COMMENTARY

Smartphones, Memory, and Pharmacy Education

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"I don't know, but I can look it up and get back to you." Over the years, many faculty members have taught their students to respond to questions from health care providers and patients in this manner. Now more than ever "looking it up" takes seconds, and one needs to go no further than the palm of one's hand. Smartphone technology is ubiquitous and ever expanding. We use our phones to find information, locations, track our health, keep calendars, watch TV, wake up in the morning, keep in touch with friends, listen to music, and much more. Smartphones have become memory extenders, and can serve as handy storage for facts and information from the mundane to the complex. Clearly, smartphones are changing the way we live.

Much has been written regarding the impact of smartphone technology on stress, anxiety, depression, sleep loss, and the potential for addictive behaviors, both in the popular press and the academic press. A widely cited article in the popular press by Jan Twenge asks, "Have smartphones destroyed a generation?" She goes on to provide examples and evidence that the amount of screen time is linked to higher levels of teen depression, suicide rates, spending less time with friends, and higher levels of unhappiness.[1] The ubiquity of smartphone technology has made using true experimental design difficult for scholars, however; several studies on college students have shown growing evidence that there is a direct correlation between the use of smartphones and overall mental health.[2,3]

Smartphones may also be affecting cognitive functioning. Headlines such as "Is your smartphone wrecking your memory?"[4] and "Your smartphone is changing the human race in surprising ways"[5] explore smartphone use and memory, reflective thinking, and learning. Scientists are examining the relationship between smartphone use and cognitive functioning such as attention, memory, and delayed gratification. Ward and colleagues state that the mere presence of a smartphone reduces people's available cognitive capacity.[6] Wilmer and colleagues examined the extant literature on this topic and concluded that the evidence is inconclusive, partly because of the lack of longitudinal data, the difficulty of conducting true experiments, and the large variability in the use of smartphone technology.[7]

Regardless of the mixed evidence regarding smartphone use and cognitive functioning, smartphone use presents dilemmas for educators. One faculty member recently reported that a student asked, "Why should I memorize this if I can look it up?" Information is growing exponentially; however, faculty members may argue that there is baseline knowledge that simply must be learned. A solid knowledge foundation is needed to analyze information, ask insightful questions, and solve problems. In fact, expertise in a body of knowledge is a characteristic of a profession, and is embedded in the pharmacists' code of ethics.[8] However, Sparrow concluded that "when people expect to have future access to information, they have lower rates of recall of the information itself and enhanced recall instead for where to access it."[9] Think again about our long-standing practice of teaching students to reply to questions with "I don't know, but I can look it up and get back to you." Now this search for information can take seconds. It may be more important for students to know how to quickly find and organize high quality information, and synthesize that information with their foundation knowledge to develop appropriate patient or situation specific recommendations and responses.

Concurrently with the rapid increase in smartphone use, pharmacy education is seeing a downward trend in the national passing rates of board examinations. In 2014, the national pass rate on the NAPLEX for first-time test takers was 94.887%.[10] In 2017, this pass rate was 87.95%.[10] Granted, there are many variables involved in this trend (eg, examination difficulty, students' academic ability, students' approach to examination preparation), but one cannot help but wonder, if the growing reliance on the external database of memory in smartphones is negatively affecting our students' ability to recall and apply the requisite information needed to pass the NAPLEX.

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Smartphone technology is here to stay, and it will only improve over time. Its impact on learning warrants careful observation and monitoring, as this technology could affect how we teach and how we assess learning in the future.

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