Android widgets may boost effectiveness of sleep-monitoring apps

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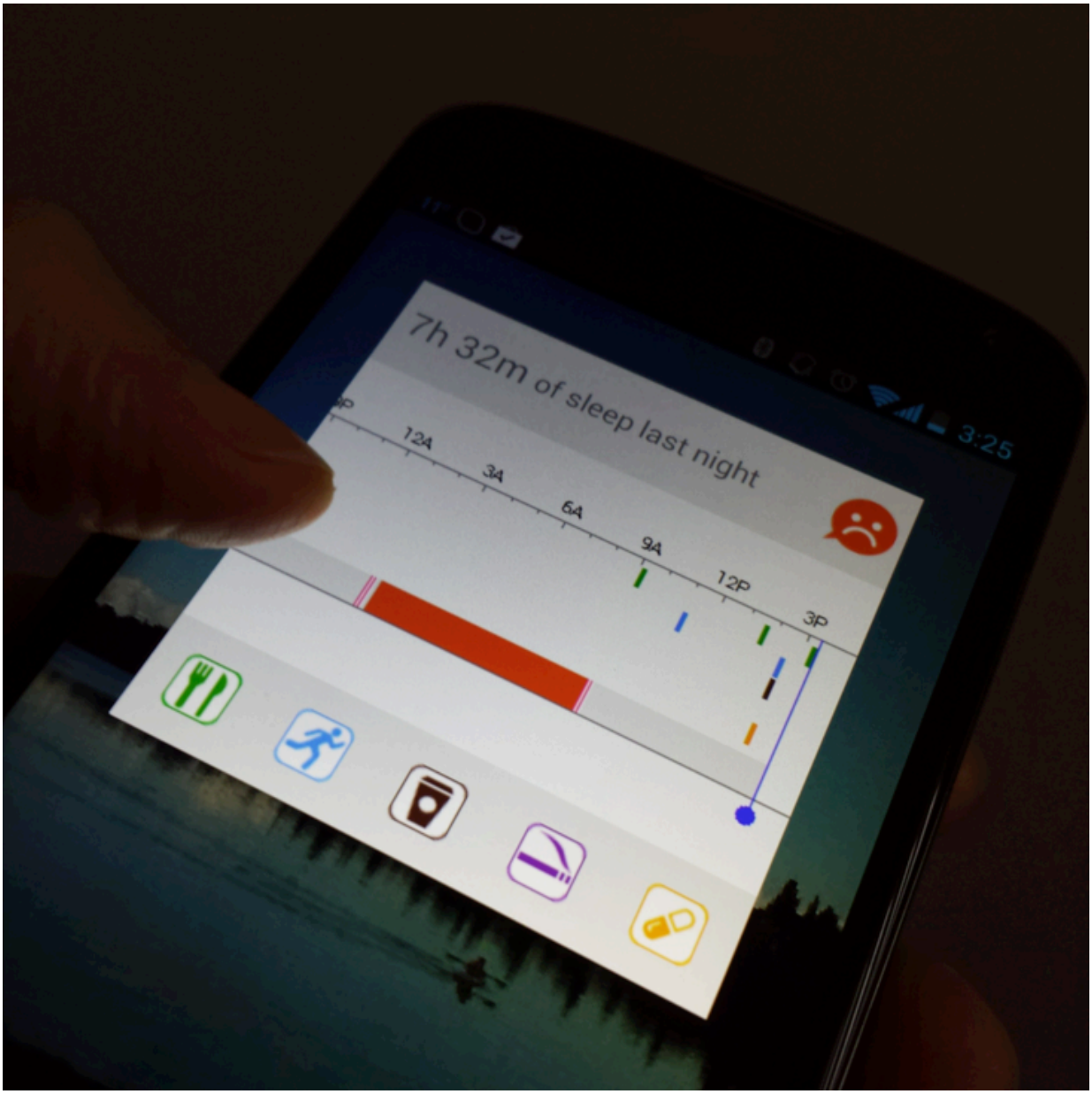

To promote both ease of entering and engaging with the data, the researchers developed an Android sleep monitoring app widget, called SleepTight. Credit: Eun Kyoung Choe/Penn State

An effective smart phone application should make data collection easy, but not so easy that the user forgets to access and reflect on that information, according to a team of researchers.

People who accessed a sleep monitoring app through a small display window—often called a widget —on an Android smart phone were more likely to manually enter their diary information, as well as interact with that data than users who monitored their sleep without the feature, according to Eun Kyoung Choe, assistant professor of information sciences and technology, Penn State.

"As a human-computer interaction researcher, I'm interested in helping people collect their own health information for self-monitoring and also make sense of their data to gain insight. Engagement with data is really important in increasing their self-awareness," said Choe. "Automated sensing can lower the capture burden to collect a lot of data; however, the down side of that is it leads to less engagement with the data and less self-awareness."

To promote both ease of entering and engaging with the data, the researchers developed an Android sleep monitoring app widget, called SleepTight, that served as a data capturing tool as well as providing visual reminders of the user's activities and sleep patterns. The widget would then appear on the home screen—or lock screen—of an Android phone.

"The widget is not a full app, but it's a small window on the home screen

where people can interact with the information and access the full app," said Choe. "We thought that maybe the widget could ease the capture burden, as well as ease the access burden."

The researchers, who recruited 22 people for the study, found that participants who used the widget version of the app were more likely to enter daily sleep diary information into the app than those who did not use widgets. Sleep diary adherence was 92 percent for the participants who had the widgets installed on their app compared to 73 percent who used the app without the widget.

Participants using the widget version also viewed the sleep summary page more than the participants who used the full app version.

"This result indicates that the lock screen and home screen widgets reminded participants to view the sleep summary page and offered a shortcut to the sleep summary page," the researchers said. "Thus, we can conclude that widgets afford frequent self-reflection."

Increased self-reflection, then, could improve the chances that users will make necessary behavioral changes to benefit their health, according to Choe who worked with Bongshin Lee, senior researcher at Microsoft Research and Matthew Kay, doctoral candidate in computer science, Wanda Pratt, professor in the information school and Julie A. Kientz, associate professor in human centered design and engineering, all of the University of Washington.

The researchers, who presented their findings today (Sept.8) at the ACM International Joint Conference on Pervasive and Ubiquitous Computing, asked the participants during weekly surveys and exit interviews what they learned from the app. Participants using both versions of SleepTight showed signs of self-reflection and self-awareness. They indicated that they better understood sleep patterns, as well as other non-sleep activities

that could influence those patterns, such as diet and alcohol use.

Participants indicated that one drawback of using the widget was its lack of privacy compared to the full app.

"Because the data is always on the lock screen, other people could see it," said Choe. "You might not feel comfortable with your boss looking over your shoulder and knowing that you had only two hours sleep the night before, or how many drinks you had."

The widget feature is exclusive to the Android phone models. There is no iPhone widget variation.

Provided by Pennsylvania State University

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