Validating Military Culture: The Factor Analysis of a Military-Related Adaptation of Acculturation

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VALIDATING MILITARY CULTURE: THE FACTOR ANALYSIS OF A MILITARY-RELATED ADAPTATION OF ACCULTURATION

A Dissertation
presented in partial fulfillment of requirements
in the Department of Psychology
for the degree of Doctor of Philosophy
The University of Mississippi

by
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May 2019
ABSTRACT

A meaningful distinction exists between military and civilian culture that appears to play a significant role in a service member or veteran’s ability to navigate effectively in civilian society. Unfortunately, many systems that provide services for these individuals do not have a valid method of identifying to what extent culture, or the dissonance between cultures, affects service members’ ability to live with the profound experiences they go through and to simply adjust to a different lifestyle.

The concept of acculturation has a long history, and measures of the construct attempt to assess the degree to which attitudes and behaviors reflect the interaction between different cultures. Berry’s acculturation framework (1997) is arguably the most empirically-supported and well-known model of acculturation. Berry’s model posits that an individual may have difficulty appropriately adapting to a culture different than his or her own depending on how much they are oriented to either culture. Moreover, Searle and Ward (1990) hypothesized that an individual’s acculturation orientation, in addition to how different the dominant and non-dominant cultures are from one another, impacts psychological and sociocultural adaptation to a foreign culture.

Both Berry’s model of acculturation and Searle and Ward’s theory of cultural adaptation provide a foundation to investigate how cultural influences may play a role in service member and veteran adjustment. Several quantitative measures exist for evaluating acculturation between individuals having different ethnocultural experiences and measures that evaluate military
culture-related adjustment or reintegration. However, there is no existing measure that is rooted in cultural theory or that explicitly assesses military-related acculturation. The aim of the current study is to initiate the development of a theoretically-grounded measure of military-related acculturation. Data from 364 veterans were collected via an online survey that included four military-related adaptations of acculturation measures created by Demes and Geeraert (2014): the Brief Sociocultural Adaptation Scale (BSAS), the Brief Psychological Adaptation Scale (BPAS), the Brief Perceived Cultural Distance Scale (BPCDS), and the Brief Acculturation Orientation Scale (BAOS). Data analysis included a confirmatory factor analysis, an estimation method sensitivity analysis, and an exploratory factor analysis to test and further explore the structural properties of the model. Results suggest that the proposed adaptation of the original ethnocultural measurement model was not a good fit to the data. However, an evaluation of localized areas of strain in the confirmatory model and results from an exploratory factor analysis suggest that there is support for the continued development of a military-related model of acculturation after considering restructuring and further validation. More specifically, taking into account the existing literature and the results of the current study, future research to further develop and improve a model of military-related acculturation includes using a more parsimonious model by merging both adaptation scales, omitting the cultural distance scale, and making more substantial text modifications to the remaining items, thus, leaving a single adaptation scale and the two-factor acculturation orientation scale.
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CHAPTER I

VALIDATING MILITARY CULTURE: A CONFIRMATORY FACTOR ANALYSIS OF THE MILITARY-RELATED ADAPTATION OF ACCULTURATION

Theoretically and conceptually, there is support for a meaningful divide between military and civilian culture. Dunivin (1994) used a sociological framework to explain how the military is an organization that espouses unique attitudes and traditions, which are learned, passed on to succeeding generations, and pervasive across time and context. Described in this way, the military lifestyle aligns with a conventional definition of “culture”: “the customs, arts, social institutions, and achievements of a particular nation, people, or other social group” (Jewell & Abate, 2001, p. 416). In addition, for the purposes of this paper, the term “service members” refers to those who are serving in the military and “veterans” refers to those who have been officially discharged. Regardless of the terms, however, the intention of this paper is not to dichotomize or categorize experiences. That is not realistic and undermines the nature of individual differences. For example, an individual whose parents are in the military would technically not be considered a “service member” or “veteran” but may certainly be influenced and affected by military culture. Therefore, specific terms should merely be used as a soft reference point to concepts and experiences related to culture that are much more fluid and variable.
Wilson (2007) posited that studying military culture using an institutional framework highlights the impact that the relationships between the military and civilian society, including government agencies, can have on service members’ behavior. In one excerpt that profoundly illustrates one of the several complex aspects of the cultural disparity between the military and civilian society, Wilson stated:

[The military] differs from other institutions in that their primary mission entails a readiness to take life and destroy property. This imparts a special nature to the relationship between the [military] and the state, because it is through the latter that soldiers receive sanction to break taboos that inhibit the rest of society from killing (p. 22).

The primary function of the military is to protect the country. Engaging in combat is inevitably a definitive means to accomplish that goal. Thus, the military’s inherently aggressive nature, which is essential to its effectiveness, is understandably reinforced despite the potential to be at odds with civilian morality. At the risk of simplifying this process, one could say that civilian society strengthens the development of a military culture that allows extreme deviations from the norms of civilian culture out of necessity, perpetuating the cultural divide.

Health professionals who work directly with veterans recognize the cultural separation between military and civilian society as well. From a social work perspective, Hall (2011) described several culturally relevant areas of the military lifestyle that make the transition from military to civilian life particularly difficult. Examples of such areas include family relations (e.g., prioritizing between military family duties and spouse and children), the authoritarian
structure and class system, language, the profound functional importance of the mission or sense of purpose, and individual values such as honor, sacrifice, and stoicism. Without an awareness and thorough understanding of these differences, communication between provider and veteran is hindered. Additionally, Kuehner (2013), a nurse practitioner and veteran, provided her own perspective, stressing the need to strengthen the communication between civilian providers and veterans. At the very least, practitioners are concerned enough about the negative impact that not recognizing these cultural differences can have on the effectiveness of the services they provide that they are compelled to share their experiences and observations with the public via peer-reviewed journals.

In addition to recognizing cultural differences more generally, other health professionals have emphasized the detrimental influence that the failure to consider cultural differences has on more specific situations. For instance, some authors, such as Coll, Weiss, and Yarvis (2011) and Weiss, Coll, and Metal (2011), expanded the discussion of culture by going more deeply into how combat experiences add complexity to working with veterans and with service members still on active duty. These authors highlighted how attempting to address issues related to mental health, such as anxiety and posttraumatic stress disorder (PTSD), can be difficult due to how mental health is perceived through the military worldview. For example, diagnosing a veteran with PTSD aids clinicians in selecting an appropriate evidence-based treatment; however, doing so may be especially stigmatizing and may invalidate the “sacrifice” these individuals, who value strength and emotional restraint, made for their country.

As a result, several professionals have suggested adopting an increasingly strengths-based approach with veterans to balance the cultural discord between individuals who value personal strength and a society whose health systems rely on identifying personal weaknesses
(Magyar-Moe, 2014). One example of how noticing cultural differences can be crucial in the mental health field is when approaching the topic of suicide. Bryan, Jennings, Jobes, and Bradley (2012) described how discussing suicide within a conventional approach (i.e., based on the medical model), using terms such as “risk and protective factors” and associating thoughts of suicide with weakness, could be problematic. In addition to alluding to a language barrier, the authors detailed several other aspects of the mental health system that undermine elements of military culture, potentially exacerbating the suicide risk and other mental health-related issues. For example, using presentations to educate large groups about suicide or simply increasing the amount of mental health professionals available to military personnel does not address the stigmatization related to seeking help. Especially when broadly implemented, conventional methods inadvertently undercut military values such as mental toughness, collectivism, self-reliance, self-sacrifice, and fearlessness about death. Pease, Billera, and Gerard (2015) theorized that many factors associated with increased suicide risk, such as poor social support, psychological distress and physical injury, financial strain, and difficulty finding employment, are further exacerbated by cultural differences. Therefore, the authors suggested an approach that facilitates the acceptance and appreciation of military culture instead of one that attempts at forcing change so that the views of service members and veterans align with a more conventional mental health approach.

Another culturally-salient example of how subtle, unintended verbal cues can be harmful is when speaking about and referring to aggression, intimidation, and traumatic experiences with negative connotations. From a military perspective, aggression and intimidation have essential utility. They are assets. A recent article published in *The Hill*, an online news source, posted a video of the U.S. Defense Secretary, Marine Corps General James Mattis, speaking to U.S.
troops stating, “We’ve got the power of intimidation, and that’s you, if someone wants to screw with our families, our country and our allies” (Carter, 2017). Additionally, war, combat, killing, and physical injury - all experiences associated with trauma - are accepted by service members and veterans as a part of the sacrifice they make, and thus they are considered to be valued facets of military culture (Bryan et al., 2012; Bryan & Morrow, 2011; Collins, 1998; Demers, 2011; Hall, 2011). Therefore, when clinicians use the word “trauma,” for example, in a mental health setting without qualifying the use of the term, they are at risk of undermining and invalidating the culture of service members and veterans.

Concerns around adhering too closely to traditional civilian cultural views are recognized within the legal system as well. Brown, Stanulis, Theis, Farnsworth, and Daniels (2013) highlighted how, despite existing legislation in some states that accommodates differences between military and civilian culture to inform rulings in criminal cases, judges still lack the understanding of those cultural differences and base judgment on traditional, stigmatizing psychological views. Such a scenario is depicted in the HBO documentary Wartorn (Aplert, Kent, O’Neill, Gandolfini, & Nevins, 2010). In the documentary, a Marine Corps veteran, Nathan Damigo, is sentenced to six years in prison for attacking a Middle Eastern cab driver at gunpoint. In the video, Damigo’s mother described the incident, based on a psychological evaluation, as a dissociative episode or “nightmare” in which he thought he “was back in Iraq […] doing his job.” Further, Damigo’s mother reported that Damigo was intoxicated and possibly suicidal during the incident, further complicating the situation. Understanding the potential impact of these cultural differences in legal matters is important. Reports from the U.S. Department of Justice found that veterans comprised 10% of inmates from state, federal, and local institutions in 2004 (Noonan & Mumola, 2007) and 8% of such inmates in 2011-2012.
Additionally, studies investigating criminal behavior in veteran and/or service member populations report that many of these cases are related to substance abuse and/or anger and aggression (Elbogen et al., 2012; Snowden, Oh, Salas-Wright, Vaughn, & King, 2017; Wilk, Quartana, Clarke-Walper, Kok, & Riviere, 2015). Similar findings have been reported in the United Kingdom (MacManus et al., 2013).

Recognizing that the instrumental utility of aggression and intimidation is highly valued in the military, seeing increases in aggression in services members and veterans is not that surprising. Fundamental, empirically-supported behavioral principles, such as operant conditioning (Skinner, 1938), provide evidence that reinforcement of a behavior will increase its frequency. If aggression were more greatly reinforced during deployment, it would make sense that there would be an increase upon return. Additionally, if aggression is highly valued (e.g., the “kill or be killed” mentality), one can see how culturally-insensitive attempts to extinguish the behavior may be met with resistance (e.g., treatment non-compliance/dropout). Unfortunately, the behaviors that result from aggression, while being quite useful attributes in the military, can be problematic in civilian society.

Moreover, there is increasing recognition in the literature of a “warrior” mentality, or culture, serving as a core component of cultural separation between military and civilian societies. The warrior culture is described as one that promotes strength, personal sacrifice, and courage, and in some cases has been associated with masculinity (Dunivin, 1994; Keats, 2010). Unfortunately, the lifestyle that is reinforced in accordance with these values is often linked to problematic psychological outcomes such as self-destructive behaviors or symptoms of posttraumatic stress (Bryan & Morrow, 2011; Hall, 2011; Jobes, 2013; Pease et al., 2015; Weiss et al., 2011; Wilson, 2007). Further, much of the published work that discusses military culture
more directly, such as those sources cited in this paper, is predominantly qualitative, anecdotal, and/or theoretical in nature. While the warrior mentality is conceptually and theoretically logical, the understanding of the potentially broad scope of raw cultural differences between military and civilian culture is still relatively devoid of substantive quantitative evidence.

Thus, while there is compelling qualitative, anecdotal, and theoretical support demonstrating differences between military and civilian cultures, there is a lack of quantitative empirical support directly illuminating these differences. Considering the complexity of culture in general, let alone military culture and its role in veterans’ and active service members’ mental health, different viewpoints and conceptualizations are needed beyond those that are solely theoretical, anecdotal, or qualitative. For these reasons, the goal of the current study is to validate existing quantitative measures designed to detect cultural differences between foreign cultures and how those differences influence sociocultural and psychological adaptation, for use with a veteran population. To maintain an emphasis on culture, that is, a direct link to culture, an equally important aim of this research is to accomplish this goal by conceptualizing military culture via an acculturation framework. The implications in recognizing the military-civilian cultural divide are apparent and essential for quality of life upon return to civilian life following military service or deployment. The following sections address these objectives by defining the concept of acculturation and discussing existing methods of measurement, identifying how military culture fits into an acculturation framework, and delineating why understanding a military-civilian integration in this way is imperative.

**Defining Acculturation**

Written works that describe processes similar to what is understood today as acculturation date as far back as 348 BC (Plato, 348BC/1892). While detailing the origins of the
term is beyond the purview of this article, clearly defining and operationalizing the concept of acculturation is critical to conducting research on it. Unfortunately, even determining an agreed upon definition of acculturation becomes difficult across the many decades of the term’s conceptual changes and empirical operationalizations. Rudmin (2009) provided an extensive overview of problems with defining and measuring acculturation that offers an abundance of helpful perspectives and sources. However, within the thorough review of issues that have accumulated over the years, an important distinction between defining and operationalizing the construct is lost. As aforementioned, overly relying on terms can be problematic without being clear about the function of those terms, especially in the context of research.

Simultaneously comparing different definitions across contexts illustrates the ease in which problems develop in measurement and conceptualization over time. To start, Powell (1880) described acculturation in Native American cultures in terms of its collective impact on culture:

The force of acculturation under the overwhelming presence of millions of civilized people has wrought with great changes. Primitive Indian [sic] society has either been modified or supplanted, primitive religions have been changed, primitive arts lost, and, in like manner, primitive languages have not remained unmodified (p. 46).

Similarly, another more formal definition created by a committee of the U.S. Social Science Research Council was even more specific. Redfield, Linton, and Herskovits (1936) indicated that “acculturation comprehends those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both groups” (p. 149). Acculturation may certainly occur at the group level, but adhering too rigidly to this one aspect of acculturation can
lead to misinterpretation. Additionally, the latter definition further demonstrates the importance of differentiating between a definition and an operationalization. One could argue that the research committee referenced by Redfield et al. (1936) was operationalizing acculturation as a construct for sociological research as opposed to simply defining the broader concept as suggested, perhaps unintentionally, by Rudmin (2009). While this may seem like a negligible subtlety, understanding the distinction could save hours of researching, a page or two of text in a manuscript, and further misconceptions of the concept as a whole.

A more modern definition of acculturation in the *New Oxford American Dictionary* is “to assimilate or cause to assimilate a different culture, typically the dominant one” (Jewell & Abate, 2001, p.11). Compare that to a definition in *The American Heritage Dictionary of the English Language*: “the modification of the culture of a group or individual as a result of contact with a different culture” (Pickett, 2000, p. 442). One relevant difference between these two definitions is that the former appears to allude to a specific outcome (i.e., assimilation), while the latter describes a process. Further, equating assimilation (discussed in detail in a subsequent section of this paper) and acculturation creates overly narrow parameters around the general concept. Also, a large body of research with decades of empirical support is based on a theoretical framework that conceptualizes assimilation as one potential dimension/outcome of acculturation (e.g., Berry, 1997; Serafini, Wendt, Ornelas, Doyle, & Donovan, 2017; Ward & Kus, 2012). Therefore, assuming they are synonymous is problematic in the context of construct measurement.

Considering the many conceptualizations of acculturation that have appeared across the years, Pickett’s (2000) definition is one of the most encompassing, including both collective and individual aspects along with the understanding that it is a process with many potential outcomes. His definition has also endured over time (see Born, 1970). Thus, once the concept of
acculturation becomes the subject of research, a level of specificity is needed to more accurately validate its understanding in relation to the context in which it is both experienced and studied (Bornstein, 2017).

Without an agreed upon definition by most, operationalizing the concept will inevitably become beset with confounds. A helpful definition should be all-inclusive (i.e., broad and global) particularly when discussing acculturation for reasons indicated by Rudmin (2009). First, the concept of acculturation is subsumed under culture, which is in and of itself complex and ever evolving. Second, acculturation is applicable and studied across a number of disciplines (e.g., anthropology, sociology, psychology), which results in a third issue the author pointed out: depending on the perspective, acculturation can be viewed as an individual or a group phenomenon. How acculturation is defined more generally must account for these complexities. The current study intends to initiate a line of research aimed at measuring psychological processes of acculturation and, therefore, operationalizes the concept from the perspective of the individual.

**Theoretical Frameworks of Acculturation: An Introduction to Berry’s Model**

The most widely researched and well-known acculturation framework is Berry's (1997, 2005) model of acculturation. When searching the University of Mississippi’s One Search online library, which indexes 252 possible databases, using the keywords “Berry, J. and acculturation,” approximately 14,439 (6,553 peer-reviewed) possible sources are found from 1980 through 2017. At its very foundation, Berry’s model describes acculturation as a process that occurs when an individual from a non-dominant cultural group comes into contact with a dominant culture (Berry, 2005). The author posited that the process can be measured bidimensionally
Based on: 1) whether or not individuals prefer to maintain their own culture; and 2) whether or not they prefer to engage with the dominant culture.

As a result of the bidimensional conceptualization, four possible strategies, or orientations, emerge: integration, assimilation, separation, and marginalization (see Figure 1). These orientations are comprised of both attitudes (i.e., preferences) and behaviors. Integration occurs when individuals maintain their own culture and also engage with the dominant culture. Separation occurs when individuals maintain their own culture and do not engage with the dominant culture. Assimilation occurs when individuals do not maintain their own culture and only engage with the dominant culture. Marginalization occurs when individuals do not maintain their own culture and do not engage with the dominant culture. While this is the basic underlying structure of Berry’s model, there are many additional relevant components.

For one, a primary interest in the acculturation process is the notion that acculturation often leads to acculturative stress, or “a reduction in health status (including psychological, somatic and social aspects) of individuals who are undergoing acculturation” (Berry, Kim, Minde, & Mok, 1987, p. 491). Acculturative stress is a concept also sometimes referred to as “culture shock” (Berry, 2006). The relationship between acculturative stress and acculturation is well rooted in cognitive theory (Born, 1970). In particular, similar to that of individuals who find themselves in an environment that is culturally different than what they are conditioned to, both Festinger’s theory of cognitive dissonance (Festinger, 1957) and Wallace’s maze-way (Wallace, 1956) posit more generally that individuals experience distress or discomfort as a result of conflicting attitudes, behaviors, and beliefs.

However, in addition to previous work (for a review see Rudmin, 2009), contradictions in current literature continue regarding the specific nature and inferential importance of the
relationship between acculturative stress and acculturation (Geeraert & Demoulin, 2013; Kim & Kim, 2013; Sullivan & Kashubeck-West, 2015; Wei, Li, Wang, & Ko, 2016). Most notably, the broad conceptualization of the term (i.e., including psychological, social, and somatic correlates of stress) leads to difficulty in interpreting what is actually being measured. Additionally, acculturative stress was initially associated with certain acculturation orientations, in that those who reported more integration were less stressed and those who were marginalized were the most stressed (Berry, 2005). Sullivan and Kashubeck-West (2015) found that students who had more social support and reported an integrated orientation experienced less acculturative stress. However, not only is there evidence that individuals may not experience stress as a result of acculturation processes (Geeraert & Demoulin, 2013; Güngör & Perdu, 2017; Hwang & Ting, 2008), findings illustrate that acculturative stress also leads to positive outcomes, such as personal growth in attitude, knowledge, and engagement in meaningful activities (Kim & Kim, 2013). Moreover, acculturative stress has been indirectly related to increases in bicultural competence and optimism towards adversity (Wei, Li, Wang, & Ko, 2016).

Other studies provide evidence that the relationship between stress and acculturation is increasingly nuanced, but also, more recently, studies illustrate a trend towards less reliance on categorical interpretations of acculturation. By way of example, results from Wang and Mallinckrodt (2006) suggested that greater identification towards the host culture (i.e., oriented more towards assimilation/integration) was associated only with increases in attachment anxiety, while both attachment anxiety and attachment avoidance were associated with psychological distress and sociocultural adjustment difficulties. Additionally, Güngör and Perdu (2017) found that cultural adoption and cultural maintenance were associated with well-being, although their relationships were dependent on differing factors of resilience. Acculturative stress may certainly
have contextual relevance in relation to acculturation, but may inadvertently introduce extraneous confounds to a research design. As Rudmin (2009) pointed out when referring to attempts at measuring acculturative stress, given the abundance of highly validated measures of different stress-related components (e.g., depression, anxiety, somatic symptoms), “little is lost and much is gained by eliminating unmeasurable intervening variables” (p. 116).

Expanding on the process of acculturation, Searle and Ward (1990) hypothesized that acculturative stress is one potential aspect of adjustment/adaptation to a foreign culture. The authors found that an individual’s cultural transition can be better understood in terms of two forms of adaptation: sociocultural and psychological. In that, psychological adaptation refers to emotional, cognitive, and behavioral components of adjustment, while sociocultural adaptation refers to an individual’s ability to navigate differences in everyday situations and ways of living in the new environment, such as language or social norms (see also Frankenberg, Kupper, Wagner, & Bongard, 2013; Moztarzadeh & O’Rourke, 2014; Ouarasse & van de Vijver, 2005).

Aycan and Berry (1996) also identified economic factors as having a significant impact on the acculturation process. Whether economic adaptation should be subsumed under sociocultural adaptation or treated as separate is an empirical question that needs to be explored. Further, cultural distance, or how different two cultures are, was also found to have an impact on sociocultural and psychological adaptation, in that the more different the non-dominant culture was compared to the dominant one, the more difficulty individuals had adapting (Galchenko & van de Vijver, 2007; Searle & Ward, 1990; Suanet & de Vijver, 2009; Ward, 2008). Cultural distance and adaptation further contextualize an individual’s experience during the process of acculturation.
Berry (1997) illustrated how combining these acculturation models provides a more comprehensive conceptualization with respect to how cultural differences can impact functioning and well-being throughout the process of acculturation. When individuals transition to a new or foreign culture that is different from the one they are conditioned to, there is a degree of psychological and sociocultural adjustment (interrelated yet distinct) that occurs. Individuals’ sociocultural and psychological adaptation is influenced by cultural distance (i.e., the perceived differences between home and host cultures). Additionally, individual adaptation is influenced by acculturation orientation, or the degree of preference in maintaining the home (non-dominant) culture and engaging with the host (dominant) culture, and to what extent behavior is oriented to that preference. Given the distinction between military and civilian cultures, applying concepts associated with acculturation to military-related experiences may highlight the unique barriers faced when service members are between deployments or transitioning out of the military (i.e., contexts when the presence of civilian culture is more dominant than military culture).

A New Framework for Military-Civilian Integration

Given the clear distinction between military and civilian cultures, there is a new and growing idea that many of the difficulties veterans and service members have need to be examined and understood with this discrepancy in mind. Research studies have begun to adopt an acculturation conceptualization as a means to investigate and describe how the degree to which veterans identify with the military impacts everyday life, such as difficulties with employment satisfaction and preferences for military or civilian relationships (Dinh, McCaslin, Herbst, Becker-Davenport, & Salas, 2017; Koenig, Maguen, Monroy, Mayott, & Seal, 2014; McCaslin et al., 2016). While the method of using an acculturation model to examine veteran
readjustment is still quite new as an approach, commonly studied military-related outcomes and experiences can undoubtedly be viewed from an acculturation perspective.

Along these lines, qualitative research provides evidence that service members and veterans perceive some of the struggles they have in relation to cultural orientation. For instance, Demers (2011) asked participants to respond to open-ended questions prompting them to describe how their lives were impacted by deployments and what kind of support they received. Results highlighted themes that were associated with experiences they had while on deployment and themes associated with experiences they had after returning from deployment. Themes related to being deployed reflected military values, such as “we are warriors” and “[having] no fear.” In contrast, themes associated with experiences they had after returning from deployment illustrate the presence of a cultural dissonance, such as reporting a “crisis of identity,” being “time travelers,” or believing that “no one understands” them. Responses that refer to “us” or “we” suggest a separation between service members and civilians. Moreover, themes such as “we are warriors,” “no one understands us,” and “crisis of identity” are indicative of some degree of orientation between military and civilian cultures. For example, “crisis of identity” corresponds to an individual who identifies as being marginalized. Alternatively, “no [civilian] understands us” and “we are warriors” correspond to an orientation of separation (c.f., Berry, 1997).

Another salient connection between the acculturation framework and research on veteran/service member outcomes is the concept of adaptation, or adjustment. For example, Reddy, Meis, Erbes, Polusny, and Compton (2011) found that increased reports of experiential avoidance were related to poorer relationship adjustment, including the use of physical aggression. Experiential avoidance involves attempts to decrease the frequency or duration of
contact with private experiences such as thoughts, emotions, and physical sensations (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Evidence suggests that decreases in experiential avoidance are related to functional improvement in veterans and service members (Kashdan & Kane, 2011; Walser, Karlin, Trockel, Mazina, & Taylor, 2013). In terms of the cultural adaptation processes as discussed by Searle and Ward (1990), experiential avoidance and aggression would be considered related to the construct of psychological adaptation, while relationship adjustment would be related to sociocultural adaptation.

A review of economic variables related to military families suggests that, not only do military families have unique financial difficulties, but also that many veterans may experience a significant decrease in financial support (i.e., including housing and health care related support) as a civilian (Hosek & Wadsworth, 2013). More research is needed to determine the extent to which culture differences have an impact on military-related economic problems. In a civilian sample of immigrants in Canada, Berry and Hou (2016) found that those who were unemployed or considered in a low-income bracket reported a more marginalized acculturation orientation and significantly lower scores on measures of life satisfaction and overall mental health compared to those who were employed and in high-income brackets. Implications from these results could apply to veteran adjustment as well. For example, one hypothesis is that there is a decline in veterans accessing services due to the physical and mental strain navigating the Veterans Administration system, exacerbating health and financial issues. Moreover, perhaps veterans are settling with undesirable jobs that merely provide wages comparable to their military salary, influencing a decline in life satisfaction. Regardless, while further research needs to be done, the potential financial and psychological implications of the discrepancy between being a service member and veteran are clear.
Comparisons between veterans who had deployed during their military enlistment, non-deployed veterans, and civilians also provide implications of cultural influences. While poorer mental health has been reported in deployed veterans compared to both civilians and non-deployed veterans (Hoglund & Schwartz, 2014), a summary of reports from The Institute of Medicine (2014) indicated suicide rates are similar in service members whether or not they were deployed to Iraq or Afghanistan. Suicidal behavior is often directly associated with combat and trauma experienced while deployed. However, there is growing research providing evidence that suicide rates, in particular, are not necessarily deployment-related (LeardMann et al., 2013; Reger et al., 2015). While these findings include confounds that are difficult to control for, such as mental health conditions (i.e., whether conditions were present prior to service or developed during/after service) or the differentiation between deployment and combat, the results also found that separation from service (i.e., discharge from the military) was associated with increased risk for suicide.

Further, attention to the high rates of suicide in service members and veterans (22% of all adult suicide deaths in the U.S. from 2001-2009; Kemp & Bossarte, 2012) and to an observed increase from 2001-2014 (an 8.8% increase in those that used VA services and a 38.6% increase in those that did not; Castro & Kintzle, 2014; U.S. Department of Veterans Affairs, 2016) has led to an emphasis on directly investigating cultural influences. For example, Nock et al. (2013) reviewed the literature on military suicide and described a framework for risks and protective factors, identifying social support as a particularly important protective factor. Jobes (2013) responded to this review, pointing out that, while in support of the authors’ findings, they neglected to include a sufficient discussion of culturally-based approaches as a potential means of effectively intervening in the suicide epidemic in the military. Jobes' (2013) response is based
on a summary of a review by Bryan et al. (2012), which highlighted conventional mental health approaches as barriers to healthy cultural adaptation. For instance, the authors described how the individualist civilian mental health approach, despite strong efforts to prevent it, stigmatizes military personnel that identify with, and belong to, a collectivist culture. Given that suicide is still a problem for both active duty military and veterans, this issue alone illustrates the importance of understanding and respecting an individual’s cultural orientation (e.g., active duty versus veteran orientations may differ given the amount of exposure), what differences they perceive between the two cultures, and a general sense of how they are adapting.

A sub-population of current or former service members who must navigate a unique aspect of the military-civilian dynamic are those individuals who decide to enroll in school. Many programs have been initiated for student veterans or service members to aid in adapting to an academic environment due to the complexities of being a non-traditional student (e.g., having lived a military lifestyle, older than the average college student, etc.; McCaslin, Leach, Herbst, & Armstrong, 2013). However, surprisingly, there is little research that specifically investigates or explores student veterans’ or service members’ cultural adjustment, as well as to what extent, if any, the services provided to them are effective (Borsari et al., 2017). Many of the studies that do exist investigate psychological or physical health status in general. For example, Widome, Laska, Gulden, Fu, and Lust (2011) found that student veterans reported more health risk behaviors, such as abusing substances, getting into physical fights, and not wearing a seat belt. Similarly, Barry, Whiteman, and MacDermid Wadsworth (2012) investigated comparisons of student veterans/service members to civilians on educational self-efficacy and motivation, as well as substance use in relation to symptoms of PTSD and combat exposure. The study’s findings indicated that combat exposure predicted significantly higher levels of posttraumatic
stress compared to civilian and non-combat exposed veterans or service members. While studies such as these provide evidence of clear differences between civilians and their military/veteran counterparts, understanding how cultural components specifically are influencing certain outcomes is unclear.

Several qualitative studies collectively provide evidence that an academic environment may aid in the transition process. Some reported findings were more indicative of a student-initiated, integrated acculturation approach, while other findings depicted the experience as more difficult to adjust to, with a lack of institutional and peer emotional support in the integration process (Elliott, Gonzalez, & Larsen, 2011; Jones, 2013; Naphan & Elliott, 2015; Norman et al., 2015; Rumann & Hamrick, 2010; Zinger & Cohen, 2010). Qualitative research is critical in providing detailed information about the cultural aspects of the military-civilian dichotomy. However, quantitative methods are needed to apply less biased, inferential statistical methods to analyze factors related to processes that are already recognized as cultural integration or adjustment.

An assessment tool that measures different components of military-related acculturation could help identify where individuals are relative to their respective contexts (e.g., active duty or veteran, degree to which culture plays a role, etc.) so that the clinician/provider and client can work together collaboratively, from a more informed perspective. Veterans Administration facilities utilize several evidence-based treatments for a range of mental health-related difficulties that service members or veterans may have, despite the level of influence culture has on functioning, such as cognitive processing therapy, cognitive behavioral therapy (Kitchiner, Roberts, Wilcox, & Bisson, 2012), and prolonged exposure therapy (Foa, Hembree, & Rothbaum, 2007; Tuerk et al., 2011). However, effectively communicating the function of
treatment processes is critical, particularly if culture plays a significant role. For example, a foreseeable argument against using an acculturation framework to aid in the conceptualization of current or former service member functioning is that the difficulties adjusting are related to the symptoms of posttraumatic stress, as opposed to confusion resulting from not knowing how to live out military values in civilian society.

Given the evidence supporting the distinction between military and civilian cultures, from at least a veteran or service member perspective, it is apparent that thoughts and feelings related to traumatic experiences, such as the violence and aggressive behavior inherent to war, are central to the values, beliefs, and expectations that come with serving in the military (e.g., sacrifice, stoicism, the warrior mentality; Hall, 2011; Kuehner, 2013). The experiences these thoughts and feelings are derived from, as Wilson (2007) alludes to, are a result of orders given to, and a lifestyle that was instilled in, service members to increase their ability to effectively protect the country by the very society that inadvertently stigmatizes them. Describing thoughts or feelings related to military values as symptoms that need to be attenuated is confusing, invalidating, further stigmatizing, and thus, detrimental to rapport between providers and their clients. An approach that is sensitive to these complexities is essential, especially due to the importance of the therapeutic alliance on treatment dropout (Sharf, Primavera, & Diener, 2010) and issues related to high veteran dropout rates in general (e.g., 38.5% reported in Kehle-Forbes, Meis, Spoont, & Polusny, 2015). Not only did results from Hoge et al. (2014) find poor treatment compliance and a 24% dropout rate in over 2000 service members who recently returned from deployment, they also reported reasons for dropping out, such as thinking they could deal with the problems themselves, with stigma, and with not being comfortable with the therapist.
A more culturally sensitive alternative to a conventional therapeutic approach, which often focuses more on changing or decreasing maladaptive thoughts and feelings (i.e., symptom reduction; Beck, 1995; Hofmann, Asmundson, & Beck, 2013), is to work on how to live with them while simultaneously focusing on problematic/maladaptive behaviors and living a meaningful life based on the values of the individual. The latter approach can be achieved through the use of more acceptance-based strategies (e.g., Hayes, Jacobson, Follette, & Doughter, 1994). There are several existing evidence-based approaches whose core components include acceptance strategies such as Acceptance and Commitment Therapy (Hayes, Strosahl, & Wilson, 1999), Dialectical Behavior Therapy (Linehan, 1993), motivational interviewing (Miller & Rollnick, 2013), and mindfulness-based interventions (Kabat Zinn, 1990). Many of these approaches are grounded in person-centered therapy and the work of Carl Rogers, who observed one aspect of effective treatment as including “the movement [of a patient’s verbal behavior] from symptoms to self” (Rogers, 1951, p. 135). Additionally, all of these approaches maintain the importance of working from individual values and/or interpreting profoundly challenging experiences in a more useful and meaningful way (see, for example, Frankl, 1946/2006). This is imperative in the military context, considering that the suffering experienced is a natural consequence of values-oriented living that involves a great deal of responsibility and risk. The intention of most clinicians, providers, families, and friends is to offer some form of support. However, the degree to which one competently communicates that support significantly influences whether it is perceived by the recipient as support or as a barrier to living a meaningful life (e.g., by unintentionally invalidating core military values).

The function and necessity of a quantitative measure of military-related acculturation is for both analytical and practical purposes. Analytically, a researcher can collect quantitative data
on large samples of the populations of interest and can use inferential statistics to test for
relationships to common outcomes associated with service members’ and veterans’ physical and
mental health across contexts (e.g., academics, mental health, day-to-day functioning, etc.).
Practically, providers can utilize a content and face valid measure one-on-one, using both total
scores, subscales, or item-by-item analyses to track clinically-related outcomes, as well as to
assess motivation to change, identify barriers to making changes, and promote collaboration for
circumventing those barriers. Developing a measure, however, introduces many challenges. The
extensive history of the broader concept of foreign acculturation has resulted in the vast
proliferation of acculturation measures creating several issues associated with validity and
interpretation.

Measuring Acculturation

Rudmin (2009) illustrated a primary measurement issue with acculturation, citing 19
different reviews conducted between 1979 and 2007 in which the number of different measures
in any given study ranged from 7 to 57. While a comprehensive review of all potential
acculturation measures used over the last 30 years is beyond the scope of this paper, a summary
of issues and suggestions from previous reviews is offered to explain the decision-making
process employed in the current study.

Several reviews have surfaced over the years that converge on potential problems with
acculturation measurement (Arends-Tóth & van de Vijver, 2006; Boski, 2008; Demes &
Geeraert, 2014; Rudmin, 2009). One issue is related to developing a measure that either can be
used universally across different pairings of cultures or used to create a new measure for each
possible acculturation experience. Both approaches have been implemented, and the issue is
clearly influenced by how many different measures exist to-date. An example of a universal
scale is the Acculturation Index (AI), where participants are asked to rate several aspects of culture (e.g., food, values, language, employment activities) on a 7-point Likert-type scale in relation to how dissimilar (1) / similar (7) they are to both the home and host cultures, which is indicated by inserting text (e.g., Singaporean and Australian) into the questionnaire (Ward & Kennedy, 1994). Two examples of idiosyncratic scales are A Short Acculturation Scale for Filipino Americans (ASASFA) and the Dietary Acculturation Questionnaire for Filipino Americans (DAQFA; Serafica, Lane, & Ceria-Ulep, 2013), which illustrate the degree of specificity in which some acculturation measures are developed. Items in both the ASASFA and the DAQFA were not meant to be adapted to different cultural contexts. This is seemingly a problem inherent to the diversity of culture and degrees of specificity of research interests. While there is no clear solution for this issue, Rudmin (2009) instructed researchers and theorists to do their due diligence. When conducting acculturation research, acquiring an astute understanding of the existing theories and whether existing measures are both psychometrically sound and grounded in empirically-supported theories is essential. Also, building on existing measures that show promise is likely to be more efficient than creating a new one altogether.

Another issue with acculturation assessment has to do with measurement formats. Over the years, many different measurement formats have been used to assess degrees of acculturation. Examples of these formats include categorical forced-choice, unidimensional scales that measure only one aspect of acculturation (i.e., home OR host culture), bipolar scales that measure both aspects but on one scale (e.g., 1 = “I take part in [home country] traditions” to 5 = “I take part in [host country] traditions”), multidimensional scales that measure both home and host cultures independently (i.e., bidimensional) or a four-statement format that has items for each orientation (e.g., integration, separation), and qualitative or proxy measures (Rudmin,
However, several reviews conclude that the bidimensional approach provides the most valid and interpretable results thus far (Arends-Tóth & van de Vijver, 2006; Demes & Geeraert, 2014; Koneru, de Mamani, Flynn, & Betancourt, 2007; Rudmin, 2009).

Interestingly, support for a bidimensional format as opposed to a unidimensional, bipolar, or a multidimensional, four-statement approach actually provides both evidence in support of and against Berry’s acculturation framework as it is currently understood. More specifically, while previous studies more consistently support the aforementioned bidimensional properties of Berry’s model (i.e., having independent variations of preference for both the dominant and non-dominant culture), they fail to consistently capture four distinct orientations (e.g., Berry & Hou, 2016; Demes & Geeraert, 2014). Additionally, results are also influenced by how the four orientations are derived. For example, Demes and Geeraert (2014) provided evidence that common methods used to categorize continuous scales into the four orientations, such as using a median, mean, or midpoint split, bias the results either by treating a unimodal distribution of scores as bimodal or by removing a significant amount of variability from certain orientation categories.

Also, there is a general lack of conceptual clarity in relation to the measurement of acculturation. First, confining and labeling the interrelationships of two independent dimensions into four distinct concepts unnecessarily convolutes the resulting interpretations of those relationships. For example, Berry’s framework characterizes “integration” as existing on one end of a spectrum where individuals orient towards both the home and host cultures. However, Boski (2008) converged on an operationalization of “integration” from several definitions as “declared preferences for merging one’s life and for being functional in several domains of two cultural worlds identified by country/national labels” (p. 143). The author illustrated how Berry’s four-
category orientation is too limited, considering that “integration” is determined by an individual’s particular level of functioning, cultural preferences, and attitudes. Interestingly, this falls more closely in line with Searle and Ward's (1990) theory of adaptation. In other words, one could be behaviorally oriented towards both cultures more or less equally (i.e., integration) but still experience a low level of psychological adaptation (i.e., high distress) due to a preference to be more oriented towards the native culture (i.e., separation).

Second, without clearly differentiating between concepts, measures of acculturation become confounded by overlapping constructs. One example of this is the AI, which was developed to measure Berry’s four acculturation orientations (Ward & Rana-Deuba, 1999). A benefit of the AI is that it was developed to accommodate adaptations of different cultural pairings using a bidimensional measurement approach. However, as also highlighted by Demes and Geeraert (2014), because individuals are rating how similar/dissimilar their behavior is to the behaviors characteristic of individuals from both the home and host cultures, this measure appears to be confounded by cultural distance.

In addition to traditional acculturation measures based more on foreign cultures, measures have been developed specifically for use with service member and veteran populations in regard to reintegration or adjustment (Elnitsky, Fisher, & Blevins, 2017). One example is the Iraq Readjustment Inventory (IRI), which is still in development. The IRI, used in a gender specific study, included only vague information regarding how items were created and, aside from internal consistency reliability, did not disclose the psychometric properties of the scale (Katz, Bloor, Cojucar, & Draper, 2007). Another example is the Combat-to-Home Transition Scale, developed by Adler, Britt, Castro, McGurk, and Bliese (2011), which was designed to specifically evaluate adjustment to post-combat deployment. A third and fourth example are
more general measures of community integration that were developed with small samples and geared more for the assessment of individuals with traumatic brain injury (McColl, Davies, Carlson, Johnston, & Minnes, 2001; Resnick, Plow, & Jette, 2009). Likewise, a comprehensive measure of reintegration called the The Military-to-Civilian Questionnaire includes items that allude to cultural differences (e.g., “feeling like you belong in ‘civilian’ society?” and “keeping friendships with people who have military experiences?”; Sayer et al., 2011); however, it was not developed from a framework that inherently emphasizes cultural differences across the entire measure. While a cultural distinction is implied across many of these measures, some target specific sub-populations of veterans or service members and none of them approach assessment from a purely cultural perspective. There is no existing measure that explicitly measures military-related acculturation or that has been developed from a foundation of acculturation theory.

**The Current Study**

The overall aim of the current study is to initiate the development of a theoretically grounded measure (or measures) of military-related acculturation. Due to the historically robust validation of the concept of acculturation and its relevance to the adjustment process service members and veterans experience navigating both military and civilian cultures, using acculturation theory as the foundation for the measure’s development is a logical place to start. To date, no such measure of military-related acculturation exists that adheres so closely to acculturation theory and that has been subjected to sufficient psychometric scrutiny. Alternatively, the historical significance of acculturation theory has led to an overabundance of measures attempting to capture acculturation, or at least aspects of acculturation, in relation to foreign cultures. Therefore, creating a new measure from scratch seems unnecessary and
counterproductive, especially considering that the current study intends to initiate the development of a measure, or measures, rooted in theory.

Consequently, the current study investigates the structural properties of veteran adaptations of four acculturation-related measures created by Demes and Geeraert (2014): the Brief Sociocultural Adaptation Scale (BSAS); the Brief Psychological Adaptation Scale (BPAS); the Brief Perceived Cultural Distance Scale (BPCDS); and the Brief Acculturation Orientation Scale (BAOS). There are several reasons why these particular measures were chosen as a starting point for developing military-related acculturation scales. These measures appear to capture the complex dimensionality of acculturation across theoretical frameworks, including Berry's (1997) acculturation orientation and Searle and Ward's (1990) model of sociocultural and psychological adaptation, as well as taking into account perceived cultural distance. Additionally, they are short measures that include both behavioral and preference/attitudinal aspects of acculturation, they use 7-point Likert-type scales across items, and the BAOS measures orientation using a bidimensional format. Further, because they were developed for adaptation to varying cultural comparisons, minimal changes were needed to adapt individual items to reference military-related adaptation. Notably, while there may be justification for making more significant changes to the item text of each scale, a priori deviations from the originals were kept to a minimum at this stage in development to minimize bias. Finally, thorough psychometric testing was conducted upon the initial development of the measures that suggest potential for future validation. Detailed psychometric properties and statistical hypotheses related to the original and proposed measures are included in the methods section, as well as in Figures 2 through 4 (see Appendices A through D for the measures themselves – inter-factor correlations not shown).
Methods

Participants

Participants were veterans recruited from social media sites, such as Facebook and Reddit, as well as from universities and community and technical colleges in the United States. For the current study, a “veteran” was defined as an individual who served on active duty in the United States armed forces, but either had no military affiliation at the time of taking the study or was serving in the National Guard or Reserves post-active duty (i.e., active duty veteran). Colleges targeted were those that publicly disclosed having a veteran organization or at least a military/veteran representative within their facility. Recruitment occurred from January to April of 2018. All participant data were de-identified. Sample characteristics are provided below.

Procedures

An online survey was administered to veterans across the United States. Administrators of colleges and online media threads were contacted to request their assistance in distributing the survey. Once approval was received, a scripted email from the principal investigator was sent to the administrators, which included a brief explanation of the study and a link to the survey, to be distributed to veterans. Once participants clicked on the link, they were directed to the online survey where they were provided written informed consent prior to proceeding with the survey. The survey was comprised of several demographic questions, the four aforementioned acculturation measures, and other related psychological measures such as the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), the Depression, Anxiety and Stress Scale-21 (Lovibond & Lovibond, 1995), the Purpose in Life test – Short Form (Schulenberg,
Schnetzer, & Buchanan, 2011), and the CAGE Substance Abuse Screening Tool (Hays, Merz, & Nicholas, 1995). Only the acculturation measures were analyzed in the current study, and they are described in detail below. At the end of the survey, participants were offered an opportunity to enter their email address into a raffle to win a $50 Visa Gift Card. If they accepted, they were instructed to click on a link that directed them to a separate form where they could submit their email address in a way that was not linkable to their survey responses. The Institutional Review Board of the University of Mississippi approved the current study procedures.

Measures

The following is a detailed description of all four of the acculturation measures adapted for use with the current study population. Several people were consulted and/or assisted in revising the original measures, including: Dr. Kali A. Demes, the first author of the validity study for the original acculturation measures; Dr. Lisa-Ann Cuccurullo, Military Sexual Trauma Coordinator and National Center for PTSD, PE Consultant at the Southeast Louisiana Veterans Health Care System; Dr. Stefan E. Schulenberg, Professor of Psychology and Director of the Clinical-Disaster Research Center at the University of Mississippi; Michael Howland, M.C.J., retired Master Gunnery Sergeant and Coordinator of the University of Mississippi Veteran and Military Services Center; and Dr. Shannon E. McCaslin-Rodrigo, Clinical Psychologist at the National Center for PTSD Palo Alto Veterans Affairs Health Care System Dissemination and Training Division. The principal investigator of the current study is also a Marine Corps veteran.

**Brief Acculturation Orientation Scale – Military Version.** The Brief Acculturation Orientation Scale – Military Version (BAOS-MV; see Appendix A) is the military-related adaptation of Demes and Geeraert’s (2014) measure that reflects Berry’s (1997) model of cultural orientation. The BAOS-MV is a bidimensional measure that includes eight items rated
on a scale from 1 (strongly disagree) to 7 (strongly agree). Respondents are asked to rate how important each item is to them. Item examples include, “Have military/veteran friends,” “Take part in military traditions,” “Have civilian friends,” and “Hold on to (or develop) civilian characteristics.” The two independent dimensions measure home (items 1-4) and host (items 5-8) culture orientations. Individual mean scores can be calculated for each factor. Higher scores represent greater orientation towards the home and/or host cultures.

The original BAOS had respectable to very good reliability (DeVellis, 2017), using the English version in student ($\alpha_{\text{Home}} = .79$, $\alpha_{\text{Host}} = .80$) and migrant ($\alpha_{\text{Home}} = .81$, $\alpha_{\text{Host}} = .83$) pilot study samples, but undesirable to very good reliability in a native English-speaking sojourner translation validity study sample ($\alpha_{\text{Home}} = .80$, $\alpha_{\text{Host}} = .62$; Demes & Geeraert, 2014). Structural validity of the original BAOS was determined by computing Tucker’s Phi ($\phi_{\text{Home}} = 1.00$, $\phi_{\text{Host}} = .98$).

**Brief Sociocultural Adaptation Scale – Military Version.** The Brief Sociocultural Adaptation Scale – Military Version (BSAS-MV; see Appendix B) is the military-related adaptation of Demes and Geeraert's (2014) measure of cultural adaptation that is related to everyday living. Respondents are asked to rate the level of difficulty they have had adapting to a civilian lifestyle across 12 different areas on a scale from 1 (very difficult) to 7 (very easy). Item examples include friends, family life, values and beliefs, [daily] living, and language. A mean score can be calculated by averaging all 12 items. Higher scores represent greater levels of sociocultural adaptation.

The original BSAS had very good reliability (DeVellis, 2017), using the English version in student ($\alpha = .85$) and migrant ($\alpha = .84$) pilot study samples, and a native English-speaking sojourner translation validity study sample ($\alpha = .87$; Demes & Geeraert, 2014). Structural
validity of the original BSAS was determined by computing a bivariate correlation between the factor eigenvalue of the English version with the average factor eigenvalue across six different translations of the measure (i.e., German, Italian, Thai, Spanish, Portuguese, and French; \( r = .83 \)). Bivariate correlations were also computed between the BSAS and the BPAS (\( r = .55 \)), BPCDS (\( r = -.35 \)), and measures of satisfaction with life (\( r = .39 \)), stress (\( r = -.49 \)), anxiety (\( r = -.55 \)), and self-esteem (\( r = .37 \)).

**Brief Perceived Cultural Distance Scale – Military Version.** The Brief Perceived Cultural Distance Scale – Military Version (BPCDS-MV; see Appendix C) is the military-related adaptation of Demes and Geeraert’s (2014) measure of cultural comparison. The same items from the BSAS-MV were used in order to make direct comparisons between the two measures. Additionally, while the BPCDS-MV also uses a 7-point Likert-type rating scale, respondents are asked to rate how different or similar the cultures are. Therefore, the anchors range from 1 (very similar) to 7 (very different). A mean score can be calculated by averaging all 12 items. Higher scores represent a greater difference between the two cultures.

The original BPCDS had respectable to very good reliability (DeVellis, 2017), using the English version in student (\( \alpha = .79 \)) and migrant (\( \alpha = .94 \)) pilot study samples, and a native English-speaking sojourner translation validity study sample (\( \alpha = .82 \); Demes & Geeraert, 2014). Structural validity of the original BPCDS was determined by computing a bivariate correlation between the factor eigenvalue of the English version with the average factor eigenvalue across six different translations of the measure (i.e., German, Italian, Thai, Spanish, Portuguese, and French; \( r = .87 \)). Bivariate correlations were also computed between the BPCDS and the BPAS (\( r = -.14 \)), BSAS (\( r = -.35 \)), and measures of satisfaction with life (\( r = -.16 \)), stress (\( r = .19 \)), anxiety (\( r = .19 \)), and self-esteem (\( r = -.15 \)).
**Brief Psychological Adaptation Scale – Military Version.** The Brief Psychological Adaptation Scale – Military Version (BPAS-MV; see Appendix D) is the military-related adaptation of Demes and Geeraert’s (2014) measure of how the individual feels specifically in response to living as a civilian. The BPAS-MV includes eight items rated on a scale from 1 (never) to 7 (always). Respondents are instructed to rate each item in relation to how they felt in the prior two weeks. Item examples include “Excited about being a civilian,” “Nervous about how to behave in certain situations,” and “Frustrated by difficulties adapting to being a civilian.” A mean score can be calculated by averaging all eight items. Items 2-7 are reverse scored. Higher scores represent greater levels of psychological adaptation.

The original BPAS had respectable reliability (DeVellis, 2017), using the English version in student ($\alpha = .72$) and migrant ($\alpha = .73$) pilot study samples. Based on the results of the pilot study, two items were removed from the scale. In the native English-speaking sojourner translation study sample, the shortened version of the BPAS had very good reliability ($\alpha = .90$; Demes & Geeraert, 2014). Structural validity of the shortened BPAS was determined by computing a bivariate correlation between the factor eigenvalue of the English version with the average factor eigenvalue across six different translations of the measure (i.e., German, Italian, Thai, Spanish, Portuguese, and French; $r = .93$). Bivariate correlations were also computed between the BPAS and the BSAS ($r = .55$), BPCDS ($r = -.14$), and measures of satisfaction with life ($r = .40$), stress ($r = -.64$), anxiety ($r = -.71$), and self-esteem ($r = .44$).

**Data Screening**

A total of 490 participants initiated the survey. Ninety-four participants were omitted as a result of not meeting criteria for the study (i.e., did not serve in the military, were active duty or National Guard with no prior active duty service). Two participants were dropped due to not
disclosing their military status. Additionally, 19 participants were dropped as a result of not completing any portion of the survey aside from reading the consent form. Missingness in the data was evaluated using both Little’s test (Little, 1988) and the Hawkins test of homoscedasticity (Jamshidian & Jalal, 2010). The Hawkins test first evaluates the data for normality and heterogeneity of covariances; it then applies, if necessary, a nonparametric test of homoscedasticity and further tests if the data are MCAR. The Hawkins test does not indicate if the data are MNAR. When including all of the acculturation measure items, the results suggest that the data are nonnormal and/or heteroscedastic ($p < .001$). According to the results of both Little’s test ($\chi^2 = 104.21, p = .503$) and the non-parametric test of homoscedasticity ($p = .131$), the hypothesis that the data are MCAR is assumed (i.e., fail to reject the null). It is important to note that all variables except those screening for study eligibility were optional and, therefore, participants could skip items or questions they did not want to respond to. With that said, visual patterns in the data appear to suggest that missing data were specific to individual pages/screens of the survey and related to the sequential order of the measure in the entire battery. For example, each measure was on a separate page/screen of the survey. Only one participant skipped the first measure and that participant’s data from the entire measure was missing, as opposed to a random number of items. The closer the measure was to the end of the survey, the higher the number of participants skipped the entire measure. This suggests that missingness may have something to do with the administration of the measures as opposed to being related to one of the specific variables in the data. Therefore, a visual inspection also suggests there is no reason to suspect the data are MNAR (Enders, 2010).

The data were then evaluated for outliers using Mahalanobis distance and other empirically-supported methods (e.g., straightliners and speeders; Meade & Craig, 2012). After
careful review of the data, it was concluded that a case could not be made with 100% certainty to omit any observations from the sample as careless responders. Using the remaining 375 participants, 11 observations were identified as multivariate outliers and dropped from the sample. The final sample to be used in the analyses was comprised of 364 participants.

Multivariate normality was evaluated by plotting residuals as well as by conducting Henze and Zirkler’s (1990), Mardia’s (1970), and Royston’s (1992) multivariate tests of normality. Furthermore, it is important to note that variables in the current study are ordinal (i.e., graded-response/Likert-type scales) in nature. All tests of multivariate normality were statistically significant; therefore, the null hypothesis that the data are multivariate normal was rejected (i.e., the data are not multivariate normal; \( p < .001 \)). Additivity was also checked to screen for potential multicollinearity. There was no evidence of extremely high correlations (\( r > .90 \)).

Data Analyses

All statistical analyses were conducted using R (R Core Team, 2018). First, descriptive statistics are reported for the sample. Item correlations and correlations between computed mean and total scores of the constructs collected from participants were also computed as a preliminary check of model validity (DeVellis, 2017). In regard to the primary analyses, this study is unique, in that the measures being validated were adapted to characteristic deviations in the matched populations (i.e., cultural variations), the variations they were adapted to in the current study are relatively atypical (i.e., sub-culture as opposed to international cultural comparisons), and the measures are in the early stages of validation. Thus, deciding the best approach to analyze the data was somewhat complicated. For example, an argument could be made for conducting an exploratory (EFA; e.g., Saucier & Goldberg, 1996) as opposed to a confirmatory factor analysis
(CFA; Jöreskog, 1969), or splitting the sample to do both (i.e., EFA followed by a CFA). Unfortunately, splitting the sample is not warranted given that a sufficient sample size was not acquired to do so. Thus, in addition to the strong theoretical framework informing the proposed model(s) and the availability of a more parsimonious validated solution (Demes & Geeraert, 2014), a CFA allows the ability to test the fit of a previously-tested model and fall back on exploratory methods to explore alternative model structures, given poor model fit (e.g., modification indices; Asparouhov & Muthén, 2009; Sörbom, 1989). Additionally, CFA provides a platform for testing structural relationships with additional latent variables for further validation of the models. As Brown (2015) suggested, establishing good model fit is essential prior to extending the analysis to investigating supplementary structural solutions. Despite the exploratory nature of both of these alternatives in the context of the current study (i.e., vulnerability of model fit; Brown, 2015; Schmitt, 2011), they are beneficial and viable extensions of CFA. Therefore, CFA was used as the primary method of data analysis in the current study.

Robust maximum likelihood (MLR) estimation was used to estimate test statistics, model parameters and standard errors of the proposed structural models. MLR is a full information estimation method that does not make strict assumptions (i.e., continuous and multivariate normal) about the distribution and that uses skewness and/or kurtosis corrected standard errors (i.e., Huber-White) and test statistics. MLR has been found to work well with symmetric and asymmetric data but may over-adjust with asymmetric data (Sass, Schmitt, & Marsh, 2014). When sample size is small and distributions are moderately nonnormal, MLR appears to perform better than a weighted least squares mean and variance (WLSMV) adjusted estimation, although both were found to inflate the chi-square statistic (Li, 2016). Bandalos (2014) also found that
MLR performed better than diagonally-weighted least squares (DWLS) estimation for categorical variables in scenarios involving model misspecification, small sample sizes, and higher asymmetry, though MLR appeared to exhibit lower power. Despite MLR being a slightly conservative estimator, important for the current study is the ability of a full information ML (FIML) method to handle missing data, including performing better than older alternative methods even when data are MNAR (Baraldi & Enders, 2010; Dong & Joanne Peng, 2013; Schafer & Graham, 2002).

Model fit was evaluated using several different goodness-of-fit indices, each providing different information about the overall structure of a CFA. The reliability and validity of certain fit indices can be affected by sample size, model (mis)specification, multivariate normality of the data, and estimation methods (Hu & Bentler, 1998). One common index of fit is the chi-square statistic. However, due to several issues related to characteristics of the statistic’s underlying distribution and dichotomous hypothesis test, a non-significant chi-square (i.e., indicating good model fit) can be rare, especially in applied research (Brown, 2015; Hu & Bentler, 1998). Therefore, several other statistics were referenced in addition to chi-square. Hu and Bentler’s (1999) suggested cutoffs will be used for absolute fit (standardized root mean square residual [SRMR] at or below .08), parsimony correction (root mean square error of approximation [RMSEA] close to or below .06), and incremental fit (Tucker-Lewis index [TLI] at or above .95). Reliability was computed using omega (ω), including 95% confidence intervals (DeVellis, 2017; Raykov, 2001).

In regard to determining an acceptable sample size, while there is no set agreed upon method for estimating sufficient sample sizes when conducting structural equation modeling (SEM), several suggestions have been made across disciplines as a result of personal experience...
and/or simulation studies. For example, Ding, Velicer, and Harlow (1995) suggested a set minimum of 100 observations. Hair, Black, Babin, and Anderson (2010) suggested a general rule that the minimum should have at least five times as many observations as there are variables to be analyzed, and the more acceptable size would have a 20-to-1 ratio. However, studies have also emphasized the importance of not adhering too closely to any one convention and instead considering many data/model characteristics such as the indicator-to-factor ratio, complexity of the model, magnitude of the factor loadings, missing data, item distributions, and even potential estimation methods available (Boomsma & Hoogland, 2001; Wolf, Harrington, Clark, & Miller, 2013). Therefore, given the current study proposed to analyze a 5-factor latent variable model predicting altogether 40 graded-response items, anticipating medium to large factor loadings, the potential for non-normal distributions of the observed indicators, and the high risk for missing data, a minimum sample size of 200 was considered acceptable. Additionally, a sensitivity analysis comparing estimation methods was conducted.

**Sensitivity Analysis.** Given the availability of several potentially valid methods to estimate the proposed model in the current study, a sensitivity analysis was used to assess how much the results may change due to violation of the relative assumptions for each estimation method. In other words, due to multivariate non-normality and the ordinal nature of the items, small sample size, and missing data, comparisons of fit indices were made across several estimation methods to control for the possibility that poor model fit resulted from using an unsuitable estimation method. While ML estimation can be safe to use in non-ideal and ideal situations with response options of five or more items, characteristics of several factors, such as sample size, population distribution, and item threshold distributions of variables measured on an ordinal scale, may further complicate the estimation of model parameters and fit indices.
(Rhemtulla, Brosseau-Liard, & Savalei, 2012). Thus, both continuous and categorical item factor analysis (IFA) methods with robust-weighted least squares estimation methods were compared (Brown, 2015; DiStefano & Morgan, 2014; Li, 2016). This approach involves conducting the CFA using three alternative estimation methods: 1) ML, which assumes continuous items that follow a multivariate normal distribution and uses an uncorrected standard test statistic; 2) DWLS, which accounts for the ordinal nature of the data by using a weighted asymptotic covariance matrix of the polychoric correlations and item thresholds to obtain parameter estimates and the diagonal of that matrix to obtain standard errors, including a correction for multivariate non-normality; and 3) WLSMV estimator, which is simply DWLS but which computes a mean and variance adjustment of the test statistic. When the last two methods are used, the analysis is referred to as a categorical item factor analysis (CIFA/IFA; Brown, 2015; Holgado–Tello, Chacón–Moscoso, Barbero–García, & Vila–Abad, 2010). Additionally, when treating variables as categorical, Yu and Muthen (2002) suggest using the weighted root-mean-square residual (WRMR) fit index and recommend a cutoff of less than 1.0 as an indication of good fit. Pairwise deletion was utilized to handle the remaining missingness in the data when using limited information estimation methods (i.e., DWLS and WLSMV).

**Results**

The final sample size was comprised of 364 veteran participants, ranging in age from 21 to 72 years old ($M = 36.96; SD = 10.61$). Of the 364 participants, 332 were veterans with no current military affiliation, while 32 were veterans in the National Guard or Reserves. Reports regarding branch of service indicated that there were 127 Army, 63 Marines, 47 Air Force, 43 Navy, 20 National Guard/Reserves, and 3 Coast Guard. Seventeen participants reported serving in more than one branch, and 79 did not disclose the branch of service. In regard to rank, similar
to branch of service responses, 79 participants did not disclose their rank. Of those that did, the majority was enlisted ($n = 253$), 22 were officers, and 10 reported being both.

The sample included 232 males and 52 females. Two individuals did not disclose their gender and 78 participants skipped the question altogether. There were 175 students compared to 189 non-students. Of the 279 participants that disclosed their ethnicity, the majority reported being White ($n = 219; 78.5\%)$. The second largest racial/ethnic group was Latinx ($n = 19; 6.8\%$), followed by those who identified as Multiracial ($n = 15; 5.4\%$), then Black ($n = 14; 5.0\%$), Asian ($n = 7; 2.5\%$), Native/Hawaiian American ($n = 4; 1.4\%$), and Pacific Islander ($n = 1; 0.4\%$). Only 286 participants reported marital status. Of those, most were married ($n = 167; 58.4\%$), then single ($n = 69; 24.1\%$), divorced ($n = 38; 13.3\%$), separated ($n = 8; 2.8\%$), and widowed ($n = 2; 0.7\%$), while two reported being in a civil union. Out of 286 participants that disclosed whether or not they had children, 155 veterans reported having children, ranging from one to five per veteran. Additionally, 235 of those children were dependents.

Two hundred and eighty-three participants responded to questions regarding their upbringing. Of those, 135 reported having a parent who served in the military, of which 107 identified as their primary guardian. Further, 29 of the participants who had a parent in the military (i.e., primary guardian or not; $n = 135$) also indicated that their parent’s military affiliation resulted in frequently moving and changing of schools. Twenty-nine reported that they were often deployed or actively away from the household. Additionally, regardless of parental military involvement, 121 of 279 participants reported growing up in a household with strong military values.

A few questions asked were related to specific military experiences. Four of these variables were censored, in that participants responded on a Likert-type scale that ranged from
either 0 or <1 to ≥10. This is important to understand when interpreting the results as cases where participants responses fall above a “10” would be reported as 10 in a frequency table, potentially skewing results, for example. Thus, in reporting the results of the following variables, a percentage of the censored data is reported, indicating the percentage of the n that is equal to or greater than 10 along with the mean and median for that variable to facilitate interpretation.

Participants were asked how many years they were active duty (n = 285, M = 6.04; Median = 5, censored[≥10] = 21.1%), how many hours per week they spend with other veterans (n = 283, M = 4.52; Median = 2, censored[≥10] = 30.0%), how many years have passed since they moved off of a military base (n = 283, M = 6.72; Median = 8, censored[≥10] = 39.6%), and how many years have passed since they were discharged (n = 282, M = 6.16; Median = 6, censored[≥10] = 33.3%; see Figure 5). Additionally, out of 284 participants that responded, 177 reported being deployed to a war zone, ranging from once to eight times (M = 1.77; SD = 1.14). Finally, participants were asked about whether they were offered any type of transition program prior to being discharged. Of the 281 responses, 187 participants indicated that they received a mandatory transition assistance program, 22 reported attending a transition assistance program that was voluntary, and 72 did not disclose what type of program they participated in.

**Confirmatory Factor Analyses**

The specified model included five factors (i.e., BPAS-MV, BSAS-MV, BPCDS-MV, BAOS-MV Home, and BAOS-MV Host) based on Demes and Geeraert’s (2014) scale development study. In the current study, the model was assumed to be congeneric. Observed variable correlated errors were constrained to zero, and factor correlations were freely estimated, with the exception of the correlation between the host and home factors of the BAOS-MV. The structure results in an over-identified model with 731 degrees of freedom. As previously
discussed, MLR estimation was used in assessing model fit and parameters. FIML was used to address missingness in the data. According to the fit indices, the model is a poor exact fit to the observed data ($\chi^2 = 2396.99, p < .001$) and a poor incremental fit compared to the null model (TLI = .727). This is not surprising, considering the chi-square goodness-of-fit test is sensitive to large sample sizes, degrees of freedom, and correlations in the data. In these scenarios, chi-square is almost always very high and statistically significant. Chi-square is also typically sensitive to non-normally distributed data and this can be evaluated using a scaling correction factor that corrects for non-normal data (Satorra & Bentler, 1994). The scaling factor for the current model suggests that the chi-square is approximately 7.1% higher than the scaled statistic ($\chi^2 = 2238.08$), which suggests that non-normality does not have a large effect on the model fit. On the other hand, alternative absolute fit indices suggest the fit is borderline acceptable to not acceptable according to conventional cutoffs (RMSEA = .082, CI[90%] = .078 to .086; SRMR = .071). Overall, the global fit of the model is far from ideal and warrants further evaluation for localized areas of misfit. Thus, standardized residual covariances, modification indices (MI), and parameter estimates were investigated for localized areas of strain.

Given that standardized residuals can be interpreted as z scores, recommended cutoffs are greater than or equal to the absolute value of 2 (i.e., z score that corresponds to $p < .05$ rounded up; Brown, 2015) and 2.58 (i.e., corresponds to $p < .01$; Byrne, 2014). However, because there were several standardized residuals that fell outside of a higher cutoff of $\pm 3$ (i.e., corresponding to $p < .001$), the focus was more on extremely large values. For example, there were five residuals that were close to or greater than 10, which provides a good starting point for evaluating items and model structure as a whole. These five components in order of severity are: $\sigma_{sas1,sas2} = 24.7$, $\sigma_{sas2,sas4} = 12.7$, $\sigma_{pas1,pas8} = 12.2$, $\sigma_{pcds1,pcds2} = 9.3$, $\sigma_{pcds2,pcds3} = 9.1$. While across
all items there were both highly positive and negative standardized residual covariances that exceeded 2, these highly positive values suggest that the parameters of the specified model are highly underestimating the relationships between the observed variables in question. Additionally, this is evidence that either additional parameters need to be added to account for the covariance between the above observed variables, or that they are not good indicators of the latent factors.

In regard to constrained parameter estimates, MIs can be computed to determine if removing the constraints may improve model fit. There were 199 parameter MIs exceeding the conventional cutoff of 3.84 (i.e., corresponding to a chi-square critical value at $p < .05, 1 \, df$). Sixty-three of those exceeded 10.83 ($p < .001, 1 \, df$), including five correlated errors that were over 50 and two that exceeded 100 (MIs: $\delta_{sas1,2} = 230.7$, $\delta_{pcds1,2} = 172.8$, $\delta_{sas5,6} = 74.3$, $\delta_{pas1,8} = 65.6$, $\delta_{sas4,5} = 64.3$). Similar to the issue with the standardized residuals, as a result of the vast amount of poor MIs, the focus for the time being will be on those that are extreme. Generally, taking both standardized residuals and MIs into consideration, we can conclude that both items 1 and 2 of the BSAS-MV and the BPCDS-MV are consistently problematic as well as BSAS-MV items 5 and 6. Further, items 1 and 8 from the BPAS-MV also appear to be underestimated by the proposed model and have highly correlated errors, suggesting external factors not accounted for may be influencing misspecification.

Regarding freely estimated parameters, while interpreting parameters of a poorly fit model must be done with caution as estimates are most likely biased, they can still provide valuable information to inform re-specification. First, while the correlation between the BAOS-MV Home and Host factors were constrained to zero, the other nine correlations were freely estimated. According to the results, statistically significant correlations exist between all of the
remaining latent factors \( (p < .05) \), with the exception of the correlation between the BAOS-MV Home and the BPCDS-MV \( (r = -.036, p = .580; \text{see Table 1}) \). Inspection of the item correlations, reliability of each measure, factor loadings, and multiple correlations are reported per each individual measure.

**Brief Acculturation Orientation Scale – Military Version.** The BAOS-MV includes two independent factors (i.e., Home and Host) each with four observed variables. Item-level bivariate Pearson correlations are provided in Table 2. Within and between factor item correlations reflect the theorized two-factor congeneric model, in that the within-factor correlations among items range from .38 to .70, while between-factor item correlations range from -.18 to .20. Reliability of both factors was good \( (\omega_{\text{home}} = .84; \omega_{\text{host}} = .84) \). Standardized factor loadings across both factors of the BAOS-MV range from .614 to .908 \( (SEs \text{ from .119 to .213}) \), and all are statistically significant \( (p < .001) \). Additionally, the squared multiple correlations \( (R^2) \) provide information about how much variance in each item is accounted for by the latent factors. The following is a list of the \( R^2 \) in order of how much information each provides about the latent factors: Home = item 3 (.696), item 4 (.618), item 2 (.609), and item 1 (.377); Host = item 7 (.824), item 6 (.531), item 8 (.528), and item 5 (.380).

Overall, according to the estimated parameters, the items in this model appear to be robust representations of their corresponding factors. One issue with this particular measure is that removing items without replacement makes the model just-identified on its own. Therefore, a more careful review of item text with consideration of theory and comprehension is warranted to aid in restructuring the model. More specific recommendations include rewording items and creating new items that are more clear and distinct. Dropping items that are highly correlated and confounded is also possible, but then new items need to be added.
Brief Sociocultural Adaptation Scale – Military Version. The BSAS-MV factor model includes one latent factor with 12 observed variables. Item-level bivariate Pearson correlations across all 12 items range from .26 to .89 (see Table 3), which indicates that there are sufficient relationships between the items, albeit one notably high correlation ($r_{12} = .89$) to consider when restructuring. Reliability of the BSAS-MV was good ($\omega = .92$). Regarding freely-estimated parameters in the proposed model, standardized factor loadings across the 12 items of the BSAS-MV range from .558 to .763 ($SEs$ from .044 to .211), and all are statistically significant ($p < .001$). The following is a list of the $R^2$ in order of how much information each provides about the latent factor: item 3 (.582), item 8 (.553), item 10 (.553), item 5 (.547), item 11 (.530), item 7 (.486), item 4 (.480), item 9 (.473), item 12 (.442), item 6 (.414), item 1 (.321), and item 2 (.312).

Taken together, given the number of correlated errors, how this measure is administered may be important to consider for future administrations. More specifically, because items are so similar to the BPCDS-MV, clearer prompts may be warranted. Additionally, if the measures are kept as they are, administering the measures within a large, more burdensome battery may be problematic, as participants may not be answering as carefully. On the other hand, given that military-related acculturation and ethnically-oriented acculturation are contextually rather different, item revisions appear necessary. For example, items 1 and 2 were highly correlated and had an extreme MI value; individually, they had the least amount of variance accounted for by the latent factor (and as a result high error variance), and the relevance of both items’ text was questionable (i.e., item 1 = “Climate” and item 2 = “Natural Environment”). Finally, because the BSAS and the BPCDS were specifically developed to be analyzed in relation to one another, results of both should be considered concurrently when informing specification.
**Brief Perceived Cultural Distance Scale – Military Version.** The BPCDS-MV factor model included one latent factor, with 12 observed variables. Item-level bivariate Pearson correlations across all 12 items range from .17 to .76 (see Table 4), which indicates that there are sufficient relationships between the items. Reliability of the BPCDS-MV was good ($\omega = .86$). Standardized factor loadings across the 12 items of the BPCDS-MV range from .487 to .695 ($SE$s from .070 to .173) and all are statistically significant ($p < .001$). The following is a list of the $R^2$ in order of how much information each provides about the latent factor: item 10 (.483), item 8 (.469), item 11 (.420), item 9 (.405), item 5 (.375), item 12 (.367), item 4 (.331), item 3 (.287), item 2 (.282), item 7 (.271), item 6 (.246), and item 1 (.238).

Overall, these results suggest the necessity of both re-specification of the model and careful consideration of how the measure is influenced by the method of administration. As aforementioned, the BPCDS-MV and the BSAS-MV differ only by the scale on which each item is measured (i.e., similar/different versus easy/difficult, respectively) but have completely identical items. Therefore, considerations for future re-specification or administration methods of either measure should not be done independently of one another. For example, given that the results suggest that method effects exist across all items of both measures, one could conclude that there is a possibility that responding to one could have an effect on the responses to the other. Additionally, in relation to specific model restructuring, items 1 and 2 for both measures resulted in extremely high MIs and standardized residual covariances, have a couple of the lowest factor loadings relative to the other items, have little variance accounted for by the latent factor, and have questionable text given the context. Considering there are already 12 items in this measure, one could conclude that removing these items is warranted.
Brief Psychological Adaptation Scale – Military Version. The BPAS-MV included one factor with eight observed variables. Item-level bivariate Pearson correlations across all eight items range from .20 to .76 (see Table 5), which indicates that there are sufficient relationships between the items. Reliability of the BPAS-MV was good ($\omega = .88$). Standardized factor loadings across the eight items of the BPAS-MV range from .387 to .844 ($SE$s from .159 to .336), and all are statistically significant ($p < .001$). The following is the list of $R^2$ in order of how much information each provides about the latent factor: item 7 (.712), item 2 (.688), item 5 (.613), item 4 (.512), item 6 (.439), item 3 (.402), item 8 (.380), and item 1 (.150).

Overall, given results of global model fit and localized areas of strain, there is evidence that there are particular items that do not contribute considerably to the model. More specifically, standardized residual covariance between item 1 and item 8 appears problematically high and positive, indicative of being influenced by some outside factor that is not included in the model. Further, only 10.5% of the variance in item 1 is accounted for by the latent factor. Notably, items 1 and 8 are also the only two items that are positively worded in this measure. An elaboration of potential revisions will be included in the discussion section.

Sensitivity Analysis

In addition to using MLR to estimate the 5-factor model proposed in the current study, results were also compared to estimation of the model using ML and categorical DWLS and WLSMV, to determine whether or not different estimation methods significantly influence model fit. Fit indices, estimated parameters, and standard errors for each estimation method are provided in Tables 6 and 7. Overall, WLSMV resulted in the best fitting model ($\chi^2 = 1609.42, p < .001; \text{TIL} = .934; \text{RMSEA} = .058, \text{WRMR} = 1.575$) and had the largest relative difference between the other methods. While there were slight differences in the factor loadings, all were
sufficiently large enough to where the statistical significance of each parameter remained across all four estimation methods \((p < .001)\). This was not the case for factor covariances, however. Almost all estimated factor covariances were at least statistically significant using a .05 alpha level. The one exception was the covariance between the BAOS-MV Host factor and the BPCDS, in which the statistical significance ranged from a \(p\)-value of .437 to .833. Considering none of the estimation methods used was able to produce an acceptable model fit according to the several different test statistics used to evaluate the model, the results suggest that the model is misspecified. Notably however, given that the WLSMV estimation appeared to produce a relatively improved model fit, careful attention should be paid to the distribution and metric of the observed variables in future analyses.

**Exploratory Factor Analysis**

As a consequence of poor fitting CFA results, an EFA was conducted that included all 40 items from the four acculturation measures to further investigate the factor structure (or the lack thereof) of the proposed model. In particular, relative comparisons can be made between the results of the CFA and EFA, regarding localized areas of strain in the proposed theoretical framework, that may aid in furthering future conceptualization of how the relationships between the particular items and factors can be understood and utilized in a military context. Guidelines from Preacher and MacCallum (2003) were referenced in carrying out the EFA.

The suggested number of factors to be used for the model depended on the method utilized, including referencing Demes and Geeraert’s (2014) theoretically constructed model. Based on a parallel analysis (eight factors), scree plot method (three factors), Kaiser criterion (five factors; Guttman, 1954), and Demes and Geeraert’s model, both a 3-factor and 5-factor model were tested, considering both can be supported by theory (i.e., a 3-factor model is a
nested, more parsimonious version of the 5-factor model). Factors were expected to correlate with the exception of the BAOS-MV factors; therefore, maximum likelihood estimation was used with an oblimin rotation for both models.

In the 5-factor model, when using a cutoff of greater than the absolute value of $\pm 0.300$, the analysis of all 40 items resulted in three item loadings split across two factors (i.e., pas3, sas5, and sas6) and one item not loading sufficiently (i.e., pas1). Additionally, after accounting for the three cross-loading items, one factor was left with only two items (i.e., sas1 and sas2) that were above the threshold. Notably, these two items also created significant issues with model fit in the CFA. The most profound difference in the factor structure determined by these results, however, was that a majority of the BPAS-MV items and BSAS-MV items all loaded on to one factor (i.e., suggesting a single, more general adaptation scale). The analysis was conducted a second time omitting the six aforementioned items and maintaining and specifying only four factors resulting in four factors cleanly emerging. See Table 8 for factor loadings from both analyses.

The 3-factor EFA resulted in two item loadings split across two factors (i.e., pas7 and pas8) and two not loading on any factor (i.e., pas1 and ao8). Notably, in the 3-factor analysis, the BPDCS-MV appeared to remain intact. However, the BAOS-MV home items merged with the BPAS-MV items and the BAOS-MV host items merged with the BSAS-MV items. These results are not theoretically supported. Additionally, the resulting structures overcomplicate the conceptual understanding of the observed variables and their applicability. Therefore, for the purposes of this study, the 3-factor model was rejected. See Table 9 for factor loadings.

**Discussion**
The purpose of the current study was to initiate the development of a psychometrically valid measure, or measures, of military-related acculturation that is grounded in theory and has utility in both research and clinical settings. The first step in this process involved testing the model structure of previously existing, empirically-supported and psychometrically-validated measures of acculturation with a veteran population. Overall, the results of the CFA suggest that the original 5-factor model was found to be a poor fit to the data, and several items in particular proved to be contributing to the misfit. Alternatively, many of the items themselves loaded highly on their corresponding factor and factor correlations were indicative of potentially meaningful inter-factor relationships. The only exception was that there appeared to be little to no relationship between what degree veterans oriented to military culture and their perceived difference between the civilian and military cultures (i.e., no correlation between the BAOS-MV Home and the BPDCS-MV). These results remained stable across several different estimation methods despite a relative improvement in model fit after adjusting for the ordinal and non-normal nature of the items.

Furthermore, not only are there significant structural issues that need to be addressed to improve the measurement model proposed in the current study, but re-conceptualizing how acculturation is understood in the context of the military may be necessary as well. Exploration of the items through an EFA highlighted that a more parsimonious 4-factor model, merging both adaptation scales, may prove to be a better representation of the data, especially after accounting for several specific items that were clearly and consistently creating structural problems across analyses. Not only is evidence in support of merging the BPAS-MV and the BSAS-MV provided by the data, but it can also be justified conceptually, given they are both measures of adaptation. Additionally, given that the BPCDS-MV and the BSAS-MV items were identical, merging the...
two adaptation scales requires a re-evaluation of the function and utility of the BPCDS-MV scale. Considering the results of the current study and the strong theoretical foundation highlighting the overlap of acculturation and veteran readjustment provided by the existing literature, further revision and subsequent validation of these scales is justified.

**Continuing Scale Development?**

Three primary points are highlighted in regard to further development of the proposed structural model: a) omitting the cultural distance scale from the model completely; b) deciding on the most appropriate way to merge the two adaptation scales; and c) minor suggested text modifications of the acculturation orientation scale. Following are explanations and descriptions of proposed changes to the model and of specific measures prior to further validation.

**Omitting the BPCDS.** Two main arguments can be made against the relevance of utilizing a measure of cultural distance in the context of military acculturation. First, comparing two different international cultures is much different than comparing two sub-cultures of one country. Demes and Geeraert (2014) were referring to *ethnic* cultural differences when they proposed that using a measure of cultural distance was important based on evidence suggesting that greater cultural differences predicted more difficulties of adaptation. Likewise, measures of cultural distance were originally developed and are still primarily used in studies of international populations (e.g., Babiker, Cox, & Ward, 1980; Fan, Zhang, Jenkins, & Lin, 2017; Geeraert & Demoulin, 2013). Specific items that proved to be statistically problematic exemplify this point. For example, not only do the results of the current study indicate that the model-imposed relationship between the “Climate” and “Natural Environment” items of both the BSAS-MV and the BPCDS-MV poses a significant problem to the model as a whole, the climate and natural environment of “military culture” is extremely difficult to define. The assumption is that the
climate and natural environment of a single country remain relatively consistent across time. Climate understood this way is difficult to apply to military culture. As a result of the variability in international travel, and living, that can potentially be experienced from one service member to another, the climate and natural environment of “military culture” can be very inconsistent. Thus, cultural distance for these particular items becomes practically impossible to define and to be used to compare military and civilian culture.

Second, considering that the aim of the current study was to develop a more function-oriented scale or scales, one could argue that the concept of cultural distance is extraneous. Particularly when including an adaptation scale in the model, cultural distance fails to provide additional useful information. For example, if a measure of adaptation reveals that a veteran is having difficulty adapting to a certain domain, such as communication (e.g., asking for help, articulating emotional experiences), there is really no necessity in knowing how different the cultures are perceived above and beyond that knowledge. This is the case regardless of whether the difference between the cultures is universally agreed upon or is solely perceived by the individual. In relation to this particular example, intervening in the domain of communication can be done despite the degree of perceived cultural differences (e.g., increasing interpersonal effectiveness; Linehan, 1993).

**Combining adaptation.** While both the BSAS-MV and the BPAS-MV appear to be constructs relevant to acculturation, only the BSAS-MV is explicitly functional in nature. The BPAS-MV items are all inherently evaluative of mood states, which is problematic when the aim is to *decrease* the emphasis on symptom reduction. Thus, the overall format of the BSAS-MV serves as a more appropriate model to initiate restructuring when merging the two adaptation scales. More specifically, the new measure of adaptation should retain an item structure that
includes relevant life domains and that asks participants to rate adaptation in each of those domains on a scale from very difficult to very easy. Using “difficulty” as an anchor can be utilized to evaluate a life domain affected more globally, but also, when addressed in a clinical setting, it provides a non-stigmatizing approach to address thoughts and emotions that influence maladaptive behaviors. To increase the contextual sensitivity of the scale, instructions should be revised to guide participants to focus only on their functioning in the past two weeks.

In addition to revising the overall structure, several item revisions can be made when considering the results of the current study, the contextual relevance of some of the items, and phrasing more generally. As mentioned previously, items 1 and 2 of the BSAS-MV are structurally problematic and their relevance is questionable; therefore, those items can be removed. Items 4 (Living), 5 (Practicalities), and 6 (Food and Eating) of the BSAS-MV were also highlighted as structurally problematic, in that the results suggest that the items overlap in a way that is not accounted for in the model, thus biasing the results. At face value, all three items seem to be components of basic living. However, “Food and Eating” conceptually fits better with “Living” if understood as components of physical and mental health more generally. Therefore, in an attempt to try to distinguish the items, the terms “self-care” and “diet” are added as parentheticals and additional qualifiers to the “Living” domain. For example, the “Living” item would then read, “Living (e.g., general self-care, diet, hygiene, sleeping practices, how safe you feel).” The “Food and Eating” item can then be removed completely.

In regard to capturing what each item from the BSAS-MV represents, item text needs to be revised to increase clarity and relevance. Again, using the “Living” item as an example, including “sense of life satisfaction” can be added as a parenthetical as well. Not only does adding “sense of life satisfaction” explicitly emphasize the broad nature of the item, but existing
evidence indicates that measuring life satisfaction is relevant to the issue of veteran and service member readjustment (e.g., Robertson & Brott, 2013; Sayer et al., 2015; Seligowski et al., 2012). Other changes to items that add clarity include changing “foreigners” to “veterans” within the text of the “People” item and changing the “Language” item to “Communication/Language.”

Further, one unique aspect of military culture is the expectation that veterans can receive resources from the Veterans Administration, such as getting access to healthcare, assistance finding employment and financing housing, to aid in their transition (https://benefits.va.gov/benefits/). These resources are readily accessible to active duty service members. Unfortunately, once separated from the military, veterans face many barriers to accessing the same resources, including how far they are from a facility, eligibility/cost of care, wait times, overabundance of forms to complete, and cultural barriers (Institute of Medicine, 2013). Therefore, a new item is added to the BSAS-MV that represents this potential issue more directly: “Community Support (e.g., availability of resources such as healthcare or assistance finding satisfying employment and housing).” See Appendix E for the revised BSAS-MV.

**Acculturation orientation scale modifications.** According to the results of the current study, there is little support for any major structural changes to the BAOS-MV specifically. In regard to item text, a more empirically-sound method of making subtle or even more major revisions entails getting direct feedback from the population of interest (DeVellis, 2017), such as by conducting veteran focus groups to discuss the scales or by including open-ended questions in a questionnaire. However, an argument for minor changes prior to a more stringent qualitative evaluation of the items can be justified. In an attempt to adhere to the method in which an acculturation scale using a universal format is typically changed to accommodate different cultural comparisons, a few of the military version items stood out as particularly confusing or
odd. For example, “service member” is a ubiquitous term that is used to describe individuals who are active duty military personnel. Therefore, one revision includes changing item 4 from “Do things the way military people do” to “Do the things the way service members do,”

Other changes require an understanding of the overlapping relationship between military and civilian culture in that the military is a subculture of the greater civilian society. Moreover, service members and veterans were civilians before they were service members and veterans. Item 5 reads, “Have civilian friends.” Adding a parenthetical to item 5, such as “Have civilian friends (i.e., individuals without military experience),” helps ensure differentiation between civilians, who have no military experience, and veterans. Similarly, item 6, “Taking part in civilian traditions,” is a little confusing given the context. The military is thought of more as a temporary occupation than a lifestyle and, more importantly, some military attitudes and behaviors can be problematic out of that context. Therefore, contrary to comparing different national cultures, the expectation is that the goal for veterans is to re-assimilate to civilian cultural traditions. Thus, the issue is less related to making a choice between behaving more in line with either military or civilian culture and is more related to extinguishing behaviors and shifting attitudes that are military-oriented and no longer helpful to veterans in specific contexts. Rephrasing item 6 to read, “Stop taking part in military traditions,” better reflects this nuance.

Finally, the phrasing of items 3 and 7 (e.g., “Hold on to [or develop] civilian characteristics”) does not adequately reflect the variable nature of human behavior, nor does it adequately add to the depth of the construct. Using the term “characteristics” is broad and refers to identifiers that are more inherently consistent over time. This is problematic when used in a scale that is designed to measure a more variable construct. Additionally, other items in the scale already refer to behaviors more broadly and to people and traditions more specifically, which
could all qualify as a “characteristic.” Considering all other items in the measure, interpreting both items 3 and 7 as referring to a preference to portray an image (i.e., an individual prefers to portray the civilian or service member image) refines the items and provides more depth to the relative constructs overall. One way to reflect this new conceptualization is to replace the term “characteristics” with “image” and to slightly rephrase both items to accommodate the new term. For example, item 7 then reads, “Maintain a civilian image.” See Appendix F for the revised BAOS-MV.

Limitations

While the study was successful in initiating the development of a measure of military-related acculturation, no study is without limitations. Notably, the current study was conducted at an academic institution as the principal investigator’s dissertation and, therefore, a large veteran population was not easily and directly accessible. Recruitment was conducted primarily by calling academic institutions across the U.S., in addition to posting on a few online social media sources. Additionally, the investigators did not have the funding to hire personnel to recruit, collect data, or provide a substantial incentive for participating. A total of two graduate students, including the principal investigator, and three undergraduates were involved in recruitment. In less than three months, the five study staff called and followed up with veteran representatives at over 160 academic institutions across 39 states. Moreover, time had to be strategically managed to ensure recruitment did not delay graduation but that a sufficient sample size was collected. These barriers made acquiring a more desirable sample size difficult and, because data was collected via an online survey as opposed to also including in-person interviews with other veteran populations (e.g., clinical), raise concern in regard to the integrity and generalizability of
the data. Overall, while a credible first step in scale development, the results of the current study, without further validation and qualitative data, should to be interpreted with caution.

Additionally, the current study did not collect data from those individuals, providers, or researchers who would be integrating these measures into their practice/work. Implementation of assessments that emphasize a more culturally-oriented approach into mental health care involves the buy-in of both veterans and providers/researchers. This is particularly important when you consider potential barriers of emphasizing cultural sensitivity, which alludes to a more behavioral etiology of psychopathology, in a mental health discipline that is heavily influenced by the biomedical model (Deacon, 2013), assumes a uniform understanding of psychopathology across cultures (Gone & Kimayer, 2010), and where other attempts at integrating culture into standardized interventions (Helms, 2015) and assessment methods (Aggarwal, Nicasio, DeSilva, Boiler, & Lewis-Fernández, 2013; DeSilva, Aggarwal, & Lewis-Fernández, 2018; Lewis-Fernández et al., 2017) have proven difficult. This approach is not easily implemented; therefore, an evaluation of the entire context in which these measures will be introduced is needed.

In regard to the measures themselves, the parentheticals included in the adaptation measure(s) may have been confusing or not specific enough. There may be other domains that should be considered or delineated from those already included, in particular those that may be more specific to veterans. For example, prior research validating concepts such as veteran readjustment, transition, or reintegration highlight common themes that include employment and physical rehabilitation as well (Elnitsky, Fisher, & Belvins, 2017). These domains are not explicitly captured in the current version of the measures.

Directions for Research
Future research on these measures needs to focus primarily on furthering structural validation, generalizability, and practical application. Acquiring larger samples that include clinical, student, and community veteran populations would exponentially enhance the interpretability of the results. Additionally, supplementing quantitative data with qualitative reports from both veterans and professionals is critical in validating the practical application. Likewise, gathering at least a portion of the data in-person would allow for supplemental validity testing (i.e., controlling for measure administration). Further, results from the current study suggest that there are important methodological implications as well. Whether items were interpreted as continuous or ordinal had a relative impact on goodness of fit, in that, when items were treated as ordinal and an adjustment was made to the test statistic to correct for skewness, there was a relative improvement in model fit. Therefore, estimation methods should be carefully considered when factor analyzing the data.

Additionally, there are statistical approaches other than factor analysis that can help improve the quality of measurement, such as item response theory (IRT; Reise, Ainsworth, & Haviland, 2005). Guttman (1954) introduced IRT modeling as a method to model the relationship between individual responses to items in a scale and individual total scores. More specifically, compared to factor analysis, which uses variability and correlation among scale items to determine the strength of the linear relationship between the items and the latent construct, IRT is used to determine the relationship between the latent construct and scale item characteristics that are conditional on individual responses. While discussing IRT in detail is beyond the scope of this paper, put simply, IRT allows for a more detailed understanding of how individual items are contributing to the measurement of a latent construct. If items are
contributing little information, or how they are contributing is inefficient (e.g., item scales are not discriminative), one could omit the item or revise it to improve the measure.

Conclusion

There is a clear distinction between military and civilian culture. Acculturation is one way to conceptualize the process a veteran goes through after leaving the military in a way that highlights individual differences and is less stigmatizing. Research on acculturation has resulted in the creation of a measurement model for ethnocultural comparisons. While there are measures of veteran readjustment, reintegration, and transition, there is no existing method for measuring this process that is grounded in theory and explicitly cultural in content. According to the results of the current study, the adaptation of the original ethnocultural measurement model of acculturation was a poor fit to the data collected from veterans. However, with restructuring and further validation, results also suggest there is promise in the continued development of a measurement model of military-related acculturation. There is overwhelming evidence that aspects of the current approach to mental health can unintentionally pathologize military culture, exacerbating cognitive, emotional, and behavioral issues that the discipline itself is attempting to mollify. Thus, there is a need to continue working towards developing more culturally responsive and person-centered ways to address veteran mental health concerns.
LIST OF REFERENCES


doi:10.1007/BF02294248


doi:10.1037/ort0000199


doi:10.1080/13811118.2012.667321


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LIST OF APPENDICES
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Figure 1. Berry’s Bidimensional Model of Acculturation

Note. Adapted from Berry (1997).
Figure 2. Structural model of the Brief Sociocultural Adaptation Scale (BSAS) and Brief Perceived Cultural Distance Scale (BPCDS)
Figure 3. Structural model of the Brief Psychological Adaptation Scale (BPAS)
Figure 4. Structural model of the Brief Acculturation Orientation Scale (BAOS)
Figure 5. Censored Demographic Data
Table 1. *Correlations Between the BSAS, BPAS, BPCDS, and BAOS.*

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<td>.25*</td>
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Note: BSAS = Brief Sociocultural Adaptation Scale; BPAS = Brief Psychological Adaptation Scale; BPCDS = Brief Perceived Cultural Distance Scale; BAOS = Brief Acculturation Orientation Scale. N = 364 using FIML estimation; *p < .05, **p < .001.
Table 2. *Brief Acculturation Orientation Scale Inter-item Correlations.*

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Note. \( N = 321 \), using pairwise deletion; \* \( p < .01 \), ** \( p < .001 \), *** \( p < .0001 \).
### Table 3: Drug Sociocultural Adaptation Scale Inter-item Correlations

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Note: N = 301, using pairwise deletion for all correlations. p < 0.001.
Table 4. Brief Perceived Cultural Distance Scale Inter-item Correlations.
Table 5. *Brief Psychological Adaptation Scale Inter-item Correlations.*

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Note. N = 363, using pairwise deletion; *p < .01, **p < .001, ***p < .0001.
Table 6. Sensitivity Analysis – FIML Fit Indices, Estimated Parameters, and Standard Errors

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Note. FIML = Full Information Likelihood; MLR = Robust Maximum Likelihood; ML = Standard Maximum Likelihood; $X^2$ = Chi-square test statistic; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; $\lambda$ = Item Factor Loading; $\zeta$ = Item Standard Error; BAOS = Brief Acculturation Orientation Scale; BSAS = Brief Sociocultural Adaptation Scale; BPCDS = Brief Perceived Cultural Distance Scale; BPAS = Brief Psychological Adaptation Scale; $N$ = 364.
### Table 7. Sensitivity Analysis – LIML Fit Indices, Estimated Parameters, and Standard Errors

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Note. LIML = Limited Information Likelihood; DWLS = Diagonal Weighted Least Squares; WLSMV = Weighted Least Squares – Mean and Variance Adjusted; $X^2$ = Chi-square test statistic; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; WRMR = Weighted Root Mean square Residual; $\lambda$ = Item Factor Loading; $\zeta$ = Item Standard Error; BAOS = Brief Acculturation Orientation Scale; BSAS = Brief Sociocultural Adaptation Scale; BPCDS = Brief Perceived Cultural Distance Scale; BPAS = Brief Psychological Adaptation Scale; $N = 364$ using pairwise deletion.
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Note. Factor loadings >.30 are in bold. \( N = 364 \) using FIML estimation.
### Table 9. Three-Factor Exploratory Factor Analysis Factor Loadings

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<td>.18</td>
</tr>
<tr>
<td>sas1</td>
<td>.61</td>
<td>-.08</td>
<td>-.07</td>
</tr>
<tr>
<td>sas2</td>
<td>.63</td>
<td>-.11</td>
<td>-.04</td>
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<tr>
<td>sas3</td>
<td>.61</td>
<td>.12</td>
<td>-.18</td>
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<tr>
<td>sas4</td>
<td>.71</td>
<td>.05</td>
<td>.00</td>
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<tr>
<td>sas5</td>
<td>.79</td>
<td>.01</td>
<td>-.01</td>
</tr>
<tr>
<td>sas6</td>
<td>.74</td>
<td>-.05</td>
<td>-.02</td>
</tr>
<tr>
<td>sas7</td>
<td>.64</td>
<td>.04</td>
<td>-.06</td>
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<tr>
<td>sas8</td>
<td>.48</td>
<td>.26</td>
<td>-.15</td>
</tr>
<tr>
<td>sas9</td>
<td>.40</td>
<td>.25</td>
<td>-.20</td>
</tr>
<tr>
<td>sas10</td>
<td>.48</td>
<td>.20</td>
<td>-.21</td>
</tr>
<tr>
<td>sas11</td>
<td>.48</td>
<td>.29</td>
<td>-.13</td>
</tr>
<tr>
<td>sas12</td>
<td>.41</td>
<td>.20</td>
<td>-.21</td>
</tr>
</tbody>
</table>
Note. Factor loadings >.30 are in bold.
\(N = 364\) using FIML estimation.
APPENDIX B: STUDY QUESTIONNAIRES
Brief Acculturation Orientation Scale – Military Version

[Adapted from Demes & Geeraert, 2014, English version]

Instructions: Think about living as a civilian. How much do you agree with the following sentences? As a civilian, it is important for me to…

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Somewhat Disagree</td>
<td>Neither</td>
<td>Somewhat Agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

Please circle one answer for the following questions:

1 2 3 4 5 6 7 Have military/veteran friends
1 2 3 4 5 6 7 Take part in military traditions
1 2 3 4 5 6 7 Hold on to my military characteristics
1 2 3 4 5 6 7 Do things the way military people do
1 2 3 4 5 6 7 Have civilian friends
1 2 3 4 5 6 7 Take part in civilian traditions
1 2 3 4 5 6 7 Hold on to (or develop) civilian characteristics
1 2 3 4 5 6 7 Do things the way civilians do
Brief Sociocultural Adaptation Scale – Military Version

[Adapted from Demes & Geeraert, 2014, English version]

Instructions: Think about your life as a civilian. How easy or difficult has it been for you to adapt to:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Difficult</td>
<td>Difficult</td>
<td>Somewhat Difficult</td>
<td>Neither Difficult or Easy</td>
<td>Somewhat Easy</td>
<td>Easy</td>
<td>Very Easy</td>
</tr>
</tbody>
</table>

Please circle one answer for the following questions:

1 2 3 4 5 6 7 Climate (temperature, rainfall, humidity)
1 2 3 4 5 6 7 Natural Environment (plants and animals, pollution, scenery)
1 2 3 4 5 6 7 Social Environment (size of the community, pace of life, noise)
1 2 3 4 5 6 7 Living (hygiene, sleeping practices, how safe you feel)
1 2 3 4 5 6 7 Practicalities (getting around, using public transport, shopping)
1 2 3 4 5 6 7 Food and Eating (what food is eaten, how food is eaten, time of meals)
1 2 3 4 5 6 7 Family Life (how close family members are, how much time families spend together)
1 2 3 4 5 6 7 Social Norms (how to behave in public, style of clothes, what people think is funny)
1 2 3 4 5 6 7 Values and Beliefs (what people think about religion and politics, what people think is right or wrong)
1 2 3 4 5 6 7 People (how friendly people are, how stressed or relaxed people are, attitudes towards foreigners)
**Friends** (making friends, amount of social interaction, what people do to have fun and relax)

**Language** (understanding people, making yourself understood)
Brief Perceived Cultural Distance Scale – Military Version

[Adapted from Demes & Geeraert, 2014, English version]

Instructions: Think about being in the military and being a civilian. In your opinion, how different or similar are these cultures in terms of:

<table>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very Similar</strong></td>
<td><strong>Similar</strong></td>
<td><strong>Somewhat Similar</strong></td>
<td><strong>Neither</strong></td>
<td><strong>Somewhat Different</strong></td>
<td><strong>Different</strong></td>
<td><strong>Very Different</strong></td>
<td></td>
</tr>
</tbody>
</table>

Please circle one answer for the following questions:

1 2 3 4 5 6 7 **Climate** (temperature, rainfall, humidity)
1 2 3 4 5 6 7 **Natural Environment** (plants and animals, pollution, scenery)
1 2 3 4 5 6 7 **Social Environment** (size of the community, pace of life, noise)
1 2 3 4 5 6 7 **Living** (hygiene, sleeping practices, how safe you feel)
1 2 3 4 5 6 7 **Practicalities** (getting around, using public transport, shopping)
1 2 3 4 5 6 7 **Food and Eating** (what food is eaten, how food is eaten, time of meals)
1 2 3 4 5 6 7 **Family Life** (how close family members are, how much time family spend together)
1 2 3 4 5 6 7 **Social Norms** (how to behave in public, style of clothes, what people think is funny)
1 2 3 4 5 6 7 **Values and Beliefs** (what people think about religion and politics, what people think is right or wrong)
1 2 3 4 5 6 7 **People** (how friendly people are, how stressed or relaxed people are, attitudes towards foreigners)
Friends (making friends, amount of social interaction, what people do to have fun and relax)

Language (understanding people, making yourself understood)
Brief Psychological Adaptation Scale – Military Version

[Adapted from Demes & Geeraert, 2014, English version]

Instructions: Think about being a civilian. In the last 2 weeks, how often have you felt:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
<td>Very Rarely</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Frequently</td>
<td>Usually</td>
<td>Always</td>
</tr>
</tbody>
</table>

Please circle one answer for the following questions:

1 2 3 4 5 6 7 Excited about being a civilian
1 2 3 4 5 6 7 Out of place, like you don’t fit into the civilian culture
1 2 3 4 5 6 7 Sad to be away from the military culture
1 2 3 4 5 6 7 Nervous about how to behave in certain situations
1 2 3 4 5 6 7 Lonely without your military family and friends around you
1 2 3 4 5 6 7 Homesick when you think of being in the military
1 2 3 4 5 6 7 Frustrated by difficulties adapting to being a civilian
1 2 3 4 5 6 7 Happy with your day to day life as a civilian
**Brief Sociocultural Adaptation Scale – Military Version (Proposed Revision)**

[Adapted from Demes & Geeraert, 2014]

**Instructions:** Think about your life as a civilian. In the past 2 weeks, how easy or difficult has it been for you to adapt to:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very Difficult</td>
<td>Difficult</td>
<td>Somewhat Difficult</td>
<td>Neither Difficult or Easy</td>
<td>Somewhat Easy</td>
<td>Easy</td>
<td>Very Easy</td>
</tr>
</tbody>
</table>

*Please circle one answer for the following questions:*

1. **Social Environment** (Ex: size of the community, pace of life, noise)
2. **Living** (Ex: general self-care, diet, hygiene, sleeping practices, how safe you feel, sense of life satisfaction)
3. **Practicalities** (Ex: getting around, using public transport, shopping)
4. **Family Life** (Ex: how close family members are, how much time families spend together)
5. **Social Norms** (Ex: how to behave in public, style of clothes, what people think is funny)
6. **Values and Beliefs** (Ex: what people think about religion and politics, what people think is right or wrong)
7. **People** (Ex: how friendly people are, how stressed or relaxed people are, attitudes towards veterans)
8. **Friends** (Ex: making friends, amount of social interaction, what people do to have fun and/or relax)
1 2 3 4 5 6 7 Communication/Language (e.g., understanding people, making yourself understood)

1 2 3 4 5 6 7 Community Support (e.g., availability of resources such as healthcare or assistance finding satisfying employment)
**Brief Acculturation Orientation Scale – Military Version (Proposed Revision)**

[Adapted from Demes & Geeraert, 2014]

**Instructions:** Think about living as a civilian. How much do you agree with the following sentences? As a civilian, it is important for me to…

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Somewhat Disagree</td>
<td>Neither</td>
<td>Somewhat Agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

*Please circle one answer for the following questions:*

1 2 3 4 5 6 7 Have military/veteran friends

1 2 3 4 5 6 7 Take part in military traditions

1 2 3 4 5 6 7 Maintain a military image

1 2 3 4 5 6 7 Do things the way service members do

1 2 3 4 5 6 7 Have civilian friends (i.e., individuals without military experience)

1 2 3 4 5 6 7 Stop taking part in military traditions

1 2 3 4 5 6 7 Maintain a civilian image

1 2 3 4 5 6 7 Do things the way civilians do
VITA

Curriculum Vitae

MATHEW A. TKACHUCK, M.A.
matkachu@go.olemiss.edu
mathew.tkachuck@va.gov

EDUCATION

Present
Psychology Predoctoral Internship
VA Salt Lake City Health Care System, Salt Lake City, UT (APA Accredited)
Anticipated Date of Completion: August 2, 2019

Present
Doctoral Candidate, Clinical Psychology
University of Mississippi, Oxford, MS (APA-accredited)
Dissertation: Validating Military Culture: A Confirmatory Factor Analysis of the Military-Civilian Adaptation of Acculturation
Major Professor: Stefan E. Schulenberg, Ph.D.

2016
Master of Arts, Clinical Psychology
University of Mississippi, Oxford, MS (APA-accredited)
Thesis: Natural disaster preparedness in college students: Implications for institutions of higher learning
Major Professor: Stefan E. Schulenberg, Ph.D.

2009
Bachelor of Science, Psychology,
University of Washington, Seattle, WA

2007
Work Immersion Study Program
Radolfzell, Germany – Stuttgart, Germany

2007
Associates of Arts
North Seattle Community College, Seattle, WA
HONORS/AWARDS/DECORATIONS

Academic:
   Dean’s List, University of Washington – Four quarters

Military Decorations/Awards:
   Marine Corps Good Conduct Medal
   Global War on Terrorism Expeditionary Medal
   Sea Service Deployment Ribbon (2nd Award)
   National Defense Service Medal
   Humanitarian Service Medal
   Meritorious Unit Commendation
   Meritorious Mast (3rd Award)
   Certificate of Appreciation

CLINICAL EXPERIENCE AND TRAINING

Aug ‘18-Present  Doctoral Psychology Intern, General Track
VA Salt Lake City Health Care System Psychology Predoctoral
Internship,
Salt Lake City, UT

   Completed Internship Rotation:
     Aug ‘18-Nov ‘18  Services for Outpatient Addiction Recovery (20-25 hours/week)
   Clinical Supervisor: Spencer Richards, Ph.D.
   ● Administer individual and group psychotherapies for addiction and
c-co-occurring medical and behavioral health concerns.
   ● Co-facilitate groups as part of a 3-week Intensive Outpatient
Program.
   ● Administer brief assessments for individuals in inpatient medical
(e.g., acute medicine, telemetry) and inpatient psychiatric settings
seeking various levels of care with Addiction Treatment Services.
   ● Receive basic training in the Behavioral Health Lab (BHL)
software to collect data.

   Current Internship Rotations:
     Nov ‘18-Present  Inpatient Psychiatric Unit (20-25 hours/ week)
   Clinical Supervisors: Richard Weaver, Ph.D. and Jo Merrill, Ph.D.
   ● Provide crisis-oriented services to a high-risk veteran population.
   ● Conduct brief solution-focused individual therapy.
   ● Facilitate process and psychoeducational groups.
   ● Administer personality and neuropsychological assessment.
   ● Participate in interdisciplinary team consultation.

     Dec ‘18-Present  Dialectical Behavioral Therapy Team (DBT; 4-6 hours/ week)
   Clinical Supervisor: Kevin Laska, Ph.D.
   ● Participate in weekly DBT Consult Team meetings.
- Co-facilitate a weekly Introduction to DBT group.
- Maintain one individual case using the DBT protocol.

**Sep ‘18-Present**

**VA Rollout CPT Training and Consultation (4-6 hours/week)**

*Clinical Supervisor:* Harrison Weinstein, Ph.D.

- Complete three-day CPT training program.
- Carry at least two individual cases through the CPT protocol.
- Participate in weekly group consultation led by Dr. Weinstein.

**Aug ‘18-Present**

**Outpatient Behavioral Health Interdisciplinary Team (20-25 hours/week)**

*Clinical Supervisor:* Kevin Laska, Ph.D.

- Deliver psychotherapy to veterans with an array of presenting concerns and diagnostic co-morbidity.
- Coordinate care with medication prescribers and other medical professionals involved in patient treatment.
- Participate in interdisciplinary team consultation.

**Future Internship Rotations:**

**Geriatric Assessment Clinic (8 hours/week)**

*Clinical Supervisor:* Bret Hicken, Ph.D.

Anticipated activities include:

- Contribute to a multidisciplinary team within a primary care setting.
- Perform brief cognitive and psychological assessments to evaluate cognitive dysfunction and behavioral health concerns within a geriatric population.
- Provide immediate recommendations for patients and their caregivers.
- Lead didactic presentations on issues pertinent to geriatric care.

**Neuropsychology Assessment (15-20 hours/week)**

*Clinical Supervisor:* Pat Miller, Ph.D.

Anticipated activities include:

- Administer neuropsychological assessment batteries and clinical interviews in an outpatient medical setting.
- Address referral questions related to differential diagnosis of neurocognitive, mental and physical health concerns.
- Integrate data from chart review, clinical interview, and assessment results in a comprehensive report with relevant recommendations.
- Administer test batteries that include Wechsler Adult Intelligence Scale (WAIS-IV), Wechsler Memory Scale (WMS-IV), Boston Naming Test, Controlled Oral Word Association (COWA), Rey Auditory Verbal Learning Test (RAVLT), Trails A/B and Rey Complex Figure Test (RCFT).
Whole Health/Mindfulness Center (20-25 hours/week)
*Clinical Supervisor:* Brandon Yabko, Ph.D.
Anticipated activities include:
- Learn about, practicing, and leading mindfulness interventions.
- Provide individual therapy for veterans utilizing mindfulness, compassion, and ACT principles.
- Work with clinical dietician and/or an LCSW to co-lead groups they may be teaching (e.g., MB-EAT, Intro classes, SARRTP group).

Residential Substance Abuse Treatment (20-25 hours/week)
*Clinical Supervisor:* Heather Black, Psy.D.
Anticipated activities include:
- Administer evidence-based individual and group therapies for addiction and co-occurring medical and behavioral health concerns.
- Receive advanced training in interventions for chronically suicidal and/or self-harming patients.
- Provide case management regarding housing, legal, and financial concerns and relapse prevention planning.
- Participate in interdisciplinary team meetings.
- Navigate interpersonal dynamics encountered in residential treatment.

May ‘14-Jul ‘18  Psychological Services Center, University of Mississippi, Oxford, MS
*Clinical Supervisors:* Stefan Schulenberg, Ph.D., Scott Gustafson, Ph.D., Kelly Wilson, Ph.D., Todd Smitherman, Ph.D., & Alan Gross, Ph.D.
- Provided evidence based individual psychotherapy to adults with mood, anxiety, substance use, and personality disorders primarily based on cognitive-behavioral principles.
- Conducted intake assessments, developed treatment plans, provided therapy, and prepared client progress notes and reports.
- Received training in evidence-based treatments such as Acceptance and Commitment Therapy, CBT for Social Anxiety and Depression, and Exposure and Response Prevention.
- Conducted full-battery assessments and completed integrated reports.

Jul ‘16-Aug ‘17  Communicare Residential Chemical Dependency Unit (Haven House), Oxford, MS
*Clinical Supervisors:* Scott Gustafson, Ph.D. & Dixie Church, LCSW
- Conducted individual and group therapy, intake assessments, substance abuse assessments, case management, and discharge plans.
- Developed, initiated and led weekly mindfulness groups adapted from Bowen, Chawla, & Marlatt’s (2011) Mindfulness-Based
Relapse Prevention for Addictive Behaviors protocol for rolling admissions and large group sizes (approx. 25 - 30 participants).

**Jul ‘15-Aug ‘16**  
**The Baptist Children’s Village, Water Valley, MS**  
*Clinical Supervisor:* C. Randy Cotton, Ph.D.  
- Provided individual therapy services for children ages 4-13 in foster care with a wide range of cognitive functioning, as well as mild to severe emotional and behavioral problems.  
- Conducted parent training with house parents, worked with an interdisciplinary team to monitor and address needs of residents.

**Jul ‘14-Jul ‘15**  
**North Mississippi Regional Center, Oxford, MS**  
*Clinical Supervisor:* J. Scott Bethay, Ph.D.  
- Provided individual and group therapy, functional behavior assessments, social skills training, comprehensive intellectual assessments for determination of ICF/IID and HCBS services.  
- Composed behavior plans, and updated and composed yearly treatment plans for individuals with intellectual and developmental disabilities.  

**Mar ‘14-Apr ‘14**  
**Clinical-Disaster Research Center, University of Mississippi, Oxford, MS**  
*Clinical Supervisor:* Stefan Schulenberg, Ph.D.  
- Developed and disseminated group recruitment materials.  
- Co-led a weekly Mindfulness-Based Strengths Practice group for adults seeking to reduce stress and anxiety.  
- Collected pre- and post-assessment data.

**Jan ‘11-Jul ‘11**  
**Emotion Regulation Treatment Study, Behavior Research and Therapy Clinics, University of Washington, Seattle, WA**  
*Clinical Supervisor:* Andrada Neacsiu, Ph.D.  
*Faculty Supervisor:* Marsha Linehan, Ph.D.  
- Co-led an Activities Based Support Group for individuals who met criteria for either a mood or anxiety disorder and also experienced high emotion dysregulation.  
- Completed orientation/assessment interviews with individual group members before first group session.

**Jun ‘07-Aug ‘07**  
**Psychological Counseling for Political Refugees (PBV), Stuttgart, Germany**  
*Clinical Supervisor:* Dieter David  
- Assisted psychologists with preparing, updating, and organizing client files.
• Helped clients in making appointments and answered questions in order to begin, continue, or conclude counseling that would potentially improve their mental health and help establish asylum in Germany.
• Reviewed and discussed client profile and potential treatment modalities with clinic psychologists.

Clinical Training Workshops Attended

Jun ‘16  Acceptance & Commitment Therapy: Focusing on Values Work, Self-Care, and Self-Compassion, by Dr. Kelly Wilson, Association for Contextual Behavioral Science Annual World Conference

Mar ‘15  Acceptance & Commitment Therapy in Groups, by Joann Wright, Dr. Jonathan Weinstein, and Lauren Porosoff, Association for Contextual Behavioral Science Southeareast Chapter Conference

RESEARCH EXPERIENCE

Aug ‘13-Present  Graduate Research Assistant, Clinical Disaster Research Center, University of Mississippi, Oxford, MS
Faculty Supervisor: Stefan E. Schulenberg, Ph.D.
• Conducting original research and managing project data pertaining to meaning/purpose in life, PTSD, suicidality, and disaster preparedness.
• Supervising undergraduates in presentations/honor’s theses.
• Providing ad hoc reviews of literature including book chapters and journal articles in the fields of conduct disorder, assessment, disaster mental health, and positive psychology.
• Preparing data for quarterly reports on disaster preparedness to The University of Mississippi.
• Participated in community outreach activities in the service of disaster preparedness and recovery.

Apr ‘12-Jul ‘13 Training, Project Coordinator, Dialectical Behavior Therapy (DBT) Intensive Evaluation Research, Behavioral Research and Therapy Clinics, University of Washington, Seattle, WA
Faculty Supervisor: Marsha Linehan, Ph.D.
• Developed and organized study materials including preparing surveys, data collection and data management.
• Maintained compliance with Institutional Review Board (IRB) applications, modifications, and protocols.
• Coordinated and supervised undergraduate research assistants and other study staff, and served as a liaison between the study staff
and the DBT trainers in matters of data collection, collaboration and organization.

- Managed online and paper surveys and maintained subject databases.
- Conducted statistical analysis to create status reports and evaluate training efficacy.

Jun ‘10-Sep ‘12  **Co-Investigator, Skills Use and Emotion Regulation in Personality Disorders and Psychopathy, Behavioral Research and Therapy Clinics, University of Washington, Seattle, WA**

*Faculty Supervisor: Andrada Neacsiu, Ph.D.*

- Designed, and obtained assessments for, a survey-based research study on skills use and emotion regulation in cluster B personality disorders and psychopathy.
- Designed participant recruitment materials.
- Wrote, revised and submitted the IRB application.
- Monitored study activities.
- Conducted data analyses looking at differences between groups and for predictors of the propensity to endorse cluster B personality disorder and psychopathic traits.

Jul ‘11-Jul ‘13  **Assistant to the Associate Director of the Behavioral Research and Therapy Clinics, Behavioral Research and Therapy Clinics, University of Washington, Seattle, WA**

*Faculty Supervisors: Kathryn Korslund, Ph.D. & Marsha Linehan, Ph.D.*

- Assisted in management of an NIMH-funded multi-site research study comparing DBT to individual and group supportive therapy in a high-risk adolescent population.
- Developed study management protocols.
- Coordinated assessment development between four institutions.
- Recruited, interviewed and trained undergraduate students and volunteers, and oriented new staff.
- Developed and maintained databases for study-related task tracking and DBT training materials.
- Assisted in writing DBT experimental training proposals and corresponding University of Washington IRB applications for treatment facilities implementing DBT.
- Developed protocols for the process of DBT accreditation and certification.
- Edited and revised grant submissions for foundation funding.

Jun ‘09-Apr ‘11  **Undergraduate Research Assistant, DBT for Suicidal and Self-Injuring Women with Borderline Personality Disorder (BPD) and PTSD, Behavioral Research and Therapy Clinics, University of Washington, Seattle, WA**
**Faculty Supervisor:** Melanie Harned, Ph.D.

- Responsible for all aspects of recruitment, phone screening, and scheduling potential participants for an NIMH-funded study to develop a protocol to treat PTSD among suicidal and self-injuring BPD women receiving DBT.
- Trained in suicide risk management to administer phone screens and clinical assessment interviews with potential study participants.
- Trained to reliability and administered the International Personality Disorder Examination (IPDE) to participants.
- Maintained databases for scheduled client assessments, and organized and managed client payments.
- Recruited, trained, oriented, and coordinated research assistants, work-study students, and volunteers.
- Developed and maintained training manuals, clinic databases, and protocols.
- Maintained and coordinated correspondence between treatment providers and clinical assessors.
- Developed and maintained relationships with potential referring agencies and practitioners in the community for the purposes of study recruitment.

Mar ‘08-Sep ‘09  
**Undergraduate Research Assistant, A Component Analysis of DBT for Suicidal Women with Borderline Personality Disorder**  
Behavioral Research and Therapy Clinics, University of Washington, Seattle, WA  
**Clinical Supervisor:** Susan Bland, MSW  
**Faculty Supervisor:** Marsha Linehan, Ph.D.

- Scheduled client assessments, managed client payments and administered phone screens to potential clients for an NIMH-funded study on suicidal women with BPD.
- Conducted clinical assessment interviews to measure treatment effects (including a Treatment History Interview, the Situational Competency Test, and the Means-Ends Problem Solving procedures).
- Transcribed assessment interviews.

Mar ‘08-Sep ‘09  
**Undergraduate Research Assistant, DBT for Opiate Dependent Men and Women with Borderline Personality Disorder**  
Behavioral Research and Therapy Clinics, University of Washington, Seattle, WA  
**Clinical Supervisor:** Susan Bland, MSW  
**Faculty Supervisor:** Marsha Linehan, Ph.D.

- Administered phone screens to potential clients for a NIDA-funded study on opiate dependent men and women with BPD.
- Administered participant urinalyses.
Conducted clinical assessment interviews to measure treatment effects (including a Treatment History Interview, the Situational Competency Test, and the Means-Ends Problem Solving procedures).

Transcribed assessment interviews.

PEER REVIEWED PUBLICATIONS


PAPER PRESENTATIONS, SYMPOSIA, PANELS, & POSTERS


Tkachuck, M. A. (2015, March). A bridge too short: Using acceptance and commitment therapy to aid in veteran readjustment through the integration of two disparate cultures. Panel presented at the 1st annual Southeastern Chapter of the Association for Contextual Behavioral Science Conference in Lafayette, LA.


TEACHING EXPERIENCE

Jan ‘18-May ‘18 Teaching Assistant, Graduate Quantitative Methods in Psychology II
Professor: Michael T. Allen, Ph.D.
• Tutored students who struggle with course material in developing a conceptual understanding and practical application of statistics, particularly how data analysis relates to social science research.
• Worked with students on improving their ability to plan, conduct, interpret, and write about statistical analyses in relation to various research questions.

Mar ’18  
**Substitute Instructor, Undergraduate Learning**  
*Professor: Scott Gustafson, Ph.D.*
• Conducted guest lecture using powerpoint, video and class demonstration.
• Covered classical and operant conditioning.
• Led class demonstration using two students in the teacher and learner roles of shaping.

Mar ’18  
**Substitute Instructor, Undergraduate Abnormal Psychology**  
*Professor: Kelly Wilson, Ph.D.*
• Conducted guest lecture in an interteaching format.
• Covered existential and humanistic therapy approaches.

Aug ‘17-Dec ‘17  
**Teaching Assistant, Graduate Quantitative Methods in Psychology I**  
*Professor: Elicia C. Lair, Ph.D.*
• Tutored students who struggle with course material in developing a conceptual understanding and practical application of statistics, particularly how data analysis relates to social science research.
• Worked with students on improving their ability to plan, conduct, interpret, and write about statistical analyses in relation to various research questions.

Oct ‘17  
**Substitute Instructor, Undergraduate Abnormal Psychology**  
*Professor: Kelly Wilson, Ph.D.*
• Conducted guest lecture in an interteaching format.
• Covered general characteristics of the neuron, reliability and validity, and comparing the medical/disease model to the problems with living model of psychological distress.

Aug ‘17-May ‘18  
**Teaching Assistant, Undergraduate Developmental Psychology**  
*Professor: Gary C. Glick, Ph.D.*
• Proctored and scored exams.
• Corrected and provided feedback on homework assignments.

**MILITARY SERVICE**

Aug ‘99-Aug ‘04  
**United States Marine Corps – Sergeant**, Honorable Discharge  
Airframe/Hydraulic Helicopter Mechanic/Air Crew, San Diego, CA – Twice deployed
SPECIALTY TRAINING AND CERTIFICATES

Interdisciplinary Certificate of Applied Statistics
   Committee Chair: John P. Bentley, Ph.D.
   June, 2017: 15 course hours in applied statistics

American Red Cross Disaster Training in Psychological First Aid – Completion Certification
   Supervisor: Northwest Mississippi Chapter, Stefan E. Schulenberg, Ph. D.
   Trained in counseling individuals in the immediate aftermath of a disaster
   February, 2015: 6 hours

COMPUTER AND LANGUAGE SKILLS

Software Proficiency
   R, SPSS, Mendeley, PsychInfo, PubMed, ReadCube, Microsoft Word, Microsoft Excel,
   Outlook, Access, PowerPoint, Catalyst Web Tools, familiarity with MPlus and SAS

Language Skills
   Language: English (native)
   German (reading and writing proficient; speaking conversational)