UNIVERSITY OF PITTSBURGH
CENTER FOR
Behavioral Health + Smart Technology

Director of the Center for Behavioral Intervention Technologies (CBITs) and a professor at Northwestern University Feinberg School of Medicine's Department of Preventive Medicine, David Mohr has been doing cutting-edge work in the field of Digital Mental Health for 15 + years. A clinical psychologist by training, he has explored telemental health, web-based interventions, and more recently, the use of mobile apps to reduce depression and anxiety.

The Center's Julia Holber had the opportunity to catch up with him in preparation for the 3rd Integrative Conference on Technology, Social Media, and Behavioral Health, where he will be featured as a keynote speaker.

Julia: What inspired you to start the Center for Behavioral Intervention Technologies?

David: I've always been interested in delivering care remotely. I began my career by delivering psychological and behavioral interventions to people with chronic illnesses, people who, for a variety of reasons, were unable to come in to care. Originally, we just did this over the telephone. Over the last 15-20 years, there have been a lot of advancements in technology that have given us the opportunity to do a lot of new and novel research. A lot of clinical psychology research, up until recently, has not been all that interesting. It has been a lot of re-testing cognitive behavioral therapy with yet another problem or another subsection of a population. Now, with technology, we really are conducting cutting-edge research. We really don't know yet how to design tools and how to integrate these tools into care systems to reap the benefits that we believe are there. So this is a really exciting time for mental health research and clinical psychology.

Julia: It sounds exciting! You have done what is referred to as "personal sensing research." Can you explain what exactly that is?

David: Personal sensing is sometimes also referred to as context sensing or digital phenotyping. We all today give off all kinds of digital exhaust. When we do a search through a browser, we give off data. Our cars now have sensing devices. Our phones have increasingly large complements of sensors. We can use that kind of data to begin to understand the behaviors and states that people are engaging in or experiencing. A lot of our work is done with mobile phones. There are several reasons for that. The mobile phone has this rich set of sensors- GPS, all of your contacts and communications, light sensors, all kinds of applications. It is a device that people tend to keep with them, so we don't have to ask people to do anything (unlike, for example, using a Fitbit which requires a decision each day by the person to use it). The phone also can be a two-way interaction, so we can use the information we're getting to be able to interact with the person and to hopefully begin to move care into the fabric of people's lives.

Julia: It's great that this research doesn't require more from people than what they're already doing.

David: Yeah! You know this is something industry is already doing. Lots of companies are collecting these data to market things to you. So, what we're trying to use these data to do something that's actually going to benefit public health.

Julia: I know one project you created that received attention in the news media is called IntelliCare. What is IntelliCare and what does it aim to accomplish?

David: Intellicare is trying to take a somewhat different approach to digital mental health. The problem that we're trying to address is that most digital mental health tools are largely didactic. They require a fair amount of effort. People have to read or watch videos for a given period of time each week, and that's not really how we use mobile phones. By and large we use most applications very, very briefly. In fact people will uninstall most applications if they require more than a minute or two. So we realized, if we're going to interact with people, it has to be pretty brief. The challenge is that, for psychological interventions, we have lots and lots of behavioral strategies. If we put all of those behavioral strategies into one app, it becomes very cumbersome to navigate, it requires time, and our sense is that people are not going to use it. So, what we did was develop a suite of apps that aim to reduce anxiety and depression. They are all very simple to use and for the most part require just 15-20 seconds each time. People can download and use what they find helpful.

Julia: You've sold me! Have the apps been effective?

David: We conducted a trial in which there was very brief support primarily via text messaging from a coach who helped people access the different apps. The evidence so far is that the apps have been successful in reducing anxiety and depression. Also, interestingly, they get used a lot. In the trial we did, the apps were opened over 8 weeks an average of about 190 times, pretty consistently. We think also using this as an intervention tool that having multiple apps also I suspect produced better adherence because there was novelty. People kept having new apps that they could try, and they could keep using the ones they liked.

Julia: Despite these findings, there are still people who are skeptical of technology and believe that human, face-to-face intervention is the only way to address behavioral health issues. What is your response to these kinds of doubts?

David: I think that the problem we have with mental health today is that 20-25% of the population has a diagnosable disorder in any given year and likely more than that have symptoms at a level that require treatment. We will never have enough mental health professionals to be able to manage everybody appropriately. So, while certainly having face to face treatment may be preferable for a lot of people, it is probably only one piece of a strategy to be able to extend mental health care to all those who need it. I think what digital mental health offers is potentially a novel way of engaging people in treatment and providing effective treatment for both people who want to use it and especially for people who don't want to go into therapy or take medications. It also has the potential to serve as a frontline treatment which would allow a care system to manage part of the population more cost effectively while preserving the more extensive face-to-face treatments for those patients who don't respond to or who don't want digital mental health.

Julia: Finally, what do you think is the biggest challenge facing the widespread implementation of Digital Mental Health interventions?

David: The challenge is that we have now over 100 randomized controlled trials showing that these kinds of interventions work, and as far as I know there are almost no successful real-world implementations, even though many, many organizations have tried. There's still a lot of work to do to make this successful, I don't think we know how to do this. But I think it is possible. It's just going to require a lot of people working together.

Want to hear more about David's work? Register here for the **3rd Integrative Conference on Technology, Social Media, and Behavioral Health** on **November 3rd** to hear him deliver a keynote address!