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# Integration of e-Health Tools Into Face-to-Face Psychotherapy for Borderline Personality Disorder: A Chance to Close the Gap Between Demand and Supply?

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Borderline personality disorder (BPD) is a severe, highly prevalent mental disorder. Effective psychological treatments for BPD are available. However, most patients do not receive evidence-based treatments partly because of high treatment delivery costs and lack of specialized therapists. By integrating specialized e-health tools into BPD-specific treatments, treatment intensity can be increased, frequency of face-to-face sessions and burden for psychotherapists can be reduced, and implementation of new skills and experiences in the everyday life of these patients can be promoted. This bears great potential to increase the availability of evidenced-based psychotherapy for BPD patients and close the gap between demand and supply. In this article we present such an innovative e-health tool, priovi, which has been developed for schema therapy. The concept and application of priovi are described and illustrated with a case example. © 2015 Wiley Periodicals, Inc. *J. Clin. Psychol.*: In Session 71:764–777, 2015.

Keywords: borderline personality disorder; e-health; online treatment; Schema therapy

## Introduction

Borderline personality disorder (BPD) is a severe and highly prevalent mental disorder that poses a significant burden on individuals, their families and partners, health care systems, and society as a whole. Over the last decades, treatment of BPD has been significantly improved by the development of BPD-specific methods such as dialectical behavior therapy (DBT), schema therapy (ST), transference-focused psychotherapy (TFP), and mentalization-based therapy (MBT) (Stoffers et al., 2012). These specific structured psychotherapies have demonstrated efficacy in reducing BPD symptoms and general functioning (Stoffers et al.). ST and DBT have also shown impressive reductions of direct and indirect health care costs of approximately 10000 Euro/\$12,000 per patient per year (van Asselt et al., 2008; Wagner et al., 2014).

However, although these treatment programs are cost effective and superior to nonstructured standard care, their implementation and dissemination have been slow. Only a very limited number of patients with BPD receive evidenced-based psychotherapy, partially because trained therapists are lacking and budgets are limited (Hermens, van Splunteren, van den Bosch, & Verheul, 2011). For example, even in a country with a relatively well-developed mental health care system such as The Netherlands, research indicates that only 23% of BPD patients receive psychotherapy, and that even this group often receives lower than useful treatment dosage (Hermens et al., 2011). This underscores the need for developing innovative ways to provide evidenced-based psychotherapy for more BPD patients without expanding health care budgets.

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Gitta Jacob and Andrea Hauer are employees at GAIA, the enterprise that has developed priovi.

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The rapid growth of Internet-based personal information technology in recent years may serve as a means to foster dissemination and implementation of evidenced-based treatments for BPD. Access to Internet-based resources using computers, laptops, or smartphones is widely available and has been used to support psychiatric care. These so-called e-health tools have several advantages over more traditional forms of delivery: They can save therapist time, enhance treatment potency, reduce stigmatization, and increase patient access to evidence-based care. They cut traveling time, allow patients to work at their own pace, and help them better balance occupational and family duties with their psychotherapy (Cuijpers, van, & Andersson, 2008).

Internet-based psychotherapeutic interventions, mainly based on cognitive-behavioral principles, have been developed for many mental disorders and health problems. In several randomized controlled trials, especially for depression and anxiety disorders, Internet-based interventions have proved to be an effective and cost-effective alternative to traditional treatments (Cuijpers et al., 2008; Hedman, Ljotsson, & Lindefors, 2012).

### *e-health Tools for Borderline Personality Disorder*

When it comes to BPD, however, e-health strategies have stalled. The main concern is safety in this population, given these patients' frequent crises, self-harm tendencies, and suicidal behaviors. The need of BPD patients for interpersonal contact cannot be met only with stand-alone e-health tools. Because interpersonal problems and emotional dysregulation are at the core of BPD, interpersonal contact in therapy is regarded as an essential context and corrective experience for dealing with conflicts and intensive emotions. Finally, some of the core techniques of BPD treatments, such as chair dialogues (ST) or interpersonal skill training (DBT), cannot be easily transferred to e-health tools. However, from an empirical view we cannot prove if these concerns on stand-alone e-health tools are correct or not because sufficient data are not yet available.

Data regarding e-health tools for BPD, though sparse, suggest positive effects. In a German study, patients with BPD widely accepted a professionally moderated Internet forum, which led to reductions in severity of BPD symptoms (Habermeyer et al., 2009). An American pilot study tested the "DBT coach," a smartphone application designed to enhance generalization of a specific DBT skill (opposite action) in patients with BPD and comorbid substance use disorder. The patients perceived the usage of the DBT coach as helpful, which decreased both emotion intensity and urges to use substances (Rizvi, Dimeff, Skutch, Carroll, & Linehan, 2011).

Given these first positive experiences and the high need for effective treatment of BPD, we think it is timely to develop and test more elaborate e-health tools for this population. There are many options, ranging between stand-alone Internet programs and no Internet psychotherapy at all, which need to be explored. Because there are concerns regarding stand-alone e-health tool with no provision for personal contact, we suggest the integration of specialized e-health tools into face-to-face psychotherapy. Many elements of BPD-specific psychotherapy can easily be offered online (e.g., psychoeducation, awareness and mindfulness training, cognitive techniques, guidance to specific exercises and behavioral experiments, experiential exercises, and training of specific skills). In our opinion, both e-health tools and face-to-face psychotherapy should be based on the same treatment model of BPD-specialized psychotherapy (e.g., DBT or ST) and support each other to obtain optimal results. Such e-health tools need to address the complexity of BPD symptomatology and thus be highly flexible, attractive for BPD patients, tailored to the personal needs of the patient at a given moment, and adaptive to the individual case and the phase of treatment.

In comparison to face-to-face psychotherapy alone, an e-health tool allows for more repetition and deepens psychoeducational content. It provides more opportunities for training and experiences and encourages patients to adopt the newly acquired skills in their everyday life; thus, it facilitates the generalization of treatment effects to the natural environment. As it is always available and offers immediate help with daily life problems, it helps to empower patients and reduce their dependency on face-to-face psychotherapy. Thus, specialized e-health tools can potentially enhance effects of BPD-specific face-to-face psychotherapy and increase treatment intensity, and therapist time, therapy length, and delivery costs per patient are reduced. Moreover, patients that cannot access psychotherapy—because, for example, they live in remote

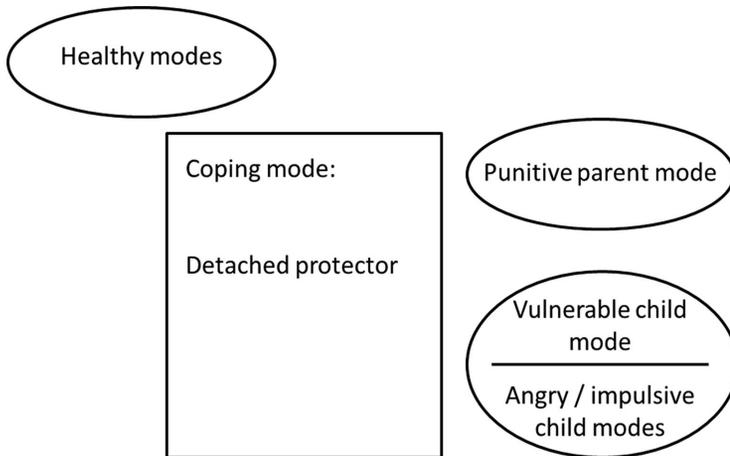


Figure 1. The schema mode model of borderline personality disorder.

areas or lack health insurance—may receive access to basic psychotherapeutic help with e-health tools.

We developed and are currently testing such an innovative e-health tool based upon ST, called *priovi*, that is meant to be offered together with individual face-to-face ST. GAIA (Hamburg), a development and research company with broad experience in the development of e-health tools for mental disorders, together with clinical experts in BPD and BPD patients, developed *priovi*. Currently, it is available only in German; however, because it is hosted on a multilingual software platform, translations are technically possible. A systematic feasibility study of *priovi* in conjunction with individual face-to-face ST is currently in progress at Lübeck University. After a brief overview of ST for BPD, we will describe *priovi*, presenting it as an example of how an e-health tool can be integrated in BPD specific psychotherapy, and present the experiences of a BPD patient who has been using *priovi* for 6 months.

### Schema Therapy for BPD

ST derives from cognitive behavior therapy (CBT) and was originally developed by Jeffrey Young for patients who did not respond to standard CBT. ST is based on the idea that aversive childhood experiences, such as physical, sexual, or emotional abuse, lead to the development of dysfunctional schemas (basic mental representations of the self, relationships to others and the world) and specific emotional-cognitive-behavioral states, so-called schema modes (Young, Klosko, & Weishaar, 2003). ST for BPD is mainly based on the mode model because this model takes into account the sudden switches in emotional-cognitive states that are common in BPD.

The following modes are characteristic for BPD (see Figure 1).

In the *vulnerable child mode*, patients experience intense unpleasant feelings like abandonment, sadness, anxiety, loneliness, or mistrust. These modes develop when primary developmental needs, particularly secure attachment, love, and attention, are not adequately met in childhood. If patients with BPD feel rejected or other needs get frustrated, then they might switch into an *angry or impulsive child mode* and react with anger outbursts, hostility, or impulsive behaviors.

Self-devaluation, self-hatred, and self-punishment are connected with the *punitive parent mode*. This mode reflects internalized negative beliefs about the self that the patient has acquired in childhood or adolescence due to the behavior and reactions of significant others (e.g., parents, teachers, or peers).

In the *detached protector mode*, patients with BPD reduce the emotional pain of child and parent modes by avoiding close relationships and intense emotions. All behaviors that help patients distract from or avoid intense emotions are accommodated in that mode (e.g., dissociation, substance abuse, binge eating, self-injury, or social withdrawal). These strategies are usually

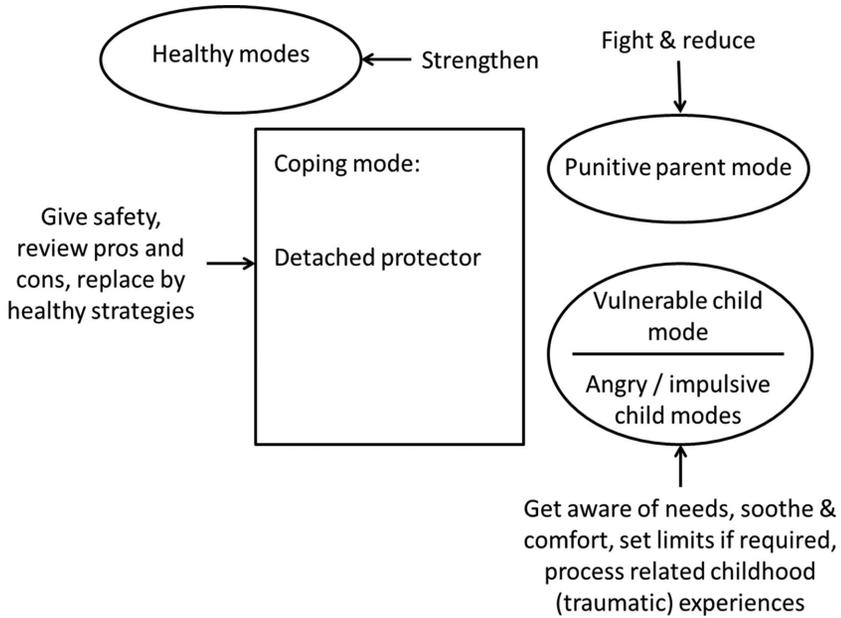


Figure 2. Mode-specific goals in schema therapy.

acquired early in childhood to protect the child from further harm and are therefore considered “survival strategies.”

In the *healthy adult mode*, people can deal with intense emotions, solve problems, and create healthy relationships with others. They are aware of their needs, possibilities, and limitations and act in accordance with their values, needs, and goals. The *happy child mode* is associated with joy, fun, and play. These healthy modes are usually weak in the beginning of therapy.

*Therapy goals* are connected with every mode, resulting in a “roadmap” for the whole therapy (see Figure 2). These goals are to support and comfort the vulnerable child, help the angry child find adequate ways to deal with anger, fight the punitive parent, and reassure the detached protector so that patients can reduce their emotional avoidance and learn healthier strategies to deal with emotions and relationships. A last important goal is to strengthen the healthy modes.

To achieve these goals, mode-specific cognitive, experiential, and behavioral interventions are used. In addition, the therapy relationship is conceptualized as “limited reparenting.” Within professional boundaries the therapist behaves toward the patient like a good parent and fulfills some of the needs the patient missed in childhood. This serves as an antidote to traumatic experiences and leads to corrective interpersonal experiences. Limited reparenting includes warmth, care, protection, and empathy. However, it may also include setting limits with a patient or encouraging more autonomous behavior.

For further information on the mode model of BPD and therapeutic interventions, we recommend the treatment manual for ST in BPD (Arntz & van Genderen, 2009) and recent reviews on ST in BPD (Jacob & Arntz, 2013; Sempertegui, Karreman, Arntz, & Bekker, 2013).

### The priovi Program

The priovi program was designed to support face-to-face ST and follows the ST model. It is highly tailored to the individual needs, modes, and mood states of patients and can be flexibly employed to meet the frequent shifts in symptoms in BPD patients. The dialogue-based structure fosters active involvement of the patient. Figure 3 shows the welcome screen (translated into English) when users log in for the first time. Illustrations of *Pia*, a girl with BPD, guide the program.

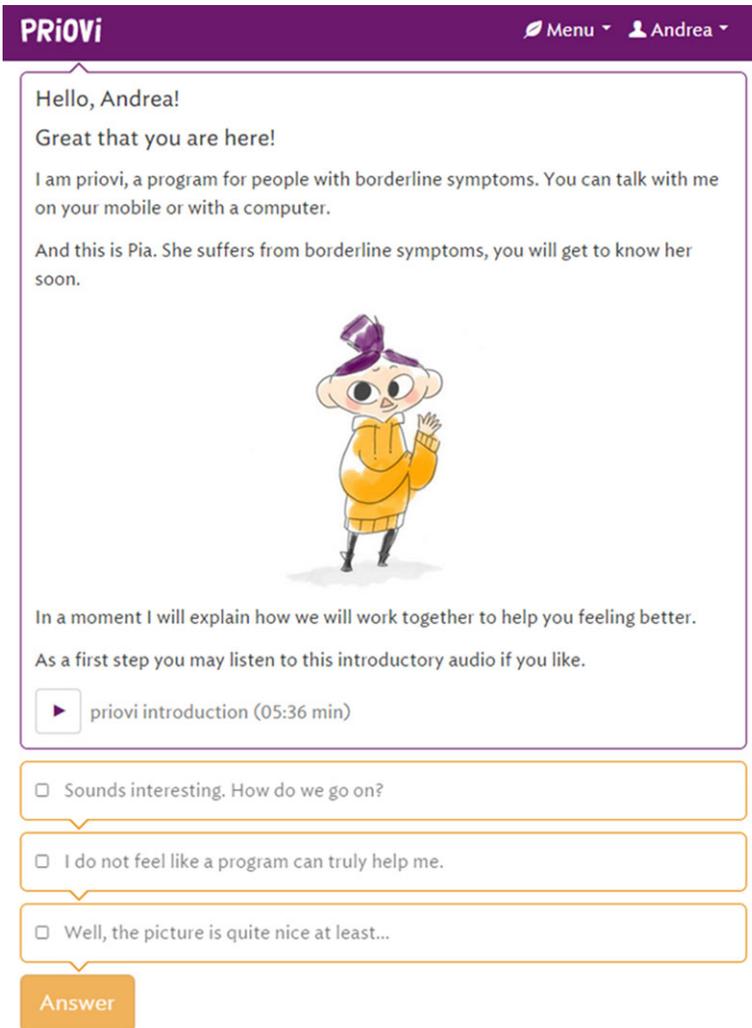


Figure 3. Priovi starting page.

Technically, priovi is usable on all online devices (i.e., desktop computers, laptop, tablet PCs, or smartphones), uses cloud computing with fast global access, and is hosted on a software platform certified with regard to data protection and security (CE certification). priovi integrates text, audio, illustrations, and pictures as well as outbound messages such as text messages or e-mails. It allows tracking of BPD symptoms, depressive symptoms, happiness, and everyday problems. With the so-called “cockpit” function (explained below), therapists can monitor program usage of their patients.

The main components of priovi are dialogues (chats), exercises, and techniques, which are organized in two phases: (a) psychoeducation and (b) interventions and exercises. Users can pause and continue sessions anytime they want. All components can be repeated individually.

Phase I covers psychoeducation on BPD symptoms, human needs, childhood abuse, and BPD-specific moods and emotions. All content is offered playfully via explanatory text, case examples, games, imagery exercises, comics, and illustrations. Figure 4 shows a screenshot from a chat on the detached protector mode as an example.

Phase II comprises many mode-specific exercises tailored to the needs of the user, including pro/con lists and similar cognitive techniques, work with case examples and one’s own issues,

**PRiOvi** Menu ▾ Andrea ▾

The **detached protector mode** is labeled as an avoidant mode since it helps to reduce negative feelings - i.e. to avoid them. Intense negative feelings can be very frightening, and thus trigger avoidant modes.

However how does "avoidance" actually look like? What do we do when we are in the detached protector mode?



This is important to consider since the detached protector mode can look quite differently at different times or in different people:

We may **dissociate** and switch into a state of trance, hardly feeling anything any more...

Or we may use **alcohol** or other **drugs** blurring our mind and cutting our feelings down.

We also may simply avoid social situations and **draw back** from others.

The detached protector mode may also comprise highly distracting behaviors such as **over-eating**, **excessive computer-gaming**, **staring at the TV** for hours or even **injuring oneself**...

But this mode is important for me, I could not do without it...

Some of that I know very well.

I feel ashamed that I sometimes act this way.

I am not sure whether I actually do have such a mode.

**Continue**

Figure 4. Priovi example from a chat regarding the detached protector mode.

imagery exercises, and affirmative audios. Exercises are increasingly demanding depending on the capacity of the user.

Priovi's additional components are as follows: an individual "mode toolbox" with helpful strategies for each mode; an area for exercises of already learned skills (see Figure 5); a glossary with important terms and information; and the possibility for tracking BPD symptoms, depression, and mood on a regular basis. Users can also register to receive daily text or e-mail messages from priovi.

PRiOvi
Menu ▾ Andrea ▾

## Your Exercises

This pages shows all exercises you already know. Feel free to pick any of these exercises at any time! With each new exercise this page will become more and more complete.

You also find an overview of exercises and your exercise schedule here to keep track of your progress. If you like you can print them out to fill in your personal plan.

Overview of Exercises



The exercises are sorted by modes. This is for two reasons:

1. Exercises are also ordered this way in our chats. Thus you know the order and can easily find each exercise here when you want to *repeat* or to *deepen* it.
2. If you realize in any given moment that you are in a certain mode and you want to work on that, you will easily find a related exercise here.

If you are done, you get back home here...

Open

I would like to do an exercise on the **detached protector mode**.

I would like to do an exercise on the **vulnerable child mode**.

I would like to do an exercise on the **angry child mode**.

I would like to do an exercise on the **punitive parent mode**.

I would like to do an exercise on the **healthy adult mode**.

Answer

Figure 5. Priovi's menu for the exercise area.

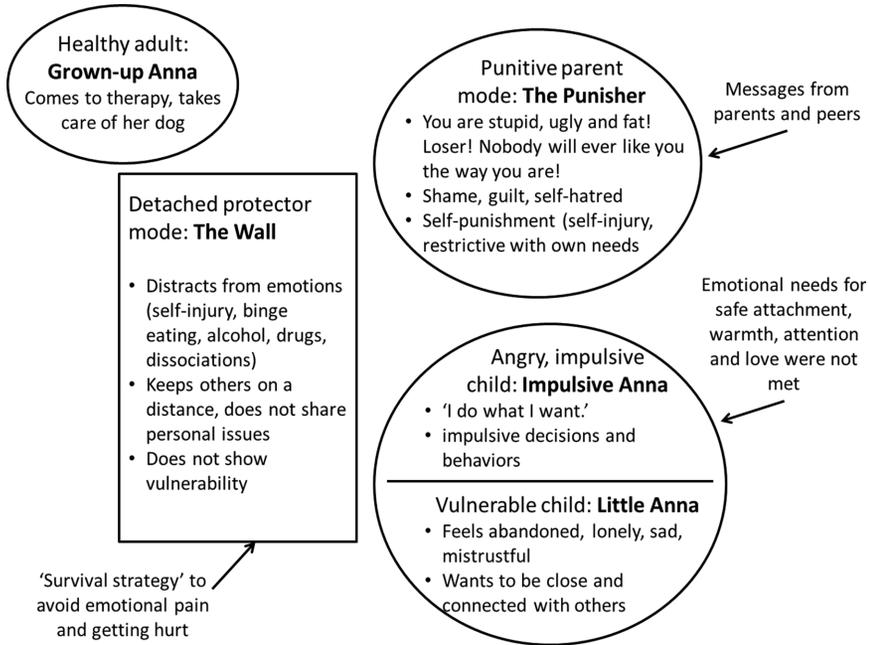


Figure 6. Anna's mode model.

Patients can work through all content in about 6 months if they use priovi on a regular basis (e.g., two times a week for half an hour). However, as repetition of content and especially of exercises is strongly recommended, we suggest using it at least for one year.

*Integration of Priovi With Face-to-Face Schema Therapy*

Clinically, we do not recommend using priovi as a stand-alone treatment but rather in combination with face-to-face ST. Therapists should address the patient's use of priovi in each session to support program usage. In our pilot study, we apply a combination of one weekly individual face-to-face session and a recommended priovi use of about one hour per week over one year. With this design we expect that priovi can replace one weekly face-to-face session, as ST has been shown to be highly effective with a treatment frequency of two face-to-face sessions per week, which may be delivered individually (Giesen-Bloo et al., 2006; Nadort et al., 2009), or in a combination of individual and group treatment (Dickhaut & Arntz, 2013) for a treatment length of 1.5 years or longer. Treatment might even be shortened if priovi enhances the change processes that take place in ST.

Priovi offers the so-called cockpit function, allowing therapists to monitor a patient's usage of priovi in cases wherein he or she explicitly agrees to be monitored. Furthermore, the cockpit shows the results of patients' symptom and mood tracking. Clinically, we recommend that patients and therapists use the cockpit because it is highly informative for therapists and helps patients feel supported in their efforts to change.

In our study, the individual therapist is supposed to look into the cockpit shortly before the patient comes in for his or her individual face-to-face session. In addition, the therapist is instructed to ask the patient how he or she perceived working with priovi in the last week, answer any questions, help with difficulties, recommend special exercises or issues, and encourage further usage.

### Case Illustration

We present the case of Anna, a patient in our pilot study, who, at the date of writing this article, had been using priovi in conjunction with individual ST for 6 months. We asked her to write about her view of her case, focusing on the treatment and her course of therapy, to present an original patient perspective on priovi. In the following pages, we weaved in passages from the therapist's perspective. Identifying patient details have been altered wherever possible to preserve confidentiality. The patient has read this article and given her full consent to publication.

#### *Presenting Problem and Client Description*

I am 35 years old and suffer from BPD along with several other problems. Before starting priovi I had been in psychiatric treatment for many years, got to know many different therapeutic methods, swallowed many different psychotropic drugs, and went through an uncounted number of in- and outpatient treatments. I had to visit the emergency room several times a month because of severe self-injuries or intoxications, and was admitted to psychiatric hospitals because of suicidal crises several times a year. I spent several years in a social psychiatric assisted living community and was put under legal guardianship due to severe dissociative episodes with severe self-injuries and frequent acute suicidal crises. I used drugs and alcohol to deal with the problems of my everyday life. Furthermore, I suffer from an eating disorder and have experienced dissociative behaviors with identity shifts since my childhood.

As a result of these problems I was not able to complete any education or studies. I had to quit several times because of putting too much pressure on myself, resulting in exacerbations of my eating disorder, self-injuries, dissociations, and alcohol and drug use. It always ended with suicidal crises, being sent to inpatient treatments for weeks or months, and me feeling a failure. My relationships were a disaster, swinging between longing for closeness and attachment on one hand and mistrust and fears of being hurt or left alone on the other. Thus, I tried to keep others at a distance or overengaged in unhealthy relationships, trying to fulfill every wish of my partner/friend without looking after my own needs. (Anna)

#### *Biographical Background*

Anna is the oldest of four siblings. Her mother had a psychotic disorder but refused to take medication, resulting in frequent psychotic decompensations when Anna was young. Anna's father was a successful surgeon, working most of the time. He was emotionally cold and placed many demands on his children, especially on Anna who was a highly intelligent and talented girl. Anna was always fighting for his love and attention, but never felt that she was good enough for him. Anna always felt very responsible for her younger siblings, particularly in the chaotic phases when her mother was psychotic and her father was not available. Because nobody explained her mother's illness to her and her siblings, Anna felt guilty for her mother's decompensations and hospital admissions. Moreover, she felt very anxious as a little child because she believed in the paranoid ideas of her mother (e.g., demons coming to catch them or radioactive contamination of their house). In school, the other children bullied her for being different.

#### *Case Formulation*

At the beginning of therapy, a case formulation with the mode model was developed with Anna in individual therapy (see Figure 3). Anna showed the BPD typical modes (except a relatively weak, angry child mode). As usual in individual ST, Anna chose individual names for her modes: Her intensive feelings of loneliness, sadness, mistrust, and fears of abandonment are conceptualized in the vulnerable child mode (Little Anna) and her impulsiveness as impulsive child mode (Impulsive Anna). Self-devaluating messages and feelings of guilt, shame, and

self-hatred as well as self-punishing behaviors are associated with the punitive parent mode (The Punisher). Early in her childhood Anna developed the “The Wall,” her detached protector mode, to protect herself from further emotional pain by keeping others at a distance and not sharing her emotions or thoughts. Also very early she learned to calm herself down by dissociation (starting with escaping into fantasy worlds) and binge eating; later she distracted from emotions with drugs, alcohol, and self-injury. Anna has a dog, which comforts her when she feels lonely and which she cares for very well. This and her therapy attendance are related to her healthy adult mode (Grown-up Anna). The biographical context is brought into the case conceptualization with arrows (see Figure 3).

### *Anna's View on the Treatment Program and Course of Treatment*

Anna receives a treatment program with a weekly face-to-face individual ST-session and online treatment support with priovi. Before starting priovi she had four individual sessions to get accustomed to the mode model. Anna describes her view on this treatment program:

I work with the mode model in my weekly therapy sessions as well as while using priovi. These two aspects of my current treatment complement each other perfectly. For me they create an ideal and strong foundation for efficient progress in my course of therapy. The weekly sessions with my therapist give me a stable framework to reach an understanding of my problems and priovi is of great help in integrating the work with the mode model into my daily life. Priovi provides exercises on how to become more aware of upcoming modes which complicate my life. At the same time it helps me to reduce unhealthy behaviors and to strengthen my healthy modes. I can collect the exercises I find particularly helpful and use them anytime I need them. Thus, I can internalize new therapeutic strategies much quicker than usual.

I really like the text messages priovi sends me every morning. They remind me to take care of myself beyond seeing my therapist once weekly and come just in the middle of my daily hassles each single day. Priovi also offers me different tests to keep track of my mood and my symptoms. This gives me a better overview of my therapy process. In bad phases it is very helpful and encouraging to see that I was able to overcome such phases in the past.

About the course of therapy she says:

Until today, priovi has become an integral part of my everyday life. It is my “little private therapist,” accompanying me everywhere. I learned to identify the problems causing my symptoms a lot faster, and therefore I am able to work on them in the face-to-face session much more effectively. Furthermore, to my big surprise, my current treatment also helps me to use strategies I learned in other treatments in the past. For example, I am now able to understand and apply the different DBT skills much better than before. I integrated them into my healthy adult mode.

The therapist also experienced the support of priovi as very helpful. Anna understood the mode model far sooner than would be usually expected with traditional ST. Clinical progress also happened faster than expected because priovi supports psychoeducation on all ST-relevant contents. Thus, the therapist could start working with experiential techniques such as chair dialogues and imagery exercises with Anna relatively quickly and spend more time on these techniques and limited reparenting compared with ST treatments without priovi. Also, priovi seems to be a transitional object for Anna, representing the therapy and the therapist in her everyday life, resulting in reduced feelings of loneliness between sessions. This reduced the burden from the therapist's shoulders and was perceived as helpful both by Anna and the therapist.

**Table 1**  
*Scores at Admission and After 6 Months of Treatment*

	Admission	After 6 months
<b>Borderline Personality Disorder Severity Index</b>		
<b>Total Score</b>	<b>47.20</b>	<b>20.54</b>
Abandonment	4.29	0.86
Unstable Relationships	7.25	3.13
Identity Disturbance	7.19	1.88
Impulsivity	5.45	2.36
Parasuicidalty	2.08	0.62
Affective Instability	8.20	4.20
Emptiness	9.25	5.25
Anger	0	0
Paranoid and Dissociative Ideation	3.5	2.25
<b>WHODAS 2.0, Overall</b>	<b>36.7</b>	<b>13.5</b>
<b>Domain scores</b>		
Understanding and communication	41.67	4.17
Getting around	5	0
Self-care	12.5	31.25
Getting along with others	80	30
Life activities	6.25	0
Participation in society	75	15.63
<b>Schema Mode Inventory<sup>a</sup></b>		
Vulnerable child	4.40	2.20
Impulsive child	2.67	1.89
Detached protector	3.33	2.00
Punitive parent	5.60	2.20
Healthy adult	2.30	3.70
Happy child	1.80	3.60

*Note.* WHODA = World Health Organization Disability Assessment Schedule 2.0.

<sup>a</sup>The modes relevant for Anna.

### *Outcome and Prognosis*

After 6 months of treatment, we observed a very positive course with encouraging results reflected in the assessments of an independent research assistant. Table 1 displays Anna's scores on the Borderline Personality Disorder Severity Index (BPDSI), a semistructured clinical interview assessing severity of BPD manifestations in the last 3 months (Giesen-Bloo, Wachters, Schouten, & Arntz, 2010; Kroger et al., 2013), the overall and domain scores on the World Health Organization Disability Assessment Schedule 2.0 (WHODAS-2.0; Ustun et al., 2010) as a general measure of functioning and disability in major life domains (scoring algorithm is available through <http://www.who.int/classifications/icf/whodasii/en/>), and scores on the Schema Mode Inventory (SMI; Lobbetael, van Vreeswijk, Spinhoven, Schouten, & Arntz, 2010) for Anna's modes.

Looking at the course of her BPD symptoms, Anna started with a BPDSI total score of 47, indicating very high severity compared with the average 30 to 35 range reported in previous studies (Dickhaut & Arntz, 2013; Giesen-Bloo et al., 2006; Nadort et al., 2009). A BPDSI cutoff score of more than 20 points distinguishes BPD pathology from other personality disorder pathology. As can be seen from Table 1, Anna had a strong decrease in BPD symptoms over all criteria. The recovery criterion is defined as achieving a BPDSI score of less than 15; thus, despite the dramatic decrease in her BPD symptoms, Anna still suffers from clinically significant BPD symptoms. However, the decrease of 27 points in the BPDSI total score was more than double the criterion of 11.70 for reliable change (Giesen-Bloo et al., 2006).

When it comes to psychosocial functioning and disability the WHODAS 2.0 shows significant improvements in Anna's overall score and especially in the domain score of understanding and

communication, getting along with others, and participation in society. The higher domain score in the domain of self-care at the 6 months assessment time can be explained in the following manner: At admission, Anna did not view her eating-disordered behaviors as a problem of self-care and stated that she had no difficulties in this area; by contrast, after 6 months of therapy, she noted that she had severe difficulties in this area. With regard to the SMI, scores here suggest that Anna was able to reduce all her dysfunctional modes and strengthen her healthy modes, the latter of which were almost nonexistent at the beginning of the therapy. Anna's written account of the changes she experienced are in line with the assessments:

Many things in my life have changed fundamentally: I am now doing an internship in a kindergarden and I am going to start an education as a care worker soon. For the first time in my life I started building healthy relationships with other people and freeing myself from the constant up and downs of either unhealthy symbiotic relationships or complete social isolation that I had most of my life.

Sometimes there are still crises with suicidal tendencies. But for the first time I can cope with them and continue my internship. I have been free from self-injury for four months now and stopped drug abuse. I consume a lot less alcohol than half a year ago and have reduced dissociative behavior a lot. Although it really makes me afraid, I even decided to get rid of my eating disorder, which was 'my best friend' for so many years. But this is still going to be a lot of work. The quality of my life has improved enormously during the last months and for the first time I feel able to leave the vicious circle of my illness in the long run.

Although Anna still has symptoms consistent with BPD and an eating disorder, her prognosis in regard to overcoming these disorders and living a fulfilled life is very good: She still has 6 months of the treatment program left to deal with these problems and her life circumstances have changed considerably. She has built supportive relationships with healthy people and established a positive day structure with an occupational perspective consistent with her values and talents. These positive factors will potentially catalyze the treatment effects and strengthen her healthy modes.

### *State of Research on priovi*

Although Anna's experiences have been very positive, they need to be understood as a single case in the context of a nonblind pilot study. At the point of writing this article, eight patients, two of them men, had worked with priovi for 1–6 months. Preliminary experiences with the two men patients suggest that they cannot identify with Pia well enough and may need a male version of the program. Although the feedback from the included patients is mainly positive, we also know from them that priovi still needs some modifications to address patients' needs even more effectively. A randomized controlled trial comparing priovi with face-to-face psychotherapy is in the preparatory stage.

We do not know to what extent priovi can be helpful if it is offered with non-ST psychotherapy, irregular face-to-face contacts, or even without face-to-face contact. We cannot yet estimate the effects size of symptom change induced by e-health tools like priovi.

### Clinical Practices and Summary

The data from Anna and her experiences with priovi are very promising. Integrating e-health into BPD-specific treatments can potentially increase treatment intensity and enhance treatment effects. Implementation of new skills and experiences in everyday life can be promoted. However, at this stage, research on priovi is still in its infancy: The pilot study needs to be completed, priovi still needs some modification, and randomized controlled trials comparing priovi with face-to-face psychotherapy are needed.

Given our current knowledge, we recommend using priovi or other e-health programs for BPD as integrated components of specialized face-to-face psychotherapy. Therapists should monitor the usage of e-health tools, help with difficulties, and check if patients understand them and promote their usage.

Future research needs to clarify the best ways to offer e-health tools and how best to combine them with face-to-face contacts. Other important questions to be investigated are what dosage to use, which elements should be offered online, and whether specialized e-health tools can be used effectively with nonspecialized psychotherapy, irregular face-to-face contacts, or alone. Preliminary evidence suggests that if access to psychotherapy is not available for patients, then e-health tools, perhaps in modified form, may help patients gain better insight into their struggles and offer them at least some opportunities to learn how to deal with their symptoms and problems. These new technologies hold great potential to increase treatment effects and availability of evidenced-based psychotherapy for BPD patients.

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