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# Dialectical Behavior Therapy with Chatbot for Borderline Personality Disorder Client

Christine Wibhowo<sup>1</sup>, Ridwan Sanjaya<sup>2</sup>

Psychology Department, Soegijapranata Catholic University, Semarang, Indonesia<sup>1</sup>  
Information Systems Department, Soegijapranata Catholic University, Semarang, Indonesia<sup>2</sup>



## Keywords:

Borderline Personality Disorder, Chatbot, Dialectical Behavior Therapy, SoviLau, Virtual Assistant

## ABSTRACT

A person with borderline personality disorder (BPD) can live a normal life if they receive appropriate therapy. Dialectical behavior therapy is one of the most effective treatments for reducing BPD criteria in a person. Individuals with BPD are typically aged 18–40 years and are comfortable with the internet. Therefore, Dialectical Behavior Therapy can be performed via a chatbot (DBTC). This study aims to this study aims to create a chatbot application for BPD clients. The hypothesis is that DBTC is useful in lowering Borderline Personality Disorder (BPD) scores. This research is divided into two stages. The first stage is to distribute the BPD scale to 56 individuals. Eleven participants with high BPD scale scores (above 80) were chosen to participate in the focus group discussion (FGD). The pretest-posttest design is used in the second stage of this study. Three participants with high BPD scale scores were invited to attempt to ask SoviLau questions regarding everyday difficulties. The next stage is to build a chatbot as a virtual assistant using the SoviLau app. The findings showed that DBTC could reduce BPD symptoms, notably impulsivity, affective instability, inappropriate behavior, and unstable patterns of interpersonal relationships.



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## 1. Introduction

Borderline personality disorder (BPD) is a personality condition that can affect people of all cultures [1] BPD can be diagnosed if a person meets five out of the nine BPD criteria. These factors concern emotional instability, relationships, conduct, and self-image. Individuals suffering from BPD are often between the ages of 18 and 40. People of this age are now very close to the internet. Despite their difficulties, they prefer to communicate via the internet rather than with their parents or psychologists. As a result, one method of assisting individuals with BPD is through information technology (IT).

Several types of research have demonstrated the significance of information technology in assisting people with BPD. For example, AI (artificial intelligence) to support individuals with BPD [2], line-based virtual companions [3]; and mobile applications [3- 5]. However, there is currently no chatbot application for BPD clients.

As a result, this study aims to create a chatbot application as a virtual assistant for BPD clients. Because Adolf Stern [6] stated that BPD clients have negative qualities throughout the therapy process, are hypersensitive, and find it difficult to conduct psychological exams. The Chatbot application for BPD clients is extremely necessary. BPD individuals frequently appear to comprehend what has to be done during therapy/counseling sessions. Even so, they can easily forget the counseling results outside the counseling session. As a result, an application that may assist them in finding solutions while not with a therapist is essential.

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition [7] classifies borderline personality disorder as an Axis II disorder (personality disorders). A person is considered to have BPD if there are aberrations in cognition, affection, interpersonal interactions, and an inability to self-regulate urges. These behavioural aberrations are not the result of medical conditions. BPD clients are quick to anger and prone to unsafe activity. They are unhappy while being alone and find it challenging to sustain relationships with others. On the other hand, BPD clients frequently require friends with whom they can discuss their issues, but not all friends are comfortable helping these clients.

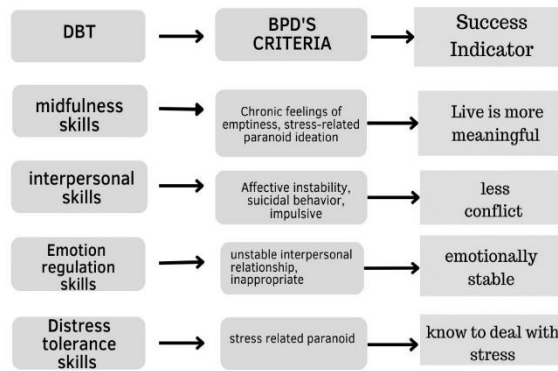
If BPD clients require the services of a psychologist/counselor, they must also make financial, time, and effort investments. Given the impulsive nature of BPD clients, the preparations that must be made prior to meeting with the therapist will make it even more challenging for them to maintain self-control. Therefore, BPD clients need friends who they can reach at any time. The chatbot application is one approach.

A chatbot is a computer programme capable of scripted human conversations [8] Therefore, BPD customers can converse with systematic technicians. Chatbot programmes can imitate therapeutic conversation styles and enable interactions akin to therapy talks [9].

Therapeutic dialogues with BPD clients can be grounded in BPD-appropriate treatment. These treatments include pharmaceutical therapy, Eye Movement Desensitization and Reprocessing (EMDR), Schema Therapy, and Dialectical Behavior Therapy/DBT [10]. Even though no therapy is considered the best, DBT is frequently recommended to assist individuals in minimizing BPD criteria.

Marsha Linehan first introduced DBT. She created DBT as an outpatient structured treatment for borderline personality disorder [11]. Emotional control, distress tolerance, and growing effectiveness in building interpersonal relationships are the essence of dialectical behaviour therapy (DBT [12]. DBT is based on cognitive behaviour therapy (CBT), which focuses on psychosocial factors. DBT differs slightly from CBT in emphasizing assistance rather than flawless cognitive abilities. In addition, the acceptance of the client by the therapist is an essential component of DBT. For instance, DBT does not instantly criticise the client's viewpoint, but the therapist may ask the client to take the middle ground.

[13] indicates in the module that there are at least four skill modules: mindfulness, interpersonal effectiveness, emotional regulation, and distress tolerance. Consequently, the meaning of Dialectical behaviour therapy with the chatbot (DBTC) for borderline personality disorder (BPD) is a computer programme capable of carrying out script-based conversations with clients who have deviations in cognition, affection, interpersonal relationships, and an inability to control impulses within themselves, so that the client can practise mindfulness, interpersonal effectiveness, emotional regulation, and distress tolerance. The hypothesis is that DBTC is useful in lowering Borderline Personality Disorder (BPD) scores. Figure 1 illustrates for greater clarity.



**Figure 1.** Dialectical behaviour therapy with the chatbot (DBTC) for borderline personality dis-order (BPD)

**Methods**

**Stage 1**

The data collection strategy utilized in this study is <sup>1</sup> Focus Group Discussion (FGD). The goal of the FGD is to collect frequently asked questions from BPD clients. The steps in Stage 1 are distributing the BPD Scale made by [14] to 56 people. <sup>1</sup> This scale is made based on nine criteria of BPD. The validity scale was tested using CFA with the results  $CMIN = 1.415$  (fit),  $GFI = 0.982$  (fit),  $CFI = 0.992$  (fit). This scale also reached 0.8 in reliability coefficient. The second step is selecting participants with a high BPD score (above 80). It was found that 11 participants received high scores and were selected to take part in focus group discussions (FGD). The third step is to carry out FGDs to collect questions that participants often ask when facing problems. In the fourth step, questions were prepared and answered by psychologists based on DBT. The next step is creating a chatbot using SoviLau (an anti-anxiety virtual friend) application.

**Stage 2**

The pretest-posttest design was used in the second stage of this study. Three participants with high BPD scale scores were invited to try installing the SoviLau application on their mobile phones. Then, they were asked to use SoviLau for one week. <sup>3</sup> Their questions and the answers from SoviLau were recorded in a diary. After one week, the three participants were asked to fill in the BPD scale again and were interviewed.

**2. FINDINGS AND DISCUSSION**

**Result 1**

Based on the results of the FGDs, it was possible to find questions often asked when BPD participants felt uncomfortable. Examples of the questions from participants and answers from psychologists based on DBT can be seen in Table 1.

**Table 1.** Questions from BPD's client as a source for making DBTC

Questions from BPD patients	BPD's Criteria	DBT	Answer from DBT Session
Frightened of being left,	Chronic feelings of emptiness	Mindfulness of Skills	SoviLau did a few things, such as observing and enjoying the clouds, leaves, and rivers.
Feeling alone,			Listen to the rustle of leaves, birds chirping, bakeries, and the sound of vehicles.
Fearing to be			It's also fine to attempt to feel the warm sun,

neglected,	Compelling others to join,	Often lonely	wet leaves, and the steps as you walk.	Don't forget to smell the flowers, your neighbor's cooking, or your meals.	Have you ever done something like that? If you want to know what SoviLau will do next, you can say "never."
Frequently disconnected, misunderstood, miscommunicated, and easily suspicious of others.	Affective instability, suicidal behavior, impulsive	Interpersonal skills	Even if forgiving others is tough, we are not hostile to them. Create a "social circle" to avoid easily suing others. What exactly is a social circle? To find out, type "circle."		
Easily provoked, prone to mood swings, Moody. Sometimes they can, but occasionally they feel powerless.	unstable interpersonal relationship, inappropriate	Emotion regulation skills	SoviLau should do a few things when this happens, including practise walking in the middle or on the middle path. Instead of "but," use the word "and." Type "and" if you want to know how.		
Uncontrollable anger, Feeling burnt out, Sad, Depression, Stress	stress related paranoid	Distress tolerance skills	SoviLau will do a "stop" if she feels that way. What is it? Stop! Don't do anything. Inhale. Keep an eye on others. Consider behaviour.		

Based on the FGD with participants, it was established that the personification of DBTC is a female named "SoviLau Lau," which is an acronym for "Virtual Anti-Stress Friends" or "Anti-Stress Virtual Friend" (Figure 2)

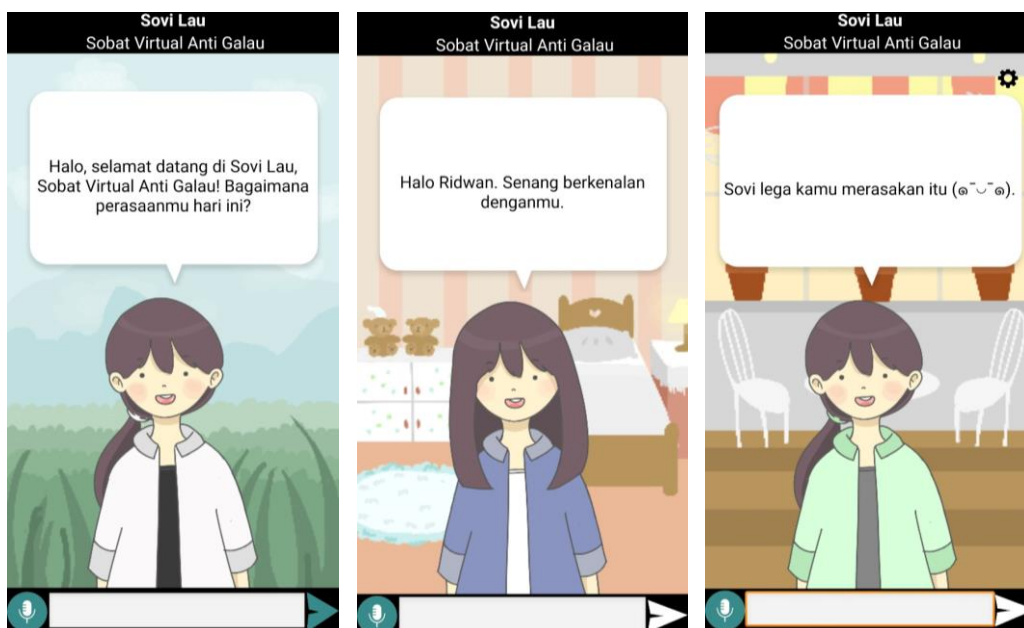
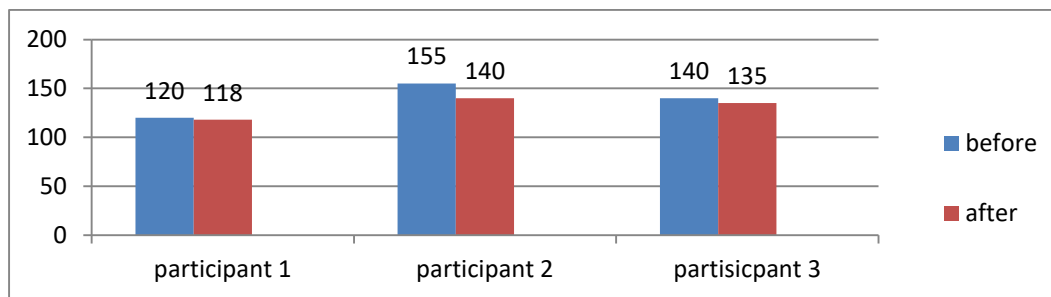


Figure 2. SoviLau as the personification of DBT

Results 2

Based on the results of the study using the pretest-posttest design, it can be seen that the participants experienced a slight decrease in BPD scores (Figure 3).



**Figure 3.** BPD value before and after participating in DBTC

Even though, in terms of numbers, the decline in the BPD score was not much, in the results of the interviews, the participants showed some significant declines in several criteria. Table 2 presents some of the results of interviews with participants.

**Table 2.** Result of interviews with participants.

Participants	Before	After	Reduced BPD Criteria
1) Female 38	Get angry when not getting what I want; for example, a friend doesn't answer the phone.  When you have a problem, for example, when dealing with students, she feels like telling a friend about it. However, because friends are not always present, she feels like screaming loudly and injuring herself.	SoviLau taught that everyone has problems. Before acting, I was asked to think about the outcome, good or bad SoviLau Lau's suggestion is easy to remember because it uses the acronym ACCEPTS SoviLau has become an alternative for me, so I can be more comfortable because I have a "chat" friend, even if it's virtual. One of Sovi's suggestions that stopped me from killing myself was "observe other people's ways of solving problems."	Unstable interpersonal relationship  Impulsivity Self-mutilating behavior Chronic feelings of emptiness
2) Female 20	Feeling depressed because of many problems, both in college and personal problems. It feels like I never had time for hobbies anymore. This made me lazy to carry out my daily activities. As a result, my problems just kept piling up. I'm getting lazy to move and want to sleep.  I'm also lazy to hear input from other people. They pretend to be good and pretend they have struggled because they don't experience the same as me.	SoviLau made a suggestion that made me realize it. That I could carry out my activities while continuing my hobby. SoviLau Lau's suggestion was "walking in the middle path." I immediately learned to manage time. This week I could enjoy doing activities because I could also do my hobbies.	Depression, stress-related paranoid
3) Male	Always feel lonely because I don't have	At first, I wasn't interested in SoviLau Lau.	Chronic feelings of



27 a friend to contact all the time. However, my friend introduced me to emptiness, Moreover, this month I was in a new situation. There were many friends around me, but I felt empty and alone. Sovi, and I tried it. At first, I wasn't sure because SoviLau was just a virtual friend. Impulsivity When I'm alone, I become more sensitive and easily get emotional. I often get angry at people in markets or inappropriate places. According to some people, I'm explosive. After trying to contact Sovi, it can open my mind. SoviLau advised me to take up a hobby, find a suitable community, and experience something new (for example, taking a different path). Within one week, I tried to enter the church youth community and took exercise classes. As a result, I am no longer easily getting sensitive because of many activities. Besides that, I also made new virtual friends. After trying to contact Sovi, it could open my mind. SoviLau advised me to do hobbies, search appropriate community and feel something new (e.g., going down a different path). Within one week, I tried to enter the church youth community and take exercise classes. As a result, I am no longer easily sensitive because of many activities. Besides that, I also made new friends.

### 3. Conclusion

The decrease in participants' Borderline Personality Disorder (BPD) scores after participating in DBTC was not large, but that does not mean DBTC does not play a role in BPD. DBTC in this study was only carried out within one week. Meanwhile, participants had to apply DBTC in everyday life to reduce BPD values. This is like the results of research conducted by [15] which states that DBT is not a magic wand that can change BPD immediately. However, the decrease in the value of BPD in this study shows that DBTC has a role in BPD.

In addition to decreasing BPD scores, based on interviews with participants, it was found that there were changes in several criteria in BPD. This study shows that Dialectical Behavior Therapy with Chatbot (DBTC) can reduce BPD criteria, especially in impulsivity, affective instability, inappropriate behavior, stress-related paranoia, chronic feelings of emptiness, and unstable patterns of interpersonal relationships. Participants felt that the distress tolerance skill was very important in reducing their impulsivity. SoviLau delivers distress tolerance skills with the acronym STOP. In STOP, there is a skill to observe other people's behavior when experiencing similar problems. Thus, participants are invited not to react immediately if they experience a problem. The acronym ACCEPTS contains SoviLau's invitations to participants to be active in daily activities (for example, taking sports/art classes). This stage also advises participants to realize that other people have their problems, so they don't have to be suspicious and feel ignored when other people are not there for them. This ACCEPTS makes participants not have chronic feelings of emptiness and stress-related paranoia.

This study also found that both male and female participants had no difficulty participating in DBTC. Participants of various ages (20, 27, and 38 years) can also participate in DBTC, and it is easy to implement

the suggestions SoviLau gave. The study's results also showed no distinctive difference in the improvement in abilities of male and female participants after participating in DBTC. Both male and female participants can experience decreased chronic feelings of emptiness and impulsivity. This is slightly different from research conducted by [16] which concluded that after participating in the DBT program, male participants experienced improvements in the impulse control difficulty subscale. In contrast, women showed a significant increase in emotion regulation difficulties. The difference in the results of this study was due to the lack of male participants. So the results of this study still need to be reviewed with a larger number of participants. Even so, DBTC is very effective in reducing BPD criteria.

The interviews showed that the three participants felt they were not being patronized when running DBTC because it was like chatting with close friends. DBTC is the initial aid before participants meet with psychologists and/or become friends when participants encounter problems but cannot meet friends/psychologists in the real world.

#### **4. Conclusion**

The findings showed that DBTC could reduce BPD symptoms, notably impulsivity, affective instability, inappropriate behavior, stress-related paranoia, chronic feelings of emptiness, and unstable interpersonal relationship patterns.

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