPENDIX A: DBT Compter Training Program Slides

Task 4: Family Vacation





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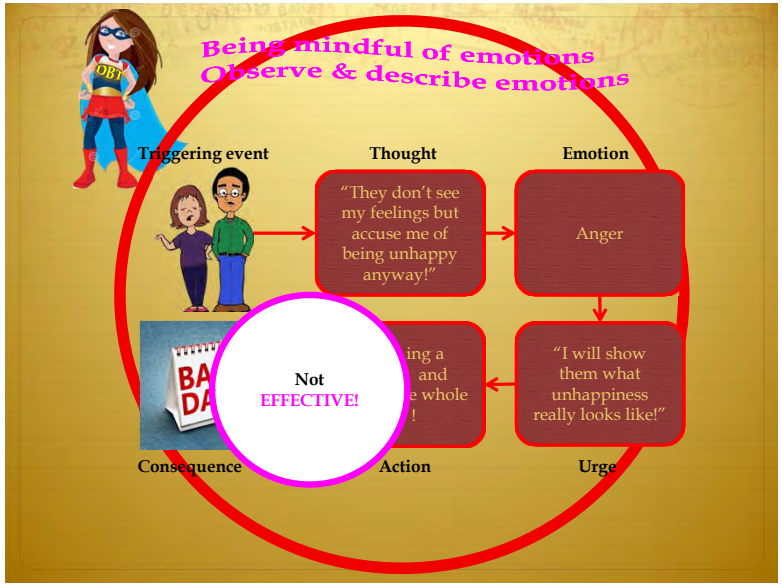
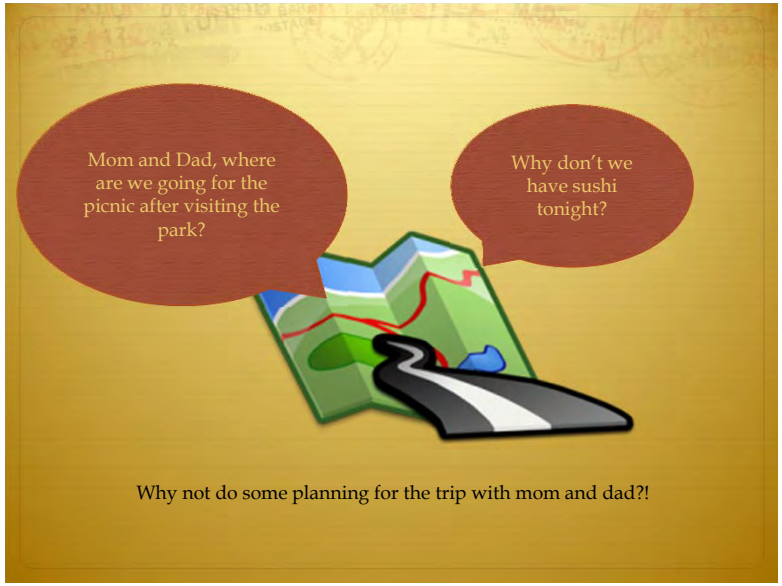
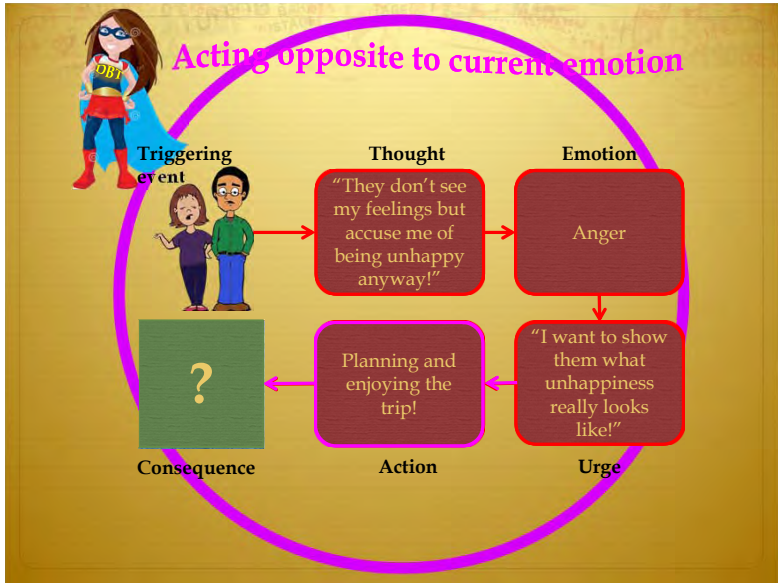


Task 4: Family Vacation





APPENDIX A: DBT Compter Training Program Slides

Jenny's family have spent a fun day in a theme park!

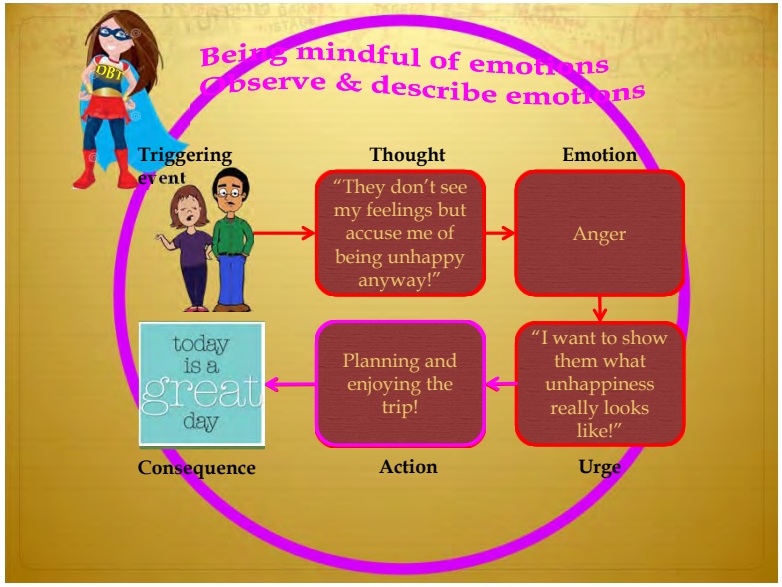
Task 4: Family Vacation

Their riverside picnic cannot be better!

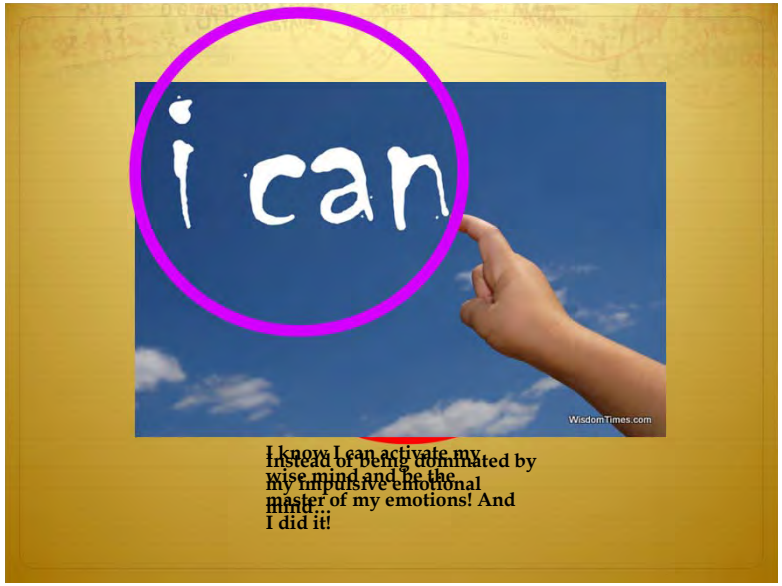
As Jenny suggested, they go to a sushi shop for dinner!

Although they are all tired in the end, they indeed had a great day!

APPENDIX A: DBT Compter Training Program Slides



Task 4: Family Vacation



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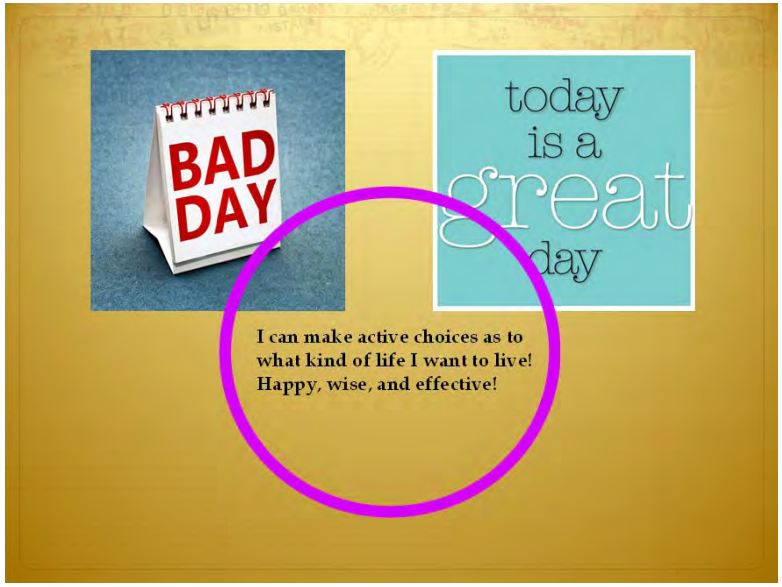
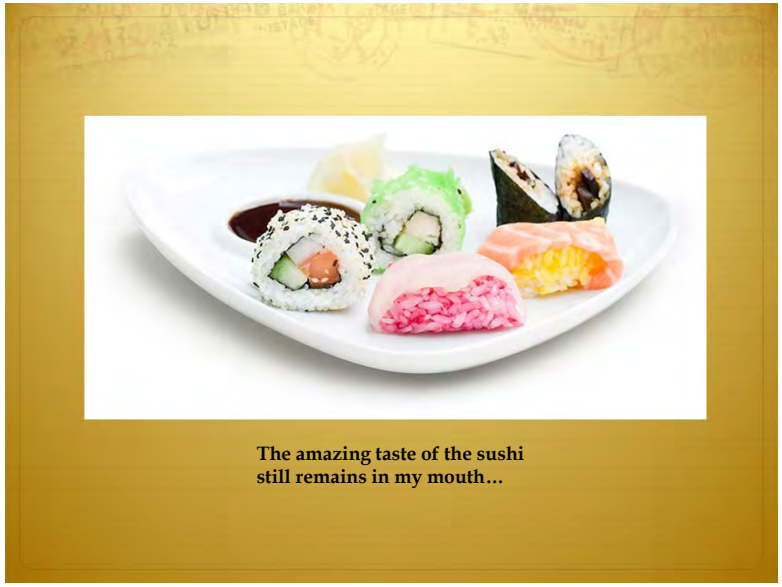


Task 4: Family Vacation



APPENDIX A: DBT Computer Training Program Slides

PHYSICS CLASS

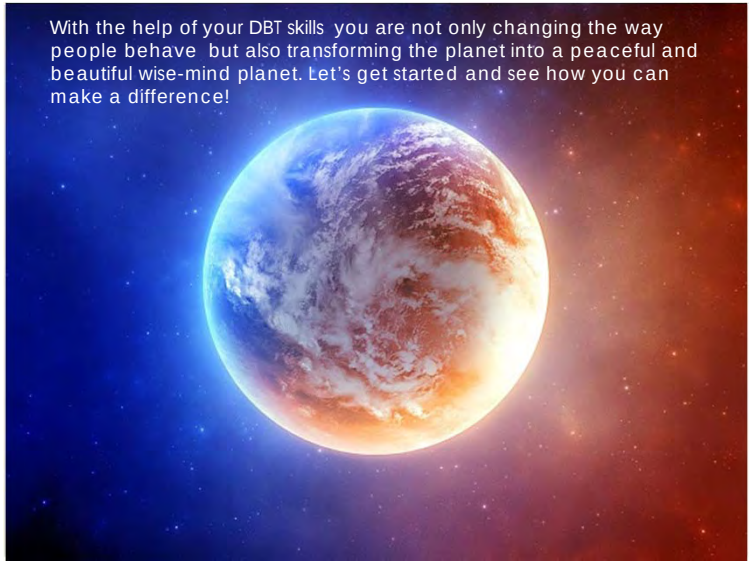
Task 5: Physics Class

Congratulations on graduating from the 20-week DBT! You are now a superhero equipped with the powerful DBT skills!

We would like to ask you to help the people living on this "emotional" planet outside of our solar system. There people have difficulties managing their emotions. These people are easily triggered by even trivial events display over-intensive reactions and take a long time to calm down.

Once you land on this planet you will see some emotional emergencies where people fail to cope well with the situations in their life. We would like you to pick the DBT skills of your choice to help them activate their wise mind and find a better solution to the situation.

APPENDIX A: DBT Computer Training Program Slides



Task 5: Physics Class

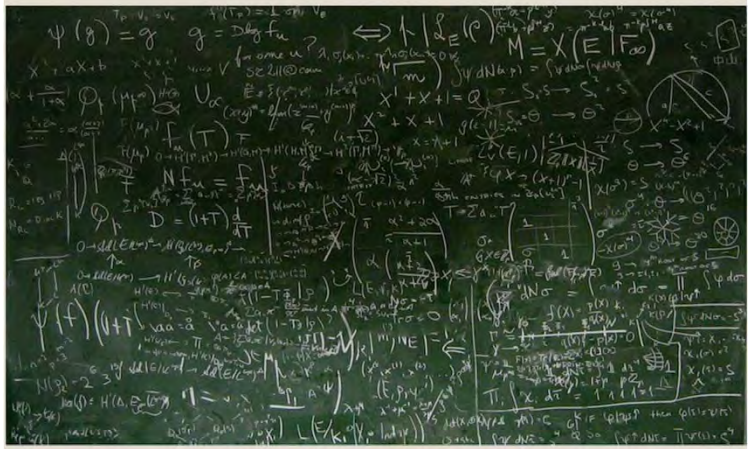
Emergency! What is happening?!

The dean of the school is meeting with Natasha's mom. What are they talking about?

Back at home Natasha's mom is shouting as loud as she can.

APPENDIX A: DBT Computer Training Program Slides

Task 5: Physics Class



Time goes back to the physics class. The huge blackboard has been flooded with all sorts of formulae and the teacher still keeps talking with his monotone voice.

In sharp contrast to the teacher's passion everyone in class is so bored that no one listens to a single word he is saying.

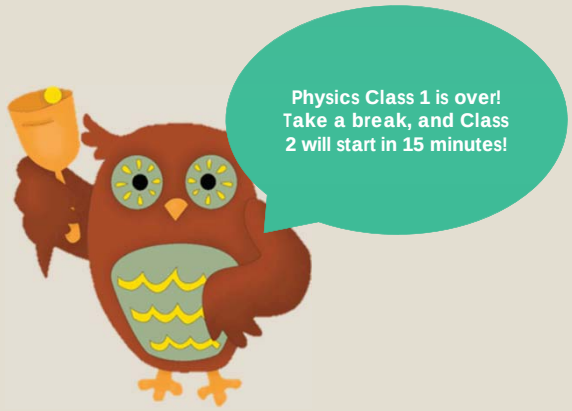
Natasha is almost asleep when her friend's whisper immediately brings her back: "let's gather some friends and skip the next class!"

APPENDIX A: DBT Computer Training Program Slides

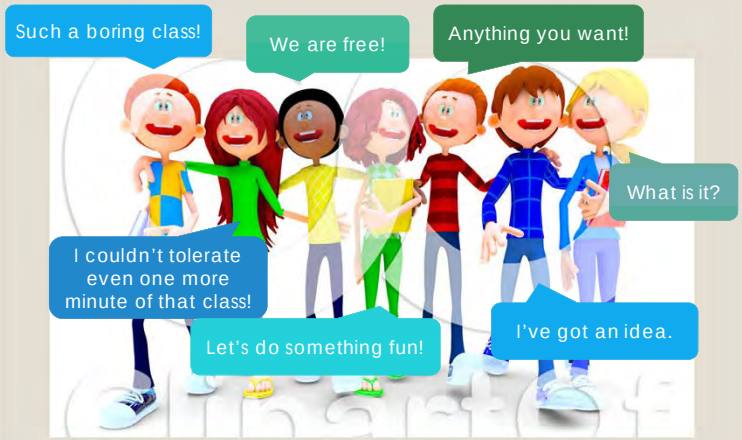
Task 5: Physics Class

Having fun with friends or staying in the sleep-promoting physics class? This is a no-brainer for Natasha!

This exciting proposal spreads out quickly. In a few seconds they have gathered an anti-physics troop who cannot wait to skip the class immediately.



When the end-of-class bell rings the allies realize that their moment has come! Class 2? It is not going to happen!!



They sneak out of the class and hang out on the street planning how to celebrate their braveness.

APPENDIX A: DBT Computer Training Program Slides

Task 5: Physics Class

APPENDIX A: DBT Computer Training Program Slides

Task 5: Physics Class

Oh perhaps they are not that unconscious because at least one of them realizes it is time for the physics class…

Natasha seems to be quite out of her mind at the moment…

Can you imagine the physics teacher's response when this group suddenly breaks into the class?

APPENDIX A: DBT Computer Training Program Slides

She is too surprised to even say anything…

Task 5: Physics Class

The teacher reports to the dean and wants Natasha's parents to come.

As you have seen when the dean complains about Natasha's conducts her mom cannot even believe it…

APPENDIX A: DBT Computer Training Program Slides

Task 5: Physics Class

It is easily conceivable how mad her mom is...

You know that Natasha could have used her wise mind to avoid this situation!

Now it is your time to make a difference! Use your DBT skills to change this story!

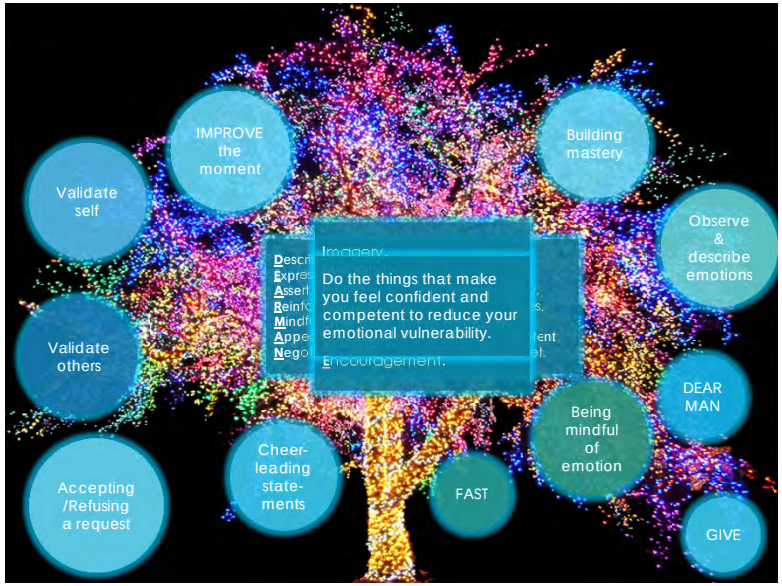
First of all get your DBT skills ready! When the magic tree lights up pick up the DBT skills that can help Natasha...:

(1) To **think** and **express** what she wants when accepting or refusing a request.

(2) To communicate **effectively** with friends while maintaining her own **self-respect**.

(3) To make sense of her own feelings and thoughts but also understand her friends.

(4) To keep track of the rise and fall cause and consequence of her emotion.



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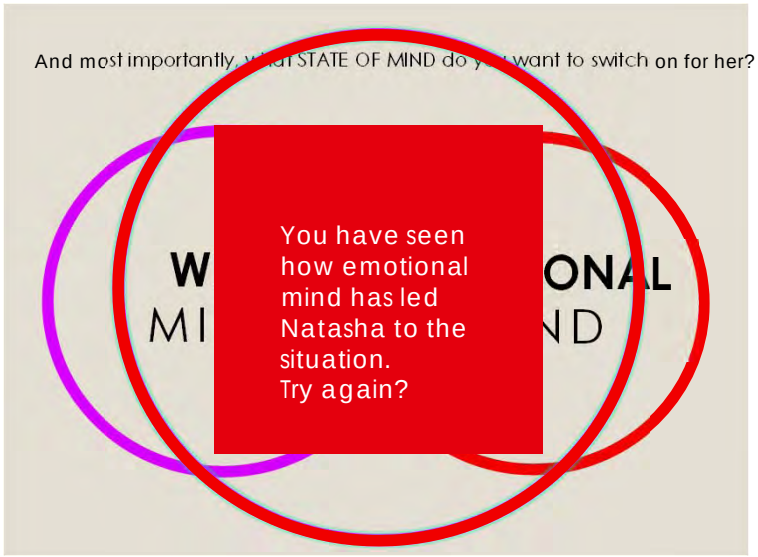
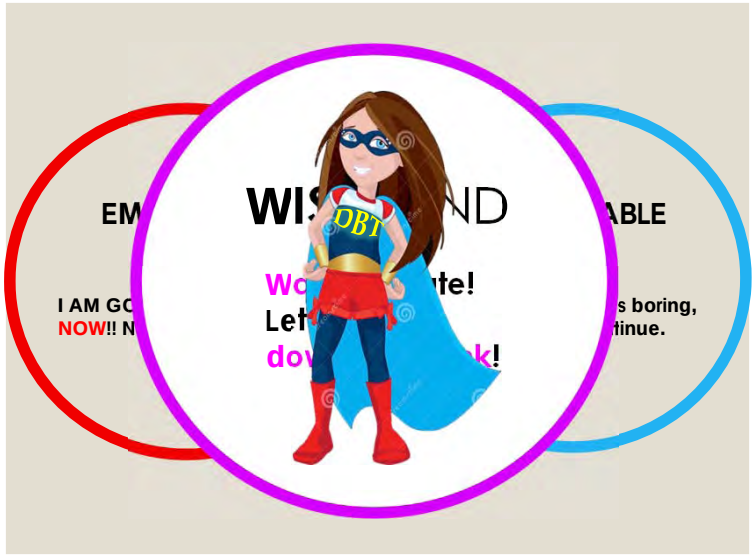
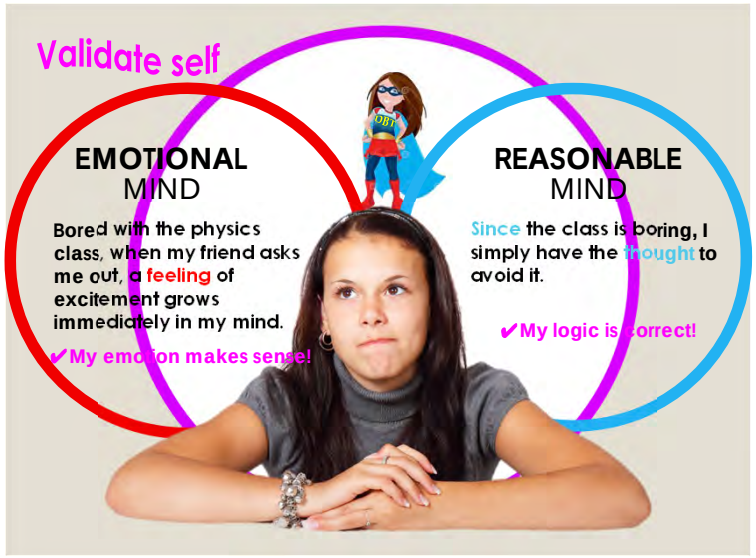


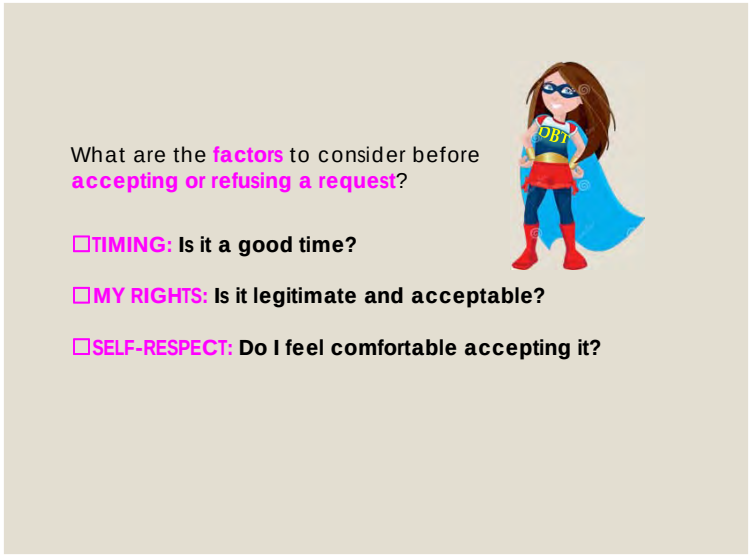
Task 5: Physics Class



APPENDIX A: DBT Computer Training Program Slides

Task 5: Physics Class





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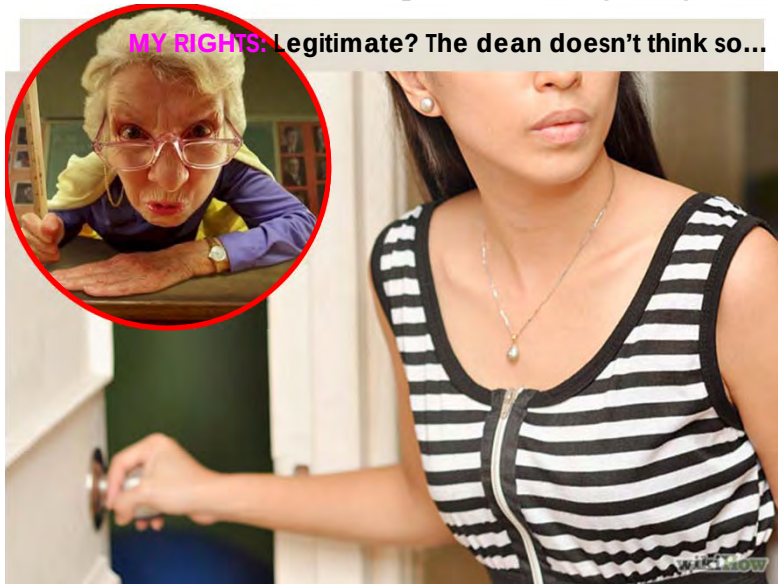
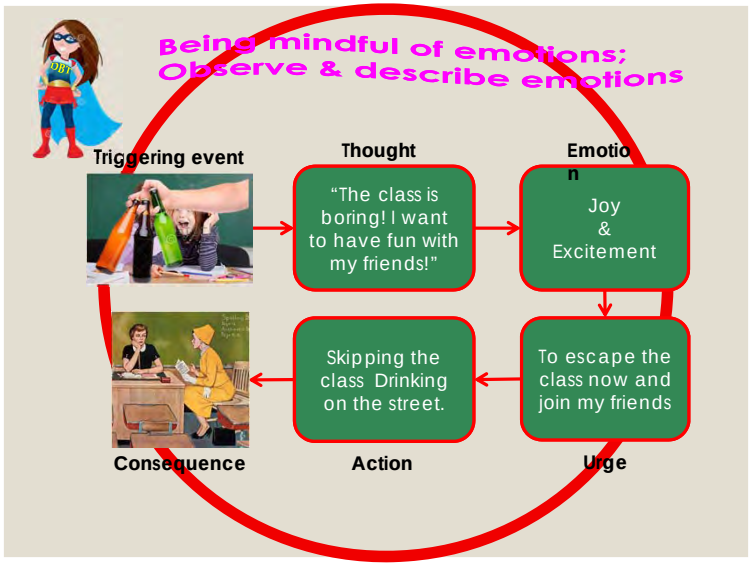


Task 5: Physics Class

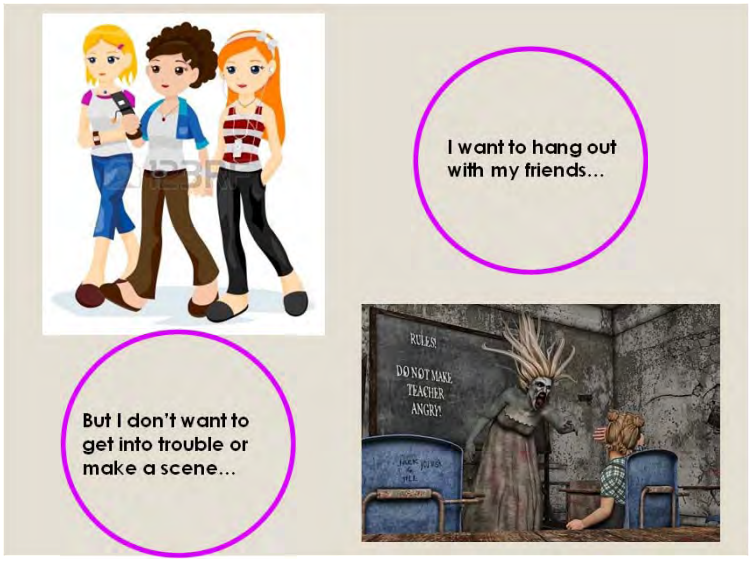
APPENDIX A: DBT Computer Training Program Slides

Task 5: Physics Class



APPENDIX A: DBT Computer Training Program Slides

Task 5: Physics Class



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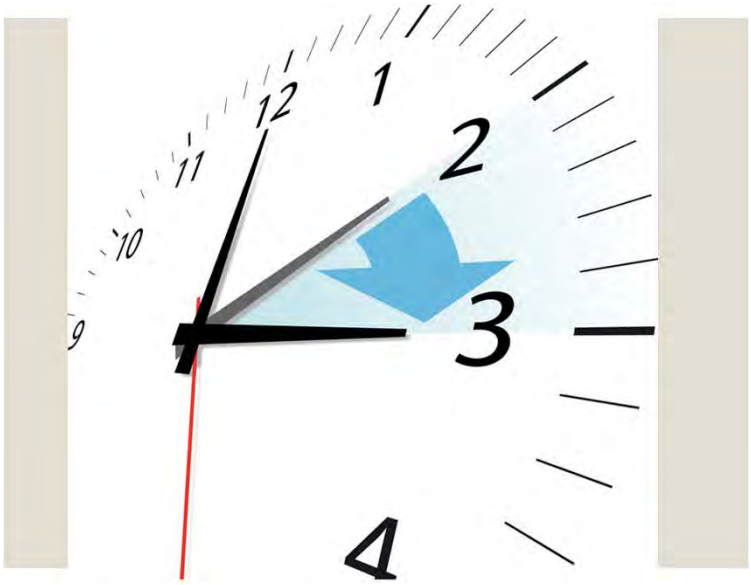


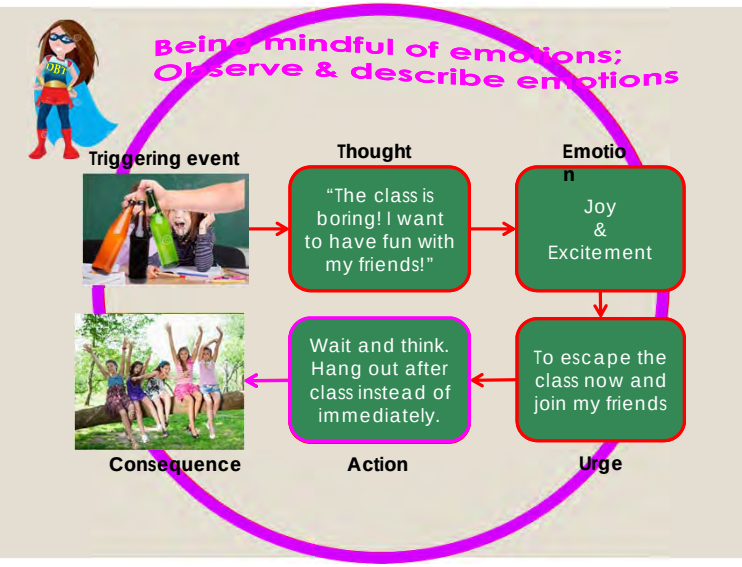
Task 5: Physics Class

Physics Class 2...

When the class is finally over...

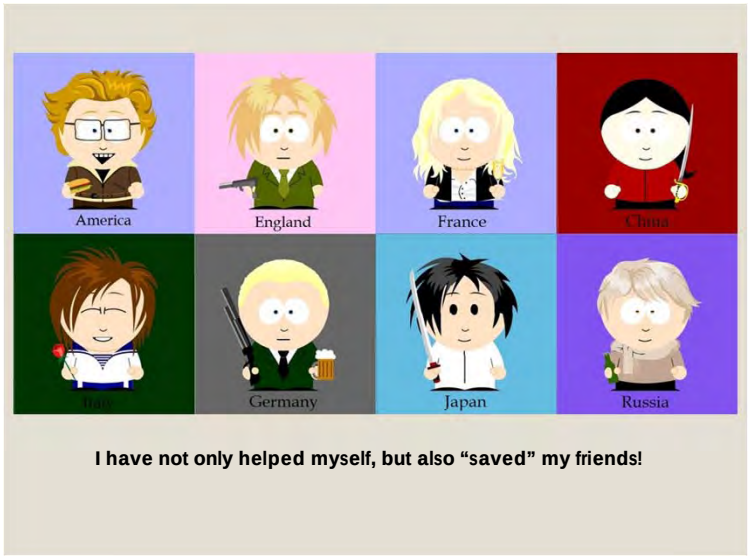
APPENDIX A: DBT Computer Training Program Slides

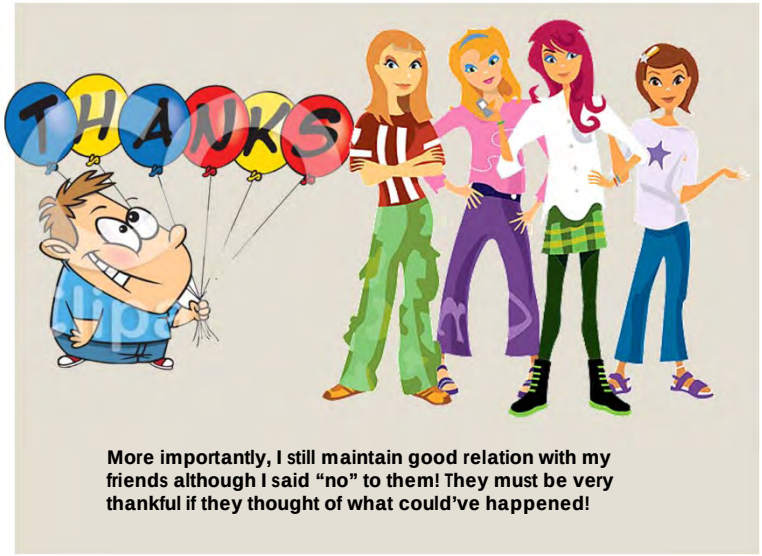
Task 5: Physics Class



APPENDIX A: DBT Computer Training Program Slides

Task 5: Physics Class





APPENDIX A: DBT Computer Training Program Slides

Task 5: Physics Class

APPENDIX A: DBT Computer Training Program Slides

Task 6: Red Ink

RED INK

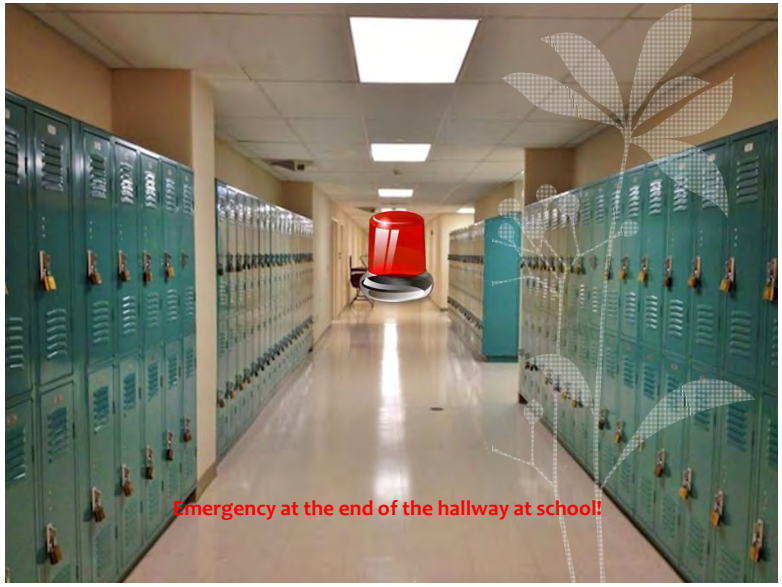
Congratulations on graduating from the 20-week DBT! You are now a superhero equipped with the powerful DBT skills!

We would like you to use your DBT skills to help the people on this "emotional" planet outside of our solar system. There, people have difficulties regulating their emotions. They are easily provoked by even trivial events, display very intensive emotional reactions, and take longer to calm down.

Once you land on this planet, you will see some emotional emergencies where people fail to cope effectively with the situation in their life. We would like you to use your DBT skills to activate their wise mind and to find a better solution to the situation.

APPENDIX A: DBT Computer Training Program Slides

Task 6: Red Ink



What happened to the teacher? It looks like a barrel of red paint has been splashed onto her face…

What did Helen do that has irritated the teacher so badly?

APPENDIX A: DBT Computer Training Program Slides

Emergency in an apartment on this street!

Task 6: Red Ink

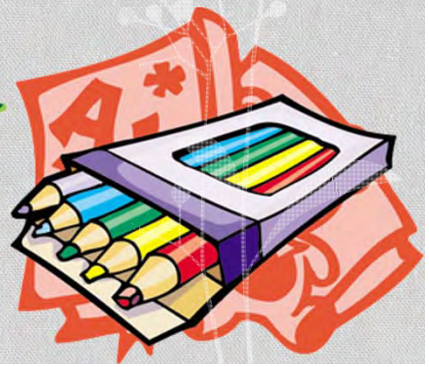
Why is Helen's mom yelling at her so much?

You travel back in time to find out what has happened…

APPENDIX A: DBT Computer Training Program Slides

She has made several new friends and they get along very well!

The school work hasn't become annoying yet...



Task 6: Red Ink

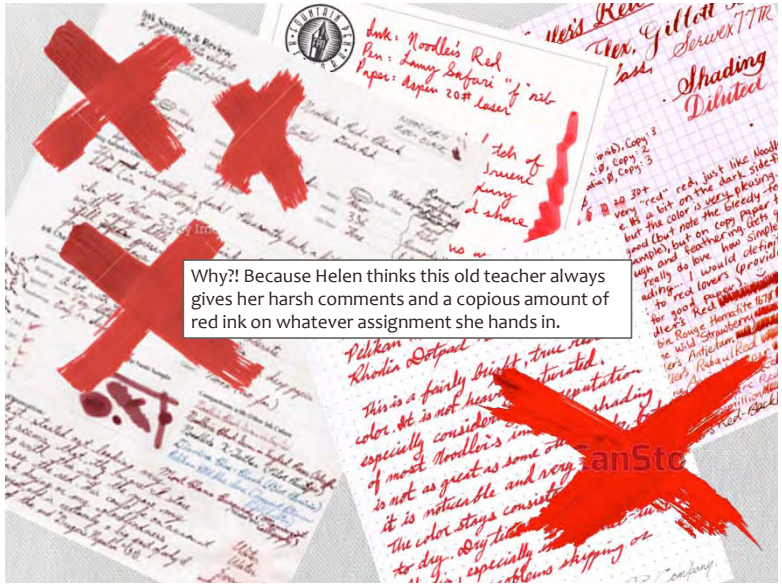
Even the campus looks beautiful! Everything at the new school is very nice, with only one exception…

…Her English teacher…In Helen's opinion, this is an old teacher both in her age and her state of mind. Stubborn, old-fashioned, never smiles…

YES! I AM THE ENGLISH TEACHER! CAPITALIZE THE FIRST LETTER IN "ENGLISH"!!

APPENDIX A: DBT Computer Training Program Slides

Task 6: Red Ink



APPENDIX A: DBT Computer Training Program Slides

Task 6: Red Ink

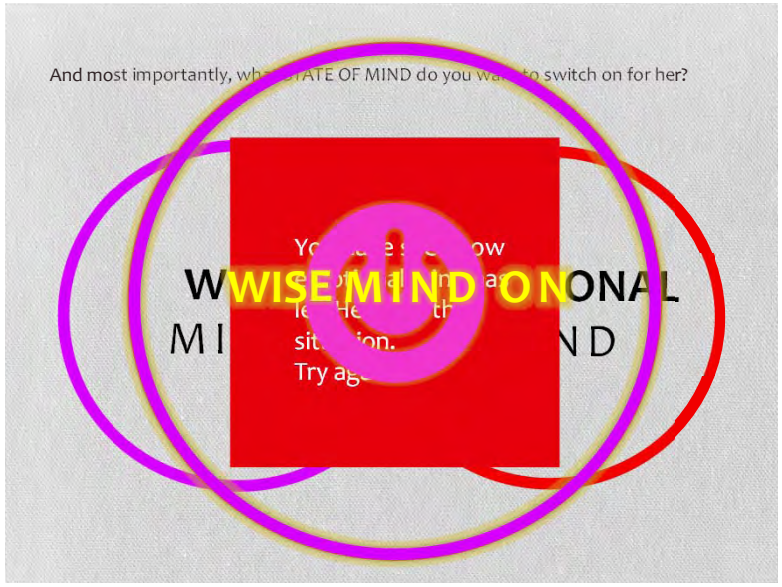
Helen puts a barrel of red paint on top of the door of the classroom, so as soon as the teacher opens the door…

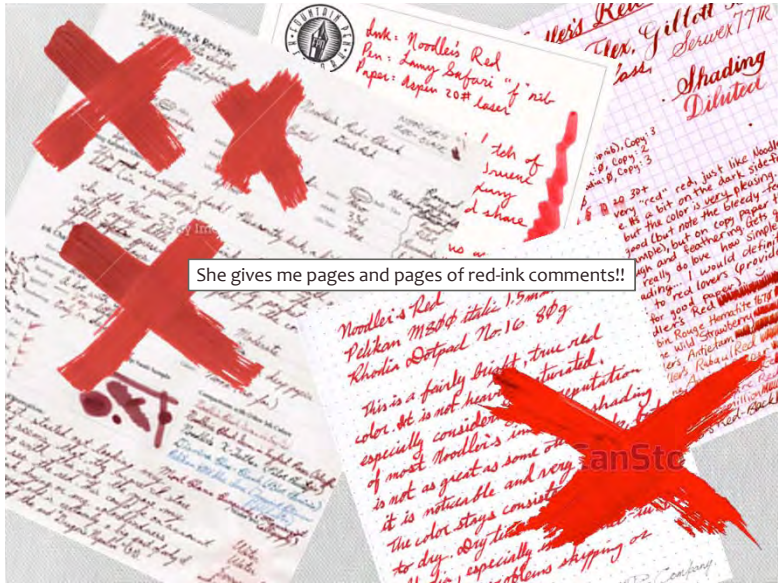
APPENDIX A: DBT Computer Training Program Slides

Task 6: Red Ink

APPENDIX A: DBT Computer Training Program Slides

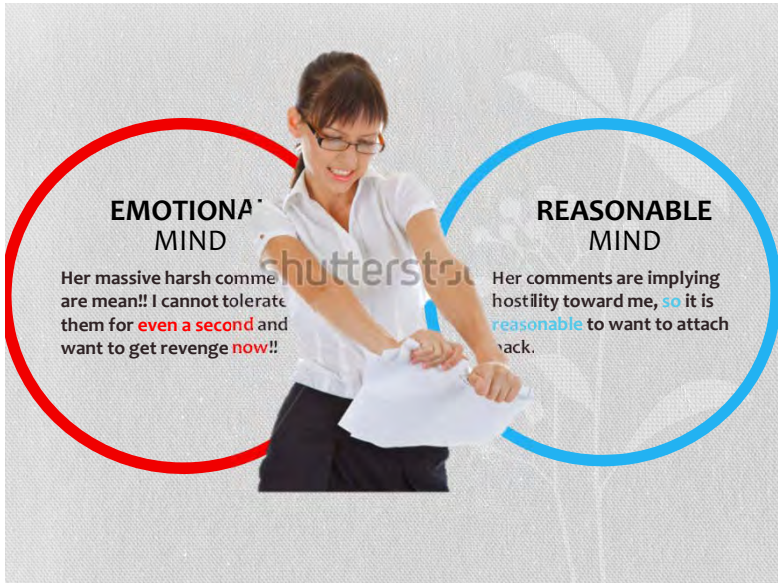
Task 6: Red Ink

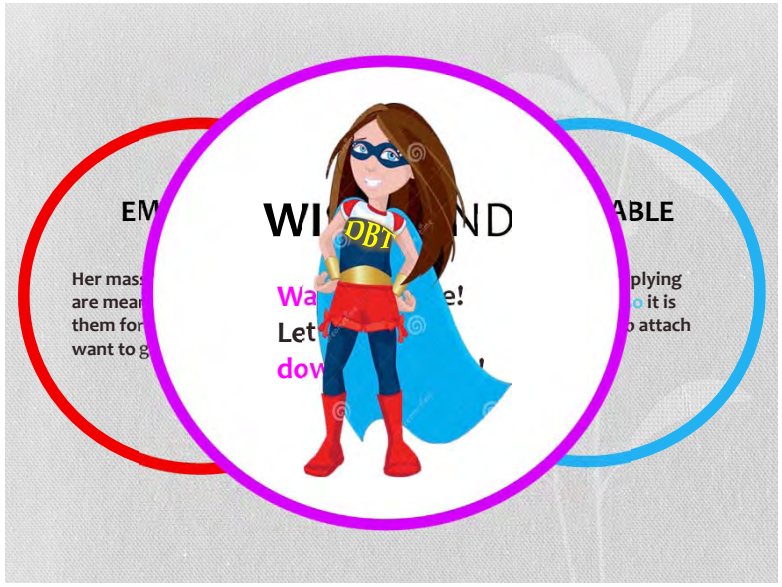


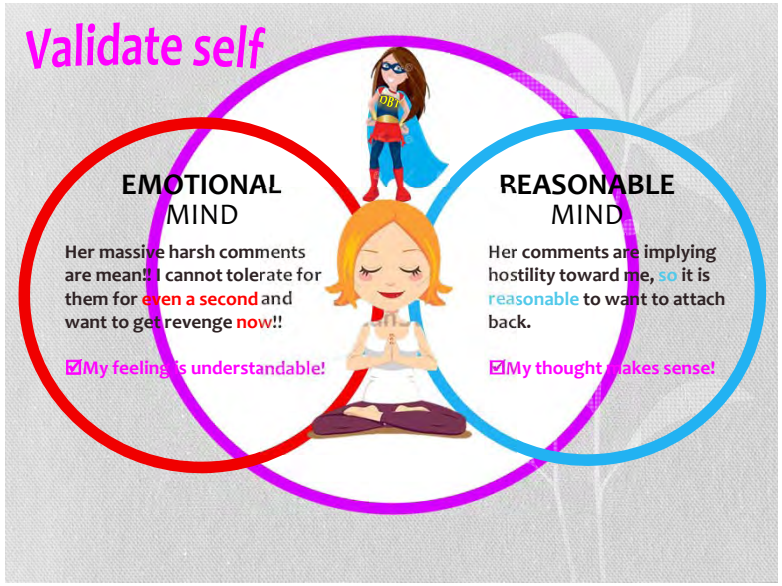


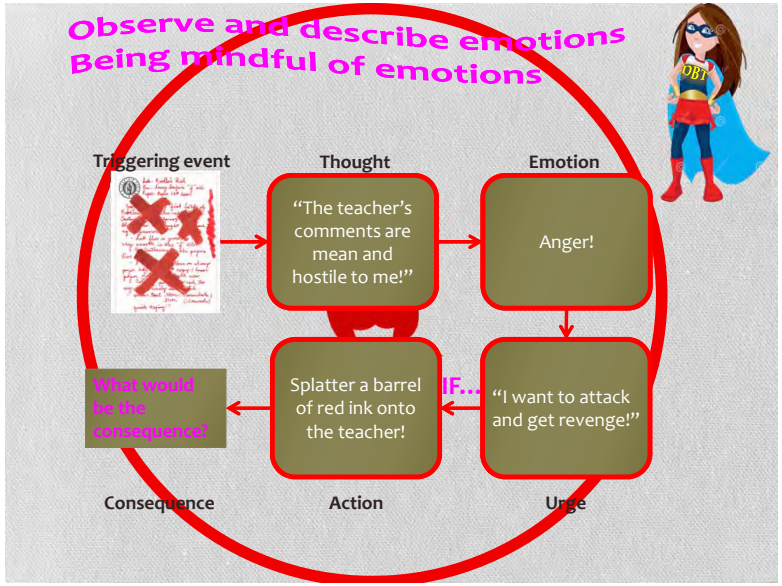
APPENDIX A: DBT Computer Training Program Slides

Task 6: Red Ink



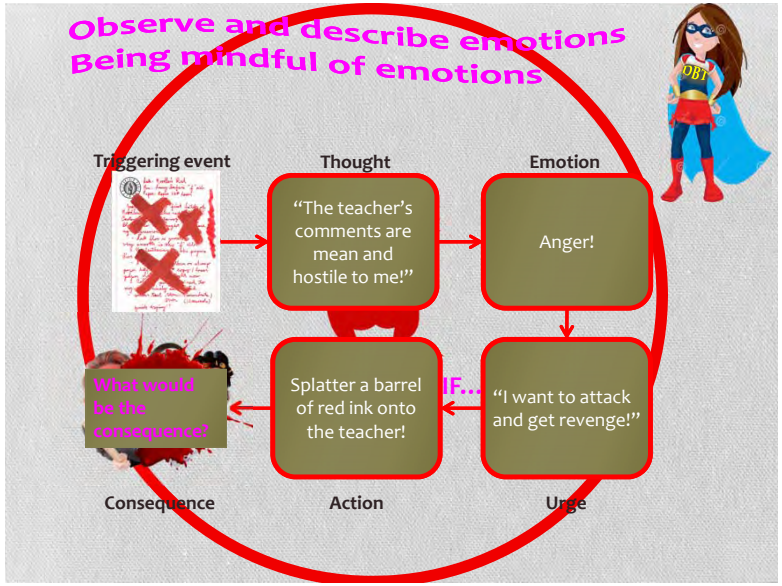


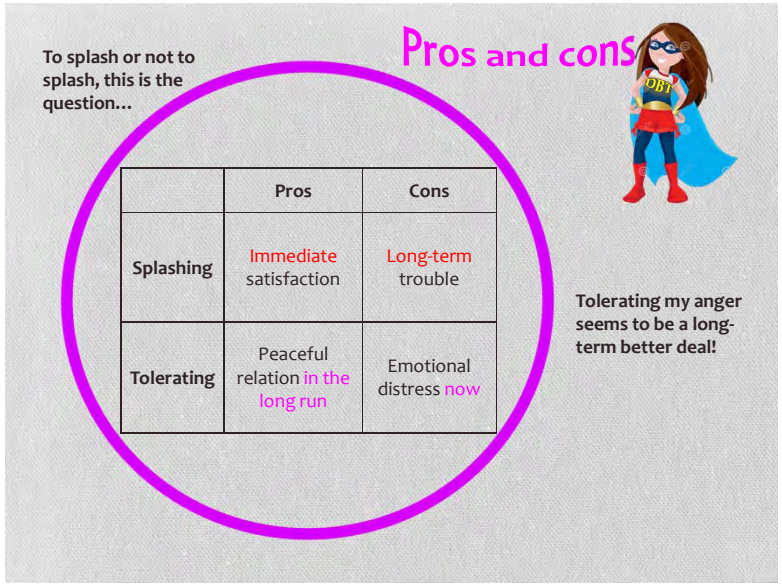




APPENDIX A: DBT Computer Training Program Slides

Task 6: Red Ink





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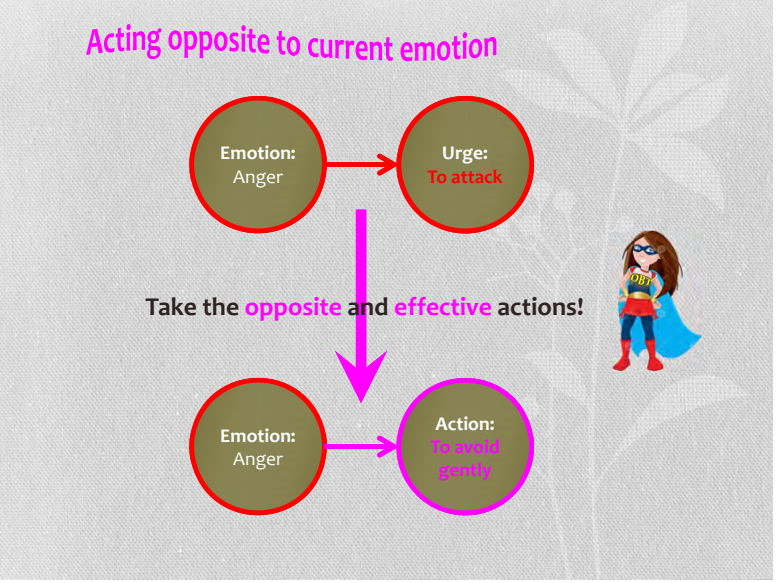
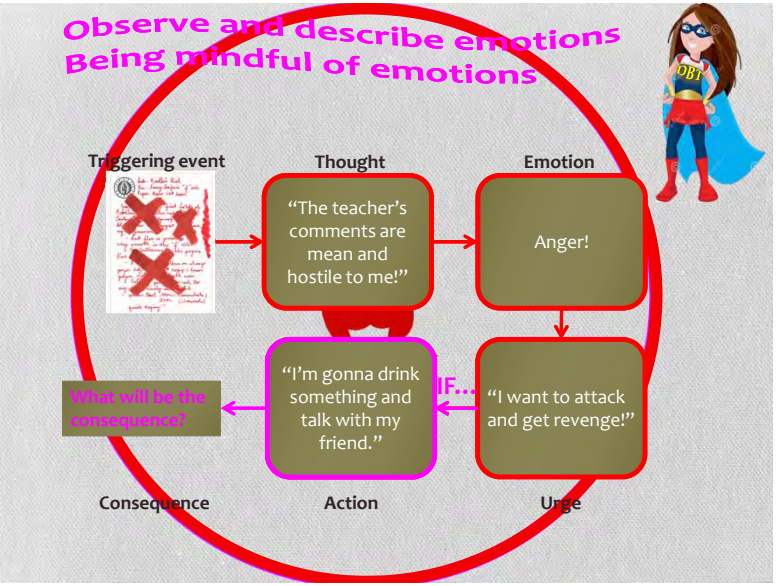
Task 6: Red Ink





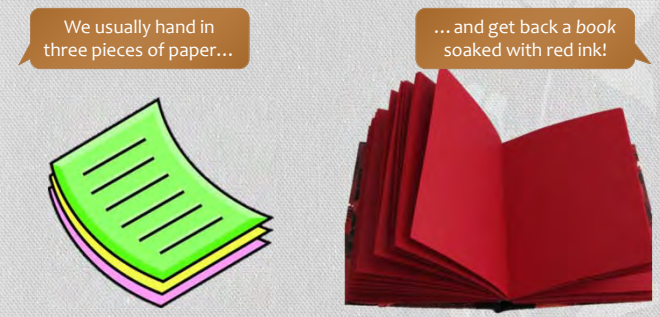
APPENDIX A: DBT Computer Training Program Slides

A.C.C.E.P.T.S.

Engaging in & planning pleasant activities

When I'm not feeling happy, I distract my attention by doing something pleasant, for example, chatting with my friend.

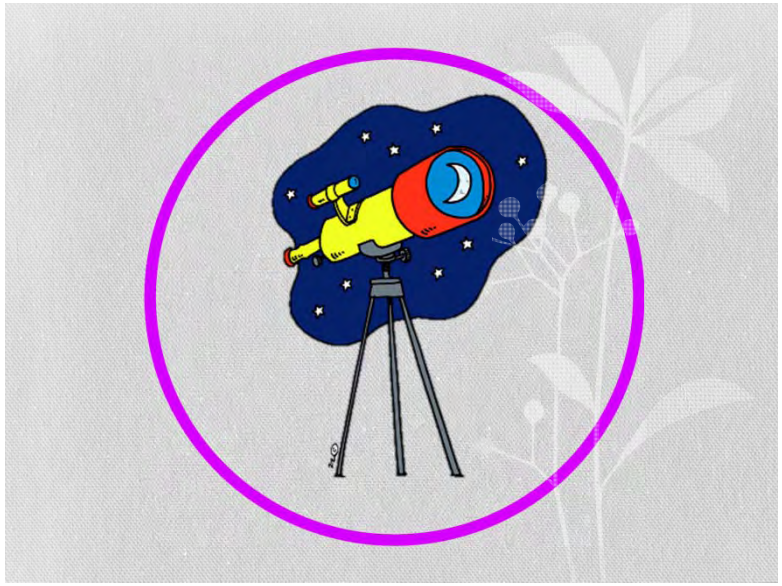
Task 6: Red Ink

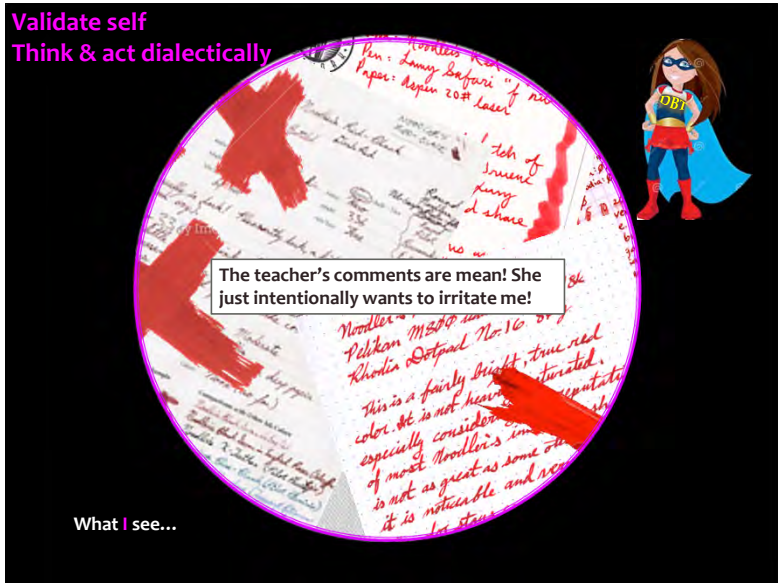


Her friend Kristi complains…

APPENDIX A: DBT Computer Training Program Slides

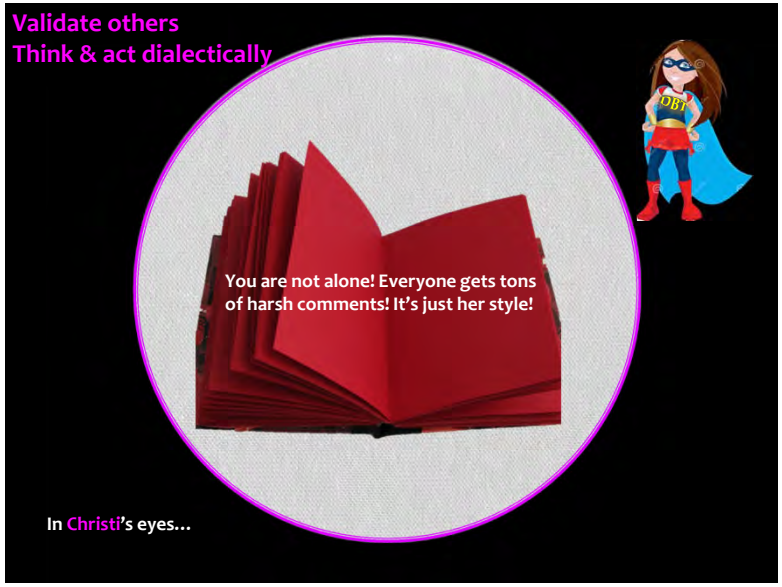
Task 6: Red Ink

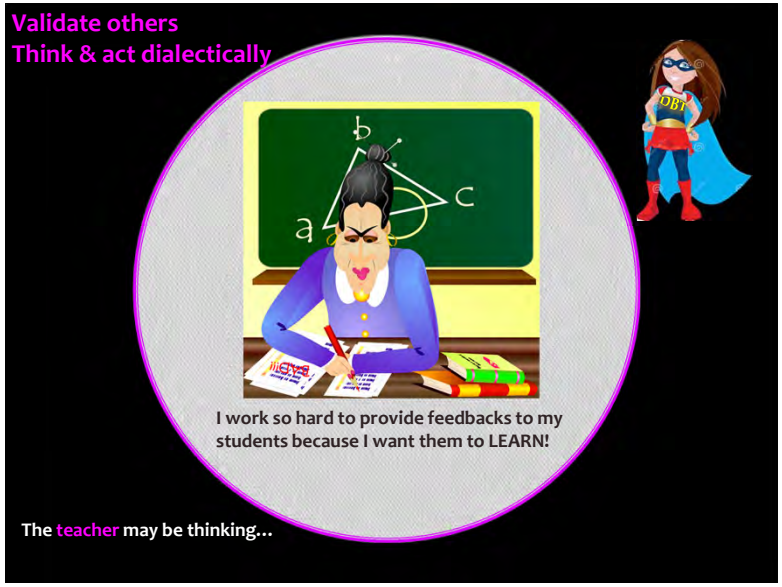


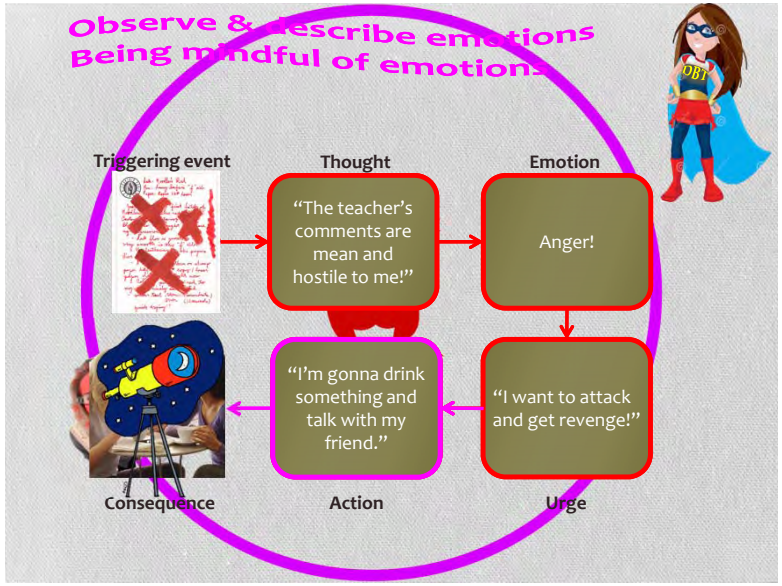


APPENDIX A: DBT Computer Training Program Slides

Task 6: Red Ink







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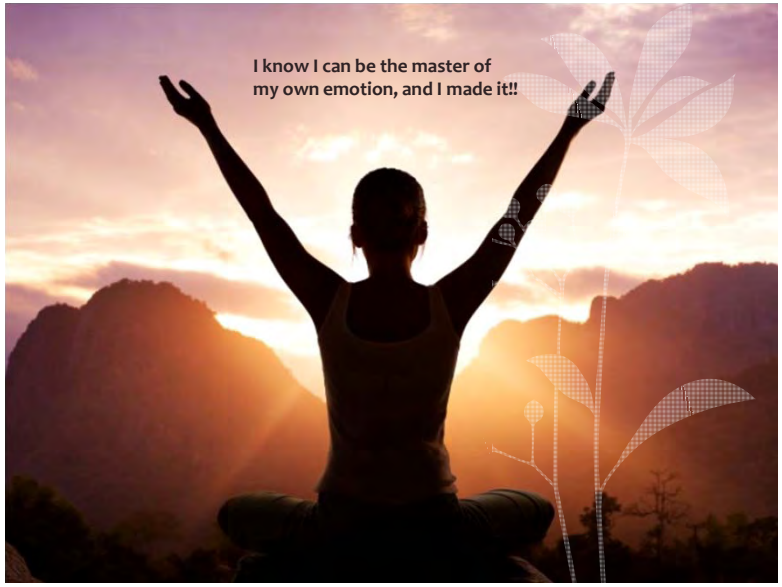
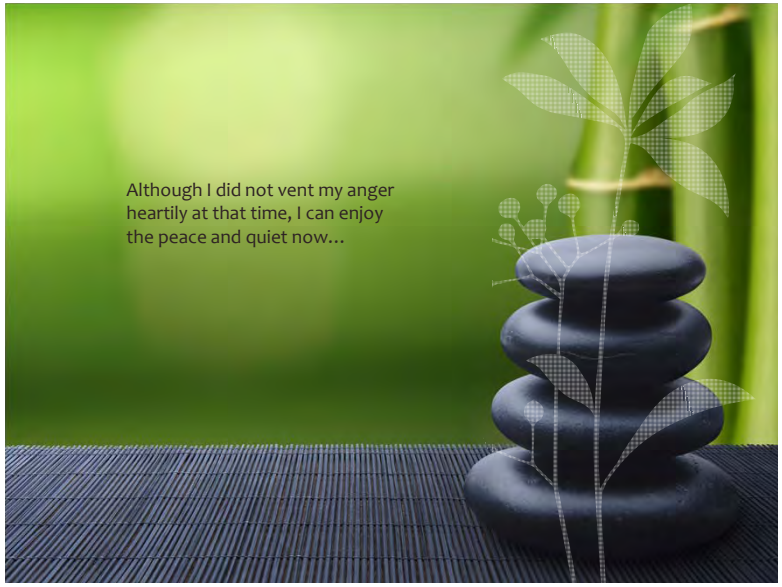


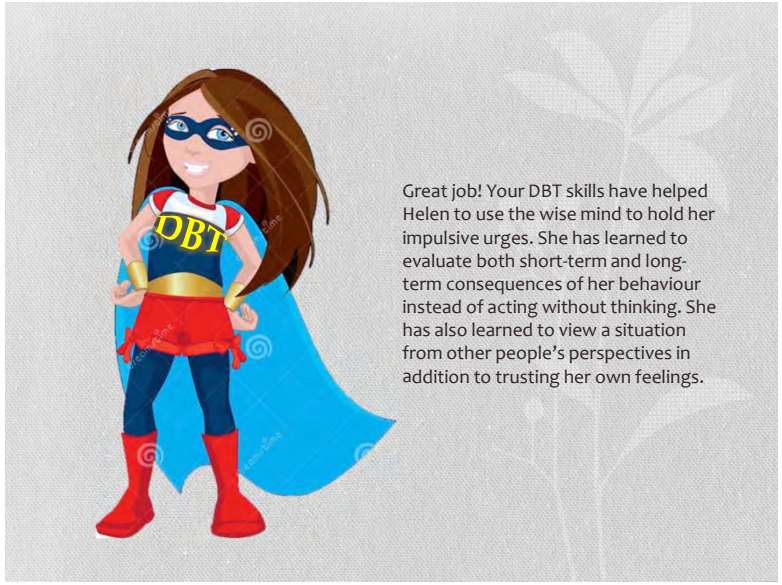
Task 6: Red Ink

I am proud to have pulled myself out of the situation in a positive way!

APPENDIX A: DBT Computer Training Program Slides



Task 6: Red Ink



APPENDIX B: Extracts of Verbal Reports

1.Curfew	Likes	Dislikes	Comments
S C E N A R I O	"I think the situation is definitely **a possible situation**." "Fun. Liked the concept of the game. Found it **stimulating**." "In particular I really like the fact that it‟s **an actual situation that I lived through**, so I just found it **really funny**. So I just found it really funny because it was **relatable on the most personal level**. If it had been a situation that I had never gone through, I am sure it would be great, but in particular I like the fact… Yeah, I found it really realistic. I went through exactly this scenario so that‟s why. I just found it funny as I played. It‟s like just laughing." "It‟s realistic. Liked it all." "The scenario was relatable. I can relate to the scenario."	"The situation is **a little bit too obvious**. But it‟s also a good way to practice the skills, **all the skills at the same time**. But maybe find situations that are a little less obvious."	1. The situation of sneaking out of home for fun is easily relatable to the participants. They either had experienced it themselves or had thought about it. 2. One participant thought it was too obvious, but this also reflected the situation was easily understandable, which is desirable. 3. We don‟t need to change the story.
A C T I V I T Y	"Liked the activity." -"Would you like more activities in one session? Did you think that it was enough?" - "**No, you can always do two if ever.**" -So you think there should be a little bit difficulty but you can still make it. The level shouldn‟t be too high but also not too obvious? **-Yes. I think where we are right now is pretty good for that**. "Liked choosing skills. **Reminds you of the skills learned. Liked seeing good result of using her skills learned.** No criticism, really liked the game." "I liked the fact that you can **click on the definitions**. It‟s really helpful when you don‟t remember." "I really liked that you had to match the skills to the categories, although it was kind of confusing. **The wording**	"I thought there was gonna be a lot more." -So you would like to use more skills? -Yeah.	1. The way of presenting the DBT skills through skills-function matching is welcomed. Participants think they are helpful to rethink the skills, interesting to work on, and reasonable in difficulty. 2. The hints are very helpful. 3. We need more ways to present the skills. 4. Improving wording is necessary.

APPENDIX B: Extracts of Verbal Reports

	might…should probably be better for the question? But I liked the idea that I was able to remember so that to reinforce everything I learned. -Do you think the hints helpful? Can you make the choices without the hints? -I can do without, because I remember a lot. But **it's helpful to have these hints**.		
P R E S E N T A T I O N	"I liked that it"s interactive. **I like that there are different images. it's interesting to look at. It's not all static.** Good." -Do you think the materials and presentation are clear to you? Do you find them confusing? -Not really. Here **(beginning)** I was a bit confused, because it wasn"t in the context of the situation. As you went along you understood… **It is good because it catches your attention right away.** "Oh let me think, something"s going on." And I think this slide is **pretty helpful to introduce you to the situation.** "I really like it, even without the whole animation or even without it being a legitimate video game. I know it"s like the slide show or whatever. **I still find it so great even without being an actual video game** or whatever. I would use it just as a slide show, and it would be helpful. It doesn"t need anything else." "I like the fact that you could turn…like…you know how you say the word? Yeah, **change the planet. It's pretty cool.** I liked…I don"t know the word. There"s like a part related to the consequences, the processing, yeah the chart showing the flow of emotions. I liked how it changed like that." "Nice pictures. I thought it was gonna be multiple choices, so this animated design was a pleasant surprise." "It was **easy**."	"I think the only part that I find kind of **repetitive is the being mindful of emotions**. They are a bit repetitive and I was kind of confused at some point, but towards the end I realized that there was more of a pattern, because at first I just thought that was a mistake or something that was repeating." "I didn"t notice the different circle until now. **I didn't know if it was just me but I didn't catch on to the color.**" "The start is a bit sudden." "I think one thing was the first slide where it said you were a superwoman. I definitely say I **put a picture of a guy there too and say superhero**. Even if the whole example was with Kate as a girl, that"s fine, but **at least make the program seem gender neutral**. Even if it"s all female examples, at least this part there… Even if I am a girl playing this, I don"t want to	1. The surprising start is helpful to catch attention. Although some perceive it as too sudden, they get the idea. I think we can keep it this way, although we can definitely consider other diverse options. 2. The idea of "changing the planet" is largely neglected because people easily focus on the situation per se, and that we don"t have a catchy way of presenting it, although one participant explicitly said it was cool. 3. The presentation of "Observe & describe" emotions through a flow chart is mostly welcomed because it goes to the details. However, we may need to change the animation to make it less repetitive. 4. We may need to change the "Superwoman" to

APPENDIX B: Extracts of Verbal Reports

		feel like that every single person who plays this is gonna be a superwoman. I want it to be part of the DBT … or people who went through this program. I want it to be "people" not "woman". Because I feel it‟s pretty humanistic. **But I don't want Kate to be changed at all.**" "**The images are weird. It's kind of like different people.** it‟s kind of confusing… (The superhero) is not something that a lot of people would understand. It‟s **kind of childish**." "**Kate and her mom kept changing the way they looked.** It was not really a big deal but it was bugging the head out, so it was kind of confusing." "I also found **the end part** where it was like „oh yeah you did it". I found it **was trying too hard to be like this. It should be more flowy.** I feel I was talked down to, I guess. I was so clear that it looked like a kindergarten kid kind of thing. So it was not giving me as much credit as I have.	"Superhero" to make the program "gender neutral". However, the actual situation doesn‟t need to change. 5. Multiple participants complained about the inconsistent images of the characters, which is an inherent issue with the current mode of presentation. 6. The end part (to increase internal motivation) is complained to be exaggerated. I think we should keep them, but maybe make them more natural. 7. As for the age-appropriateness, the comments are diverse, reflecting the divergent cognitive development (not just physiological) of adolescents, which reminds us to be careful of the target age. We can keep the scenario as is, but may use more mature images to present them.
E	"It‟s nice that it‟s on the computer. It‟s a game so it‟s **more**		1. The format of the training

APPENDIX B: Extracts of Verbal Reports

ENTERTAINMENT	**fun than talking and writing**." "I just found it **funny** as I played. It's like just laughing." "Yeah, that's why I wanted to say particularly because **I would usually say that don't make it boring, but I could see how you would be scared to make it too boring. And I think it's funny right now. It's perfect like how it is.**" "**It's fun because it's not blank questionnaire.**"		program is new and interesting to participants, but we still need to think about other formats, because it becomes increasingly repetitive with more sessions.
BENEFIT	"It helps to see different skills in different situations." "It helped me remember the skills instead of having to go look in my binder." "Good practice." "I think it's pretty cool. I see how definitely it will be helpful." "It definitely helps to refresh the skills because it's been a while since I looked at them. It does remind you how to handle situations when something comes up." "Made her use the skills learned. Made her reflect/see both sides of situations given in an objective way." "I think it's a great refresher in terms of all the DBT skills especially at the part where it was saying that "choose the DBT skills required" and how it had the different description. I think like for FAST, I had forgotten what it stood for, not it was nice to go over." "I liked the idea that I was able to remember so that to reinforce everything I learned. I kind of learned all that stuff in the DBT, but it was more like a reinforcing things because they haven't seen me in a little while, so it was nice to know that I still remembered. Definitely they stuck with me more than I guess I thought it did." "(When asked what have you learned) How to use the skills. E.g., pros and cons." "No (new things), because I already know this. It just helped me refresh…"		1. The program made the participants to re-think about the DBT skills they learned. Every participant thought it helpful to refresh on the skills.

APPENDIX B: Extracts of Verbal Reports

EXPECTATION	"I think it would be good if everything is clear. All we need to do is to click. But also it can't be so clear that it gives away the answer." -Do you have any thoughts on how we can present the skills so that we can help you refresh them? In other ways than this? -I like the way it's presented here. It is interactive but what will be pretty cool is like having us find the skills ourselves, so like maybe see the chess there and open the chess. I don't know. -Do you think it might be good if we don't give you the choices and we just let you imagine what skills you have may be helpful in the situation? -I think if the skills weren't written here, I would probably have had a lot more difficulty. Yeah, but also having the skills there makes it a lot easier because it's self-explanatory. Hmm. Maybe there's a different way to phrase it? "To validate herself and her mom" obviously is gonna be "to validate self and others". - So you think it's better if we re-phrase the questions in a way that makes it a little bit less obvious to make these choices but also you need to think for a little bit and make it in the end? -Yeah. "I think it can definitely be done (to implement it in 3D). And it would probably make it more interesting for use. We are used to the video game per se every day so…" "Really liked DBT. A program that makes her use and practice skills learned all year. Would be fun and different and stimulating in 3D especially since youth today love technology." "Well I don't expect anything too complicated or too fun. It shouldn't be something where I go and like oh I'm gonna play this game. It should be where I'm going to practice my DBT skills. I think it should also at the same time not be a drag. I found that this was nice because it was funny. It was not like "ah f***, I'm really f***ed out. I'm forgetting all my DBT skills" or whatever. It was like a good refresher, but it wasn't like a losing psych." "I know that for sure when you are designing the game you are probably super concerned that the girl's gonna think that it's boring or you are not gonna play it or they are not gonna want to go through. In my personal opinion, I think you shouldn't worry too much about it being really exciting. I think the way it's being done is good because it's funny but it's still…like… you still have to…do it for a reason." "Well I think definitely with animations like girls hopping around like "Hi, welcome to the	What participants expect: 1. **Easy** and clear, not complicated. 2. Reasonable level of difficulty. We may need to rephrase/redesign the questions. 3. Fun, but not faked fun. Some participants think there should be certain level of seriousness since the major purpose is to learn. 4. As we have expected, participants don't like the program that treats themselves like patients, so we should probably continue with a "third person perspective". 5. We should continue to explore diverse ways of presenting the skills. Probably the general direction should still be "to choose/pick the skills" instead of imaging out of nothing, because some participants thought that would be too difficult.

APPENDIX B: Extracts of Verbal Reports

	DBT…", you know, I hate that. I really hate that. It sounds like shut up, you know. It‟s very juvenile animation computer games. I guess that I like it because I was able to read and I didn‟t have to wait her to walk on and walk off. If she‟s like saying it out loud, then I have to wait until she stops talking even though I had already read this."to wait her to walk on and walk off. If she‟s like saying it out loud, then I have to wait until she stops talking even though I had already read this… Because I think a lot of people in DBT would appreciate to do it at their own speed, too. I mean I like the slide show. Because it‟s very independent. I have control over it." "I guess so that I can reinforce my skills especially after you do the 20 week DBT there should be something like that help you remember and something that it‟s not that makes you feel crapy. So it‟s something that‟s like not easy but just something that‟s like… you know… it doesn‟t have something like depressing like images or stuffs like that. It‟s something that just reminds you that you can do it." "That it makes it easier to use them."	

2.Internet Lover	**Likes**	**Dislikes**	**Comments**
S C E N A R I O	"**Better than the first**." "The story is developed pretty well." -Do you think the situation is realistic or possible for some other people? -Yeah, I think it can definitely be **possible**. Just for me personally I would never… Unlikely… **Even for a person who cannot relate, it definitely puts their mindset into this situation**. Even though they don‟t really normally feel like that, they‟ll still figure out how to help this person. "Liked it more because the story made her feel more emotions than the first, also since the situation happens a lot today so I found it realistic." "I think the whole thing like avoiding real people, I	"Again, the situation is possible, but I don‟t know if guys can relate as much. I feel the situation is more common in the girls." "I feel like the younger generations like now are gonna experience this kind of problems more intensely than I did. So that‟s why I can‟t really relate to it that much. I know I used to have an issue with that like one time. It was kind of like that. But I would never like go and meet the person, or I would at least Google map the address first. I don‟t know. The story for me seems like kind of extreme in a way because I can‟t really relate to it, but I am sure that maybe for younger girls it would be… I don‟t want to say that it‟s unrealistic for everybody, but just like for me,	1. Very frequently, participants tended to focus heavily on whether they could relate to the situation personally or whether it was a good/realistic story. In this sense, it would be definitely better if we use actual situations. 2. On the other hand, some dramatic situations like this one may not be always relatable for everyone, but it adds fun to the program, which I

APPENDIX B: Extracts of Verbal Reports

	mean, avoiding Internet and going for real people, I think it‟s definitely a concept in itself. I don‟t know.” “I think it‟s good. I think it‟s a good situation. For me, like I met someone on the Internet platform, we were exchanging letters by mails. He already had my address. I had his address. I was really stupid but whatever. He was like “I‟m in love with you. I‟m coming to visit you.” But he lived in Vancouver. So I experienced it, I experienced the situation obviously, but I called the cops, because he was 21 and I was 16, and he said he was coming to meet me, and he already had my address. So…” “Liked the scenario more than the first one.” “I did like the idea. Her thoughts were really accurate. Like the way she was thinking I need a boyfriend right now. That‟s been like a situation that I had before, so it is relatable. The friends making fun of her, though, I would say more like other people making fun of her because if they really were friends they wouldn‟t do that. So people from your class tease you that way.”	I would never like… I don‟t think anyone really laughs at you if you don‟t have a boyfriend. I‟ve never seen that happen. Most people are single. Usually the prettiest people are single, because they feel like they are too good for everyone else. But you don‟t laugh at the pretty girl because she‟s single, you know. I just don‟t find that realistic, I guess.” “The story is kind of unrealistic in a way, because the ending is kind of unrealistic. (What about the Internet part?) A little (childish), but I don‟t know a lot of people who actually went to a guy‟s house, so I don‟t think that realistic. (Do you think it might happen to some people?) Sometimes, yes.” “I‟m in a relationship so it‟s kind of hard for me to picture that, but it was not something that I would particularly get upset about, because I would never go into something like that. I‟ve made friends on the Internet but we were taught in the entire life not to meet up with anyone from the Internet.”	think is a merit. Moreover, most people get the idea although the situation may not actually happen to them. 3. For this scenario, I think we can keep it, but perhaps we need to change the ending of the story a little bit so that it doesn‟t look stretched away from the topic.
A C T I V I T Y	“Liked the activity and liked using the DBT skills. Wanted more interactions more than one activity.” -Do you think the choices are difficult? -No. “(When asked what you liked) It was easy.”	“It was the same as the other one. It would be cool if it changed a little bit, so it‟s like I‟m not doing the exact same activity. So like doing something different to get me… not out of my comfort zone but just like refreshing it up. Now this same format all the time… But it was also very confusing. The part would be like the „modulating‟. Yeah, so confused, because we never looked at that word before… Stick with what we have learned.”	1. More diverse ways of presenting the DBT skills (the question skills matching exercise). 2. The level of difficulty is fine.

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PRESENTATION	"It‟s like interactive." -Would you like it to be more interactive or was it enough? -No, it was OK. -You think it‟s better to put all the sessions into one continuous one? -No. I think just the opposite actually. Since there were similar, if they were all done at the same time, they could seem kind of redundant, but if they are all done at separate times, it‟s fine I think. "I think it was very clear. I thought it was good." "I like that they show you the definition, again. That‟s so cool. I like the circle (chart of emotions)"	"Maybe just the images, they are a little juvenile, but they‟re still OK, and they make me laugh sometimes the images." "I feel it childish, too, like how it‟s presented to you." "I found it very confusing. For when she said she was talking to Mike, there were like pictures of different conversations, screenshoted, and that was way too distractive, first of all. Second of all, it looks like she was talking to many different guys, which is not something that I would like. I don‟t know. I don‟t want to see that kind of thing. Because it was supposed to be relatable to me. Like oh I don‟t have a boyfriend, I go out to talk to a bunch of guys on the Internet. Also the word "lover" is like not the proper word because lover is like sex. It‟s like the "Internet lover" is like kind of creepy, kind of. So like "Internet boyfriend" or something like "relationship" would be better, I think?"	1. More diverse ways to present the DBT skills will be necessary. 2. There are some issues related to the pictures (distracting images from Facebook, inconsistent characters), but they are inherent with the current version (PowerPoint slide show). 3. We may or may not change the title of this scenario to "Internet relationship", because one participant thought the word "lover" implied sexual relation which is not appropriate.
LENGTH	"Not too long so found it good." "Liked it short in length."		1. The length is liked. Participants prefer not too long, though I was thinking it was too short.
ENTERTAINMENT	"The situations and drawings made it less boring."		
BEN	"Nothing new really but it made me think about the skills again. It was good practice." "Makes me realize to stay vigilant and reminded her	-Have you learned anything from this session? -This one, not so much. Because I kind of worry of people on the Internet in general. It‟s really not my type to just trust people	1. Like all other sessions, participants didn‟t learn anything new from the program, but it just

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E F I T	to keep her guard up." "I think the "opposite action", was good, about her feeling shameful, because I would obviously relate to that. You feel you don't want to see anybody, and you just turn to the Internet." "Need to work on remembering the skills." "It made you think about them." "I think it helps to use and remind you of the skills. It helped remind me of the skills learned. E.g., the PLEASE skill."	randomly on the Internet. -Have you learned anything from this session? -No. -So you already learned everything before? -Yes. -Do you think when the situation is not so realistic, do you think it may still help people practice the skills if we present the program in this way? -Maybe.	helped them to reflect on the DBT skills learned, which is basically our objective.
E X P E C T A T I O N	"More for ages 14 to 16, 16 to 18." "Makes her relive DBT skills. Not boring." "I think like here, when her friends are laughing at her that she doesn't have a boyfriend. I don't think that really happens that way. I think what really happens is that they already have guys chasing them and she has like no one who's interested in her, and she feels like depressed. But it's not her friends that like "haha, you don't have a boyfriend". It's more like her friends are being nice to her but she's obviously not as pretty. She just feels like sad. She doesn't want to go out with them, because they get all the attention."		1. As one participant suggested (and another one in a different session), it's not common that teenagers laugh at others for not having a boy/girlfriend. More often, they themselves feel unhappy seeing others in a relationship.

3.Dance Class	Likes	Dislikes	Comments
S C E	"Good scenario." "This one, I found it more relatable to myself, because my mom kind of acts the same way."	"Again, I don't know how relatable it is to guys." "But the whole mom thing like being super	1. In a situation like this one, both the children and the parents are responsible for the conflict. It would be helpful

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N A R I O	"I found it fun, because a lot is true that there are a lot of parents who are strict on the level of boys, of adolescents, who think more about romantic (?) things. It touched on a lot of facts fairly, and I found that interesting. It wasn"t a fake (?) subject, it"s nothing like that. It"s real account of conflicts." "I think it"s really realistic. I think that happens a lot. You tell your mom you"ll do something after school like a school activity, but you"re actually just hanging out with people… I agree with the daughter, honestly. I would just lie to my mom anyway. I don"t know. I agree with the daughter. You should be able to hang out after school." "It"s better. I like it better than the other ones. It"s realistic." "Favorite scenario because it happened to me." "I think it"s all pretty good… I actually think this program is a good idea because it doesn"t" happen to me per se but I know other parents are like that. I like the whole… trying to get the dance thing as a cover up. That"s totally something that I would do. Other people might do. That"s very realistic, so I like that. Definitely for the people that I was in the group with the DBT I heard (we do the group therapy every week) I heard people talk about this kind of things." "It"s realistic. (When asked which aspect of	irrational about everything kind of bugged me because it was like just focusing on what I should be doing but like there are stuff that she has to work on as well, so it"s like blaming me just like a kid… The whole intensive mom thing in like her not having to do anything are hard to incorporate in any ways."	either to show how the DBT skills are applied on the parents, or to develop a separate version for parents.

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	the program is well designed) The situation."		
ACTIVITY	"Liked the activity." -Do you think the phrasing of this one is better or worse than the previous one? -I think this one is phrased better for "Validate". And here again it‟s "making a request". Yeah, that‟s the only one here that‟s obvious. "Again, I liked that you can click on the definitions. It‟s really helpful." -Do you think these questions are difficult? -Not really. "No difficulty picking the skills."	"Maybe more interaction, more, not activities, but you know, like, you learn, after you‟ve chosen the skills, have another little thing, to finalize it." "I think it‟s interesting but it‟s still like the same activity every time. There‟s only one activity throughout the whole entire thing. So it‟s like reading, reading, reading, match, and then reading, reading, reading… It‟s always the same like matching things. Maybe it could be something that mixed up."	1. More diverse ways of presenting the skills are needed, although the current method is welcomed and effective. 2. We need to computerize the "feedbacks" to participant‟s choice. For now, the experimenter orally tells the participant whether their choices are good, but obviously we need to automate them. This is difficult for PowerPoint because of its inflexibility in function, but it will be necessary in the computer version.
SKILLS	"I think the skills too on this one are well related to the situation." "The skills in the situation are helpful."	"It seems to be the same skills coming up though. The past three ones, „validate self and others‟, I think those were in all three."	1. The skills are helpful in each situation. 2. Similar skills come up over and over because (1) lots of skills are involved in different situations, and (2) the repeated skills are fundamental.

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PRESENTATION	"The images are nice." "Not sure why but I found this one is more clear than the others." -Do you think the idea of a changing planet may be interesting or related to the story? - I think it could be interesting since you portrait her as a superhero DBT character. And yeah I think this sort of a play between the DBT skills and just making people get rid of their distress and be happier over all, it's sort of like a nice play on the program. "I think it's a good representation of the "think and act dialectically". It kind of reminds me of yin and yang. Yeah, I like them."	"I find it's a lot about the storyline and less about the actual skills. I really like the other one with the diagram of the thoughts, emotions, and urge… I mean I know the skills. But if you give me a situation like this, it's easy for me to say what it is because I am mindful about playing the video game. There's no question. But at other times when I am going on with my day, I don't stop and think "oh maybe I should validate the other person", you know? I like the breakdown like the urge and action stuff. I find it could be more interactive in terms of like… you just need one slide for the story instead of thirty slides just to get to this point. So you can just have one slide and it explains what's happening." "Some things repeated themselves (the chart of emotions)." "(I don't like) the pictures." "It's the same thing as for other ones, all faces change constantly… And the last part here when it's all finished it's like „oh I'm so proud that I did it", it's still kind of … you know, …kind of exaggerated and not so real, because when I use the skills, I don't think that to myself, you know. The skills should be incorporated as if they are a normal behavior, not like „I did one of the things and good for the rest of the week."	1. One participant complains about the long introduction of the storyline, and wants just simple text description. I don't understand and don't think we should change anything. I still think some level of details in the story is helpful for putting the participant's mindset into the situation. 2. Participants like the detailed presentation of how some key skills are applied (e.g., being mindful of emotions, think and act dialectically). However, there's some repetition in the flow chart presentation of the emotion. 3. The quality of the pictures, again, is a problem, but is almost inevitable with the current version. However, this will be resolved in the computerized version in the future.
LENGTH	-What did you like? -It's done quickly. It's fun. You are not wasting like three hours doing boring activities.		1. Length of each task is fine. For these patients, 10 to 15 min each session is good.

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ENTER TAIN MENT	"I found it fun, because a lot is true that there are a lot of parents who are strict on the level of boys…"		
B E N E F I T	"Good idea to consolidate what was learned." "F.A.S.T., learned about how to use it in the scenario. Couldn‟t remember this skill." "It did remind me of the skills. Hmm… It reminded me when to apply them, because I often forget like „D.E.A.R. M.A.N.‟ and „think and act dialectically‟." "Practice." "Nothing new, just refresh." "Remembered which skills to use this time." "It‟s all skills that I learned so I knew them… (Do you think it helps people to refresh on the skills?) Yeah." "It just helps me to apply more the things I learned."	"Not much really, like I already did, it did more for me before. Just a practice." "They (2nd and 3rd tasks) don‟t happen in your everyday life. But I find that sometimes things in DBT happen every day. This doesn‟t really help me, because I don‟t really go through this issue with my parents or whatever. Like the Internet thing it doesn‟t really help me in the everyday life. But I think it‟s maybe also like how you present it. But obviously lying to my parents about where I am might be something that I do like every day. Not every day but often. But it‟s not a situation like to see a boy or it‟s not a situation where like… It‟s a class, but obviously there are like specific examples."	
E X P E C T A T	"But I feel like instead of the daughter asking to do the dance class, she should have just said can I hang out with people." "(When talking about the same activity throughout) Like if you do step by step, like instead of all them like one cluster, when the initial reaction happens, then like give a bunch of choices like which skills should I use for this or could I use to avoid this situation, this kind of thing. It‟s always like the build-up to things… Instead of being like there are the three things then here are all your choices, do something else more interactive."		1. A participant suggested that instead of giving a whole story and offering all the skills, it would be better to provide the skills step by step as the situation develops. Her purpose was so that there could be more activities within in each situation, but separating the skills into each

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I O N		"step" of the situation may not be that feasible to actually implement.

4.Family Vacation	Likes	Dislikes	Comments
S C E N A R I O	"Found it realistic." "That happens to me a lot. When people accuse me of being unhappy, I get really unhappy… I get really upset. Like it happens with my parents too, where I ruined days, so I could definitely relate to that… I might not destroy a whole kitchen or stuff like that I would definitely yell a lot. Definitely destroy things… This slide show is like the most helpful for me because it happens on a daily basis. It does happen a lot… I don"t even think it"s too extreme or even exaggerated. I think it"s funny because it"s one slide at a time, so you think it"s over after her tantrum at the park, and you think it"s over. After that iPad… It is a little exaggerated but I don"t think it"s a bad thing." "Liked the situation…" "I really liked it, yeah, because it happened multiple times. I actually had those situations happened. When my parents thought I was upset making me more upset. Also when I was upset and I was actually upset, I used all the skills to make sure that else had a good day… I liked that the girl was kind of too obsessed with her phone to taking where she was and what was happening... I get that making everyone else" day a bad day, I would remain angry and I would not talk to anybody, and I stay on my phone and I wouldn"t eat or anything. I think this one was really good. I like this one the best, because my parents had that reaction as well."	"The scenario was a little too much, like no one would throw their iPad through a window… It was like, you know, I found it a little funny, you know, like too realistic isn"t fun either. I liked it anyway, a little less than the others because it was more difficult." "The scenario"s good but certain aspects were exaggerated." "The situation is not realistic because she threw the iPad out of the window. Thought both parents were too calm to the child." "(When asked if girl"s reaction is exaggerated) A little bit, for my age. Maybe like because there was a thirteen year old in my group. I don"t know how everyone else reacted but I would never throw a tantrum. I have boundaries when I am in public. So even I want to throw the table or whatever, I would never actually do that. I have seen it happen, but not for me… Because there are certain behaviors that are like thirteen maybe	1. Although some participants thought the situation was too dramatic/extreme (e.g., throwing iPad, destroying things), many could well relate to the feelings of the character. The comments on whether the girl"s behaviour was extreme were divergent, but most participants could relate to the character"s feelings.

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		fifteen year olds would do but I am eighteen, and I was the oldest one in the group, we had kind of a different kind of… even though we had the same kind of like borderline, we acted differently." "I don‟t like her reactions relatable or realistic. They are extreme."	
ACTIVITY		"I liked it anyway, a little less than the others, because it was more difficult. The activity was more difficult." -Because you thought it was too hard? -Yes, but it wasn‟t that. It was more, the elements where you had to associate. I didn‟t understand that too much. -Because it was on another page? -Yes, yes, that was what was confusing, like sometimes I would have to turn the page to remember what it was. "There are a lot of them (choices)."	1. Question and choices are on different pages. 2. Some people felt this task was hard because the description of the questions was not as detailed (on purpose). They were essentially asked to match the skills into the DBT modules in which these skills were taught, instead of to their exact functions. For example, "Validate self" is to be matched to the "Finding a middle path solution" instead of "making sense of one‟s own feelings and thoughts".

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SKILLS	"The skills are helpful in the situation, although the situation is not very relatable."		
PRESENTATION	"Nice pictures." "Found it repetitive (the arrows)." "Liked the animated format and activity structure."	"I think the only thing with this one is that maybe you did on purpose but it's on two different pages, the skills and the (categories)" "That part was a little confusing. I couldn't remember all of them. Oh yeah, that was also confusing because you have to go between pages."	1. Question and choices are on different pages.
BENEFIT	"Didn't realize the DBT skills went in those categories." -I more reviewed my skills. I didn't really learn a lot. It was more difficult. It made me work a little more." -Did you find you used your skills more this time, since it was more difficult? -Yes. "I find this one really really helpful to help my DBT because for me it happens a lot but I don't really notice it… My friends and family always try to tell me that when it's happening, and they say "oh when things don't go your way, you get really upset" and stuff. But seeing an example really helps put it into perspective about like what they are talking about." "It did, definitely did (help me learn the skills." "I learned my skills better. It made me think about them more. I used these skills before." "Nothing new. It just refreshed my memory, like which skills to use in which situation."		1. Everyone said it was helpful, although for some the situation was a bit too extreme.

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5.Physics Class	Likes	Dislikes	Comments
SCENARIO	"Liked the scenario." "I liked it. I liked the scenario and everything. Yeah it is definitely (relatable and realistic). I think she should just have written a sick note or something. It should have been better planned. She should have written a note being like "Natasha has doctor‟s appointment" or something, so that… She‟s like really impulsive, like if she‟s gonna do something stupid she should have planned it out so that she should not take the odd, which is not even like a good idea. But even then she should have planned it like to do it on the weekend or something. If they want to drink on the street, they should probably do it when…like no one‟s gonna find out about it." "Liked the situation and images"	"The situation is relatable but it happens but not that. They wouldn't go back to class. It‟s too dramatic." "I think the idea is good, because I‟ve not been in a physics class but the math class is kind of like that for me. I just think the drinking was over the top, because I can get this skipping the class because I‟ve done that before but it‟s not like we go from skipping the class to being like "oh yeah we are going to do recreational drugs or alcohol", so… If anything, smoking pot or anything because someone always have that on them but alcohol, not so much… I think the rest is pretty accurate. I like the skills that she had to use to rationalize herself… I used those before."	1. The scenario has some exaggeration but people can relate to the idea and emotions. 2. A participant suggests that we change alcohol to drugs since it‟s more common for school kids to bring drugs than alcohol.
ACTIVITY	"I do need to think a little bit… There‟s still thinking involved… I don‟t think they are too difficult." "It‟s easy to pick the skills. Easier than the other one."	"Activity is on different screens."	1. Activity is on two pages.

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PRESENTATION	"I liked that it was like in the circle so that I could cross off in my mind which ones I have done because it was all confusing in the other ones… It‟s hard for me to concentrate when they are not right beside each other so I was having trouble remembering which ones I crossed off. But this one was kind of in a pattern…" "The situation and presentation are clear." "(When asked if the program is appropriate for her age) Still liked the images although she‟s 18. Find it age appropriate."	"I think the photos are really young. They look like seven years old. They look definitely like not old enough to drink alcohol." "(JP) The arrow example is a bit long."	1. The photos of characters are too young. 2. Participants like the detailed presentation of "Observe and describe emotions".
LENGTH	"Not too long." "They are not too long, but they are not like just two seconds… I find these are good length (5-10min)."		1. A participant thinks the perfect length is 5-10min but I think it‟s too short. Maybe 10-15min would be better.
BENEFIT	"Practice skills." "It‟s a nice refresher." "It was refreshing." "It just helped refresh my memory." "Good to practice the skills." "Learned about the skills. Wasn‟t very familiar with them but understood from the explanations provided in the game why she got them wrong during the exercise."		

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6.Red Ink	Likes	Dislikes	Comments
SCENARIO	"Realistic scenario" "(When asked if there"s anything realistic) The feelings, definitely, but not the actual action. Instead of taking it out on a teacher, I know I used to take it out on my parents, so… (When asked anything you liked) The whole being upset with teachers and feelings that they are intentionally out to get you."	"I don"t know anyone who would just pour paint on the teacher. Extreme. You never know." "I think this makes me feel like I am crazy. Because all of them are so exaggerated, and I would never do that to a teacher. I would want to get revenge and stuff but I would never actually do it or never like that." "(When asked anything you didn"t like) The whole splattering red ink on the teacher"s face, well it depends. If I was in grade 7/8, fine, but if I was in grade 10/11 trying to get into CEGEP, oh my god, no, I would never even think of doing that. Like more realistic for me would be to stop going to classes, because I hate competition (??) and I actually did do that two years ago." "(When asked whether the situation is relatable) Kind of, because I don"t think someone would actually do that. Too television. Like it only happens on TV."	1. The reaction may be dramatic, but the emotions and thoughts are accurate. Several participants report to have the same thoughts before.
ACTIVITY	"It was easy to choose." "Hardest one. Categories are tough. Challenging but liked it."	"Categories are not very detailed so I got confused sometimes when doing the activity."	1. Like Task 4, the skills are supposed to be match to the DBT modules instead of their functions, which make it difficult.

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PRESENTATION	"I find this one is the most detailed, in terms of using DBT skills and what the DBT skills are and stuff. I think that‟s really important. I was saying with other ones, there are a lot of storylines and there are just like two slides of like what to do. But I think if you go more into explaining, it‟s helpful. (e.g., ACCEPTS and opposite action)" "The presentation is clear." "Liked the images."	"You need guys. You need "DBT person", a guy." "(When asked if the program is repetitive) Yeah, it‟s repetitive, but it‟s not bad. Maybe you could add music or something so it‟s not like staring at the screen. I think like change activities like how you have to pick the skills. Something different instead of exactly the same thing every single thing."	1. Multimedia are welcome in the program.
BENEFIT	"Practiced the DBT skills." -Do you think it may be helpful if we just provide a program like this to people after the 20-week DBT? -I would. I think it would help me for sure. "I need to look over the skills to match the categories." "It just reminds me of what skills to use in which situation." "Reminded me of the skills. Good practice."		
EXP	"Want to see video or audio." "Want to see parents that put themselves too much into kids‟ life. Over implicate themselves in their life." "I feel like it doesn‟t need to be as super intense. You can just leave it as a slide show, but just have it on a CD so that it‟s not like when I click it I can change the words. You can just leave it like you click through it. And I think that would be fine. I don‟t think		

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E C T A T I O N	it needs to be super intense. It‟s more this that‟s important… It doesn‟t need to be animated. No one needs to like jump around." "I would like that very much because after not being in therapy for how many hours it‟s kind of not as present, but something like this will be fine. They are not to be too complicated. Just like a refresher, not to make you feel like an idiot for not remembering everything… Not like a math class. It should be just like „these are the skills you need‟. Just kind of remind you… (Do you think the program is doing well in this way?) Yeah… Most of the video games have kind of like the background music or sound effect when you do something right. That would be more appealing and more interesting." "(When asked what scenarios you would like to see) Probably something to do with best friends or kind of thing? Because for me my biggest thing was that I will be jealous of my best friend hanging out with someone else so that I would be… you know… I would do stupid things, because I was so upset even though obviously they have right to be friends with other people." "I think it would be simple, like easy. I think it would be more fun than coming in every day. You just do it at home."

APPENDIX C: Evaluation Study Protocol

Evaluation of the Efficacy of a Prototype Therapeutic Intervention Computer Program for Adolescents with Depression: A Pilot Project

1. Study Purpose and Rationale

Adolescent suicide is a major public health problem, and is a leading cause of death in children and adolescents. Per 100,000 people, the worldwide annual suicide rate is 0.5 for females and 0.9 for males between age 5 and 14, and 12.0 for females and 14.2 for males between age 15 and 24 (Pelkonen and Marttunen, 2003, Bridge et al., 2006). In accordance with the increase of suicide death during adolescence, suicide attempts also increase significantly, with a peak between 16 and 18 years of age, and decline markedly after 19 (Lewinsohn et al., 1996). It is estimated that the highest prevalence of suicide attempts across lifespan exists during adolescence (Miller et al., 2006). Disturbingly, among the 10 to 19 years of age, suicide is the second leading cause of death in Canada and third in the United States (Anderson, 2002). The high risk for suicide-related behavior during adolescence deserves immediate action.

Although a complex of risk factors precipitate suicidal behavior, the single strongest predictor is psychiatric disorder, in particular mood disorder, e.g., major depression and bipolar disorder (Cavanagh et al., 2003). Depression has been reported among adolescents attempting and completing suicide at rates ranging from 43 to 79 percentage (Ryland and Kruesi, 1992, Brent et al., 1994, Cavanagh et al., 2003). Compared with adolescents with no mental disorders, depression adolescents show a 4 to 5-fold increase in suicidal ideation and behavior (Kovacs et al., 1993). Although adolescence sees a dramatic rise of the risk for depression, it is also a period when adolescents develop self-identity and emotion maturity, and when effective intervention and behavioral training can benefit the whole life. Therefore, early intervention is critical to reduce the harm caused by depression and suicidal behaviors.

Despite the demand for intervention and treatment, the current health care system cannot guarantee access for everyone. Evidence-based psychotherapies such as cognitive behavioral therapy (CBT), interpersonal therapy and dialectical behavior therapy (DBT) require highly specialized practitioners, and the treatment cycle can be as long as 6 months to more than one year, too intensive for adolescents. Furthermore, patients may not actively seek treatment for reasons including failure to recognize symptoms, underestimation of severity or reluctance to see a mental health doctor because of stigma. To improve the current situation, new approach is needed to ensure dissemination of evidence-based interventions. In 2007, the UK government formulated a “stepped model of care” in which “the least instructive, most effective intervention is provided first” (Health, 2009). This model emphasizes the low intensity psychological interventions including guided or self-help CBT in either booklet or computerized format.

The purpose of the present project is to develop such a prototype computer intervention program for adolescent with depression and suicidal behavior. Unlike most existing computerized cognitive behavioral therapies (cCBT) programs (Kaltenthaler et al., 2006), our program is based on adolescent DBT (Linehan, 1993, Miller et al., 2006), and is presented in a series of virtual scenarios instead of a didactic teaching. The present program serves as a complement to the standard DBT such that the patients can practice and review in virtual reality the behavioral skills they have learned from the DBT skills training sessions. In this preliminary study, we plan to evaluate the effectiveness and feasibility of this approach before implementing the program into a product. After the patients have finished the 20-week DBT, we will test them on the prototype program in order to collect their subjective feedback to guide further development. We hypothesize that the patients who are given the program will use the DBT skills more often in their life than those who are not. We are also interested to see if the program increases depression symptoms, which may be studied by a separate experiment in the future.

2. Scientific Background

Our program is theoretically based on the dialectical behavior therapy (DBT) (Linehan, 1993, Miller et al., 2006), which combines traditional behavioral techniques with concepts of distress tolerance, acceptance and mindful awareness. Explicitly targeting at suicidal and self-injurious behaviors, DBT blends behavioral science, dialectical philosophy and Zen practice to help patients not only survive but also live a better life. Dialectical theory postulates that there is no absolute truth, but reality contains in itself its own opposition. Accordingly, in DBT practice, the technology to change represented by the behavioral science is counterbalanced by the attitude to accept and tolerate. Dialectical truth and change only emerge through the integration and relative movement of the opposing positions. Therefore, DBT expects patients to be aware and mindful of the oppositions in their behavior and environment.

Under DBT's biosocial theory, the origin of maladaptive behaviors is both biological and environmental. One the one hand, the patients' emotion regulation is systematically dysfunctional such that they are either inherently vulnerable to emotional reactions, or unable to modulate emotions in a reasonable way. On the other hand, the environment may catalyze the malfunctional disposition by providing inadequate emotional coaching or by reinforcing dysfunctional learning. Such invalidating environment tends to respond inappropriately to individuals' private emotional experiences. As a result, the individual never learns how to label, regulate or trust their emotions. Such an environment exacerbates the emotional vulnerability, and the emotion dysregulation further taxes the environment. Extreme and high-risk behaviors are developed out of such vicious reciprocal interactions.

In order to improve the patients' behavioral capabilities and to restructure the environment, the standard DBT utilizes four modes: individual psychotherapy which oversees the progress, group skills training which increases behavioral capabilities, out-of-session consultations which ensure skills generalization, and therapist meetings which provide support to therapists. For our computer training program, we only implement the DBT skills training. These skills include mindfulness, distress tolerance, emotion regulation, interpersonal effectiveness, and finding the middle path. Among the five skill modules, the mindfulness is the core skills, and subserves all

other skills where patients learn to be mindful of their internal distress, take a non-judgmental stance of the emotion, and be effective in cognitive dilemmas, just for a few examples.

A challenge and defining feature of DBT is to balance change and acceptance. Although the treatment attempts to teach the emotion regulation skills and to restructure the environment, under the dialectical framework, the patient's maladaptive behavior is considered as their learned coping strategy for emotional suffering and is thus functional from the patient's perspective. It is the natural response in the situation because the patient is trying their best although they do not have the capability to cope. The resolution of this dialectical tension is by finding the synthesis that on one hand validates the need to relieve stress and on the other hand utilizes new skills in the long run. Therefore, we expect the patients to learn that they are doing their best while they need to do better to achieve more effectiveness, and that they may have not caused the problems but they have to solve them. There is no absolute right or wrong.

Although DBT was not initially developed for depression adolescents, its efficacy in this patient group has been validated. By comparing the pre-post effect among adolescent patients, studies have demonstrated significant improvement in BPD symptoms (Miller et al., 2000, Fleischhaker et al., 2011), suicidal ideation and/or self-injurious thoughts (James et al., 2008, Woodberry and Popenoe, 2008, Fleischhaker et al., 2011, James et al., 2011), and depression and hopelessness (James et al., 2008, Woodberry and Popenoe, 2008, James et al., 2011). Notably, all the skills taught in the skills training were rated from moderately to extremely helpful, among which the mindfulness and distress tolerance skills were rated most helpful (Miller et al., 2000). In the follow-up studies, the gains from the adapted DBT were shown to sustain for at least 8 months (James et al., 2008) and one year (Fleischhaker et al., 2011). These studies provide empirical support for the computerization of DBT.

3. Study Objectives

Primary objective: To assess the potential of the prototype program and to obtain participants' feedback (see APPENDIX D for the home-made questionnaire). This will help us modify and improve the prototype program in future development.

Secondary objective: To investigate the therapeutic effectiveness of the prototype program as a supplement to the standard DBT. In this preliminary study, we will look at the DBT skills use measured by Dialectical Behavior Therapy Ways of Coping Checklist (DBT-WCCL, APPENDIX E). We hypothesize that the training program will increase the patients' use of DBT skills in their life, as reflected by the improved performance on the DBT-WCCL questionnaire. The therapeutic efficacy in improving depression symptoms, however, will be the primary objective of a separate study in the future.

4. Research Design

Program design

The program of the present project serves as supplement to the standard DBT and allows the patients to practice and review the behavioral skills they have learned. At the Douglas Hospital Depression Clinic, the DBT consists of (1) 6-month introduction to perform pre-treatment

assessment and to establish therapist-patient alliance, (2) 20-week individual sessions and multifamily skills training, and (3) 6-month individual follow-up sessions. At present, our prototype program targets at adolescent depression patients who have completed the 20-week DBT treatment, and will be provided during their 6-month follow-up session.

Since the participants have already finished the 20-week DBT and have learned the DBT skills, the program tries to avoid didactic psychological education of all the DBT skills linearly. Instead, we provide virtual conflict scenarios that mimic the situations where patients often fail to cope well in real life. Patients are asked to apply the DBT skills they have learned in these virtual situations in order to make a difference. Specifically, the patients are presented with a series of connected virtual scenarios from a third person's perspective. The actors in the scenarios fail to regulate their emotions or interact with their environment in an appropriate way as the patients used to suffer before coming to DBT. The patients, assumed to be equipped with the DBT skills, are asked to apply the skills they have in order to help the virtual actors to cope with the stressful situations. As a goal within the program, the patients' involvement in the virtual world with DBT skills will increase the mindfulness and peacefulness in the virtual world that is consistent with the "wise mind" concept of the DBT. At the preliminary stage, the prototype program is presented in PowerPoint slides. The implementation will depend on the results of the present study. The following are a few design principles of the prototype program.

Integration of skills

We integrate multiple skills into each scenario instead of practicing one skill at a time. This is to allow the patients to apply the skills they already know, rather than relearning each of them for a second time. This design is also out of practical consideration because the DBT skills are highly interconnected. Multiple skills may apply to one situation but no situation requires only a single skill. Some core skills are always adopted and serve as foundations for others. Therefore, it is neither necessary nor practical to dissociate the DBT skills and teach one at a time.

Minimal texts

Since the young adolescent patients are often highly impulsive, we try to minimize the amount of texts but use more visual stimuli such as pictures in order to be appealing to this particular group of participants. The skills in each scenario are also provided with key words only such that patients are reminded of the skills but not overwhelmed by the words.

Optional didactic component

Many of the clinically effective cCBT programs are essentially didactic in nature, and these educational materials are necessary to convey the therapeutic information. One study (Christensen et al., 2004) found that a website that contained information on depression can be as effective as a cCBT program in reducing symptoms among mild depression patients. Although our program targets at patients who have learned the DBT materials, we offer the option to refresh some of the key ideas of the skills. This information is hidden behind the skill key words but may display upon mouse click.

No absolute truth

APPENDIX C: Evaluation Study Protocol

One critical idea of DBT is that there is no absolute truth. We encourage patients to develop a dialectical way of thinking instead of running into cognitive rigidity or polarities. In the program, we don't give right or wrong judgments on the patients' performance. Therefore, in response to a scenario, one can either choose to suppress and tolerate the distress, or step back to observe and modulate their emotions, just for an example. There is no clear cut black or white, but as long as the patients learn to use the DBT skills, they help to make a difference.

Participant recruitment

Since the prototype training serves as a supplement to adolescent DBT, the participants can only be recruited from patients who have completed the 20-week individual and group sessions. In our study, participants will be recruited from the current DBT cohort of 17 adolescent patients at the Douglas Hospital Depression Clinic. Although we would like to recruit both male and female patients, the current cohort of patients are all female only. Therefore, we will have only female participants in our study. Their 20-week treatment will complete in April and will be followed up regularly for six months. During this period, the patients will receive the follow-up individual DBT sessions as usual. Our training program will be adjunct to the treatment as usual. We will introduce the study and program to the patients, and we hope to invite them to be tested on our prototype program during this follow-up period.

Experimental and control group

The participants will be randomized into an experimental group and a control group. Since the present preliminary study aims to assess the feasibility of the training program, we expect to have 8 participants in experimental group and 8 participants in control. The sample size is limited by the overall number of patients we have in the current cohort of DBT. In the future, when we have our computer software fully developed, we will design a more statistically powerful study to evaluate the clinical efficacy of the computer program.

For participants in the control group, they will receive the follow-up weekly individual DBT sessions as usual. The experimental group will be given the training program in adjunct to the weekly individual treatment as usual. In addition, the experimental group will be given a home-made questionnaire (APPENDIX D) to inquire their assessment and feedback of the training program. Both experimental and control will receive the Dialectical Behavior Therapy Ways of Coping Checklist (DBT-WCCL, APPENDIX E), a measure of DBT skills use.

Study procedure

Consent

The study will be explained to the participant in the presence of his or her parent or a legal representative. Both the participant and legal representative are encouraged to ask any questions they have. Informed consent will be obtained before moving on to the rest of the study. The legal representative will get a copy of the consent form.

Training program

APPENDIX C: Evaluation Study Protocol

The prototype program will consist of 6 sessions presented in PowerPoint slides. The program will be finished in 3 consecutive weekly visits. In each visit, the participant will be given 2 sessions, and this will take about 1 hour. This training program will be adjunct to the individual DBT weekly follow-up treatment, and will not interfere with the regular DBT procedures.

Questionnaires

Two questionnaires will be used during the course of the study. The first one is a home-made questionnaire attached in APPENDIX D, for experimental group only. It will be given each time the participant comes to the study (so three in total), and is aimed at obtaining the subject's feedback and comments on the training program. In the questionnaire, the participant will firstly be asked about their likes and dislikes about the program. Then they will be asked to give their ratings on components such as scenario design, difficulty, choices and etc. Finally, participants are welcome to offer whatever additional comments they may have. Their subjective comments will be summarized into a report, and the individual ratings will be averaged to produce overall measures of quality of the program.

The second questionnaire, the DBT-Ways of Coping Checklist (DBT-WCCL, attached in APPENDIX E), is a measure of DBT skills use (Neacsiu et al., 2010) independent of the DBT language. Adapted from the Revised Ways of Coping Checklist (RWCCL) (Vitaliano et al., 1985), the DBT-WCCL is tailored to reflect four modules of DBT skills training (mindfulness, emotion regulation, interpersonal effectiveness, and distress tolerance) and is specifically designed to measure the coping using these DBT skills. The test produces two subscales: the DBT Skills Subscale (DSS) assess coping via DBT skills, and the Dysfunctional Coping Subscale (DCS) assesses coping via dysfunctional means. In our study, we will use the DBT-WCCL to assess the frequency of DBT skills practice before and after using our training program, for both experimental and control groups. Therefore, the tests will be administered pre and post the training. Both DSS and DCS will be used as dependent variables. Additionally, since the DBT-WCCL is measured before and after the standard DBT, we will consult the patients' DBT record, and use the post-DBT scores of the DBT-WCCL as the baseline measure of our study.

Plans for withholding standard therapies

The present study does not interfere with the participants' ongoing follow-up procedures of the standard DBT.

Time schedule for study completion

A two-month timeline is planned for the study.

Rules or criteria by which participants may be removed from the study

Participants may withdraw from the study upon their request, at any time, without any form of coercion applied from the investigators.

5. Data Analysis

Based on the participants' responses to the home-made questionnaire (APENDIX D), their subjective comments will be summarized to a report while the scale ratings will be averaged to produce overall measures of different components of the training program. These results will guide the development and improvement of the program in the future.

For DBT-WCCL (APPENDIX E), we will compare the difference of experimental and control group using an Analysis of Variance (ANOVA), with group as the independent variable and both DSS and DCS subscales as dependent variables. Difference will be considered significant when the probability *p* of a type I error is lower than 5%, and will be considered as a suggestive trend when *p* is between 5% and 10%.

6. Anticipated Benefits

Expected benefits of the research to the participants

The prototype program may help the participants to practice and review the DBT skills they have learned, and may facilitate the integration of the behavioral skills into their life.

Potential benefits of the research to the researchers

The participants' feedback and performance may help to inform the researcher how the program should be modified and improved. The results will also be important reference for future implementation.

7. Potential Risks

There are no known risks associated with the participation in the experiment.

8. Privacy and Confidentiality

The study will not inquire participants' personal information except names and date of birth. All personal information and questionnaires will be stored and locked in the laboratory. The access to the laboratory is restricted by key. Electronic copies of this information will be protected by personal password on the laboratory computers. Access to the records will be limited to the scientific research personnel from the laboratory.

Prior to transferring the data into analysis or report, all identifying information about the participants will be removed. Participants' name initials may be maintained digitally in the records of the laboratory. For all scientific uses, the data will be displayed without identifying information.

Upon completion of the study, the data will be archived onto external disc drives stored in the locked cabinet. Access to the data will be limited to the laboratory only. Data storage may be permanent.

9. Voluntary Participation

Participants will be allowed to review the contents of the consent forms, and will be provided oral information about the purpose, benefits and risks, and procedures of the study. Each participant will be encouraged to ask any questions that they may have about the procedures. Each participant will be asked if they are comfortable that they understand the procedure to their full satisfaction and will be asked some simple questions to test their knowledge of the contents of the consent form. Under no circumstances will coercion be applied to obtain informed consent, and participants will be thanked for their participation in the study regardless of whether they choose to continue in the study. In the event that the participant has signed the consent, but wishes to terminate the study at any time before completion, they will be allowed to do so. Participants will be informed about procedures applied to insure privacy and confidentiality.

10.Compensation

The participant will receive a lump sum of 60$ in the form of gift cards to cover the transportation expenses related to his/her participation in the study. This compensation will be given at the end of the study after all the three weeks of the training program have been completed. If the participant withdraw from the study or are withdrawn before it is completed, he/she will receive a prorated amount according to the participation.

11.References

Anderson RN (2002) Deaths: leading causes for 2000. National vital statistics reports : from the Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System 50:1-85.

Brent DA, Johnson BA, Perper J, Connolly J, Bridge J, Bartle S, Rather C (1994) Personality disorder, personality traits, impulsive violence, and completed suicide in adolescents. Journal of the American Academy of Child & Adolescent Psychiatry 33:1080-1086.

Bridge JA, Goldstein TR, Brent DA (2006) Adolescent suicide and suicidal behavior. Journal of child psychology and psychiatry, and allied disciplines 47:372-394.

Cavanagh JT, Carson AJ, Sharpe M, Lawrie S (2003) Psychological autopsy studies of suicide: a systematic review. Psychological medicine 33:395-405.

Christensen H, Griffiths KM, Jorm AF (2004) Delivering interventions for depression by using the internet: randomised controlled trial. Bmj 328:265.

Fleischhaker C, Böhme R, Sixt B, Brück C, Schneider C, Schulz E (2011) Dialectical behavioral therapy for adolescents (DBT-A): a clinical trial for patients with suicidal and self-injurious behavior and borderline symptoms with a one-year follow-up. Child and adolescent psychiatry and mental health 5:3.

Health NCCfM (2009) NICE clinical guideline 90: Depression - The treatment and management of depression in adults.

James AC, Taylor A, Winmill L, Alfoadari K (2008) A Preliminary Community Study of Dialectical Behaviour Therapy (DBT) with Adolescent Females Demonstrating Persistent, Deliberate Self-Harm (DSH). Child and Adolescent Mental Health 13:148-152.

James AC, Winmill L, Anderson C, Alfoadari K (2011) A preliminary study of an extension of a community dialectic behaviour therapy (DBT) programme to adolescents in the looked after care system. Child and Adolescent Mental Health 16:9-13.

Kaltenthaler E, Brazier J, De Nigris E, Tumur I, Ferriter M, Beverley C, Parry G, Rooney G, Sutcliffe P (2006) Computerised cognitive behaviour therapy for depression and anxiety

update: a systematic review and economic evaluation. Health technology assessment 10:iii, xi-xiv, 1-168.

Kovacs M, Goldston D, Gatsonis C (1993) Suicidal behaviors and childhood-onset depressive disorders: a longitudinal investigation. Journal of the American Academy of Child & Adolescent Psychiatry 32:8-20.

Lewinsohn PM, Rohde P, Seeley JR (1996) Adolescent suicidal ideation and attempts: Prevalence, risk factors, and clinical implications. Clinical Psychology: Science and Practice 3:25-46.

Linehan M (1993) Cognitive behavioral treatment of borderline personality disorder: Guilford Press.

Miller AL, Rathus JH, Linehan MM (2006) Dialectical behavior therapy with suicidal adolescents: Guilford Press.

Miller AL, Wyman SE, Huppert JD, Glassman SL, Rathus JH (2000) Analysis of behavioral skills utilized by suicidal adolescents receiving dialectical behavior therapy. Cognitive and Behavioral Practice 7:183-187.

Neacsiu AD, Rizvi SL, Vitaliano PP, Lynch TR, Linehan MM (2010) The dialectical behavior therapy ways of coping checklist: development and psychometric properties. Journal of clinical psychology 66:563-582.

Pelkonen M, Marttunen M (2003) Child and adolescent suicide: epidemiology, risk factors, and approaches to prevention. Paediatric drugs 5:243-265.

Ryland DH, Kruesi MJ (1992) Suicide among adolescents. International Review of Psychiatry 4:185-195.

Vitaliano PP, Russo J, Carr JE, Maiuro RD, Becker J (1985) The ways of coping checklist: Revision and psychometric properties. Multivariate Behavioral Research 20:3-26.

Woodberry KA, Popenoe EJ (2008) Implementing dialectical behavior therapy with adolescents and their families in a community outpatient clinic. Cognitive and Behavioral Practice 15:277-286.

APPENDIX D: Questionnaire 1-English

Participant number		Session 1 Task 1

Into which categories did the participant match the skills?

Category 1: GIVE, FAST, Making a request.

Category 2: Validate self, Validate others.

Category 3: Pros and cons.

Category 4: Being mindful of emotions, Observe & describe emotions.

Others: P.L.E.A.S.E., Building mastery.

Observe & describe emotions _____	F.A.S.T. _____
Being mindful of emotions _____	Pros & cons _____
Making a request _____	Validate self _____
G.I.V.E. _____	Validate others _____
P.L.E.A.S.E. _____	Building mastery_____

1. What do you think about this program?	
2. What did you like about the program?	
3. What can be improved?	
4. What have you learned?	
5. What would you expect to see from a program that aims at helping you practice the DBT skills, e.g., in terms of the design and format of the program, presentation of the skills, virtual situations, and etc.?	
6. How would you like if the program was presented as a 3D computer program?	

How would you describe these different components of the program? (1= Very poor, 5=Very good)

Scenario (Is the scenario realistic?)	1	2	3	4	5
Choices (Are the choices of skills easy?)	1	2	3	4	5
Skills (Are the skills helpful in the scenario?)	1	2	3	4	5
Presentation (Is the presentation clear?)	1	2	3	4	5
Time (Is the length of the session good?)	1	2	3	4	5
Entertainment (Is the format interesting?)	1	2	3	4	5
Benefit (Does it help you practice the skills?)	1	2	3	4	5
Overall (How would you rate this session?)	1	2	3	4	5
Other comments					

APPENDIX D: Questionnaire 1-English

Participant number		Session 1 Task 2

Into which categories did the participant match the skills?
Category 1: Validate self
Category 2: P.L.E.A.S.E.
Category 3: Being mindful of emotions, Observe & describe emotions, Acting opposite
Others: D.E.AR. M.A.N.

Validate self _____ P.L.E.A.S.E. _____
Being mindful of emotions _____ Observe & describe emotions _____
Acting opposite to current emotion _____ D.E.A.R. M.A.N. _____

1. What do you think about this program?	
2. What did you like about the program?	
3. What can be improved?	
4. What have you learned?	

How would you describe these different components of the program? (1= Very poor, 5=Very good)

Scenario (Is the scenario realistic?)	1	2	3	4	5
Choices (Are the choices of skills easy?)	1	2	3	4	5
Skills (Are the skills helpful in the scenario?)	1	2	3	4	5
Presentation (Is the presentation clear?)	1	2	3	4	5
Time (Is the length of the session good?)	1	2	3	4	5
Entertainment (Is the format interesting?)	1	2	3	4	5
Benefit (Does it help you practice the skills?)	1	2	3	4	5
Overall (How would you rate this session?)	1	2	3	4	5

Other comments	

APPENDIX D: Questionnaire 1-English

Participant number		Session 2 Task 1

Into which categories did the participant match the skills?
Category 1: Making a request, D.E.A.R. M.A.N..
Category 2: F.A.S.T., G.I.V.E..
Category 3: Validate self, Validate others.
Category 4: Think and act dialectically.
Others: Self soothe, I.M.P.R.O.V.E. the moment.

Making a request _____ D.E.A.R. M.A.N. _____
F.A.S.T. _____ G.I.V.E. _____
Validate self _____ Validate others _____
Think and act dialectically _____ Self soothe _____
I.M.P.R.O.V.E. the moment _____

1. What do you think about this program?	
2. What did you like about the program?	
3. What can be improved?	
4. What have you learned?	

How would you describe these different components of the program? (1= Very poor, 5=Very good)

Scenario (Is the scenario realistic?)	1	2	3	4	5
Choices (Are the choices of skills easy?)	1	2	3	4	5
Skills (Are the skills helpful in the scenario?)	1	2	3	4	5
Presentation (Is the presentation clear?)	1	2	3	4	5
Time (Is the length of the session good?)	1	2	3	4	5
Entertainment (Is the format interesting?)	1	2	3	4	5
Benefit (Does it help you practice the skills?)	1	2	3	4	5
Overall (How would you rate this session?)	1	2	3	4	5
Other comments					

APPENDIX D: Questionnaire 1-English

Participant number		Session 2 Task 2

Into which categories did the participant match the skills?
Category 1: A.C.C.E.P.T.S., Pros & cons, Self-soothe.
Category 2: Observe & describe emotions, Pleasant activities, Acting opposite to current emotion, Being mindful of emotions
Category 3: Think & act dialectically, Validate self, Validate others.
Others: Making a request, D.E.A.R. M.A.N.

A.C.C.E.P.T.S. _____	Pros & cons _____
Self-soothe _____	Observe & describe emotions _____
Acting opposite to current emotion _____	Pleasant activities _____
Being mindful of emotions _____	Think & act dialectically _____
Validate self _____	Validate others _____
Making a request _____	D.E.A.R. M.A.N. _____

1. What do you think about this program?	
2. What did you like about the program?	
3. What can be improved?	
4. What have you learned?	

How would you describe these different components of the program? (1= Very poor, 5=Very good)

Scenario (Is the scenario realistic?)	1	2	3	4	5
Choices (Are the choices of skills easy?)	1	2	3	4	5
Skills (Are the skills helpful in the scenario?)	1	2	3	4	5
Presentation (Is the presentation clear?)	1	2	3	4	5
Time (Is the length of the session good?)	1	2	3	4	5
Entertainment (Is the format interesting?)	1	2	3	4	5
Benefit (Does it help you practice the skills?)	1	2	3	4	5
Overall (How would you rate this session?)	1	2	3	4	5
Other comments					

APPENDIX D: Questionnaire 1-English

Participant number		Session 3 Task 1

Into which categories did the participant match the skills?
Category 1: Accepting/refusing a request, D.E.A.R. M.A.N.
Category 2: G.I.V.E., F.A.S.T., Cheerleading statements.
Category 3: Validate self, Validate others.
Category 4: Observe & describe emotions, being mindful of emotions.
Others: Building mastery, I.M.R.P.O.V.E.

Accepting/refusing a request _____ D.E.A.R. M.A.N. _____
G.I.V.E. _____ F.A.S.T. _____
Cheerleading statements _____ Validate self _____
Validate others _____ Observe & describe emotions _____
Being mindful of emotions _____ Building mastery _____
I.M.P.R.O.V.E. _____

1. What do you think about this program?	
2. What did you like about the program?	
3. What can be improved?	
4. What have you learned?	

How would you describe these different components of the program? (1= Very poor, 5=Very good)

Scenario (Is the scenario realistic?)	1	2	3	4	5
Choices (Are the choices of skills easy?)	1	2	3	4	5
Skills (Are the skills helpful in the scenario?)	1	2	3	4	5
Presentation (Is the presentation clear?)	1	2	3	4	5
Time (Is the length of the session good?)	1	2	3	4	5
Entertainment (Is the format interesting?)	1	2	3	4	5
Benefit (Does it help you practice the skills?)	1	2	3	4	5
Overall (How would you rate this session?)	1	2	3	4	5
Other comments					

APPENDIX D: Questionnaire 1-English

Participant number		Session 3 Task 2

Into which categories did the participant match the skills?

Category 1: Observe & describe emotions, Being mindful of emotions, Opposite actions, Pleasant activities.

Category 2: A.C.C.E.P.T.S., Pros & cons.

Category 3: Validate self, Validate others, Think & act dialectically.

Others: F.A.S.T., Cheerleading statements.

Observe & describe emotions _____ Being mindful of emotions _____

Opposite actions _____ Pleasant activities _____

A.C.C.E.P.T.S. _____ Pros & cons _____

Validate self _____ Validate others _____

Think & act dialectically _____ FAST _____

Cheerleading statements _____

1. What do you think about this program?	
2. What did you like about the program?	
3. What can be improved?	
4. What have you learned?	

How would you describe these different components of the program? (1= Very poor, 5=Very good)

Scenario (Is the scenario realistic?)	1	2	3	4	5
Choices (Are the choices of skills easy?)	1	2	3	4	5
Skills (Are the skills helpful in the scenario?)	1	2	3	4	5
Presentation (Is the presentation clear?)	1	2	3	4	5
Time (Is the length of the session good?)	1	2	3	4	5
Entertainment (Is the format interesting?)	1	2	3	4	5
Benefit (Does it help you practice the skills?)	1	2	3	4	5
Overall (How would you rate this session?)	1	2	3	4	5
Other comments					

APPENDIX D: Questionnaire 1-French

Numéro de participant		Session 1 Tache 1

Dans quelles catégories le participant a-t-il placé les habiletés?
Catégorie 1: GIVE, FAST, Faire une demande.
Catégorie 2: Me valider, Valider les autres.
Catégorie 3: Pours et contres
Catégorie 4: Sois present à ton émotion, Observer et décrire les émotions.
Autre: P.L.E.A.S.E., Bâtir son sentiment de maitrise.

Observer et décrire les émotions _____ Sois present à ton émotion _____ Faire une demande _____ G.I.V.E. _____ P.L.E.A.S.E. _____	F.A.S.T. _____ Pours et contres _____ Me valider _____ Valider les autres _____ Bâtir son sentiment de maitrise _____
1. Que pensez-vous de ce programme?	
2. Qu'avez-vous aimé de ce programme?	
3. Qu'est-ce qui pourrait être amélioré?	
4. Qu'avez-vous appris?	
5. Quelles seraient vos attentes d'un programme qui vise à vous faire pratiquer les habiletés DBT, par exemple en terme de la conception et du format du programme, de la présentation des habiletés, des situations virtuelles, etc.?	
6. Que penseriez-vous si le programme était un programme informatique en 3D?	

Comment décririez-vous les différents aspects de ce programme? (1= Très mauvais, 5= Très bon)

Scénario (Le scenario est-il réaliste?)	1	2	3	4	5
Choix (Les choix d'habiletés sont-ils faciles?)	1	2	3	4	5
Habiletés (Les habiletés sont-elles utiles dans le scénario?)	1	2	3	4	5
Présentation (La présentation est-elle claire?)	1	2	3	4	5
Durée (La durée de la session est-elle adéquate?)	1	2	3	4	5
Divertissement (Le format est-il intéressant?)	1	2	3	4	5
Bienfaits (Le programme vous a-t-il aidé à mettre en pratique les habiletés?)	1	2	3	4	5
Global (Comment évalueriez-vous cette session?)	1	2	3	4	5
Autres commentaires					

APPENDIX D: Questionnaire 1-French

Numéro de participant		Session 1 Tache 2

Dans quelles catégories le participant a-t-il placé les habiletés?
Catégorie 1: Se valider.
Catégorie 2: PLEASE
Catégorie 3: Sois présent à ton émotion, Observer et décrire ses émotions, Action opposée
Autre: D.E.F.A.C.O.N.

Se valider _____ Sois present à ton émotion _____ Action opposée _____	P.L.E.A.S.E. _____ Observer et décrire ses émotions _____ D.E.F.A.C.O.N. _____
1. Que pensez-vous de ce programme?	
2. Qu'avez-vous aimé de ce programme?	
3. Qu'est-ce qui pourrait être amélioré?	
4. Qu'avez-vous appris?	

Comment décririez-vous les différents aspects de ce programme? (1= Très mauvais, 5= Très bon)

Scénario (Le scenario est-il réaliste?)	1	2	3	4	5
Choix (Les choix d'habiletés sont-ils faciles?)	1	2	3	4	5
Habiletés (Les habiletés sont-elles utiles dans le scénario?)	1	2	3	4	5
Présentation (La présentation est-elle claire?)	1	2	3	4	5
Durée (La durée de la session est-elle adéquate?)	1	2	3	4	5
Divertissement (Le format est-il intéressant?)	1	2	3	4	5
Bienfaits (Le programme vous a-t-il aidé à mettre en pratique les habiletés?)	1	2	3	4	5
Global (Comment évalueriez-vous cette session?)	1	2	3	4	5
Autres commentaires					

APPENDIX D: Questionnaire 1-French

Numéro de participant		Session 2 Tache 1

Dans quelles catégories le participant a-t-il placé les habiletés?
Catégorie 1: Faire une demande, D.E.F.A.C.ON.
Catégorie 2: FAST, GIVE.
Catégorie 3: Se valider, Valider les autres.
Catégorie 4: Pense et agis dialectiquement
Autre: S'apaiser avec les cinq sens, Améliorer le moment avec I.M.P.R.O.V.E.

Faire une demande _____ F.A.S.T. _____ Se valider _____ Pense et agis dialectiquement _____ Améliorer le moment avec I.M.P.R.O.V.E. __	D.E.F.A.C.ON. _____ G.I.V.E. _____ Valider les autres _____ S'apaiser avec les cinq sens _____
1. Que pensez-vous de ce programme?	
2. Qu'avez-vous aimé de ce programme?	
3. Qu'est-ce qui pourrait être amélioré?	
4. Qu'avez-vous appris?	

Comment décririez-vous les différents aspects de ce programme? (1= Très mauvais, 5= Très bon)

Scénario (Le scenario est-il réaliste?)	1	2	3	4	5
Choix (Les choix d'habiletés sont-ils faciles?)	1	2	3	4	5
Habiletés (Les habiletés sont-elles utiles dans le scénario?)	1	2	3	4	5
Présentation (La présentation est-elle claire?)	1	2	3	4	5
Durée (La durée de la session est-elle adéquate?)	1	2	3	4	5
Divertissement (Le format est-il intéressant?)	1	2	3	4	5
Bienfaits (Le programme vous a-t-il aidé à mettre en pratique les habiletés?)	1	2	3	4	5
Global (Comment évalueriez-vous cette session?)	1	2	3	4	5
Autres commentaires					

APPENDIX D: Questionnaire 1-French

Numéro de participant		Session 2 Tache 2

Dans quelles catégories le participant a-t-il placé les habiletés?
Catégorie 1: ACCEPTS, Pours & Contres, S'apaiser.
Catégorie 2: Observer & décrire ses emotions, Activités plaisantes, Action opposée à l'émotion du moment, Sois présent à ton emotion.
Catégorie 3: Pense et agis dialectique-ment, Se valider, Valider les autres.
Autre: Faire une demande, D.E.F.A.C.ON.

A.C.C.E.P.T.S. _____	Pours & Contres _____
S'apaiser _____	Observer & décrire ses emotions _____
Activités plaisantes _____	Action opposée à l'émotion du moment _____
Sois présent à ton emotion _____	Pense et agis dialectique-ment _____
Se valider _____	Valider les autres _____
Faire une demande _____	D.E.F.A.C.ON. _____

1. Que pensez-vous de ce programme?	
2. Qu'avez-vous aimé de ce programme?	
3. Qu'est-ce qui pourrait être amélioré?	
4. Qu'avez-vous appris?	

Comment décririez-vous les différents aspects de ce programme? (1= Très mauvais, 5= Très bon)

Scénario (Le scenario est-il réaliste?)	1	2	3	4	5
Choix (Les choix d'habiletés sont-ils faciles?)	1	2	3	4	5
Habiletés (Les habiletés sont-elles utiles dans le scénario?)	1	2	3	4	5
Présentation (La présentation est-elle claire?)	1	2	3	4	5
Durée (La durée de la session est-elle adéquate?)	1	2	3	4	5
Divertissement (Le format est-il intéressant?)	1	2	3	4	5
Bienfaits (Le programme vous a-t-il aidé à mettre en pratique les habiletés?)	1	2	3	4	5
Global (Comment évalueriez-vous cette session?)	1	2	3	4	5

Autres commentaires	

APPENDIX D: Questionnaire 1-French

Numéro de participant		Session 3 Tache 1

Into which categories did the participant match the skills?
Catégorie 1: Accepter ou refuser une demande, D.E.F.A.C.ON.
Catégorie 2: G.I.V.E., F.A.S.T., Mots d'encouragement.
Catégorie 3: Se-Valider, Valide les autres.
Catégorie 4: Observer et décrire ses émotions, Sois présent à ton émotion.
Autre: Bâtir son sentiment de maîtrise, I.M.R.P.O.V.E.

Accepter ou refuser une demande _____ G.I.V.E. _____ Mots d'encouragement _____ Valide les autres _____ Sois présent à ton émotion _____ I.M.R.P.O.V.E._____	D.E.F.A.C.ON._____ F.A.S.T._____ Se-Valider _____ Observer et décrire ses émotions _____ Bâtir son sentiment de maîtrise _____
1. Que pensez-vous de ce programme?	
2. Qu'avez-vous aimé de ce programme?	
3. Qu'est-ce qui pourrait être amélioré?	
4. Qu'avez-vous appris?	

Comment décririez-vous les différents aspects de ce programme? (1= Très mauvais, 5= Très bon)

Scénario (Le scenario est-il réaliste?)	1	2	3	4	5
Choix (Les choix d'habiletés sont-ils faciles?)	1	2	3	4	5
Habiletés (Les habiletés sont-elles utiles dans le scénario?)	1	2	3	4	5
Présentation (La présentation est-elle claire?)	1	2	3	4	5
Durée (La durée de la session est-elle adéquate?)	1	2	3	4	5
Divertissement (Le format est-il intéressant?)	1	2	3	4	5
Bienfaits (Le programme vous a-t-il aidé à mettre en pratique les habiletés?)	1	2	3	4	5
Global (Comment évalueriez-vous cette session?)	1	2	3	4	5
Autres commentaires					

APPENDIX D: Questionnaire 1-French

Numéro de participant		Session 3 Tache 2

Into which categories did the participant match the skills?
Catégorie 1: Observer et décrire ses émotions, Sois présent à ton émotion, Action opposée, Activités plaisantes.
Catégorie 2: A.C.C.E.P.T.S., les pour et les contre.
Catégorie 3: Valide-toi, Valide les autres, Pense et agis dialectiquement.
Autre: F.A.S.T., Mots d'encouragement contre les inquiétudes.

Observer et décrire ses émotions _____ Action opposée _____ A.C.C.E.P.T.S. _____ Se-valider _____ Pense et agis dialectiquement _____ Mots d'encouragement _____	Sois présent à ton émotion _____ Activités plaisantes _____ les pour et les contre _____ Valide les autres _____ F.A.S.T. _____
1. Que pensez-vous de ce programme?	
2. Qu'avez-vous aimé de ce programme?	
3. Qu'est-ce qui pourrait être amélioré?	
4. Qu'avez-vous appris?	

Comment décririez-vous les différents aspects de ce programme? (1= Très mauvais, 5= Très bon)

Scénario (Le scenario est-il réaliste?)	1	2	3	4	5
Choix (Les choix d'habiletés sont-ils faciles?)	1	2	3	4	5
Habiletés (Les habiletés sont-elles utiles dans le scénario?)	1	2	3	4	5
Présentation (La présentation est-elle claire?)	1	2	3	4	5
Durée (La durée de la session est-elle adéquate?)	1	2	3	4	5
Divertissement (Le format est-il intéressant?)	1	2	3	4	5
Bienfaits (Le programme vous a-t-il aidé à mettre en pratique les habiletés?)	1	2	3	4	5
Global (Comment évalueriez-vous cette session?)	1	2	3	4	5
Autres commentaires					

APPENDIX E: Questionnaire 2-English

DBT-WCCL

The items below represent ways that you may have coped with stressful events in your life. We are interested in the degree to which you have used each of the following thoughts or behavior to deal with problem and stresses. Think back on THE LAST MONTH in your life. Then check the appropriate number if the thought/behavior is: never used, sometime used, or regularly used (i.e., at least 4 to 5 times per week). Don't answer on the basis of whether it seems to work to reduce stress or solve problems- just whether or not you use the coping behavior. Use these response choices. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

	0 Never Used	**1 Rarely Used**	**2 Sometimes Used**	**3 Regularly Used**	
1.	Bargained or compromised to get something positive from the situation.				0 1 2 3
2.	Counted my blessings.				0 1 2 3
3.	Blamed myself.				0 1 2 3
4.	Concentrated on something good that could come out of the whole thing.				0 1 2 3
5.	Kept feelings to myself.				0 1 2 3
6.	Made sure I'm responding in a way that doesn't alienate others.				0 1 2 3
7.	Figured out who to blame.				0 1 2 3
8.	Hoped a miracle would happen.				0 1 2 3
9.	Tried to get centered before taking any action.				0 1 2 3
10.	Talked to someone about how I've been feeling.				0 1 2 3
11.	Stood my ground and fought for what I wanted.				0 1 2 3
12.	Refused to believe that it had happened.				0 1 2 3
13.	Treated myself to something really tasty.				0 1 2 3
14.	Criticized or lectured myself.				0 1 2 3
15.	Took it out on others.				0 1 2 3
16.	Came up with a couple of different solutions to my problem.				0 1 2 3
17.	Wished I were a stronger person — more optimistic and forceful				0 1 2 3
18.	Accepted my strong feelings, but not let them interfere with other things too much.				0 1 2 3
19.	Focused on the good things in my life.				0 1 2 3
20.	Wished that I could change the way that I felt.				0 1 2 3
21.	Found something beautiful to look at to make me feel better.				0 1 2 3
22.	Changed something about myself so that I could deal with the situation better.				0 1 2 3
23.	Focused on the good aspects of my life and gave less attention to negative thoughts or feelings.				0 1 2 3
24.	Got mad at the people or things that caused the problem				0 1 2 3
25.	Felt bad that I couldn't avoid the problem.				0 1 2 3

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APPENDIX E: Questionnaire 2-English

0 Never Used **1 Rarely Used** **2 Sometimes Used** **3 Regularly Used**

26.	Tried to distract myself by getting active.	0 1 2 3
27.	Been aware of what has to be done so I've been doubling my my efforts and trying harder to make things work..	0 1 2 3
28.	Thought that others were unfair to me.	0 1 2 3
29.	Soothed myself by surrounding myself with nice fragrance of some kind.	0 1 2 3
30.	Blamed others.	0 1 2 3
31.	Listened to or played music that I found relaxing.	0 1 2 3
32.	Gone on as if nothing had happened.	0 1 2 3
33.	Accepted the next best thing to what I wanted.	0 1 2 3
34.	Told myself things could be worse.	0 1 2 3
35.	Occupied my mind with something else.	0 1 2 3
36.	Talked to someone who could do something concrete about the problem	0 1 2 3
37.	Tried to make myself feel better by eating, drinking, smoking, taking medication, etc.	0 1 2 3
38.	Tried not to act too hastily or follow my own hunch.	0 1 2 3
39.	Changed something so things would turn out right.	0 1 2 3
40.	Pampered myself with something that felt good to the touch (e.g., a bubble bath or a hug).	0 1 2 3
41.	Avoided people.	0 1 2 3
42.	Thought how much better off I was than others.	0 1 2 3
43.	Just took things one step at a time.	0 1 2 3
44.	Did something to feel a totally different emotion (like gone to a funny movie).	0 1 2 3
45.	Wished the situation would go away or somehow be finished.	0 1 2 3
46.	Kept others from knowing how bad things were.	0 1 2 3
47.	Focused my energy on helping others.	0 1 2 3
48.	Found out what other person was responsible.	0 1 2 3
49.	Made sure to take care of my body and stay healthy so that i was less emotionally sensitive.	0 1 2 3
50.	Told myself how much I had already accomplished.	0 1 2 3
51.	Made sure I respond in a way so that I could still respect myself afterwards.	0 1 2 3
52.	Wished that I could change what had happened.	0 1 2 3
53.	Made a plan of action and followed it.	0 1 2 3
54.	Talked to someone to find out about the situation.	0 1 2 3
55.	Avoided my problem.	0 1 2 3
56.	Stepped back and tried to see things as they really are.	0 1 2 3
57.	Compared myself to others who are less fortunate.	0 1 2 3
58.	Increased the number of pleasant things in my life so that I had amore positive outlook.	0 1 2 3
59.	Tried not to burn my bridges behind me, but leave things open somewhat.	0 1 2 3

APPENDIX E: Questionnaire 2-French

DBT-WCCL

Les phrases ci-dessous représentent des façons que tu as pu utiliser pour surmonter des évènements stressants de ta vie. Nous désirons savoir à quel degré tu as eu recours aux pensées ou aux comportements suivants pour résoudre les problèmes et surmonter le stress.

Repense à ta vie au cours **DU DERNIER MOIS**. Ensuite, encercle le chiffre qui indique si cette pensée ou ce comportement est : (0) jamais utilisé(e), (1) rarement utilisé(e), (2) parfois utilisé(e) ou (3) régulièrement utilisé(e) (c'est-à-dire au moins quatre ou cinq fois par semaine). Ne réponds pas à ces énoncés en évaluant si cette méthode semble fonctionner pour réduire le stress ou résoudre les problèmes – indique seulement si tu utilises ou non cette stratégie d'adaptation. Utilise les choix de réponse suivants. Essaie d'évaluer chaque énoncé séparément des autres. Donne des réponses qui sont le plus possible vraies POUR TOI.

0	**1**	**2**	**3**
Jamais utilisé(e)	**Rarement utilisé(e)**	**Parfois utilisé(e)**	**Régulièrement utilisé(e)**

1.	J'ai négocié ou fait un compromis afin de retirer quelque chose de positif d'une situation.	0 1 2 3
2.	Je me suis souvenu(e) de ce qui me rend heureux (se) dans ma vie.	0 1 2 3
3.	Je me suis blâmé(e).	0 1 2 3
4.	Je me suis concentré(e) sur quelque chose de bon qui pourrait ressortir de la situation.	0 1 2 3
5.	J'ai gardé mes sentiments pour moi.	0 1 2 3
6.	Je me suis assuré(e) de répondre de façon à ne pas repousser les autres.	0 1 2 3
7.	J'ai trouvé qui blâmer.	0 1 2 3
8.	J'ai espéré qu'un miracle survienne.	0 1 2 3
9.	J'ai essayé de me centrer avant d'agir.	0 1 2 3
10.	J'ai parlé à quelqu'un de la manière dont je me sentais.	0 1 2 3
11.	Je suis resté(e) sur mes positions et j'ai tout fait pour avoir ce que je voulais.	0 1 2 3
12.	J'ai refusé de croire ce qui s'était passé.	0 1 2 3
13.	Je me suis gâté(e) avec quelque chose de vraiment savoureux.	0 1 2 3
14.	Je me suis critiqué(e) ou réprimandé(e).	0 1 2 3
15.	Je me suis défoulé(e) sur les autres.	0 1 2 3
16.	J'ai trouvé différentes solutions à mon problème.	0 1 2 3
17.	J'ai souhaité être une personne plus forte – plus optimiste et énergique.	0 1 2 3
18.	J'ai accepté mes sentiments intenses, mais sans les laisser trop interférer avec les autres choses.	0 1 2 3
19.	Je me suis concentré(e) sur les bons aspects de ma vie.	0 1 2 3
20.	J'ai souhaité pouvoir changer comment je me sentais.	0 1 2 3
21.	J'ai trouvé quelque chose de beau à regarder afin de me sentir mieux.	0 1 2 3
22.	J'ai changé quelque chose en moi afin que je puisse mieux m'ajuster à la situation.	0 1 2 3
23.	Je me suis concentré(e) sur les points positifs de ma vie et j'ai donné moins d'attention à mes pensées ou sentiments négatifs.	0 1 2 3
24.	Je me suis fâché(e) contre les gens ou les situations qui ont causé le problème.	0 1 2 3
25.	Je me suis senti(e) mal de ne pas pouvoir éviter le problème.	0 1 2 3

Traduit et validé par Janelle, Létourneau, Laliberté et Labelle (2011) de Neacsiu et coll. (2010)

APPENDIX E: Questionnaire 2-French

		0	**1**	**2**	**3**	
		Jamais utilisé(e)	**Rarement utilisé(e)**	**Parfois utilisé(e)**	**Régulièrement utilisé(e)**	
26.	J'ai essayé de me distraire en étant actif (ve).					0 1 2 3
27.	J'ai pris conscience de ce qui devait être fait, alors j'ai redoublé d'efforts afin que les choses fonctionnent.					0 1 2 3
28.	J'ai pensé que les autres étaient injustes envers moi.					0 1 2 3
29.	J'ai pris soin de moi en m'entourant d'une bonne odeur.					0 1 2 3
30.	J'ai blâmé les autres.					0 1 2 3
31.	J'ai écouté ou joué de la musique que je trouvais relaxante.					0 1 2 3
32.	J'ai continué comme si rien ne s'était passé.					0 1 2 3
33.	J'ai accepté la meilleure solution de rechange à ce que je voulais.					0 1 2 3
34.	Je me suis dit que les choses pourraient être pires.					0 1 2 3
35.	Je me suis occupé(e) l'esprit avec autre chose.					0 1 2 3
36.	J'ai parlé à une personne qui pouvait apporter une solution concrète pour régler le problème.					0 1 2 3
37.	J'ai tenté de me sentir mieux en mangeant, en buvant, en fumant, en prenant des médicaments, etc.					0 1 2 3
38.	J'ai tenté de ne pas agir trop vite ni de suivre mes pressentiments.					0 1 2 3
39.	J'ai changé quelque chose afin que les choses se passent bien.					0 1 2 3
40.	Je me suis fait(e) plaisir avec quelque chose de doux au toucher (par ex. : un bain moussant ou un câlin).					0 1 2 3
41.	J'ai évité les gens.					0 1 2 3
42.	J'ai pensé que j'étais meilleur(e) que les autres.					0 1 2 3
43.	J'ai pris les choses une à la fois.					0 1 2 3
44.	J'ai fait quelque chose afin de ressentir une émotion complètement différente (comme aller voir une comédie).					0 1 2 3
45.	J'ai souhaité que la situation disparaisse ou qu'elle cesse, d'une manière ou d'une autre.					0 1 2 3
46.	J'ai empêché les autres de savoir à quel point les choses allaient mal.					0 1 2 3
47.	J'ai concentré mon énergie à aider les autres.					0 1 2 3
48.	J'ai trouvé quelle autre personne était responsable.					0 1 2 3
49.	Je me suis assuré(e) de prendre soin de mon corps et de rester en santé afin de me sentir moins émotif (ve).					0 1 2 3
50.	Je me suis rappelé tout ce que j'avais déjà accompli.					0 1 2 3
51.	Je me suis assuré(e) de répondre aux demandes des autres de façon à continuer à me respecter par la suite.					0 1 2 3
52.	J'ai souhaité pouvoir changer ce qui était arrivé.					0 1 2 3
53.	J'ai fait un plan d'action et l'ai suivi.					0 1 2 3
54.	J'ai parlé à quelqu'un afin de m'informer de la situation.					0 1 2 3
55.	J'ai évité mon problème.					0 1 2 3
56.	J'ai pris du recul et essayé de voir les choses comme elles sont réellement.					0 1 2 3
57.	Je me suis comparé(e) à des gens moins chanceux que moi.					0 1 2 3
58.	J'ai augmenté le nombre de choses plaisantes dans ma vie afin d'en avoir une vision plus positive.					0 1 2 3
59.	J'ai essayé me de laisser des portes ouvertes dans mes relations plutôt que de couper les ponts pour de bon.					0 1 2 3

Traduit et validé par Janelle, Létourneau, Laliberté et Labelle (2011) de Neacsiu et coll. (2010)

APPENDIX F: Consent Forms – Youth – English

Information/Consent Form

Youth under 18 years of age

INFORMATION

Title of the project: Evaluation of the Efficacy of a Prototype Therapeutic Intervention Computer Program for Adolescents with Depression: A Pilot Project

Researchers in charge of the project:

Principle investigator: Johanne Renaud, M.D., M.Sc., FRCPC, Douglas Mental Health University Institute
Co-investigators: Yiling Yang, Master's Degree Student, McGill University
Véronique Bohbot, Ph.D., Douglas Mental Health University Institute
Valentin Mbekou, Ph.D., Douglas Mental Health University Institute

Preamble: You are being invited to take part in a research project. Before agreeing to participate in this project, please take the time to review the information in this consent form.

This form may contain words that you do not understand. We invite you to ask the researcher or other members of the research team any question you may have, and ask them to explain any word or information that is unclear.

Nature and objectives of the research project: The purpose of the present project is to assess the potential of a computer Dialectical Behavior Therapy (DBT) program we are developing. This computer training program is used to serve as a supplement, review and practice of skills acquired in the standard DBT. The preliminary prototype program will be presented in Microsoft PowerPoint slides. The results of the present study will help us assess its effectiveness.

Procedures of the research project: The project will be a supplement to your regular DBT follow-up visits. Participants will be randomly assigned to either an experimental group or a control group. If you are assigned to the control group, you will receive the follow-up individual DBT sessions as usual, but will not be given the prototype training program. At the beginning and the end of the study period, however, you will be given the Dialectical Behavior Therapy Ways of Coping Checklist (DBT-WCCL).

If you are in the experimental group, you will be given the prototype training program and a few questionnaires in addition to your regular follow-up DBT individual treatment as usual. The program consists of 6 sessions, and will be given during three visits, once a week in 3

consecutive weeks. In each one-hour visit, you will be asked to complete 2 sessions. Once you agree to participate, you will be expected to carefully read and respond to the materials presented in the prototype program. In each visit, you will also be given a home-made questionnaire that inquires your feedback and assessment of the program. At the beginning and the end of the study, you will receive the DBT-WCCL that measures your improvement during this period of time.

Risks and disadvantages associated with the research project: There are no known risks or disadvantages associated with the research project.

Advantages of participation: The prototype training program used in the study may help you review and practice the DBT skills you have learned. Your feedbacks and the study results will help us to improve the program accordingly in future development.

Voluntary participation and possibility to withdraw: Your participation in this research project is voluntary. You are therefore free to refuse to participate. You can also withdraw from the project at any moment, without giving any reason, by informing the researcher in charge of the project or one of the members of the research team.

Your decision not to participate in the study or to withdraw from it will not have any impact on the quality of care and services to which you are entitled or your relationship with the researcher in charge of the project and the other caregivers.

The researcher in charge of the research project, the research ethics committee of the Douglas Mental Health University Institute, the granting agency or the sponsor could put an end to your participation, without your consent, if new findings or information indicate that your participation is no longer in your interest, if you do not follow the research project instructions, or for administrative reasons that would force ending the project.

If you withdraw or are withdrawn from the project, the information that was already collected in the course of the project will be stored as long as necessary, to ensure your safety as well as the safety of the other research subjects and to meet the regulatory requirements.

Confidentiality: During your participation in this project, the project researcher and his team will collect and record the information concerning you in a study file. Only the data required to meet the scientific goals of the project would be collected.

This data could include information contained in your medical files concerning your past and present health condition, your lifestyle, as well as the results of your tests, exams and procedures that you would have to undergo during this research project. Your file could also contain other information such as your name, sex, date of birth and ethnic origin.

All this information collected during the research project will remain strictly confidential to the extent prescribed by the law. In order to protect your identity and the confidentiality of this information, only a code number will identify you. The key to the code linking your name to your study file will be kept by the project researcher.

The project researcher would use this data for research purposes, in order to achieve the project scientific goals, described in the information/consent form. This data would be kept by the researcher in charge of the project for 10 years.

The data could be published in medical specialized magazines or shared by other individuals during scientific meetings; however, it would not be possible to identify you.

For surveillance and control purposes, your study file as well as your medical file could be examined by a person mandated by the Ethics Research Board of the Douglas Mental Health University Institute, if necessary. All these individuals agree with the privacy policy.

You have the right to consult your study file in order to verify the information gathered and to rectify it if necessary, as long as the project researcher or the institution holds this information. However, in order to protect the scientific integrity of the research project, you would have access to certain information only once this project has come to an end.

Marketing possibilities: Your participation in this research project could lead to the creation of commercial products. However, you would not receive any financial benefits.

Funding of the research project: This project is funded by the Standard Life Research Fund in Teen Depression.

Compensation in case of injury and rights of the research participant: If you should suffer any injury following your participation in the research project, you will receive the appropriate care and services for your medical condition without any charge to you.

By accepting to participate in this study, you are not waiving any of your legal rights nor discharging the researchers, the sponsor or the institution, of their civil and professional responsibility.

Compensation: You will receive a lump sum of 60$ in the form of gift cards to cover your transportation expenses related to your participation in the study. This compensation will be given at the end of the study after you have completed all the three weeks of the training program. If you withdraw from the study or are withdrawn before it is completed, you will receive a prorated amount according to your participation.

Identification of contact persons: If you have questions concerning the research project or if you feel you have a problem related to your participation in the research project, you can communicate with the project coordinator, YANG Yiling, at the following numbers: 514-761-6131, extension 3487.

For any question concerning your rights as a research subject participating in this research project or if you have comments or wish to file a complaint, you can communicate with the Douglas Institute Ombudsman at the following number: 514-761-6131, extension 3287.

Information/Consent Form

CONSENT

I took notice of the information/consent form. I acknowledge that the research project was explained to me, that my questions were answered and that I was given sufficient time to make a decision.

I, _____agree to participate in this research project according to the conditions stated above. A dated and signed copy of the present information/consent form was given to me.

_____ _____

Signature of the research adolescent participant Date

I took notice of the information/consent form. I acknowledge that the research project was explained to me, that my questions were answered and that I was given sufficient time to make a decision.

I, _____agree that my child participate in this research project according to the conditions stated above

_____ _____

Signature of a parent or a legal representative Date

I, _____, have explained to the research participant the terms of the present information/consent form and I answered all their questions.

_____ _____

Name of the person who obtains the consent Date

APPENDIX F: Consent Forms – Adult – English

Information/Consent Form

Participants over 18 years of age

INFORMATION

Title of the project: Evaluation of the Efficacy of a Prototype Therapeutic Intervention Computer Program for Adolescents with Depression: A Pilot Project

Researchers in charge of the project:

Principle investigator: Johanne Renaud, M.D., M.Sc., FRCPC, Douglas Mental Health University Institute
Co-investigators: Yiling Yang, Master's Degree Student, McGill University
Véronique Bohbot, Ph.D., Douglas Mental Health University Institute
Valentin Mbekou, Ph.D., Douglas Mental Health University Institute

Preamble: You are being invited to take part in a research project. Before agreeing to participate in this project, please take the time to review the information in this consent form.

This form may contain words that you do not understand. We invite you to ask the researcher or other members of the research team any question you may have, and ask them to explain any word or information that is unclear.

Nature and objectives of the research project: The purpose of the present project is to assess the potential of a computer Dialectical Behavior Therapy (DBT) program we are developing. This computer training program is used to serve as a supplement, review and practice of skills acquired in the standard DBT. The preliminary prototype program will be presented in Microsoft PowerPoint slides. The results of the present study will help us assess its effectiveness.

Procedures of the research project: The project will be a supplement to your regular DBT follow-up visits. Participants will be randomly assigned to either an experimental group or a control group. If you are assigned to the control group, you will receive the follow-up individual DBT sessions as usual, but will not be given the prototype training program. At the beginning and the end of the study period, however, you will be given the Dialectical Behavior Therapy Ways of Coping Checklist (DBT-WCCL).

If you are in the experimental group, you will be given the prototype training program and a few questionnaires in addition to your regular follow-up DBT individual treatment as usual. The program consists of 6 sessions, and will be given during three visits, once a week in 3

consecutive weeks. In each one-hour visit, you will be asked to complete 2 sessions. Once you agree to participate, you will be expected to carefully read and respond to the materials presented in the prototype program. In each visit, you will also be given a home-made questionnaire that inquires your feedback and assessment of the program. At the beginning and the end of the study, you will receive the DBT-WCCL that measures your improvement during this period of time.

Risks and disadvantages associated with the research project: There are no known risks or disadvantages associated with the research project.

Advantages of participation: The prototype training program used in the study may help you review and practice the DBT skills you have learned. Your feedbacks and the study results will help us to improve the program accordingly in future development.

Voluntary participation and possibility to withdraw: Your participation in this research project is voluntary. You are therefore free to refuse to participate. You can also withdraw from the project at any moment, without giving any reason, by informing the researcher in charge of the project or one of the members of the research team.

Your decision not to participate in the study or to withdraw from it will not have any impact on the quality of care and services to which you are entitled or your relationship with the researcher in charge of the project and the other caregivers.

The researcher in charge of the research project, the research ethics committee of the Douglas Mental Health University Institute, the granting agency or the sponsor could put an end to your participation, without your consent, if new findings or information indicate that your participation is no longer in your interest, if you do not follow the research project instructions, or for administrative reasons that would force ending the project.

If you withdraw or are withdrawn from the project, the information that was already collected in the course of the project will be stored as long as necessary, to ensure your safety as well as the safety of the other research subjects and to meet the regulatory requirements.

Confidentiality: During your participation in this project, the project researcher and his team will collect and record the information concerning you in a study file. Only the data required to meet the scientific goals of the project would be collected.

This data could include information contained in your medical files concerning your past and present health condition, your lifestyle, as well as the results of your tests, exams and procedures that you would have to undergo during this research project. Your file could also contain other information such as your name, sex, date of birth and ethnic origin.

All this information collected during the research project will remain strictly confidential to the extent prescribed by the law. In order to protect your identity and the confidentiality of this information, only a code number will identify you. The key to the code linking your name to your study file will be kept by the project researcher.

The project researcher would use this data for research purposes, in order to achieve the project scientific goals, described in the information/consent form. This data would be kept by the researcher in charge of the project for 10 years.

The data could be published in medical specialized magazines or shared by other individuals during scientific meetings; however, it would not be possible to identify you.

For surveillance and control purposes, your study file as well as your medical file could be examined by a person mandated by the Ethics Research Board of the Douglas Mental Health University Institute, if necessary. All these individuals agree with the privacy policy.

You have the right to consult your study file in order to verify the information gathered and to rectify it if necessary, as long as the project researcher or the institution holds this information. However, in order to protect the scientific integrity of the research project, you would have access to certain information only once this project has come to an end.

Marketing possibilities: Your participation in this research project could lead to the creation of commercial products. However, you would not receive any financial benefits.

Funding of the research project: This project is funded by the Standard Life Research Fund in Teen Depression.

Compensation in case of injury and rights of the research participant: If you should suffer any injury following your participation in the research project, you will receive the appropriate care and services for your medical condition without any charge to you.

By accepting to participate in this study, you are not waiving any of your legal rights nor discharging the researchers, the sponsor or the institution, of their civil and professional responsibility.

Compensation: You will receive a lump sum of 60$ in the form of gift cards to cover your transportation expenses related to your participation in the study. This compensation will be given at the end of the study after you have completed all the three weeks of the training program. If you withdraw from the study or are withdrawn before it is completed, you will receive a prorated amount according to your participation.

Identification of contact persons: If you have questions concerning the research project or if you feel you have a problem related to your participation in the research project, you can communicate with the project coordinator, YANG Yiling, at the following numbers: 514-761-6131, extension 3487.

For any question concerning your rights as a research subject participating in this research project or if you have comments or wish to file a complaint, you can communicate with the Douglas Institute Ombudsman at the following number: 514-761-6131, extension 3287.

Information/Consent Form

CONSENT

I took notice of the information/consent form. I acknowledge that the research project was explained to me, that my questions were answered and that I was given sufficient time to make a decision.

I, _____agree to participate in this research project according to the conditions stated above. A dated and signed copy of the present information/consent form was given to me.

_____ _____

Signature of the research participant Date

I, _____, have explained to the research participant the terms of the present information/consent form and I answered all their questions.

_____ _____

Name of the person who obtains the consent Date

APPENDIX F: Consent Forms – Access to Medical Files – English

AUTHORIZATION TO CONSULT A MEDICAL FILE

Name: _____ File #: _____

Birthdate: _____ / _____ / _____ (dd/mm/yyyy)

I, the undersigned, _____, authorize the research assistant assigned to the evaluation of files at the Douglas Institute Research Centre to consult my medical file within the context of my participation in the research study entitled: Evaluation of the Efficacy of a Prototype Therapeutic Intervention Computer Program for Adolescents with Depression: A Pilot Project

The person responsible for the evaluation of files will verify:

1) My eligibility to participate in the research
2) The presence of side effects related to my taking medication
3) The validity of the information obtained about me within the context of the research.

I authorize the consultation of my medical file by the research assistant assigned to the evaluation of files at the Douglas Institute Research Centre.

Signature: _____

Signed the _____ (date), at _____ (city)

APPENDIX F: Consent Forms – Youth - French

Information/Formulaire de consentement

Participants âgés de moins de 18 ans

INFORMATION

Titre du projet: Élaboration d'un prototype de Programme d'intervention assistée par ordinateur pour des adolescents avec dépression.

Chercheurs responsables du projet:

Chercheur principal: Johanne Renaud, M.D., M.Sc., FRCPC, Institut universitaire en santé mentale Douglas

Co-chercheurs: Yiling Yang, Master's Degree Student, McGill University
Véronique Bohbot, Ph.D., Institut universitaire en santé mentale Douglas
Valentin Mbekou, Ph.D., Institut universitaire en santé mentale Douglas

Préambule: Nous sollicitons votre participation à un projet de recherche. Cependant, avant d'accepter de participer à ce projet et de signer ce formulaire d'information et de consentement, veuillez prendre le temps de lire, de comprendre et de considérer attentivement les renseignements qui suivent.

Ce formulaire peut contenir des mots que vous ne comprenez pas. Nous vous invitons à poser toutes les questions que vous jugerez utiles au chercheur responsable du projet ou aux autres membres du personnel affecté au projet de recherche et à leur demander de vous expliquer tout mot ou renseignement qui n'est pas clair.

Nature et objectifs du projet de recherche: Le but de ce projet est d'évaluer le potentiel d'un programme d'intervention assistée par ordinateur pour la thérapie dialectique comportementale que nous sommes à développer. Ce programme d'entraînement par ordinateur vise à compléter la formation de thérapie dialectique comportementale, afin de supplémenter, de réviser et de pratiquer les habiletés acquises dans le programme de thérapie dialectique comportementale standard. Ce prototype préliminaire va consister en la présentation de diapos en Microsoft PowerPoint. Les résultats de de la présente étude vont nous aider dans l'évaluation de l'efficacité du programme.

Déroulement du projet de recherche: Ce programme d'intervention assistée par ordinateur va servir à compléter les visites de suivi de votre programme de thérapie dialectique

comportementale régulier. Les participants seront assignés de façon aléatoire au groupe expérimental ou au groupe témoin. Si vous êtes dans le groupe expérimental, le programme d'intervention va consister en 6 sessions qui se dérouleront sur trois visites. À chaque visite d'une durée d'une heure, vous serez appelé à compléter 2 sessions. À partir du moment où vous accepterez de participer, on vous demandera de bien lire le matériel présenté et à répondre aux questions demandées dans le prototype du programme. Suite au programme d'intervention, vous serez appelé à compléter deux questionnaires papier-crayon qui visent à mesurer votre amélioration et à vous demander votre rétroaction sur le programme. Un des questionnaires sera administré à chaque visite et l'autre à la première et troisième visite seulement. Dans le cas où vous serez assigné au groupe témoin, vous ne recevrez pas le programme d'intervention mais vous devrez toutefois compléter un questionnaire au début et à la fin de l'étude.

Risques et désavantages associés au projet de recherche: Il n'y a pas de risques connus ou désavantages associés à ce projet de recherche, à notre connaissance.

Avantages de la participation: L'entraînement via le prototype utilisé dans cette étude pourra vous aider à réviser et à pratiquer les habiletés apprises dans la thérapie dialectique comportementale. Vos commentaires et observations, ainsi que les résultats de cette étude vont nous aider à améliorer le programme dans le futur.

Participation volontaire et possibilité de retrait: Votre participation à ce projet de recherche est volontaire. Vous êtes donc libre de refuser d'y participer. Vous pouvez également vous retirer de ce projet à n'importe quel moment, sans avoir à donner de raisons, en faisant connaître votre décision au chercheur responsable du projet ou à l'un des membres du personnel affecté au projet.

Votre décision de ne pas participer à ce projet de recherche ou de vous en retirer n'aura aucune conséquence sur la qualité des soins et des services auxquels vous avez droit ou sur votre relation avec le chercheur responsable du projet et les autres intervenants.

Le chercheur responsable du projet de recherche, le comité d'éthique de la recherche de notre Institut, l'organisme subventionnaire ou le commanditaire peuvent mettre fin à votre participation, sans votre consentement, si de nouvelles découvertes ou informations indiquent que votre participation au projet n'est plus dans votre intérêt, si vous ne respectez pas les consignes du projet de recherche ou s'il existe des raisons administratives d'abandonner le projet.

Si vous vous retirez ou êtes retiré du projet, l'information déjà obtenue dans le cadre de ce projet sera conservée aussi longtemps que nécessaire pour assurer votre sécurité et aussi celles des autres sujets de recherche et rencontrer les exigences réglementaires.

Confidentialité: Durant votre participation à ce projet, le chercheur responsable ainsi que son personnel recueilleront et consigneront dans un dossier de recherche les renseignements vous concernant. Seuls les renseignements nécessaires pour répondre aux objectifs scientifiques de ce projet seront recueillis.

Ces renseignements peuvent comprendre les informations contenues dans vos dossiers médicaux concernant votre état de santé passé et présent, vos habitudes de vie ainsi que les résultats de tous les tests, examens et procédures que vous aurez à subir durant ce projet. Votre dossier peut aussi comprendre d'autres renseignements tels que votre nom, votre sexe, votre date de naissance et votre origine ethnique.

Tous les renseignements recueillis demeureront strictement confidentiels dans les limites prévues par la loi. Afin de préserver votre identité et la confidentialité des renseignements, vous ne serez identifié que par un numéro de code. La clé du code reliant votre nom à votre dossier de recherche sera conservée par le chercheur responsable.

Le chercheur responsable du projet utilisera les données à des fins de recherche dans le but de répondre aux objectifs scientifiques du projet décrits dans le formulaire d'information et de consentement. Ces données seront conservées pendant 10 ans par le chercheur responsable.

Les données pourront être publiées dans des revues spécialisées ou faire l'objet de discussions scientifiques, mais il ne sera pas possible de vous identifier.

À des fins de surveillance et de contrôle, votre dossier de recherche ainsi que vos dossiers médicaux, s'il y a lieu, pourront être consultés par une personne mandatée par le comité d'éthique de la recherche de notre Institution. Toutes ces personnes adhèrent à une politique de confidentialité.

Vous avez le droit de consulter votre dossier de recherche pour vérifier les renseignements recueillis, et les faire rectifier au besoin, et ce, aussi longtemps que le chercheur responsable du projet ou l'établissement détiennent ces informations. Cependant, afin de préserver l'intégrité scientifique du projet, vous pourriez n'avoir accès à certaines de ces informations qu'une fois votre participation terminée.

Création de produits commerciaux: Votre participation au projet de recherche pourrait mener à la création de produits commerciaux. Cependant, vous ne pourrez en retirer aucun avantage financier.

Financement du projet de recherche: Ce projet est subventionné par le Fonds de recherche Centre Standard Life sur la dépression chez les jeunes.

Indemnisation en cas de préjudice et droits du participant au projet de recherche: Si vous deviez subir quelque préjudice que ce soit dû à votre participation au projet de recherche, vous recevrez tous les soins et services requis par votre état de santé, sans frais de votre part.

En acceptant de participer à ce projet, vous ne renoncez à aucun de vos droits ni ne libérez les chercheurs, le commanditaire ou l'établissement de leur responsabilité civile et professionnelle.

Compensation: Vous recevrez une somme forfaitaire de 60$ sous forme de cartes-cadeaux pour couvrir vos frais de transport liés à votre participation à l'étude. Cette compensation vous sera remise à la fin de l'étude après avoir complété les trois semaines du programme

d'entraînement. Si vous vous retirez ou si vous êtes retiré du projet avant qu'il ne soit complété, vous recevrez un montant proportionnel à votre participation.

Identification des personnes à contacter: Si vous avez des questions concernant le projet de recherche ou si vous éprouvez un problème que vous croyez relié à votre participation au projet de recherche, vous pouvez communiquer avec le coordonnateur du projet, YANG Yiling, au numéro suivant 514-761-6131 extension 3487.

Pour toute question concernant vos droits en tant que sujet participant à ce projet de recherche ou si vous avez des plaintes ou des commentaires à formuler vous pouvez communiquer avec le commissaire local aux plaintes et à la qualité des services de l'Institut universitaire en santé mentale Douglas au numéro suivant : 514-761-6131 extension 3287.

APPENDIX F: Consent Forms – Youth - French

Information/Formulaire de consentement

CONSENTEMENT

J'ai pris connaissance du formulaire d'information et de consentement. Je reconnais qu'on m'a expliqué le projet, qu'on a répondu à mes questions et qu'on m'a laissé le temps voulu pour prendre une décision.

Je, _____, consens à participer à ce projet de recherche aux conditions qui y sont énoncées. Une copie signée et datée du présent formulaire d'information et de consentement m'a été remise.

_____ _____

Signature du participant de recherche adolescent Date

J'accepte que la personne que je représente participe à ce projet de recherche aux conditions qui y sont énoncées. Une copie signée et datée du présent formulaire d'information et de consentement m'a été remise.

Je, _____, consens que mon enfant participe à ce projet de recherche aux conditions qui y sont énoncées.

_____ _____

Signature du parent ou du tuteur légal Date

J'ai, _____, expliqué au sujet de recherche les termes du présent formulaire d'information et de consentement et j'ai répondu aux questions qu'il m'a posées.

_____ _____

Nom de la personne qui obtient le consentement Date

APPENDIX F: Consent Forms – Adult – French

Information/Formulaire de consentement

Participants âgés de 18 ans et plus

INFORMATION

Titre du projet: Évaluation d'un prototype de Programme d'intervention assistée par ordinateur pour des adolescents avec dépression.

Chercheurs responsables du projet:

Chercheur principal: Johanne Renaud, M.D., M.Sc., FRCPC, Institut universitaire en santé mentale Douglas

Co-chercheurs: Yiling Yang, Master's Degree Student, McGill University
Véronique Bohbot, Ph.D., Institut universitaire en santé mentale Douglas
Valentin Mbekou, Ph.D., Institut universitaire en santé mentale Douglas

Préambule: Nous sollicitons votre participation à un projet de recherche. Cependant, avant d'accepter de participer à ce projet et de signer ce formulaire d'information et de consentement, veuillez prendre le temps de lire, de comprendre et de considérer attentivement les renseignements qui suivent.

Ce formulaire peut contenir des mots que vous ne comprenez pas. Nous vous invitons à poser toutes les questions que vous jugerez utiles au chercheur responsable du projet ou aux autres membres du personnel affecté au projet de recherche et à leur demander de vous expliquer tout mot ou renseignement qui n'est pas clair.

Nature et objectifs du projet de recherche: Le but de ce projet est d'évaluer le potentiel d'un programme d'intervention assistée par ordinateur pour la thérapie dialectique comportementale que nous sommes à développer. Ce programme d'entraînement par ordinateur vise à compléter la formation de thérapie dialectique comportementale, afin de supplémenter, de réviser et de pratiquer les habiletés acquises dans le programme de thérapie dialectique comportementale standard. Ce prototype préliminaire va consister en la présentation de diapos en Microsoft PowerPoint. Les résultats de de la présente étude vont nous aider dans l'évaluation de l'efficacité du programme.

Déroulement du projet de recherche

Ce programme d'intervention assistée par ordinateur va servir à compléter les visites de suivi de votre programme de thérapie dialectique comportementale régulier. Les participants seront

assignés de façon aléatoire au groupe expérimental ou au groupe témoin. Si vous êtes dans le groupe expérimental, le programme d'intervention va consister en 6 sessions qui se dérouleront sur trois visites. À chaque visite d'une durée d'une heure, vous serez appelé à compléter 2 sessions. À partir du moment où vous accepterez de participer, on vous demandera de bien lire le matériel présenté et à répondre aux questions demandées dans le prototype du programme. Suite au programme d'intervention, vous serez appelé à compléter deux questionnaires papier-crayon qui visent à mesurer votre amélioration et à vous demander votre rétroaction sur le programme. Un des questionnaires sera administré à chaque visite et l'autre à la première et troisième visite seulement. Dans le cas où vous serez assigné au groupe témoin, vous ne recevrez pas le programme d'intervention mais vous devrez toutefois compléter un questionnaire au début et à la fin de l'étude.

Risques et désavantages associés au projet de recherche: Il n'y a pas de risques connus ou désavantages associés à ce projet de recherche, à notre connaissance.

Avantages de la participation: L'entraînement via ce prototype utilisé dans cette étude pourra vous aider à réviser et à pratiquer les habiletés apprises dans la thérapie dialectique comportementale. Vos commentaires et observations, ainsi que les résultats à de cette étude vont nous aider à améliorer le programme dans le futur.

Participation volontaire et possibilité de retrait: Votre participation à ce projet de recherche est volontaire. Vous êtes donc libre de refuser d'y participer. Vous pouvez également vous retirer de ce projet à n'importe quel moment, sans avoir à donner de raisons, en faisant connaître votre décision au chercheur responsable du projet ou à l'un des membres du personnel affecté au projet.

Votre décision de ne pas participer à ce projet de recherche ou de vous en retirer n'aura aucune conséquence sur la qualité des soins et des services auxquels vous avez droit ou sur votre relation avec le chercheur responsable du projet et les autres intervenants.

Le chercheur responsable du projet de recherche, le comité d'éthique de la recherche de notre Institut, l'organisme subventionnaire ou le commanditaire peuvent mettre fin à votre participation, sans votre consentement, si de nouvelles découvertes ou informations indiquent que votre participation au projet n'est plus dans votre intérêt, si vous ne respectez pas les consignes du projet de recherche ou s'il existe des raisons administratives d'abandonner le projet.

Si vous vous retirez ou êtes retiré du projet, l'information déjà obtenue dans le cadre de ce projet sera conservée aussi longtemps que nécessaire pour assurer votre sécurité et aussi celles des autres sujets de recherche et rencontrer les exigences réglementaires.

Confidentialité: Durant votre participation à ce projet, le chercheur responsable ainsi que son personnel recueilleront et consigneront dans un dossier de recherche les renseignements vous concernant. Seuls les renseignements nécessaires pour répondre aux objectifs scientifiques de ce projet seront recueillis.

Ces renseignements peuvent comprendre les informations contenues dans vos dossiers médicaux concernant votre état de santé passé et présent, vos habitudes de vie ainsi que les résultats de tous les tests, examens et procédures que vous aurez à subir durant ce projet. Votre dossier peut aussi comprendre d'autres renseignements tels que votre nom, votre sexe, votre date de naissance et votre origine ethnique.

Tous les renseignements recueillis demeureront strictement confidentiels dans les limites prévues par la loi. Afin de préserver votre identité et la confidentialité des renseignements, vous ne serez identifié que par un numéro de code. La clé du code reliant votre nom à votre dossier de recherche sera conservée par le chercheur responsable.

Le chercheur responsable du projet utilisera les données à des fins de recherche dans le but de répondre aux objectifs scientifiques du projet décrits dans le formulaire d'information et de consentement. Ces données seront conservées pendant 10 ans par le chercheur responsable.

Les données pourront être publiées dans des revues spécialisées ou faire l'objet de discussions scientifiques, mais il ne sera pas possible de vous identifier.

À des fins de surveillance et de contrôle, votre dossier de recherche ainsi que vos dossiers médicaux, s'il y a lieu, pourront être consultés par une personne mandatée par le comité d'éthique de la recherche de notre Institution. Toutes ces personnes adhèrent à une politique de confidentialité.

Vous avez le droit de consulter votre dossier de recherche pour vérifier les renseignements recueillis, et les faire rectifier au besoin, et ce, aussi longtemps que le chercheur responsable du projet ou l'établissement détiennent ces informations. Cependant, afin de préserver l'intégrité scientifique du projet, vous pourriez n'avoir accès à certaines de ces informations qu'une fois votre participation terminée.

Création de produits commerciaux: Votre participation au projet de recherche pourrait mener à la création de produits commerciaux. Cependant, vous ne pourrez en retirer aucun avantage financier.

Financement du projet de recherche: Ce projet est subventionné par le Fonds de recherche Centre Standard Life sur la dépression chez les jeunes.

Indemnisation en cas de préjudice et droits du participant au projet de recherche: Si vous deviez subir quelque préjudice que ce soit dû à votre participation au projet de recherche, vous recevrez tous les soins et services requis par votre état de santé, sans frais de votre part.

En acceptant de participer à ce projet, vous ne renoncez à aucun de vos droits ni ne libérez les chercheurs, le commanditaire ou l'établissement de leur responsabilité civile et professionnelle.

Compensation: Vous recevrez une somme forfaitaire de 60$ sous forme de cartes-cadeaux pour couvrir vos frais de transport liés à votre participation à l'étude. Cette compensation vous sera remise à la fin de l'étude après avoir complété les trois semaines du programme

d'entraînement. Si vous vous retirez ou si vous êtes retiré du projet avant qu'il ne soit complété, vous recevrez un montant proportionnel à votre participation.

Identification des personnes à contacter: Si vous avez des questions concernant le projet de recherche ou si vous éprouvez un problème que vous croyez relié à votre participation au projet de recherche, vous pouvez communiquer avec le coordonnateur du projet, YANG Yiling, au numéro suivant 514-761-6131 extension 3487.

Pour toute question concernant vos droits en tant que sujet participant à ce projet de recherche ou si vous avez des plaintes ou des commentaires à formuler vous pouvez communiquer avec le commissaire local aux plaintes et à la qualité des services de l'Institut universitaire en santé mentale Douglas au numéro suivant : 514-761-6131 extension 3287.

Information/Formulaire de consentement

CONSENTEMENT

J'ai pris connaissance du formulaire d'information et de consentement. Je reconnais qu'on m'a expliqué le projet, qu'on a répondu à mes questions et qu'on m'a laissé le temps voulu pour prendre une décision.

Je _____ consens à participer à ce projet de recherche aux conditions qui y sont énoncées. Une copie signée et datée du présent formulaire d'information et de consentement m'a été remise.

_____ _____

Signature du participant adulte Date

J'ai, _____, expliqué au sujet de recherche les termes du présent formulaire d'information et de consentement et j'ai répondu aux questions qu'il m'a posées.

_____ _____

Nom de la personne qui obtient le consentement Date

APPENDIX F: Consent Forms – Access to Medical Files – French

AUTORISATION DE CONSULTATION DU DOSSIER MÉDICAL

Nom: _____ #Dossier:_____

Date de naissance: _____ / _____ / _____ (jj/mm/aaaa)

Je, soussigné (e), _____, autorise l'assistant de recherche assigné à l'évaluation des dossiers du Centre de Recherche de l'institut universitaire en santé mentale Douglas à consulter mon dossier médical dans le cadre de ma participation à la recherche intitulé : Évaluation de l'efficacité d'un prototype de Programme d'intervention assistée par ordinateur pour des adolescents avec dépression : un projet pilote.

La personne responsable de l'évaluation des dossiers vérifiera:

1) Mon éligibilité à participer à la recherche
2) La présence d'effets secondaires relatifs à ma prise de médicaments
3) La validité des informations obtenues à mon sujet dans le cadre de la recherche.

J'autorise la consultation de mon dossier médical par l'assistant de recherche assigné à l'évaluation des dossiers au Centre de Recherche de l'institut universitaire en santé mentale Douglas.

Signature: _____

Signé le _____ (date), à _____ (ville)

APPENDIX G: Research Ethics Board Letter of Approval

SOIGNER.
DÉCOUVRIR.
ENSEIGNER.

Douglas
INSTITUT UNIVERSITAIRE EN SANTÉ MENTALE
MENTAL HEALTH UNIVERSITY INSTITUTE

CARING.
DISCOVERING.
TEACHING.

ELECTRONIC MAIL

May 26th, 2014

Doctor Johanne Renaud
Researcher
Douglas Mental Health University Institute – Research Centre
F.B.C. Pavilion, F.3113

Protocol 14/14 *Evaluation of the Efficacy of a Prototype Therapeutic Intervention Computer Program for Adolescents with Depression: A Pilot Study*
New Protocol – Expedited Approval

Dear Dr. Renaud;

Thank you for your response to the issues that had been raised by the REB concerning the above mentioned protocol. The assigned reviewers and I have examined your reply as well as the revised documents and we found them satisfactory.

This study is approved for a one-year period.

Official certificate will follow the REB meeting of April.

Thank you for your collaboration.

Sincerely,

Emilie Campeau

For: J. Bruno Debruille, MD, PhD
Chairperson
Douglas Institute Research Ethics Board
/éc

c.c.: Yiling Yang

APPENDIX G: Research Ethics Board Letter of Approval

SOIGNER.
DÉCOUVRIR.
ENSEIGNER.

Douglas
INSTITUT UNIVERSITAIRE EN SANTÉ MENTALE
MENTAL HEALTH UNIVERSITY INSTITUTE

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RESEARCH ETHICS BOARD

At a meeting of the Douglas Institute Research Ethics Board Held on May 26th, 2014

A Committee consisting of:

BRODEUR, Mathieu, Ph.D.	Researcher
DEBRUILLE, J. Bruno, M.D., Ph.D.	Psychiatrist and Chairperson
EDWARDS, Moïra	Community Representative
HARVEY, Philippe O., Ph.D.	Researcher
JAITOVICTH GROISMAN, Iris, Ph.D.,	Ethicist, Researcher
LÉVEILLÉ, Éliane	Medical Archivist
LOISEAU, Me. Roxane	Jurist
MBEKOU, Valentin	Psychologist
SCHMITZ, Norbert, Ph.D.	Vice-President; Researcher
ST-HILAIRE, Annie	Psychologist

has confirmed the approval of the new protocol titled:

Evaluation of the Efficacy of a Prototype Therapeutic Intervention Computer Program for Adolescents with Depression: A Pilot Study

As proposed by: Doctor Johanne Renaud

This protocol is approved for a one-year period

J. Bruno Debruille, M.D., Ph.D.
Chairperson
Douglas Institute Research Ethics Board
/éc

Date: 2014-05-26
REB #: 14/14