



Cornell Research Program on Self-Injury and Recovery

BY NADJA LEDERER AND RENÉ BARANYI,
RESEARCH GROUP FOR INDUSTRIAL SOFTWARE,
VIENNA UNIVERSITY OF TECHNOLOGY, AUSTRIA

Who is this for?

Individuals who self-harm, professionals

What is included?

Reasons to use apps for self-injury intervention

Mobile therapeutic accessories currently available

Self-injury, interrupted: Mobile technology as therapeutic accessory

Introduction:

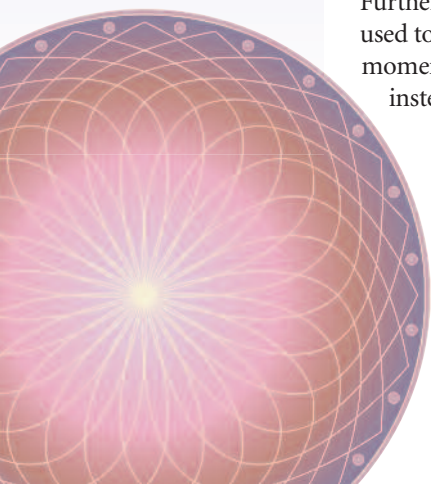
There is no denying that smartphones are the mobile companions in today's fast-paced and ever-changing environment, especially with younger generations. Smartphone Mobile Applications ("Apps") on these phones are available for people who suffer from depression, anxiety, eating disorders or pain (see, for instance, [2-3]). Until recently, non-suicidal self-injury (NSSI) remained largely unrepresented in this trend. In this information brief, we present an overview of different Mobile Apps that can be used to support people with self-injurious behavior in addition to traditional therapeutic approaches.

I. Three good reasons to use Mobile Apps for self-injury intervention

Therapeutic work is invaluable: mobile technology will never be able to replace the benefits of face-to-face interaction. Mobile Apps can, however, be used to enhance therapeutic practice. Since NSSI is used as a coping mechanism and is commonly carried out in private settings [9, 14], using mobile technology as a therapeutic accessory may enhance recovery efforts by providing in the moment reflection opportunities, feedback, and alternatives to self-injury.

For example, while attending therapy is a first step in recovery from non-suicidal self-injury, therapists cannot be available for clients at all times. Mobile Apps provide a way to interact with clients in between sessions. Mobile Apps also allow therapists to assign and monitor between session "homework." Unlike paper and pencil tasks, Mobile Apps allow for interactive and in the moment recording, thus reducing the likelihood that a client will have trouble remembering important feelings or events later in the day when they sit down to write [1-2].

Furthermore, when difficult or triggering situations arise in between therapy appointments, Apps can be used to monitor and possibly intervene before self-injury behavior occurs. This is called "ecological momentary assessment" (EMA), and allows for assessing and addressing behavior as soon as it occurs instead of relying on recall of past experiences [4].



II. Already available mobile therapeutic accessories

Below we review several self-injury specific applications which are currently available and which can be used as therapeutic enhancements and/or for research purposes.

iCope

iCope can be purchased and downloaded from the Apple App Store. Its objective is to provide distractions and alternative method suggestions as soon as urges to self-harm begin; offered strategies vary depending on the intensity of user feelings [5].

FEATURES AND FUNCTIONS

When launching iCope, users are encouraged to rate their current feelings and urge to self-harm, after which three intensity options are displayed. Depending on whichever option is selected that resembles user feelings the most, the App lists regulation strategies like basic distractions (e.g. be with others), suggests alternative actions (e.g. bite into a chili) or offers functionality of in-app simulated self-harm. iCope does not record any entered data and is just intended for the moment the urge occurs.

unCUT

unCUT is a research project carried out at the Vienna University of Technology and currently being refined based on preliminary feedback [6]. Figures are taken from [6] as well. unCUT is a Mobile App that supports individuals who have been diagnosed with Borderline Personality Disorder (BPD) and who engage in NSSI. It can also be used by individuals who have not been diagnosed with BPD but who self-injure.



It is designed to be used by clients who are currently in treatment for one or both of these conditions. All data collected throughout the day are recorded on a “personal health record” that can be used by the client and his or her therapist to evaluate trends over time.

Borderline Personality Disorder

Borderline Personality Disorder is a complex behavioral disorder, which can take on a variety of forms. Some of the characteristics are [11]:

- severe problems to identify and regulate emotions
- high-risk behavior
- ambivalent feelings and unstable interpersonal relationships
- possible signs of self-harm or suicidality

That is, NSSI and Borderline Personality Disorder frequently go hand in hand – about 70-80% of Borderline patients engage in self-harm [12]. It is important to note, however, that there are many individuals who self-injure who would not also be diagnosed with Borderline Personality Disorder [9].

FEATURES AND FUNCTIONS

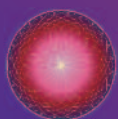
The App tracks mood and perceived level of tension throughout the day and uses this information to alert users to possible trigger conditions and to suggest alternatives for managing negative emotions. unCUT uses ecological momentary assessment (EMA) and offers the following four key features:

Notifying users to report tension

unCUT prompts users to report their tension between five and six times a day (compare Figure 1). The tension report – including level of tension and mood – is then transferred to the personal health record of the patient, where it contributes to a documentation of a “tension curve.” The latter provides an often useful daily record of mood and behavioral patterns that can be assessed and integrated into therapeutic support efforts.

Urges to injure and intervention

The second key part of the unCUT application allows users to self-report urges and acts of injury. The Mobile App then retrieves the individual (di)stress tolerance skills from the personal health record and “beeps” at the user by displaying one skill after the other. As a final reminder or intervention point, unCUT reminds users that self-injury is a choice and invites the user to reflect on his/her decision.



Skills

Skills are any activities or actions that may help a person get rid of tension or cope with a difficult situation. Five modules to categorize skills in accordance to the DBT [7-8]:

- Awareness
- Emotion regulation
- Interpersonal relationships
- Self-worth
- (Di)stress tolerance

Skills management and practice

unCUT offers users multiple opportunities to manage and practice their skills, a core component of DBT [7-8, 11].

Goals and rewards

Therapists monitoring client records can use the information to reward or reinforce client successes. For instance, the therapist may send a personal message via a Youtube video, which can be directly played in the Mobile App.

More information about unCUT and ongoing research results may be obtained from Nadja Lederer, Vienna University of Technology, nadja.lederer@inso.tuwien.ac.at.

Insight

Insight uses EMA and functions as an electronic diary to document emotions and circumstances when self-injury or thoughts of self-injury occur [10]. It also tracks sleep, location data, occurrence of flashbacks, activity patterns, and heart rate as well as other risk factors that are known to be preceding self-injury. In addition to the Mobile App software, the App comes with a chest strap and wristband [13] to monitor physiological processes. Figures are a courtesy of Lisa Marzano and her research team.

FEATURES AND FUNCTIONS

The smartphone application of Insight employs two main features for self-reporting: *my diary*, and *my story*.

My diary

My diary solicits user input twice a day – once in the morning and once in the evening. Users are prompted to document feelings, triggers and circumstances preceding or associated with self-injury or self-injurious thoughts (compare Figure 2). It also prompts users to reflect on actions or circumstances that assisted users in refraining from acting upon an urge.

My story

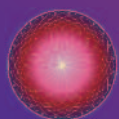
My story encourages users to reflect on general life situations, reasons why self-harm was chosen as a coping method in the first place, and to assess the pros and cons of self-injury practices.

Users are not obliged to answer or complete these journal entries. Additional entries may be added during the day. In general, the Mobile App lets users describe situations in their own words and relies very little on close-ended (survey style) formats and response options (e.g. pain level, if the patient was alone or with others). In addition to text entries, Insight allows storing and uploading pictures, audio and video recordings. Users can edit their reports any time.

Insight initially started off as a research project at the Middlesex University in London, UK, and is currently under further development. For more information about this project and up-to-date research results, have a look at their website, see [15], or get in touch with Lisa Marzano, Middlesex University, l.marzano@mdx.ac.uk.

Summary

These Mobile Apps represent the start of a new generation of technology-based tools for early and on-going intervention and support for self-injurious individuals. Although most of the reviewed applications are also primarily used for research at this point, use of mobile tools such as these are likely to become an increasingly valuable part of therapeutic care. While current generations of these Apps are not typically available on every type of smartphone, development and refinements currently underway will enhance availability.



ACKNOWLEDGMENTS

Special thanks to Lisa Marzano, Bob Fields and Andy Bardill for their contributions to this information brief. Also, a big thank you to Janis Whitlock and her team who were the driving force in making this article happen.

References

- [1] Bradburn, Norman M., Lance J. Rips, and Steven K. Shevell (1987). "Answering autobiographical questions: the impact of memory and inference on surveys". In: *Science* 236, pp. 157- 161.
- [2] Yoshiuchi, Kazuhiro, Yoshiharu Yamamoto, and Akira Akabayashi (2008). "Application of ecological momentary assessment in stress-related diseases". In: *BioPsychoSocial Medicine* 2 (13).
- [3] Vivyan, Carol (2010). "CBT self-help programmes". <http://www.getselfhelp.co.uk/links2.htm> (visited on 02/21/2015).
- [4] Shiffman, Saul, Arthur A. Stone, and Michael R. Hufford (2008). "Ecological momentary assessment". In: *Annu Rev Clin Psychol.* 4, pp. 1-32.
- [5] ReallyAPPy (Dec 2011). "iTunes Preview. iCope". <http://itunes.apple.com/gb/app/icope/id473664035?mt=8> (visited on 09/15/2012).
- [6] Lederer, Nadja, Thomas Grechenig, and René Baranyi (2014). "unCUT: Bridging the gap from paper diary cards towards mobile electronic monitoring solutions in Borderline and self-injury". *IEEE 3rd International Conference on Serious Games and Applications for Health (SEGAH)* 2014.
- [7] Linehan, Marsha M., Hubert E. Armstrong, Alejandra Suarez, Douglas Allmon, and Heidi L. Heard (1991). "Cognitive-Behavioral Treatment of Chronically Parasuicidal Borderline Patients". In: *Arch Gen Psychiatry* 48, pp. 1060-1064.
- [8] Bohus, Martin and Martina Wolf-Arehult (2013). "Interactive skills training for borderline patients. Therapist's manual". [Original: "Interaktives Skillstraining für Borderline-Patienten. Das Therapeutenmanual"]. 2nd edition. Schattauer.
- [9] Klonsky, E. David, Jennifer J. Muehlenkamp, Stephen P. Lewis, and Barent Walsh (2011). "Nonsuicidal Self-Injury". In: *Advances in Psychotherapy. Evidence-Based Practice*. Ed. By Danny Wedding, Larry Beutler, Kenneth E. Freedland, Linda C. Sobell, David A. Wolfe. Hogrefe Publishing.
- [10] Marzano, Lisa, Andy Bardill, and Bob Fields (2014). "Towards a Comprehensive Ecological Model of NSSI: Integrating Psychosocial, Biological and Environmental Real-Time Data Using Digital Diary Methods and Smartphone Technology". 9th Annual Conference of the International Society for the Study of Self-Injury (ISSS) 2014.
- [11] American Psychiatric Association (2000). "Diagnostic and statistical manual of mental disorders (4th ed., text rev.)". doi:10.1176/appi.books.9780890423349.
- [12] Bohus, Martin (2002). "Borderline Disorder". In: *Advances in Psychotherapy*. [Original: „Borderline-Störung“. In: *Fortschritte der Psychotherapie*]. Ed. by Dietmar Schulte, Klaus Grawe, Kurt Hahlweg, Dieter Vaitl. Hogrefe Publishing.
- [13] Jawbone (2015). "UP by Jawbone™". <https://jawbone.com/up> (visited on 02/21/2015).
- [14] Whitlock, Janis, Jennifer Muehlenkamp, Amanda Purington, John Eckenrode, Paul Barreira, Gina Baral Abrams, Tim Marchell, Victoria Kress, Kristine Girard, Calvin Chin, and Kerry Knox (2011). "Nonsuicidal Self-injury in a College Population: General Trends and Sex Differences". *Journal of American College Health*, 59:8, pp. 691-698.
- [15] Marzano, Lisa, Andy Bardill, Bob Fields, and Kate Herd (2014). "Insight. INdividual SIGnature mHealth Technology". <http://insight.mdx.ac.uk/> (visited on 02/24/2015).

