Cultural Considerations in Using Mobile Health in Clinical Care With Military and Veteran Populations

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Traditional cultural models typically address factors like ethnicity, language, and race as important concerns pertaining to treatment efficacy, but over the years, professionals have expanded the focus to include gender, sexual orientation, age, socioeconomic status, and other aspects of identity and experience, including military cultural issues. As the integration of mobile health increases in clinical care, another important cultural factor that can impact care is technological culture. Differences in perception of technological competence by patient and provider can impact the provider's ability to effectively connect with the patient and fully leverage tools to support evidence-based treatment. In this article, we describe provider- and patient-level cultural issues in the provision of clinical care in the military and veteran populations and how the development of cultural competency in technological culture can improve patient care. We apply traditional models in the development of cultural competency to technological culture as well as provide recommendations for providers in Department of Defense and Department of Veterans Affairs health care systems that may be relevant to outside clinicians as well. Key factors are addressed when considering the cultural issues involved in the clinical integration of mobile health in the military and veteran populations.

Keywords: cultural competency, mobile apps, clinical care, military, veteran

Cultural competence in the provision of health care can have a direct impact on the efficacy of delivery of care (Griner & Smith, 2006). Providers can significantly improve patient satisfaction and treatment outcomes when they acknowledge their own limitations in cultural awareness, attitudes, and knowledge of cultures beyond their own. Providers that work to develop their cultural competence provide better care in multiple domains (Lie, Lee-Rey, Gomez, Bereknyei, & Braddock, 2011; Saha, Beach, & Cooper, 2008). This understanding can significantly improve patient satisfaction and potentially outcomes (Beach et al., 2005).

Culturally competent health care providers strive for optimal care to patients regardless of their race, ethnic background, native language, sexual orientation, gender identity, religious affiliation, or cultural beliefs. Being culturally competent in the mental health field involves understanding cultural values, awareness of potential biases, and the use of effective strategies to increase one's cultural knowledge and humility while being empirically grounded (Whaley & Davis, 2007). Cultural competence also can extend to particular populations, including military culture and the integration of technology in clinical care. This article will describe cultural considerations of the integration of mobile health technology in the U.S. Department of Defense and Department of Veterans Affairs (VA) health care settings and demonstrate the application of cultural theoretical models to better develop provider competence.

Military Culture and Provider Cultural Competence

In military patient populations, many treatment recipients hold the belief that nonmilitary providers will be unable to understand, and therefore effectively treat, service members (Reger, Etherage, Reger, & Gahm, 2008). Indeed, while civilian mental health providers may be trained to deliver evidence-based treatments, research has shown that with a lack of knowledge, awareness, comfort, and skills in treating military and veteran populations, the quality of care is negatively impacted (Tanielian et al., 2014). The unique cultural components in the military (e.g., language, behavior norms, and belief systems) require providers delivering care to service members, veterans, and their families to become culturally competent to deliver effective care. Whereas provider-patient matching is a proposed solution for overcoming this barrier, experts have

argued for other solutions that address both practical and ideological issues with matching (e.g., Sue, 1998). For example, in the military and VA settings, the demand for mental health providers far exceeds the number of providers trained that have also served in the Armed Forces. To competently deliver care to service members, civilian providers have an ethical obligation to become knowledgeable regarding military culture (Reger et al., 2008). Given that a large percentage of mental health providers have not served in the military, many leaders have recommended specific training to increase these providers' level of military cultural competence (Meyer, Writer, & Brim, 2016). Training on military culture addresses various issues, such as military hierarchy, values, and stressors associated with deployment.

Technological Cultural Competence

One aspect of cultural competence that extends beyond military settings, but is particularly germane to this population, is the integration of technology in clinical care. In addition to (and often intersecting with) the abovementioned cultural factors, technology use is another consideration when tailoring treatment to the individual patient. Many service members exhibit a need for mental health services, particularly postdeployment, but a substantially lower proportion of service members actually seek any kind of treatment due to concerns such as stigma and career impact (Sadler et al., 2013; Schreiber & McEnany, 2015; Sharp et al., 2015). Lack of access to services is also a crucial barrier to care, particularly in rural or remote areas. Mobile health can provide effective emotional support across geographically dispersed patients (Poropatich, Pavliscsak, Tong, Little, & McVeigh, 2014).

By utilizing mobile applications or websites, service members and veterans can gain information, complete assessments, and participate in behavior-change techniques in an immediate, low-cost, and anonymous way. A barrier to the optimal use of these technologies in behavioral health is a lack of technological cultural competence. Prensky (2001) identified a developmental cohort phenomenon, *digital nativism.* He described this phenomenon as an age divide in which individuals who grew up in an era of computing are referred to as *digital natives*. *Digital natives* are thought to be at ease with using a wide range of technologies. Alternatively, individuals who did not grow up with digital technology (*digital immigrants*) had to learn these technologies, often in adulthood, and Prensky's theory posits that *digital immigrants* may feel less comfortable with technology use. However, technology adoption and technology use are much more complex than Prensky's view, which is based solely on age. Factors such as experience with technology and technology adoption style (see Rogers, 1962/2010, described below) provide a more comprehensive understanding of the multitude of factors involved in the adoption of technologies.

Demographics of the U.S. Armed Forces include mostly young (65.6% are 30 years or younger), White (68.7%) men (84.5%; Department of Defense, 2015). Further, only 8.9% of the total U.S. active duty force are 41 years or older, meaning that the vast majority of service members are *digital natives*. Technology is at the heart of their work, play, knowledge seeking, and connection with family and friends and is increasingly a part of mental health care in the military (Wilson, Onorati, Mishkind, Reger, & Gahm, 2008). However, we see a divide in demographic variables between service members and their behavioral health providers, with the majority of providers being over the age of 30. The Department of Veterans Affairs serves a population that is on average older than those in active duty, with 85.3% of veterans being age 40 and older in 2016 (Department of Veterans Affairs, 2016). However, despite age differences between active duty and veteran populations, there is great diversity with regard to utilization of technology across ages, and it is urged that providers not make assumptions based on age for understanding a patient's comfort with technology use in health care.

If a technological cultural divide exists between patient and provider, it can impact behavioral health care in substantial ways. For instance, if a provider is unwilling or unable to integrate health technologies into care, the patient may grow less willing to engage in care (Ricciardi, Mostashari, Murphy, Daniel, & Siminerio, 2013). Within the Veterans Health Administration, the reverse pattern can be found with younger providers and older patients. No matter the direction of potential disconnect, using technology in care requires careful consideration of any potential cultural divide, as well as the sensitivity as providers to meet our patients where they are in terms of comfort level with technology in clinical care.

Military Personnel Mobile Health Use and Cultural Considerations

The use of mobile devices has reached near-ubiquitous levels in recent years, with smartphone ownership rates 70% or higher across age strata, gender, and ethnoracial background (Pew Research Center, 2017). Service members' smartphone ownership rates are even higher, with 89% reporting owning a smartphone in 2016 (Edwards-Stewart, Smolenski, Reger, Bush, & Workman, 2016). Further, service members report a willingness to use technology-based tools that facilitate psychological care (Wilson et al., 2008). Moreover, Wilson et al. (2008) found that 33% of soldiers who were not willing to talk to a counselor in person were willing to use a mobile application or website for mental health care. More recent studies have supported this finding (e.g., Bush & Wheeler, 2015; Sadler et al., 2013). Thirty-one percent of service personnel who screened positive for psychological problems reported that use of online screenings reduced discomfort, and 42% endorsed intentions to seek care (Sadler et al., 2013).

Technology may be a solution to stigma and privacy concerns (Schreiber & McEnany, 2015). Fear, Seddon, Jones, Greenberg, and Wessely (2012) demonstrated that anonymous surveys revealed a higher prevalence of posttraumatic stress disorder and self-endorsed stigmatizing beliefs when compared to identifiable surveys. Service members often report that they avoid seeking help out of concern for negative personal or professional consequences, such as concern that receiving treatment would identify them as unfit for duty (Olden, Cukor, Rizzo, Rothbaum, & Difede, 2010). These barriers to effective behavioral health care in military settings clearly elucidate the need for a model of military cultural competence. Such a model must be applied not only to more commonly considered cultural aspects (e.g., ethnicity, gender) but also to the dichotomies discussed herein—namely, the military-civilian divide and differences between digital natives and digital immigrants.

Relationship With Technology

The conceptual framework of a *technology culture* involves an understanding of and familiarity with both the use of technology and the divide between digital natives and digital immigrants. Although the culture divide may be impacted by year of birth, age is not the only variable that influences one's relationship with technology. Thus, providers must be cautious not to prejudge and discriminate about the likelihood of patients' willingness to integrate technology into care based on their age.

People's relationship with technology can also be influenced by their technology adoption styles, which were initially defined by Everett Rogers (1962/2010) in his diffusion of innovation (DOI) theory. DOI theory explains how an idea or product gains popularity over time. Once people perceive the new idea or product as innovative and useful, the adoption process begins. While Rogers's theory will be discussed here as it is a foundational model, additional theories and constructs of innovation adoption exist and provide additional insight into increasing adoption (for a review, see Wisdom, Chor, Hoagwood, & Horwitz, 2014).

As described in Rogers's (1962/2010) theory, the adoption of a new idea, behavior, or product (i.e., *innovation*) does not happen simultaneously in a social system. Rather, it is a process whereby some people are more apt to adopt an innovation than others. There are five established adopter categories based on a theorized normally distributed continuum of early (*innovators,* 2.5% of the population) to later adoption (*laggards,* 16%), and the majority of the general population tends to fall in the middle three categories of *early adopter* (13.5%), *early majority* (34%), and *late majority* (34%). Characteristics of earlier adopters were originally described as more often young, White, and male (Rogers, 1962/2010), which aligns with much of the service member population (Department of Defense, 2015). Characteristics of later adopters include being more averse to change, being more advanced in age, having more focus on "traditions," and having less disposable income (Rogers, 1962/2010). When promoting an innovation, different strategies can appeal to the different adopter categories.

An important consideration with any technology is that adoption rates can change significantly in short periods of time. Although smartphone ownership is now relatively ubiquitous, data from 6 years prior (Pew Research Center, 2017) show that only a third of American adults owned a smartphone. Regarding a technological cultural divide in the military between providers and patients, research does show a marked difference in technology use with only 56% of military providers owning a smartphone compared with 89% of service members (Edwards-Stewart et al., 2016). These data notwithstanding, when introducing technology in clinical settings, providers must be sensitive to socioeconomic factors and how they impact access to technology. Providers can show sensitivity by first asking whether or not a client owns a smartphone or similar device.

An Explanatory Framework for Cultural Competence: Bennett's Developmental Model

Complementary to Rogers's (1962/2010) DOI theory in our discussion of cultural competency with technology use is Milton Bennett's (1993) developmental model of intercultural sensitivity (DMIS), which is sometimes referred to as the Bennett scale. In this model, six stages describe how an individual may (or may not) move through increasing levels of awareness of, and openness to, cultural disparities. The first three stages are considered states of *ethnocentricity* (only seeing the world through the lens of one's own culture), whereas the last three are thought to reflect *ethnorelativity* (recognizing multiple ways of viewing the world), a more integrated stance vis-à-vis these differences. In his theory, Bennett describes evolutionary strategies, which are changes that occur when evolving through each step of the scale. Bennett's six stages and the evolutionary strategies include those outlined in Figure 1.

DMIS Stage (Bennett, 1993)		Evolutionary Strategy (Bennett, 2004)
Ethnocentricity *Seeing the world through the lens of your own culture*	**Denial of Difference** Only my view exists *I don't use smartphones, so I know none of my patients do either*	**From Denial to Defense** Person acquires an awareness of difference between cultures *I'm starting to realize that although I don't use smartphones, almost everyone else does*
	Defense against Difference We are different, but I'm better *My patients may use smartphones, but I'm better because I don't, or "those young kids and their stupid smartphones!"*	**From Defense to Minimization** Negative judgments are depolarized, and the person is introduced to similarities between cultures. *Although those young kids are using smartphones, I remember how excited I was when new technologies came out when I was their age*
	Minimization of Difference We might be different, but it's no big deal *I don't use smartphones and my patients do, but it doesn't impact how I deliver care*	**From Minimization to Acceptance** Person grasps the importance of intercultural difference. *Smartphones are here to stay and people seem to like them, so I guess I'll be open to it*
Ethnorelativity *Recognizing multiple ways of viewing the world*	**Acceptance of Difference** We're different, and I'm ok with that *I don't use smartphones, but my patients do and I'm ok with that*	**From Acceptance to Adaptation** Exploration and research into the other culture begins *Mobile apps can provide benefits to me and my patient in clinical care, maybe I should work to learn how to safely and ethically integrate them into evidence-based practices*
	Adaptation to Difference We're different, but I work to think and act in a way that is understanding and respectful of those differences *I'm not familiar with smartphones, and my patients are, but I'm working to learn how to safely and ethically integrate them into care, and to understand the benefits to me and my patients*	**From Adaptation to Integration** Subject develops empathy towards the other culture *I didn't grow up in the digital age, but I can understand the benefits of smartphone technologies, as well as the increased challenges it may create for digital natives*
	Integration of Difference I respect and value our cultural differences, and can operate in both cultures *Although I didn't grow up in a digital age, I understand how to leverage smartphone technology, how to choose and prescribe apps to support evidence-based treatment, and to communicate to patients regarding security and privacy*	

Figure 1. Technological culture divide in mobile health use in clinical care.

As described in this figure, the application of cultural models, such as the Bennett (2004) model, allows providers a method to identify their own level of acculturation with technological culture, as well as a method to bridge the potential divide between cultural differences that may exist between provider and patient. Working toward increasing cultural competency is a process that can be achieved through the application of cultural models and provides a way to include these differences in technology use and adoption. Cultural considerations include being aware of and sensitive to potential differences between provider and patient because such differences can impact the quality of care provided.

As with any cultural differences, it is important to "meet patients where they are." For example, an alliance rupture may occur if a provider is resistant to using an app that supports an evidence-based treatment when the patient wants to use the app in his or her clinical care. The risk is that the provider does not address the patient's needs and wishes. Thus, when integrating technology into care, the first step for the provider is to identify any potential personal biases regarding technology use. Provider-held technology biases may include ideas like "only young people like technology," "technology is for entertainment purposes only," "my patients don't have access to technology," or, on the other end of the spectrum, "if it's new, it's better" (see Figure 1).

Providers should understand their own technology adoption style and strive to become aware of any potential negative or positive biases they may have. It is recommended that providers be aware of their own comfort level with technology, their technology adoption style, and how that may influence their perception of technology and/or readiness to adopt to new technologies. Providers should also be aware of potential differences between themselves and their patients on these variables and how this may influence the process of integration of technology in clinical care. Providers should be aware that any differences might impact care as they could impact therapeutic alliance, as well as be aware of and prepared to assess for and address issues as they arise. The application of an established cultural model, as seen in Figure 1, provides a potential roadmap for process. As an example, depending on factors including technology adoption style and experience as a digital native or digital immigrant, technology can be viewed as useful and efficient, while others may feel frustrated by the experience of learning new technologies. These perspectives influence technology adoption in clinical care and have the potential to impact the effectiveness of a technology used to support the delivery of evidence-based practices.

The next step is obtaining an understanding of the patients' level of familiarity and comfort with the proposed technology and whether they already use the relevant technology. Providers can benefit from identifying the technology adoption style of the patient. The authors recommend assessing a patient's familiarity and comfort level with any proposed technology prior to engaging with the technology. A patient-centered approach involves using strategies to reach beyond one's current perspective and to "meet patients where they are." After assessing for potential technological cultural issues, the next steps involve applying Bennett's model to identify which DMIS stage corresponds to the provider and then work to bridge any potential gap. Figure 1 illustrates the adaptation of Bennett's model with the example of a provider's perspective varying from denial to adaptation, with a patient who is a digital native and/or early adopter. An example of a common

bias by providers who are digital immigrants is that their patients do not have access to the technology or interest in using it. Such an assumption is often inaccurate and likely based on their own experience and cognitive heuristics. In Bennett's model, this example fits the *denial of difference* stage. In reality, at least for smartphone technology, as described above, the data show that across age strata, gender, and ethnoracial background, ownership rates are high (70% or higher; Pew Research Center, 2017). This bias may stem from a developmental cohort effect due to commonly seen age differences between patients and providers.

Another bias a provider may have is that a patient with a lower income will have less access to technology, such as thinking "This veteran only receives partial service connection benefits, so they can't afford a smartphone." Despite realistic socioeconomic concerns, one survey of U.S. adults who earned less than $30,000 per year found that 64% still owned a smartphone (Pew Research Center, 2017). Due to social programs, cellphone and smartphone ownership rates are high even among homeless individuals who historically had less access to technology (Rhoades, Wenzel, Rice, Winetrobe, & Henwood, 2017). These assumptions may be potentially damaging to the therapeutic alliance and may fail to leverage the benefits of mobile apps in clinical care. Another common provider-held bias is that patients who are younger are savvier with technology and more open to learning new approaches to treatment. While it may be more likely that younger patients may be more willing to adopt technology, it cannot be assumed. The same is true of assuming older patients want to avoid technology.

Conclusions

Mobile health represents a paradigm shift in how providers deliver care and patients engage in their own health data. Recent advances in smartphones and their pervasiveness in our society represent a disruptive innovation, as described by Christenson (1997); these technologies have created fundamental changes in how society operates. This paradigm shift in the delivery of health care augmented with technology can be either resisted or embraced with the proper knowledge, awareness, and guidance to foster greater technological cultural competency. Providers and patients alike have promoted the idea that digital natives and immigrants must embrace technology-based approaches to care. Indeed, recent federal legislation mandates the establishment of these services in the military (Civic Impulse, 2017). Legislative and financial support, though, is insufficient for change; providers must also develop cultural competence for the digital age. A growing emphasis in cultural competence training in health care shows promise for improving the knowledge, attitudes, and skills of providers, including methods of identifying and assessing cross-cultural differences and increasing cultural sensitivity (American Psychological Association, 2003; Bennett, 2004). Applying existing cultural models provides an opportunity for providers to bridge the divide that may exist in multiple domains, including technological culture, in better understanding themselves and their patients. This growing cross-cultural dialogue and understanding, by extension, helps the mental health field move toward increasing cultural competence that maximizes the benefits of technology.

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