Smarter phones, smarter practice

Mobile phone apps measure many psychological, social and physiological factors associated with well-being, making them valuable tools for psychology practice and research. And it’s just the beginning.

BY MARGARET E. MORRIS AND ADRIAN AGUILERA
Overview:
CE credits: 1
Exam items: 10
Learning objectives:
After completing this course, participants will be able to:
• Describe advances in mobile, social and wearable computing that are relevant to psychology practice and research.
• Explain options for psychologists to integrate mobile technology into clinical practice.
• Explain concerns and limitations that should drive innovation in mobile computing.

In the last decade, smartphones revolutionized personal communication. Now they are poised to significantly transform how psychologists interact with their clients and conduct research.

The mobile phone has clearly expanded beyond a communication tool. Thanks to the integration of social networking, wearable and embedded sensors, photography and hundreds of thousands of apps, our mobile phones are platforms for self-expression, social learning and role exploration.

The emotional bond we have with our phones has been explored by neuroscientists and ethnographers as well as market researchers. At the neuronal level, people respond to the iPhone exploration by neuroscientists and ethnographers as well as market researchers.

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and hundreds of thousands of apps, our mobile phones networking, wearable and embedded sensors, photography and applications that patients are already using for self-monitoring, addressing loneliness and fostering a sense of connectedness and belonging, is independent of online support communities and forums that specifically focus on mental health. Active engagement on Facebook has been associated with less loneliness and greater feelings of social connectedness (Burke, Kraut, & Marlow, 2011), echoing previous research on social capital (Ellison, Steinfield, & Lampe, 2007). Social network apps may also benefit mental health through “emotional contagion;” that is, the spread of positive affect. Semantic analyses of Facebook status updates indicate that that affective tone spreads within networks (Kramer, 2012). This research indicates that social media’s influence on mental health depends on how and with whom one interacts online: specifically, the extent to which one shares content and forms friendships with people who express positive emotion.

But social media can also pose significant problems for psychological well-being. Privacy concerns are highlighted in examples such as the suicide of the college student whose homosexual activity was broadcast in his roommate’s Twitter feed and webcam (Zerrilli, 2012). Other types of identity breaches abound; one, particularly alarming study illustrated how facial recognition software can cross-reference an individual’s various online profiles, such as those for dating and professional networking, that are intended to be separate (Acquisti, Gross, & Stutzman, 2011). Sherry Turkle (2011) discusses with great nuance the psychosocial downsides of social media, including not just privacy but negative social comparison, parental distraction and loss of control over one’s life story. Turkle suggests that the boasting and simplistic commentary in typical status updates may actually preclude meaningful intimacy and expression. Kate Crawford (2010) raises the concern of the “compulsory sharing.” In opting out of this broadcasting, one risks invisibility and irrelevance.

Facebook communication is of course very different from face-to-face interaction with a trusted friend or a support group. By expressing vulnerability online, for example, one may inadvertently jeopardize social support (Newman et al., 2011). However, compared with online support groups defined by common characteristics (e.g., with mood or weight), Facebook and other social network platforms offer a broader set of role models and social inspirations. Role models found within one’s broad social network may be especially influential because of commonalities in friends, cultural factors and preferences. It is possible that hybrid approaches such as Google Plus, which allows users to define social “circles” for different types of sharing, will allow people to safely express vulnerability with a small group while learning from a broad range of influential role models.

Wearable sensing
Many apps now use data from wearable sensors to track users’ physiological responses, movement and location. Representative examples are Jawbone UP and the Nike Fuelband, both bracelets that sense movement and offer feedback on exercise, diet and sleep. Similar wrist and armbands integrate movement sensing with temperature and pulse. Others, such as Zon and Neurosky, attempt to discern brain activity related to sleep cycles and engagement. Slightly further afield, but relevant to physical and emotional health, are apps that link to sensors worn on the back to detect postural changes and prompt with corrective feedback. Another approach, seen in apps such as StressCheck by Aruzino, uses light sensors on the phone camera to detect pulse and infer stress levels.

The validity of the data from some of these low-cost products is debatable, which is a source of frustration for some end users and researchers. But more precise and costly tools, such as Afflectiva’s sensors of skin conductance and facial recognition, are emerging. As the materials and research advance, these products are bound to improve, and their applicability to clinical practice will increase as well.

Advances and perils in mobile, social and wearable computing
Mobile applications
The number of mobile phone apps related to emotional health is rapidly growing. Of the more than 9,000 consumer health apps available, approximately 6 percent relate to mental health, 11 percent to stress management, 4 percent to sleep and 2 percent to smoking cessation (Dolan, 2011). One of the most common components of apps related to emotional well-being is mood tracking, which has potential to boost emotional awareness and resilience. By using these apps to monitor their moods, people can understand their emotional patterns and develop contextually appropriate coping strategies (Morris et al., 2010). Such monitoring can also enhance patient and therapist communication (Aguilera & Muñoz, 2011). Experience sampling of mood has been shown to reduce biases in patients’ retrospective reports (Calkinsenthal & Larson, 1987), and it may consequently improve clinicians’ understanding of patients.

Most of the apps that offer psychological guidance are based on positive psychology, such as the Live Happy app inspired by Sonja Lyubomirsky’s research (2008). An excellent index of mental health apps was compiled by Luxton et al. (2011), but there is a continuous stream of new apps.

Social media
The most radical psychological effect of mobile phones may lie in their uses for social media rather than in particular apps intended for emotional well-being. Facebook, now used by over a billion people, and other social platforms can be seen as massive psychological interventions insofar as they address needs for social connectedness.

Loneliness and perceived isolation is a core element of affective disorders and a major risk factor for many physical and mental illnesses (Hawley & Cacioppo, 2010). The potential psychosocial benefit of social media, i.e., in addressing loneliness and fostering a sense of connectedness and belonging, is independent of online support communities and forums that specifically focus on mental health. Active engagement on Facebook has been associated with less loneliness and greater feelings of social connectedness (Burke, Kraut, & Marlow, 2011), echoing previous research on social capital (Ellison, Steinfield, & Lampe, 2007). Social network apps may also benefit mental health through “emotional contagion;” that is, the spread of positive affect. Semantic analyses of Facebook status updates indicate that that affective tone spreads within networks (Kramer, 2012). This research indicates that social media’s influence on mental health depends on how and with whom one interacts online: specifically, the extent to which one shares content and forms friendships with people who express positive emotion.

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by analyzing hundreds of speech qualities (Chang, Fisher, & Canary, 2012), and to measure social dynamics related to well-being (Lane et al., 2011). Ongoing research with machine learning will combine many indicators from voice, expression, movement and other behaviors detectable by smartphones. The resulting emotional classifications may facilitate the opportunity to share self-tracking data on sites such as PatientsLikeMe has contributed to an impressive bank of public health data that is changing the way patients evaluate their medical options. Next-generation therapies may involve a layering of crowd-sourced solutions on clinical suggestions. Increasingly, patients expect that when they provide data about their symptoms or treatment responses, they will have access to it for personal investigation and the therapeutic alliance may guide how people can optimally engage with their technologies over time. This in turn, people invest and direct health data depending on returns in education, peer support, social benefit and treatment opportunities.

Implications for clinicians and researchers

These advances in mobile technology will make mobile technologies increasingly relevant to mental health care. To begin, they will provide clinicians with a more contextualized understanding of patients’ struggles and an opportunity to tailor treatment accordingly. Rich sets of population data will eventually allow clinicians to redefine diagnostic systems by examining clusters of symptoms and treatment responses. These advances will also allow clinicians to offer mobile therapies as other adjuncts to or substitutes for psychotherapy, addressing the need for affordable, nonstigmatizing and effective treatment (Kazdin & Blase, 2011). Cognitive-behavioral therapy (CBT) is particularly amenable to mobile interventions given its emphasis on self-monitoring and in situ experimentation with alternative coping strategies. Preliminary studies of mobile therapy based on CBT show promise. Researchers have found that people can engage with their technologies creatively to increase self-awareness, cope with diverse stressors and empathize with others (Morris et al., 2010).

Mobile tools and clinical interventions should complement one another to create more psychologically intelligent technologies and more sophisticated therapies. Early field trials of mobile therapy as an adjunct to CBT show promise for enhancing therapy and shortening treatment protocols (E. Gershon et al., 2009). Researchers are also investigating text messaging as an adjunct to CBT (Aguilera & Muñoz, 2011), and the integration of mobile technology into treatment for severe mental illnesses such as schizophrenia (Deyo et al., 2010). Bulldozer personality disorder (Riwei, Dimeff, Skuch, Carroll, & Linehan, 2011) and substance abuse (Gustafson et al., 2010). By staying informed of such studies and relevant technology advances, clinicians will be able to guide patients toward the most appropriate, empirically validated applications and incorporate those tools to enhance treatment.

Clinicians can become more involved with smartphone technology by integrating the tools patients are already using — whether they relate to moods, diet, music or general social networking — into the therapy. The therapist need not have expertise with or endorse the apps; the value lies in discussing how patients are using them, and examining the insights and obstacles that arise as they try to make changes in their lives. For example, clinicians can help patients align an app’s prompting with therapeutic objectives. They can discuss the patterns that patients see in their moods, thoughts and behaviors — an exercise that may allow both therapist and patient to develop a better understanding of situational challenges and coping strategies. The growing use of the therapeutic alliance may guide how people can optimally engage with their technologies over time, whether these are direct-to-consumer applications or products delivered via clinicians.

Clinicians can also guide technology developers about features that would enhance therapy or assessment. The qualities of a successful therapeutic relationship — trust, empathy, collaborative investigation — can inform the interaction design and the capabilities of future products. For example, there are various ways of visualizing trends and personalizing feedback that can cultivate rapport and trust. A significant challenge that clinicians can address with developers is how technology can raise insight and invite change. Technology should not just hear and fulfill demands, but also offer interpretations and challenges. Demands such as “Where is the nearest Starbuck’s?” or “Will my friend I’m running late” could conceivably be met with questions about whether a third cup of coffee or making a friend wait aligns with one’s values and long-term goals. Such interpretation would obviously need to be done artfully, lest it erode patience and mental health. The qualities required to build an alliance and raise awareness should be integrated with a variety of principles from clinical and social psychology, to help people make sustained changes in their lives. The integration of such technology into a therapeutic relationship could improve the alliance by making a patient feel cared for, even if prompts or messages from a more psychologically intelligent therapeutic agent are automated (Aguilera & Muñoz, 2011).

There are also risks, of course, to bringing technology into the therapeutic encounter. Privacy is a significant concern both to individuals and to health systems. It is critical that patients understand who has access to their mobile data, how frequently it is monitored, and whether a clinician will intervene between sessions because of negative mood patterns, thoughts or behaviors tracked on mobile application.

Another issue pertains to the “digital divide” and the possibility that lack of access to advanced technologies among low income, elderly or rural populations could increase disparities in mental health. Further research is essential to illuminate the potential hazards and benefits of integrating mobile technology into clinical practice.

Technologies are evolving in alignment with consumer expectations and the vision of interdisciplinary development teams. As consumers demand more nuanced expression and control over their data, applications will emerge that are increasingly valuable for enhancing assessment and psychotherapy. Clinicians who stay abreast of technology advances and associated research will be able to help their patients reap the most benefit from these tools.

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This article is adapted from "Mobile, Social, and Wearable Computing and the Evolution of Psychological Practice" from the December 2012 issue of the APA Journal of Professional Psychology: Research and Practice. To read the full article, which includes all references, go to www.apa.org/montage/digital/cc-smartphones.aspx.

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