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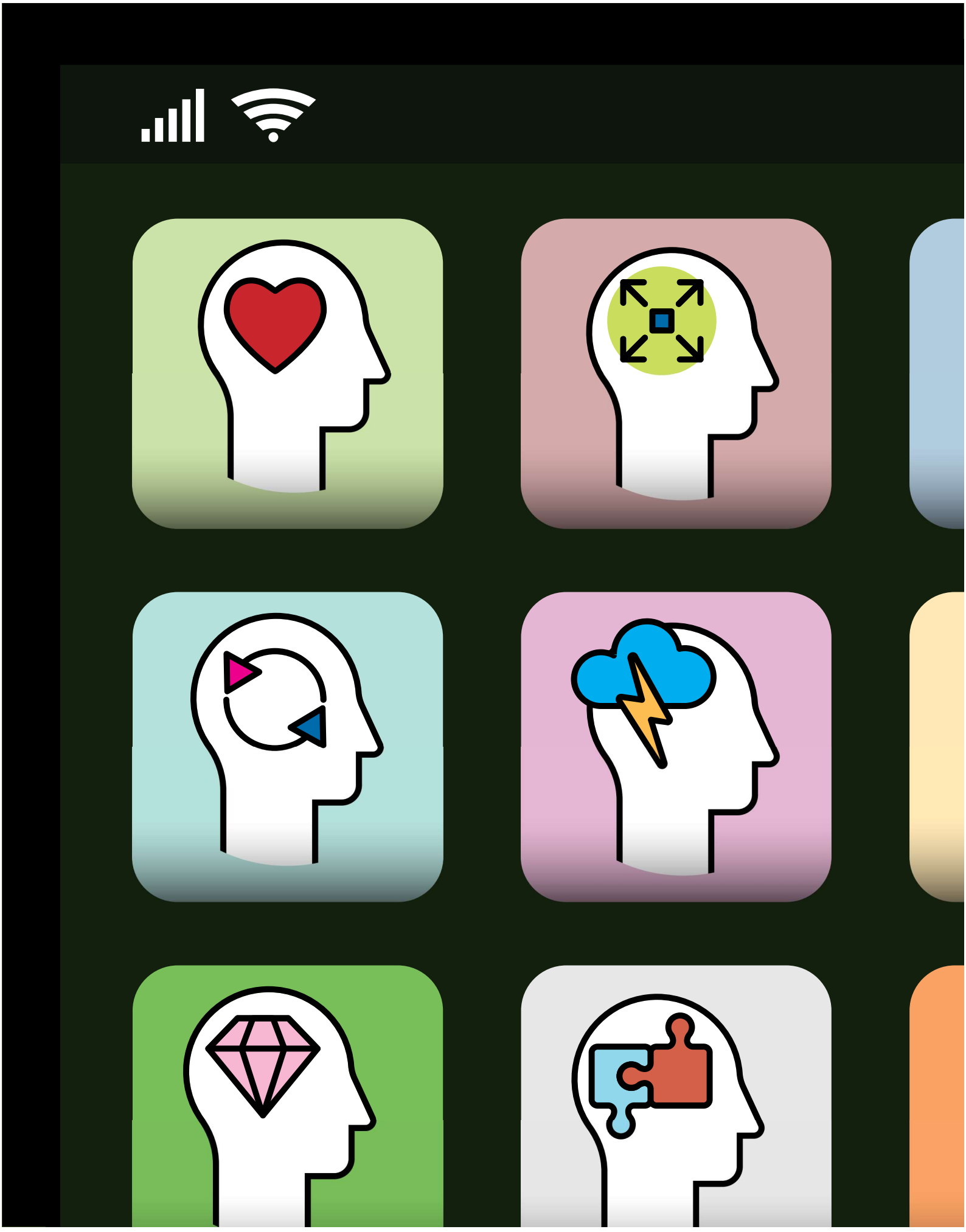

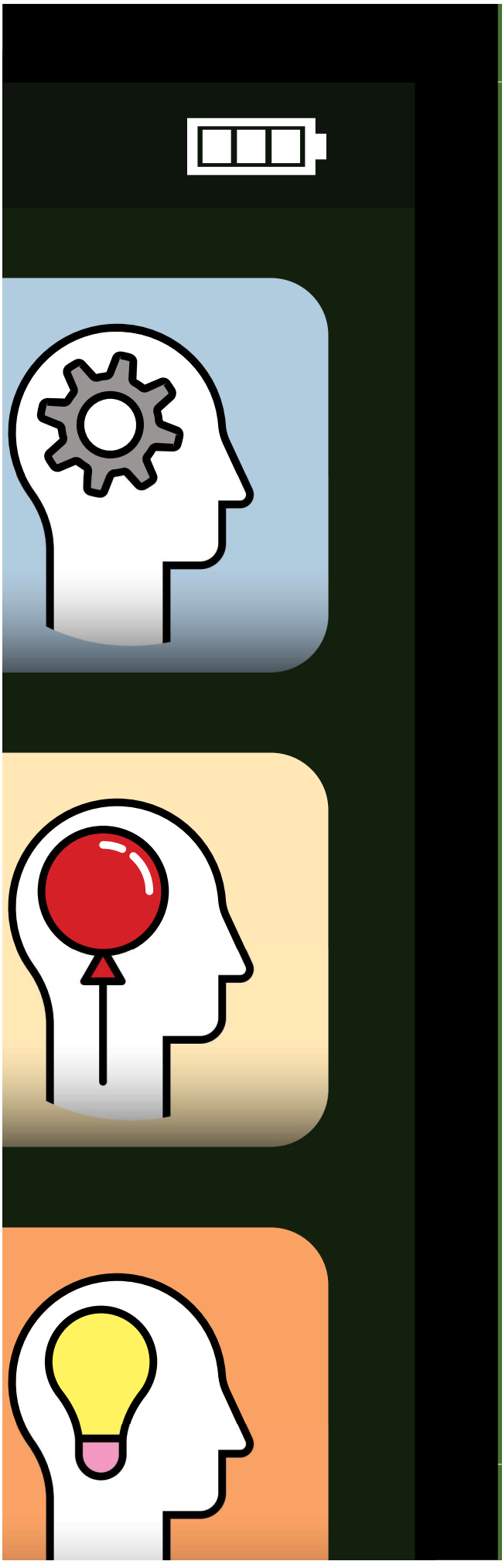

COVER

PUTTING APPS ON THE MENTAL WELL-BEING MAP

by Jack Brooks and Jennifer Nicholas

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Smartphones are the everyday devices we can't put down. Chances are you've checked yours within the last 10 minutes. People are increasingly thinking of smartphones as more than communication devices, but many may remain unaware of their various sensors and features. What if these features could put the tools for improving our mental well-being right at our fingertips? It's already happening, with a multitude of apps available and in development to support multiple facets of mental health and well-being.

What's your purpose in life? Research suggests that knowing the answer to this simple question can improve your health and well-being, reduce your risk of Alzheimer's disease and depression, and maybe even help you lead a longer, more fulfilling life. A personal experience led Professor Victor Strecher, based at the University of Michigan, to reconsider his life purpose. He recalls he began by "working on my sleep, presence, activity, creativity, and eating." With time, Strecher felt "that each of these positive practices gave me more vitality, self-control, and well-being." There are parallels in Strecher's experience with that of Viktor Frankl, who after surviving four Nazi concentration camps, realized that helping other prisoners often resulted in psychological growth of the helper. Frankl went on to create "logotherapy": a method of finding one's life purpose.

"FOR A LONG TIME THIS FIELD HAS BEEN DOMINATED BY AN URGE TO QUANTIFY OUR BODIES AND OURSELVES; WE NOW HAVE THE OPPORTUNITY TO DESIGN MULTISENSORY EXPERIENCES THAT BECOME EMBEDDED IN OUR PSYCHOLOGICAL ACTIVITIES IN NON-DISRUPTIVE WAYS."

With renewed purpose Strecher boldly aims to "help over 1 billion people find greater purpose in their lives." To reach such a large number of people, Strecher took these principles and created a smartphone app called "JOOL," based on logotherapy and other behavioral evidence, to help people live their life with purpose. So if you're unsure of the answer, or want help living your life with purpose — take out your phone — apps can help. At heart, JOOL is a goal-setting and monitoring tool, with the aim of using the science of behavior change to improve health and mental well-being. Increases in behaviors that support living with purpose include sleep and eating healthily, as well as building resilience and promoting self-care; behaviors that are also associated with positive mental well-being.

Using apps can also aid other approaches known to improve our mental well-being, such as by encouraging us to exercise. A 2015 study in the *Journal of Medical Internet Research* (*JMIR*) surveyed 726 participants about their exercise app use and exercise habits. They reported that current exercise app users were 50 percent more likely to exercise than non-users. But is this merely because gym junkies are using apps to track their exercise? A paper in the same issue of *JMIR* used a randomized control trial to find out. (Scientists consider these trials the gold standard for testing causal relationships.) The experimenters randomly divided 51 individuals into one of three groups: an exercise program app, an immersive app where an exercise program was delivered as part of a game, and a control. Using apps did improve fitness, but only for some participants. Further, immersing individuals in a game did not seem to enhance the effect. If some apps work better than others, perhaps the real challenge is aligning the needs of the consumer with app content, and having an easier way for consumers to find suitable apps.

Apps can also improve our mental health. Using apps for the treatment and maintenance of mental health is attractive because people who don't seek help, perhaps due to cost, accessibility, or fear of stigma, can use them to receive support from the device in their pocket. It's therefore unsurprising that the push for apps for mental health is consumer-driven. Indeed, one of us (J. Nicholas) recently analyzed the sentiment of user reviews of apps for the mental health condition, bipolar disorder. The paper, published in *JMIR*, reports that two-thirds of reviews were positive — indicating consumers are readily adopting apps to support their mental health. In the words of one reviewer, "This app is really helpful in keeping me conscious of where my moods are each day. Being on my smartphone I remember to use it."

From a clinical perspective, emerging evidence indicates apps can also be effective at reducing the symptoms of common mental illnesses, such as anxiety. In reality, most mental health apps available have not been scientifically evaluated or even made by people with clinical expertise. So, if you're looking for an app to support your mental health — check out the tips section in this article.

Many of these apps rely on the user to set goals, track their progress, or do exercises — can the user's belief in the app influence their outcomes? There is a wealth of evidence for the "placebo effect": the phenomenon whereby our expectations of a treatment influence the efficacy of the treatment. A 2016 paper in *The Lancet* suggests that the placebo effect also extends to digital treatments. This paper highlights

Tips for Picking a Mental Well-Being App

Lots of apps are available. How to spot the good ones:

- Look at who developed the app: they should have expertise and a good reputation in mental health and well-being.
- You care about your privacy, does the app? Check if the app has a privacy policy. Especially with health apps, it's important to know if and how your data is protected.
- Google it! Try to determine if there is any evidence that the app is effective in achieving its goal. While few apps will be scientifically tested, the core principles should have evidence to support them.
- Don't just rely on app ratings. High-star ratings and reviews tell you if others like using the app. While important, these don't always equal an effective app.
- Do you like it? The app will only be effective if you use it. Everything above is important, but also make sure you enjoy using the app.

USING APPS FOR THE TREATMENT AND MAINTENANCE OF MENTAL HEALTH IS ATTRACTIVE BECAUSE PEOPLE WHO DON'T SEEK HELP, PERHAPS DUE TO COST, ACCESSIBILITY, OR FEAR OF STIGMA, CAN USE THEM TO RECEIVE SUPPORT FROM THE DEVICE IN THEIR POCKET.

that our interactions with apps differ from almost all other treatments because of our intimate relationship with our smartphone. As apps are the new kid on the block, our expectations might also be different from other treatments. Could we use the placebo effect to maximize the impact of apps? Traditionally, the view has been that the placebo effect only works when people are deceived into thinking they are receiving a treatment — a treatment that is expected to have an effect. But recently this thinking has been upturned by studies showing that the effect remains even when people are aware they are receiving a placebo. Until more "evidence-based" apps hit the market, it may be the expectations that surround these apps — that are most important for their efficacy.

Since the introduction of mobile apps in 2008, society is increasingly exploring their benefits on our physical and mental well-being. We must remember that the science of apps for mental well-being is in its infancy and researchers across the globe are working to create more evidence-based apps for physical and mental health. Beyond the development of effective apps, the future of app research is a vast and exciting area.

Strecher believes the innovations to keep an eye on are the ability of smartphones to collect behavioral and biological data in real time and to link this to a whole host of other factors. Strecher adds that once this technology is commonplace, "We can combine these data and, using advances in predictive modeling, help users understand what gives them more vitality and self-control; what influences depressive symptoms, migraines, or relationships."

These developments will become even more viable with the rise in new personalized technologies such as wearables. One exciting prospect is the use of wearable devices to manage stressful situations. A paper published this year in Nature's *Scientific Reports* used a watch-like device, called a "doppel," to deliver heartbeat-like sensations at the wrist. They found that lowering the frequency of these heartbeats reduced anxiety. The paper's senior author, Professor Manos Tsakiris of the University of London, believes this research "paves the way for some exciting opportunities in the field of wearable technology." Tsakiris continues, "For a long time this field has been dominated by an urge to quantify our bodies and ourselves; we now have the opportunity to design multisensory experiences that become embedded in our psychological activities in non-disruptive ways."

Apps already have the ability to automatically record our pulse, movement and location, help us monitor our health, and lead a life with purpose. What will future app technologies be able to tell us about our well-being? B