Indigenous Assessment Developers on Elements of the Disjuncture-Response Dialectic: A Critical Comparative Case Study

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INDIGENOUS ASSESSMENT DEVELOPERS ON ELEMENTS OF THE
DISJUNCTURE-RESPONSE DIALECTIC: A CRITICAL
COMPARATIVE CASE STUDY

A Dissertation Presented
to
The Faculty of the School of Education
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In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

by
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San Francisco, California
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ABSTRACT

The disjuncture-response dialectic proposes that the assessment development practices of Indigenous assessment developers exist within a broader environment where attention to broader themes such as settler colonialism (Wolfe, 2006) and Indigenous sovereignty is incorporated. To understand this dialectic, this study sought insight from Indigenous assessment developers about the issues they face when developing culturally specific assessments for use within their environments and settings.

This study used a critical (Giroux, 1979; Horkheimer, 2018; McKenzie, 2012) comparative case study approach (Bartlett & Vavrus, 2017b) with a convenience sample of three Indigenous assessment developers representing a cross-section of culturally specific assessment development projects across North America and Hawai‘i. The data for this study were drawn from interviews with Indigenous assessment developers with whom the researcher has collaborated toward the development of culturally specific assessments. The study design incorporated a horizontal, transversal, and a pair of dialectical vertical axes to establish the framing of the interviews.

The study findings indicate that Indigenous assessment developers situate measurement disjuncture and culturally specific assessment within larger oppositional structures that include settler colonialism, intellectual elimination, intellectual amplification, and Indigenous sovereignty.

The establishment of the disjuncture-response dialectic as a theoretical framework has implications for both research and practice and lead to a generalized disjuncture-
response dialectic as a wider theoretical framework that encompasses broader oppositional structures that exist in other fields and disciplines.
This dissertation written under the direction of the candidate’s dissertation committee and approved by the members of the committee, has been presented to and accepted by the Faculty of the School of Education in partial fulfillment of the requirements for the degree of Doctor of Education. The content and research methodologies presented in this work represent the work of the candidate alone.

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CHAPTER I
INTRODUCTION

This chapter provides a background and the need for the study, a statement of the problem it addresses, the research questions, research frameworks, and significance. It concludes with a definition of key terms.

Background and Need

For generations, Indigenous peoples have utilized performance-based assessment practices to determine how individuals could best contribute to the society. Adults observed children exhibiting varying degrees of skill in tasks such as “hunting, running, consensus building, healing, and spiritual leadership” (Bordeaux, 1995, p. 3) and those who demonstrated superior performance were the ones who later led hunting parties, provided spiritual guidance, served as orators for the people, and performed other necessary tasks for the group. Since 2016, I have been fortunate to locate a small number of Indigenous assessment developers constructing assessment instruments from within their own worldviews. That year, my work took me to Hawai‘i to collaborate on the development of an assessment grounded in the cultural values of Native Hawaiians. The framework was based on three Hawaiian knowledge domains. In October 2017, I began working on an Indigenous language assessment for a First Nations educational institution located in Ontario province, Canada. Through this project work in Hawai‘i and Canada and through subsequent partnerships within North America, ideas about the conduct of assessment from an Indigenous perspective began to emerge. Based on shared work and lengthy informal collegial conversations, I submit that observation, assessment, and
feedback are vital practices within Indigenous communities and are grounded in deep belief systems. Such assessments are conducted through the careful observations by elders, teachers, parents, older siblings, master craftspeople, and ceremonial leaders. To obtain that information, the learner is offered a variety of tasks with varying degrees of challenge. These tasks are used to obtain information about the desired learning in order to provide insight about what a learner is capable of doing. In the conduct of such assessment, a continuous stream of actions is examined, and a judgement is rendered against or in comparison with established markers or informal guideposts that form expectations for learning and indicate the learner’s location in their pathway toward becoming independent. Could it be that these ideas about assessment are foundational to the strengthening of Indigenous communities?

With the elimination of the Native as a goal for North American settler colonialism (Wolfe, 2006), Western settlers imposed a new reality onto Indigenous peoples that was intended to supplant the existing structures, frames, and knowledge constructs on those survivors of the intentional genocide. Indigenous people “have survived violent massacres, colonization, pandemic diseases, forced relocation, genocidal policies, removal of children to boarding schools, and the assault on culture and language” (Lambert, 2014, p. 59). Under colonization, the traditional passage of Indigenous knowledge from thousands of years was interrupted by the ravages of European contact, and the continued attempts to dismantle the cultural, linguistic, and Indigenous knowledges. For those who remained, educational structures were established and intended to replace centuries of Indigenous knowledge. In the process, Indigenous
knowledge was scattered, carried not by the collective anymore but by families and individuals who preserved portions of the knowledge.

Today, the experiences of Indigenous people remain restricted by external human management systems. As a means of survival, many Indigenous people have adapted a new constrained functional reality grounded in a Western worldview. The loss of native speakers of Indigenous languages represents an adaptation to a Western reality. Whatever knowledge may be for Indigenous people, today it is grounded in experiences within a constrained reality established through settler colonialism (Wolfe, 2006) and human slavery. Within this constrained reality, a structure is forced upon Indigenous people and they are taught to stay within that structure, thus, limiting the human capacity to imagine and to dream. However, for some, the imposition of constraints engenders an imagining within some that there is something beyond those boundaries – a different imagined reality within which definitions, structures, rules, and freedoms are self-determined.

The deep relationship between Indigenous people and their specific forms of assessment was disrupted by European contact. Within Indigenous communities, that disruption must be acknowledged and addressed before the practice of assessment development for use with Indigenous people can begin. Hegel (2010) wrote “contradiction is the root of all movement and vitality; it is only insofar as something has a contradiction within it that it moves, has an urge and activity” (p. 439). The act of exposing the contradiction serves as the impetus for the emergence of the next iteration of the concept, idea, or framework. The imposition of non-Indigenous forms of assessment onto Indigenous people leads to a disjuncture (Appadurai, 1996; Meek, 2010; Wyman et al., 2010) and a corresponding response that is multilayered and affects all aspects of the
work of Indigenous assessment developers. The layers of this disjuncture-response dialectic is presented in Figure 1 and the elements of it are described in the sections below.

![Figure 1. The disjuncture-response dialectic](image)

**Settler colonialism**

Indigenous people continue to experience the effects of colonialism and the “decimation of the indigenous population, primarily through waves of disease, annihilation, military and colonialist expansionist policies” (Brave Heart & DeBruyn, 1998, p. 62). Indigenous people have been subjected to historical and contemporary complexities such as “genocide, territorial usurpation, forced relocation, and transformations of Native economic, cultural and social systems brought on by contact with Whites” (McCarty, 2003, p. 148). In Hawai‘i, there were an estimated 800,000 Hawaiians prior to the arrival of Captain Cook in 1778 and within 100 years, venereal diseases, tuberculosis, and influenza decimated nearly 95% of the Native Hawaiian population (Warner, 1999). In North America, European colonization “forced North American tribes from their ancestral homelands, destroyed their communities (culturally and literally), and forced assimilation to a European way of life that is now considered
mainstream North American culture” (Bowman et al., 2015, p. 337). Indigenous people continue to be harmed by historical trauma, the chronic trauma and “unresolved grief of a people due to systemic loss” (Shea et al., 2019, p. 554) that affects both survivors and subsequent generations (Brave Heart & DeBruyn, 1998; Grayshield et al., 2015; Morgan & Freeman, 2009).

Colonialism, according to Yellow Bird (1999), is when an alien people invade the territory inhabited by people of a different race and culture and establish political, social, spiritual, intellectual, and economic domination over that territory. It includes the appropriation of both territory and resources by the colonizer and loss of sovereignty by the colonized (Yellow Bird, 1999). Patrick Wolfe (2006) defined settler colonialism as inherently eliminatory but not invariably genocidal. Wolfe (2006) described the logic of elimination as the summary liquidation of Indigenous people and their societies. As with genocide, settler colonialism first strives for “the dissolution of native societies” and, then, the construction of “a new colonial society on the expropriated land base” (p. 388). According to Wolfe (2006), the primary motive for elimination “is not race (or religion, ethnicity, grade of civilization, etc.) but access to territory” (p. 388).

Applying these same concepts, one can construct the logic of intellectual elimination as also being inherently eliminatory. The logic of intellectual elimination refers to the summary liquidation of Indigenous peoples’ knowledge. Intellectual colonialism strives first for the dissolution of native societies’ knowledge and then for the construction of a new colonial knowledge within the expropriated minds. As with the logic of elimination, the primary motive for intellectual elimination is not race (or religion, ethnicity, grade of civilization, etc.) but access to territory.
The logic of intellectual elimination

Assessment developers who practice Western forms of assessment development within Indigenous communities are participants in this intellectual elimination. Three case examples are provided here to articulate this point. These cases demonstrate the relative ease with which assessment developers and researchers introduce intellectual colonialism through their practices and methods. The consequences of their actions are incalculable.

In use throughout Canada, parenting capacity assessments (PCA) are used by child protection workers to make determinations about the fitness of parents to care for their children (Choate & McKenzie, 2015). In noting the role that neglect investigations play in the overrepresentation of Indigenous children in child welfare, Caldwell and Sinha (2020) called for a “framework for reform of current approaches to assessing and addressing cases involving concerns about neglect” (p. 483). When making important decisions about child protection, Muir and Bohr (2014) argue that “the cultural, social and historical realms of Aboriginal communities” must be considered in the assessment of Aboriginal children, “especially in the context of child protection, as identifiable differences may exist between the parenting norms in Aboriginal communities and those of mainstream groups” (p. 76). Nevertheless, PCAs in use throughout Canada are a part of larger decision-making processes that “have been constructed using Euro-North America understandings of parenting focusing on the nuclear family” (Choate & McKenzie, 2015, p. 32).

The Lakota Women and Cervical Cancer Survey (Bowker, 2017; Bowker et al., 2020) was developed to conceptualize the knowledge, beliefs, and behaviors of Lakota
women with respect to the Human Papillomavirus (HPV) and cervical cancer. Lakota women have their own distinct worldview and beliefs about health and yet the survey included slight modifications to a previously-developed instrument constructed for use with Appalachian women (Vance & Keele, 2013).

Mental-health screenings and assessments that are not responsive to the needs of Latinx immigrants are used frequently for evaluations of clinical programs (Alegría et al., 2019; Cardemil et al., 2010; Farina & Mancini, 2017; Kaltman et al., 2016; Kataoka et al., 2003; Santiago et al., 2015) that serve them. When Latinx immigrants present for trauma care within these mental health programs, they are often assessed with culturally encapsulated (L. McCubbin & Bennett, 2008) instruments that fail to capture: (a) Latinx cultural experiences, values, and knowledge, (b) the specific forms of pre-migration, during migration, and postmigration traumas they may encounter, and (c) how colonization, enslavement, racism, and other oppressive forces shape their experiences. In a review of the six evaluation studies cited above, a total of 23 unique mental-health instruments were used. Although some of these researchers attempted to be responsive to cultural and linguistic needs of the immigrant participants during the assessment process, this responsiveness began and ended with a strict Spanish-language translation of the instrument.

Measurement disjuncture

The misalignment between assessments developed within a Western worldview and applied within an Indigenous worldview presents a special problem. In the field of measurement, this problem was unnamed until 2019, when I named this problem measurement disjuncture (Sul, 2019). In doing so, I began the process by examining the
definition of measurement validity. Measurement validity refers to the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests (American Educational Research Association, American Psychological Association, and the National Council on Measurement in Education, 2014). Key elements of this definition are addressed by the terms “evidence,” “theory,” “interpretations,” “scores,” “uses,” and “tests.” The meanings of these terms within the very definition of measurement validity are grounded in and influenced by the worldview under which the instrument development occurs.

While measurement validity is not the problem at hand, measurement validity is affected by this problem. To pursue an explanation, I examined the literature on settler colonialism (Wolfe, 1999, 2006) as this act seemed to me to be a remnant of colonialism. It is within that literature where I came across two key terms. Misalignment that is grounded in cultural and linguistic differences has been referred to as “disjuncture” (Appadurai, 1996; Meek, 2010; Wyman et al., 2010) or “discontinuity” (Bougie et al., 2003; Brown-Jeffy & Cooper, 2011; Edwards, 2006; Meek, 2007). Cultural discontinuity refers to the lack of cohesion between two or more cultures (Lovelace & Wheeler, 2006). Such cultural and linguistic disjunctures are often grounded in the conflicts of “beliefs, or feelings, about languages” that are the inevitable outcome of the interaction of indigenous, colonial, post-colonial, and professional academic perspectives (Kroskrity, 2009). Based on these definitions, I identified measurement disjuncture as the misalignment that occurs when elements of an instrument-development process from one worldview are applied to the instrument-development process of another worldview (Sul, 2019). While measurement disjunctures can occur across worldviews, environments or
settings, this research will center on the measurement disjuncture that exists across Western and Indigenous worldviews.

Culturally specific assessment

Developing assessments from within the worldview in which they are applied is one way to address the problem of measurement disjuncture. This approach has been applied in a variety of disciplines such as cancer prevention (Garcia et al., 2017), student behavior (Hitchcock et al., 2005), early-childhood education (Kinzel, 2015), and mental health (O’Brien et al., 2007; Telander, 2012; The Getting it Right Collaborative Group et al., 2019; Thompkins et al., 2020; Walls et al., 2016; Whitfield, 2017). It is referred to in the literature as a “culturally specific” or an “emic” approach (Hui & Triandis, 1985).

Emic research, as opposed to etic research, refers to research that studies phenomena that exist within one culture and does not involve a focus on other cultures. These two terms are derived from linguistics where “phonetics refers to the study of general aspects of vocal sounds and their production and phonemics studies the sounds used in a particular language” (Eckensberger, 2015, pp. 111–112). The etic research approach refers to research when it is conducted “across many cultures, when the structure is created, and when the criteria for analysis are considered absolute or universal” (Eckensberger, 2015, p. 112). The main aim of the emic approach, located at one end of the “abstraction universality-cultural specificity continuum” (Hui & Triandis, 1985, p. 132), is to focus on individual differences in attributes that are characteristic of a cultural context (Burtáverde et al., 2018).

Nastasi (2000) wrote that educational psychological services that are culturally specific “embody an individual's real-life experiences within a given cultural
context…and his or her understanding of those experiences” (p. 547). A reference to the term “culturally specific assessment” appears in federal Public Law P.L. 95-561, the Indian Education Act of 1979 which called for the Assistant Secretary for Indian Affairs through the Director to “establish and maintain a program of research and development to provide accurate and culturally specific assessment instruments to measure student performance in cooperation with Tribes and Alaska Native entities” (Indian Education Act of 1979, 1983). Ten years after the passage of the Indian Education Act of 1979, Chavers and Locke (1989) wrote “We do not know of any Native-normed test of any kind. This is an area which is obviously rich in development possibilities” (p. 19). In 1995, Estrin and Nelson-Barber (1995) wrote “there is no repertoire of standardized tests in Native languages or that draw on Native cultural content and learning processes” (p. 5). Since that time, there remains limited research on the development of assessments and measurement scales from an Indigenous perspective. This research attempts to fill a research gap that is over 40 years old.

Culturally specific assessment development is the focus of this study and the formal definition of culturally specific assessment that will be utilized throughout this document is (a) assessment that supports the (academic) development of individuals, (b) is inclusive of a willingness to nurture and support cultural competence, (c) aims to support the development of a sociopolitical or critical consciousness within students, (d) is focused on constructs and measures of importance to educational practitioners and other key stakeholders, and (e) functions within a system of knowledge that exists within a named worldview (Sul, 2019).
Since the 1960s, a renaissance of the teaching of culture, language, and Indigenous knowledge has been occurring throughout Aotearoa (New Zealand), Hawai‘i, Native American communities within the United States, and First Nations within Canada (Battiste, 2014; McCarty, 2003; van Meijl, 2006; Warschauer, 1998). Over this time, “Indigenous peoples and their allies have taken a stand and begun an indigenizing and decolonizing process” (P. Johnson, 2016, p. 45). These processes have included the retelling of cultural pasts and practices, advocacy for their own value systems, traditional forms of governance, and a return to ways of life that relate people to the cosmos, nature, and landscape.

In the 1970s, pressure on the federal government exerted by tribal nations and urban Indian communities within the United States focused on educational change and control, which led to “a number of important pieces of legislation and federal investigations related to American Indian education and, specifically, the role of tribal languages and cultures in schools serving Indigenous youth” (Brayboy & Castagno, 2009, p. 33). In 1972, the Indian Education Act of 1972 was passed and included “opportunities and funding for creating tribal culture and language programs for schools and support for increasing the number of Native educators” (Brayboy & Castagno, 2009, p. 33). The challenges of educators trying to meet the needs of their Native American students resulted in additional federal legislation, Public Law 95-561 (P.L. 95-561) or the Indian Education Act of 1979, that included a call for a program of research and development of culturally specific assessments for use within Native American educational settings (Indian Education Act of 1979, 1982). Ten years after the passage of the Indian Education Act of 1979, Chavers and Locke (1989) wrote “We do not know of
any Native-normed test of any kind. This is an area which is obviously rich in
is no repertoire of standardized tests in Native languages or that draw on Native cultural
content and learning processes” (p. 5). According to Brayboy and Castagno (2009), “two
models dominate conversations and approaches to Indian education in the USA: the
assimilative model and the culturally responsive model” (p. 31).

A growing international Indigenous rights movement led to the passage of Article
asserted “Indigenous peoples have the right to establish and control their educational
systems and institutions providing education in their own languages, in a manner
appropriate to their cultural methods of teaching and learning” (United Nations
Declaration on the Rights of Indigenous Peoples, 2007, p. 5). Since then, Indigenous
communities have reframed their educational settings (Ragoonaden & Mueller, 2017) to
align with their cultural worldviews and within these settings resides the practice of
formal assessment. In addition to developing teaching materials and resources,
Indigenous scholars such as Sʔímlaʔxʷ Michele K. Johnson now call on Indigenous
educators to “create their own methods of assessing student achievement and fluency”
(2017, p. 23).

*Intellectual amplification*

The work of Indigenous culturally specific assessment developers resides within a
larger space referred to here as intellectual amplification. While culturally specific
assessments are narrowly tailored to address independent constructs from within a named
worldview, when grouped together across constructs and worldviews, the act of
developing such assessments represents a response to intellectual elimination denoted here as intellectual amplification. Intellectual amplification is the acknowledgement, revitalization, sustenance, maintenance, development, and promotion of knowledge that is grounded within named cultural knowledge systems. McCarty and Lee (2014) wrote that culturally sustaining/revitalizing pedagogy (CSRP) addresses “sociohistorical and contemporary contexts of Native American schooling”, “attends directly to asymmetrical power relations and the goal of transforming legacies of colonization,” “recognizes the need to reclaim and revitalize what has been disrupted and displaced by colonization,” and “recognizes the need for community-based accountability” (p. 103).

**Indigenous sovereignty**

While intellectual amplification can come in many forms from a variety of cultural worldviews, when gathered across Indigenous groups, this amplification of Indigenous knowledge forms but one strategy within broader political movements that seek the full expression of the right to Indigenous sovereignty. Sovereignty is the right of a people to self-government, self-determination, and self-education which includes the right to linguistic and cultural expression according to local languages and norms (Lomawaima & McCarty, 2002). According to Lomawaima (2000), the sovereignty held by Native American tribes has inherently existed prior to the establishment of the United States and is the “bedrock upon which any and every discussion of Indian reality today must be built” (p. 3). The drive toward Indigenous sovereignty is where the work of Indigenous culturally specific assessment developers resides. Indigenous culturally specific assessment developers are political actors and their assessment development practices, offered in response to measurement disjuncture, serve as political acts of
intellectual amplification and Indigenous sovereignty that challenge intellectual elimination, and, ultimately, stand against forces of settler colonialism.

Statement of the Problem

“As with any other product of human activity, tests are cultural artifacts” (Solano-Flores, 2011, p. 3) existing within a given worldview. As such, elements of the assessment-development process are prescribed necessarily by an unstated worldview under which they are presented that bounds all aspects of the assessment development process. Experiences with Western-based forms of assessment have not served Indigenous people’s interests. Through “scientific analysis Indigenous peoples found their selves compared, measured, and judged inferior to European standards of civility, language, and culture. This belief permitted atrocities and forced removal throughout Indigenous territories” (P. Johnson, 2016, p. 44). In addition, the practice of utilizing Western-framed assessments within their Indigenous settings often has produced results that are impractical and irrelevant. Chavers and Locke (1989) wrote that “tests developed and normed with majority populations have a built-in set of errors when used with Native American Indians” (p. 18). The reliability and validity of most speech and language-pathology screening tools surveys for Aboriginal children are undetermined due to the fact that most language tools have been calibrated on students within the dominant culture (Robinson-Zañartu, 1996). As a result, the core validity of virtually all existing speech and language-pathology screening tools and instruments should be challenged. Robinson-Zañartu (1996) stated further that “cultural assumptions inherent in standard tests and evaluation tools are so divergent from Native American learning as to make the
current repertoire irrelevant as valid indicators of Native American learning” (Robinson-Zañartu, 1996, p. 379).

The use of Western-framed assessments for use with Indigenous learners has been described as “trying to fit a square peg into a round hole” (Keliʻikipikāneokolohaka, 2015, p. 14). This assessment misfit is represented in the figure below.

![Assessment Misfit](image)

*Figure 2. Assessment misfit*

Three learner effects are related to this assessment misfit to be defined in Chapter II as measurement disjuncture (Sul, 2019). First, when assessments are developed from a Western perspective (i.e., represented as the dark blue square in Figure 2), measurement disjuncture penalizes individuals with limited access to the customs and standards of the dominant culture, such as Indigenous people, because the knowledge, values, and experiences of those from the dominant culture (e.g., White individuals) are considered normative and serve as the default foundation of the assessment framework. Second, assessments may fail to recognize the knowledge, values, and experiences of members from nondominant cultural groups (i.e., represented as a light blue circle in Figure 2)
yielding less information about the attribute of interest, and possibly resulting in inaccurate diagnoses and treatments. Third, measurement disjuncture may pressure participants from non-dominant cultural groups (e.g., Indigenous people), to alter the complexion of their being, set aside their own systems of knowledge, and adopt the dominant group’s worldview in order to participate in the assessment activity. Researchers have referred to the “active denial of the present living existence of a culture and/or cultural identity as expressed through language, behaviors, norms, values, history, and assets” by educational structures as cultural identity silencing (Leigh-Osroosh & Hutchison, 2019, p. 2). Measurement disjuncture effects can lead to misclassification errors based on the overestimation (Type I error) or the underestimation (Type II error) of the attribute status. These misclassification errors, ultimately, can affect the results of research and evaluation studies.

**Responses to measurement disjuncture**

The lack of representation of Indigenous perspectives within assessment-development processes has been met by a range of efforts. One method of developing assessments is to begin with one that already has been validated for one setting and then modify it for use in another (Borgia, 2009). Given the challenge of assessing Indigenous knowledge domains using existing assessments, some have focused their efforts on the development of entirely new assessments grounded in the perspectives of Indigenous people (Dench et al., 2011). A typical psychometric response to assessment misfit would be to continue to use the assessment or a modified version of it and to examine such issues as internal consistency, item bias, and differential item functioning for Native American students. McGroarty, Beck, and Butler (1995) wrote that such responses have
focused on the “technical and statistical properties of language assessments and excluded consideration of wider educational and human consequences” (p. 323). Others have indicated that when working within Indigenous settings, “it is sometimes not possible to do a full evaluation of psychometric properties such as reliability, validity, and sensitivity is particularly true when working with a relatively small population” (Dench et al., 2011, p. 171). This research, however, seeks to address the assessment misfit problem at its core source: the entire assessment development process itself. Culturally specific assessments are constructed through the lens of and function within a specific culture’s unique worldview. To avoid disjuncture effects when working with Indigenous people, I propose the use of a culturally specific assessments, represented by the image on the right in the figure below.

![Diagram](image)

**Figure 3.** Measurement disjuncture, culturally responsive assessment, and culturally specific assessment

Since June 2016, I have been collaborating with Indigenous assessment developers on the development of culturally specific assessments that reframe the assessment exercise from within their worldviews. These Indigenous assessment
developers and I have been attempting to create assessment instruments that are culturally and linguistically appropriate for use in their respective settings. There has been limited research on the development of assessments from an Indigenous perspective. There has been even less research on the effect of developing such assessments on Indigenous assessment developers. This research attempts to fill these gaps.

**Purpose of the Study**

Assessments that are developed from a Western perspective and used within Indigenous environments introduce measurement disjuncture, increase measurement error, and ultimately, reduce measurement validity. The purpose of this critical comparative case study was to explore, through the experiences of Indigenous assessment developers, what measurement disjuncture is, why it is a problem, and what can be done about it. I introduced the disjunction-response dialectic theoretical framework and through the comparative case examples, I investigated how Indigenous assessment developers use culturally specific assessments as responses to measurement disjuncture, as forms of intellectual amplification that challenge intellectual elimination, and as political acts of Indigenous sovereignty that stand against forces of settler colonialism. My aim in presenting these case studies was to elevate the work of Indigenous assessment developers to support practitioners, researchers, scholars, and activists working within Indigenous environments who seek information that reflects the Indigenous people they serve.
Frameworks

Theoretical framework: Critical theory

In the 1840s, Germany was undergoing rapid modernization, and this led to a surge in intellectualism to explain the accompanying societal changes. The prior centuries’ Age of Enlightenment shifted thought toward an “increased use of reason to gain knowledge of nature and apply that knowledge for human benefit” (Stone, 2014, pp. 1118–1119). The concept and approach to critique prominent during the 1840s was “derived from the Enlightenment (and) was developed most systematically in the work of Kant, Hegel, and the Left Hegelians” (Brenner, 2009, p. 199). Hegel’s dialectical approach (2010) would establish the foundation for critical theory. The approach is a general one and is based on the establishment and resolution of a contradiction between opposing sides. In the Science of Logic, Hegel (2010) wrote “contradiction is the root of all movement and vitality; it is only insofar as something has a contradiction within it that it moves, has an urge and activity” (p. 439). The act of exposing the contradiction serves as the foundation for the development of what would become known as critical theory. Marx utilized critique of the political economy “to show how capitalism’s contradictions simultaneously undermine the system, and point beyond it, towards other ways of organizing social capacities and society/nature relations” (Brenner, 2009, p. 200). By the end of the 1800s, social theory transitioned away from being critical and adopted a more scientific and positivistic approach that would remain in place until the end of World War I (Jay, 1973).

By 1917, the Russian revolution had begun and “the social world was in urgent need of reinterpretation” (Steinberg & Kincheloe, 2010, p. 142). World War I had left
Germany devastated, responsible for postwar reparations, experiencing high inflation and unemployment, and on the verge of economic collapse (Kincheloe, 2008; Steinberg & Kincheloe, 2010). Strikes and protest movements within Germany and throughout Central Europe provided postwar conditions suitable for the launch of a socialist revolution. Yet, in 1918, when presented with this historical moment, Germany opted for a democratic socialist form of government, the Weimar Republic. In response, a group of young German Marxist philosophers assembled to answer the question of why a socialist revolution had occurred in Russia but not in Germany. The result of these early discussions was the formation of the Institute for Social Research in Frankfurt, Germany or the “Frankfurt School” in 1923 (McKenzie, 2012). The philosophical background of the school was provided by Hegel and Marx, “who viewed social and cultural problems as being the result of the imperfections of rationality” (Swartz, 2014, p. 273). Max Horkheimer, a German philosopher and sociologist, assumed leadership of the institute in 1930 and in his inaugural lecture, he proposed critical theory as a new model for research in the social sciences (McKenzie, 2012, p. 20). To carry out the research, the institute drew together the ideas of “traditional sociological theorists, such as Marx and Weber, with the philosophy of Hegel and Kant; the psychoanalysis of Freud; the psychology of Fromm; the analysis of music, art and culture through Adorno; and numerous other specialties such as politics, history and literature” (McKenzie, 2012, p. 20). This multidisciplinary approach was used to expand the focus on social issues by integrating views from a wide variety of disciplines.

Today, a “criticalist is a researcher, teacher, or theorist who attempts to use her or his work as a form of social or cultural criticism” (Kincheloe et al., 2011, p. 164). During
the conduct of critical research, the identification of contradictions both helps to undermine systems and helps to point people beyond the contradiction toward other ways of doing things. While a goal of critical researchers is to reveal hidden sources of domination in order to facilitate human emancipation, criticalists seek to “excavate the emancipatory possibilities that are embedded within, yet simultaneously suppressed by, this very system” (Brenner, 2009). Critical theory “concerns itself with issues related to the socialization of people for existence in society, usually a society defined by dominant discourses” (Keesing-Styles, 2003, p. 2).

**Theoretical framework: Critical pedagogy**

The purposeful socialization of people is an aspect of critical theory that aligns it with critical pedagogy. Paulo Freire was “one of the first theorists to specifically align critical theory with the interest and needs of educational research” (Jennings & Lynn, 2005, p. 17). Throughout the 1950s and 1960s, Freire integrated critical theory within his literacy work in Brazil, Latin America, and Africa. In 1970, Freire (2017) wrote *Pedagogy of the Oppressed* and criticized what he referred to as a “banking form of education” (p. 45) where knowledge is deposited into passive empty vaults of learners and learners are never asked to question that knowledge. Within the banking model, the teacher is the center of the educational process and students are recipients of knowledge (Freire, 2017). Freire (2017) believed that this form of teaching, prevalent throughout public education until the late 20th century, removed both the object and form of instruction from societal problems and injustices.

Freire instead placed “social and political critiques of everyday life at the centre of the curriculum” (Keesing-Styles, 2003, p. 3). According to Freire, “we need to ask
questions of all knowledge… because all data are shaped by the context and by the individuals that produced them” (Kincheloe et al., 2011). Freire promoted a democratic approach where teachers posed open-ended questions, students posed solutions, and both groups worked together as equals willing to learn from one another in order to implement change. Critical pedagogy represents “the ways a teacher understands and attends to the overt and subversive power woven into the relational dynamics between teacher and schooling, student and schooling, teacher and student, teacher and society, student and society, and all other relational elements that order both scholastic and social life” (Magill & Salinas, 2019, p. 2). While not described as critical pedagogy at the time, Freire’s seminal work would gain rapid acceptance within the United States beginning in the 1980s. Henry Giroux (1983) coined the term “critical pedagogy” to describe the merging of critical theory with the practice of teaching and learning and soon thereafter, research in the field of critical pedagogy became “one the major paradigms in contemporary educational thought” (Jennings & Lynn, 2005, p. 17).

Critical pedagogy operates from a series of foundational beliefs that center on the power of education to make social change possible. Among them are the concepts of education as praxis and education for critical consciousness. Praxis is comprised of critical action and reflection, both grounded in theory (Freire, 2017). Praxis “starts with an abstract idea (theory) or an experience, and incorporates reflection upon that idea or experience and then translates it into purposeful action” (Breunig, 2005, p. 111). Operationally, reflection follows action grounded in a theory or an abstract idea and is meant to determine whether the actions were consistent based on the theory. The reflection allows for modification of either the theory or the subsequent actions. Freire
placed great importance on moving from reflection and discussion toward positive action (Jennings & Lynn, 2005, p. 17) and claimed that reflection without action is merely “verbalism” (2017, p. 60) that makes transformation impossible. Action without critical reflection, according to Freire (2017), is purely “activism” (p. 61) and in the conduct of critical pedagogy, a balance between the two “is important and necessary” (Van Duinen, 2005, p. 147). This “ongoing relationship between theoretical understanding... and action that seeks to transform individuals and their environments” (Leistyna, 1999, p. 45) is referred to as the dialogic approach.

Viewing education as a liberatory practice, Freire hoped to raise the consciousness of learners around social, political, economic, gender, race, and class issues as an integral part of learning how to read and write. *Conscientizaҫão*, or conscientization, the process of developing critical consciousness, involves engagement with community members in order to construct “generative themes designed to tap into issues that were important to various students in his class” (Kincheloe et al., 2011, p. 164). Critical consciousness-raising “compels teachers to examine those difficult histories of racism, sexism, classism, homophobia, and ableism used to negate (or mute) these problematic relations within (academic) content areas” (Magill & Salinas, 2019, p. 2). The development of a critical consciousness within learners challenges them to reflect on the various forces of inequity affecting their lives, devise strategies to combat inequities, and to act on their plans.

Critical pedagogy would lead to the development of the strands of research known as culturally relevant pedagogy (Ladson-Billings, 1994, 1995b, 1995a, 2014) and culturally responsive assessment (Hood, 1998; Hood et al., 2015).
Theoretical framework: Critical assessment

Critical assessment is an answer to the question, “what would it look like to develop assessments from a critical perspective?” The critical perspective is inherently at odds within disciplines where it resides. This also is the case for the field of assessment. The introduction of the critical perspective brings with it a new dimension to assessment that may not be visible from what others see as the primary disciplinary dimension, assessment. Assessment and critical theory, however, are not contradictory but, instead, create an orthogonal space between them. That space is critical assessment. Critical assessment is situated under critical pedagogy (Freire, 2017) alongside of culturally relevant teaching (Ladson-Billings, 1994, 1995b, 1995a, 2014) and sits above culturally responsive assessment (Hood, 1998; Hood et al., 2015).

Linguistics provides an example of how these dimensions form a space known as critical language testing (Shohamy, 2001) which developed from the acknowledgement that language tests, especially high stakes language tests such as those used in citizenship applications, may lead to unintended consequences that need to be examined and evaluated. Placing the field of critical language testing within the broad area of critical pedagogy, Shohamy (2001) viewed tests as “powerful tools – embedded in social and political contexts and agendas, related to intentions, effects and consequence and open to interpretations and values” (p. 131). Critical language testing seeks to encourage stakeholders “to question the uses of tests, the materials they are based on and to critique their values and the beliefs inherent in them” (Shohamy, 2001, p. 131). Lynch (2001) presented Shohamy’s (2001) 15 critical language testing principles within his own framework for critical applied linguistics. According to Lynch (2001), a critical approach
to applied linguistics has four characteristics. First, it has an interest in particular domains such as gender, class, ethnicity, and the ways that language and language-related issues (like all human relations and activities) are interconnected with them. Next, it is based on the notion that researchers need to consider paradigms beyond the dominant, postpositivist-influenced one. It also has a concern for changing the human and social world, not just describing it. This is referred to as the “transformative agenda,” with the related and motivational concern for social justice and equality. Finally, it must be self-reflexive (Lynch, 2001, p. 363).

According to Keesing-Styles (2003), to achieve a critical approach to assessment, it must be centered on dialogic interactions so that the roles of teacher and learner are shared and all voices are validated. Additionally, assessment must value and validate the experience students bring to the classroom and importantly, situate this experience at the center of the classroom content and process in ways that problematize it and make overt links with oppression and dominant discourses. Critical assessment must reinterpret the complex ecology of relationships in the classroom to avoid oppressive power relations and create a negotiated curriculum, including assessment, equally owned by teachers and students. Finally, it also accommodates some of the aspects of postmodernism that are seen to address the supposed “deficits” in critical pedagogy (p. 10). Van Duinen (2005) placed the liberation of people and society at the core of critical assessment and argued for the use of learner-centered assessment practices “rooted in students’ lived experiences and expressed in authentic ways” (Van Duinen, 2005, p. 145).

Critical assessment (a) tends to ecosystems of power (Chavez-Dueñas et al., 2019; R. P. Foster, 2001) that influence the practice of assessment, (b) considers assessment
paradigms beyond the dominant, post-positivist-influenced ones (Giroux, 1997; Lynch, 2001), (c) is grounded in a transformative (Mertens, 2009) framework for changing the human and social world that goes beyond describing it (numerically) (Freire, 2017; Pennycook, 1999), (d) integrates praxis (Freire, 2017) – regarding the practice of assessment and the role of the assessment practitioners and researchers, and (e) requires meaningful interdisciplinary collaboration (Horkheimer, 2018) that addresses sociopolitical issues within assessment. These five tenets constitute the theoretical framework of critical assessment for this research.

The first tenet of critical assessment is that it tends to ecosystems of power that influence the practice of assessment. Critical assessment shifts away from and challenges “power relationships and dominant ideologies” (Gardner & Halpern, 2016) that influence the practice of assessment. Critical assessment situates the practice of assessment within a broader, critical view of social and political relations. It focuses on the role measurement plays in questions of power, inequality, discrimination, resistance, and struggle (Pennycook, 1999). Critical assessment requires an interest in particular strata such as gender, class, ethnicity, and their various intersections (Crenshaw, 1991; Lynch, 2001; Pennycook, 1999). Critical assessment acknowledges that the assessment exercise is situated within an ecosystem of oppressive laws and policies created in support of enslavement, colonization and oppression (Chavez-Dueñas et al., 2019; R. P. Foster, 2001).

The second tenet of critical assessment is that it considers assessment paradigms beyond the dominant, post-positivist-influenced one. The culture and assumptions of positivism have exerted a powerful influence on the process of schooling (Giroux, 1997).
Critical assessment expands criteria regarding both what is important to assess and how to assess it. Critical assessment is open to the development and conduct of assessments based on constructs and demonstrations of knowledge that may be defined universally or solely within specific cultures, perspectives and worldviews. Practitioners of critical assessment caution against the reliance, weight, and value assigned to the resultant scores derived from the use of measurement instruments. Critical measurement is open to the possibility that a nonmeasurement approach may be a more appropriate form of assessment for any given case. Giroux (1997) encouraged educators to treat as problematic socially constructed assumptions that underlie classroom assessment by asking: “How do the prevailing methods of evaluation serve to legitimize existing forms of knowledge?” (1997, p. 29). Critical assessment calls into question who gets to decide what to assess, who gets to assess, and ultimately, what is considered valid assessment.

Sablan (2019) argued that, when taken with an appropriate lens, measurement theory, including survey methodology and scale development, can contribute adequately to critical race dialogues, which is due to the possibilities of counterstories being incorporated into scale development and of validation techniques refining asset-based theories. While it is acknowledged that “the running of a regression model or structural equation model, for example may appear similar across ‘critical’ and ‘noncritical’ studies,” (Sablan, 2019, p. 198), it is the intent that defines the critical nature of the analytical approach (Stage, 2007).

While critical measurement shares many characteristics with critical assessment, the focus on the construction of a numerical scale separates the two concepts. As such, attention to the construction of the measurement rule (Stevens, 1958) either at the item-
level or at the domain-level is paramount. This includes a re-examination of the use of measurement methods grounded in classical test theory that seek the “true score waiting to be approximated” (Lynch, 2001, p. 362). The measurement model proposed here is supported by the application of Item Response Theory (Embetson & Reise, 2000; Hambleton et al., 1991). Item response theory relies on the interaction between two concepts that are defined by assessment developers – item difficulty and learner ability – to model estimates of these two traits (Embetson, 2010). This differs from the Classical Test Theory approach that relies solely on total scores and does not account for item properties within the model (Embetson, 2010). Critical measurement attends to four considerations prior to the selection of the appropriate measurement model: the rating process, the level of measurement, construct multidimensionality, and the variability of item rating scales.

Critical assessment’s third tenet is that it is grounded in a transformative framework for changing the human and social world that goes beyond describing it (numerically). Those conducting critical assessment recognize their role in being critical of institutional structures and people who hold power within them as a means to lessen oppression (Breunig, 2005). Critical assessment carries within it the “transformative agenda” as well as related and motivational concerns for social justice and equality (Pennycook, 1999). Critical assessment researchers acknowledge their work is about more than instrument and scale development and participate in the development of a critical consciousness (Freire, 2017) within assessment developers. While not sufficient, critical assessment, as a necessary element of critical pedagogy, can lead to pedagogical autonomy and self-determination. For whatever Indigenous knowledge may be for
people, today it is grounded in experiences situated within a constrained reality imposed through settler colonialism (Wolfe, 2006) and slavery. For some, such a constrained reality limits the capacity to imagine and to dream whereas, for others, it engenders an imagining that there is something beyond boundaries: a different imagined reality within which definitions, structures, rules, and freedoms are self-determined. Critical assessment seeks the conduct of assessment not within the world as it exists today but within a better world imagined for tomorrow.

The fourth tenet of critical assessment is that it integrates praxis regarding the practice of assessment the practice of assessment and the role of the assessment practitioners and researchers. Critical assessment integrates theory, practice, and reflection – or praxis (Freire, 1970) – regarding the practice of assessment, and the role of the assessment practitioners and researchers. Praxis is the integration of both theory and practice, has been characterized as action and reflection upon that action (Freire, 2017). Critical assessment as a force for social change builds congruence between theory and practice while maintaining a focus that is critical of how dominant institutions wield assessment and measurement to maintain their power. Critical assessment raises questions about the reliance on assessment to define and establish systems of merit, value, and worth to sustain power imbalances. Such reflective questions, however, must be accompanied with action and the commitment to work toward change (Freire, 2017).

At the heart of critical theory is the exposure of the dialectic through dialogue which can lead to the revelation of new ways of thinking and acting (Hegel, 2010; Jay, 1973; Stone, 2014). Practitioners of critical assessment practice it by emphasizing the fractured, broken, or contradictory character of the assessment enterprise.
Critical assessment calls into question the practice of assessment (Gardner & Halpern, 2016). Prior to launching an assessment project, critical assessment calls into question the need for an assessment and, in particular, an assessment that requires a numerical finding. Practitioners of critical assessment ask whether assessment purposes can be served without the assignment of a numerical value and, where possible, provide alternative qualitative assessment options.

Critical assessment calls into question the object of assessment. Practitioners of critical assessment ask whether the object of assessment is relevant to whom the assessment will be applied, whether it has been created from within a dominant paradigm, or how the object of assessment can be used as a tool to expand liberation.

Critical assessment calls into question the role of assessment researchers. Critical assessment rejects any research perspective “that claims to be able to stand ‘outside’ of the contextually specific time/space of history” (Brenner, 2009) where assessment occurs. Critical assessment developers acknowledge the role they play in advancing society through the practice of critical assessment.

The fifth tenet of critical assessment is that it requires meaningful multidisciplinary collaboration. Critical assessment involves the collaboration of experts, practitioners, scholars, and other interested stakeholders from across a variety of disciplines (Horkheimer, 2018) who are all engaged in the work of developing meaningful assessment instruments. Critical assessment is conducted by those with the rich knowledge of the object of assessment and by those with a rich knowledge of the construction of assessment instruments. Participants work as co-equals to combine their respective knowledge sets to co-construct assessment instruments. Through the conduct
of critical assessment, assessment instruments as well as knowledge about critical assessment can be co-created by all participants leading to research that is “on, for, with, and by” (Czaykowska-Higgins, 2009) Indigenous people.

Based on these five tenets, the theoretical framework of critical assessment is represented in the figure below. Within it, the concentric fields of assessment and measurement are displayed with Critical Theory in an orthogonal manner. This perpendicular relationship is meant to capture how those with a critical perspective, in any discipline, are often at odds with their own disciplines.

![Figure 4. Culturally responsive and culturally specific assessment located within the theoretical framework of critical assessment](image)

Inserting Critical Pedagogy within Critical Theory establishes the location of both critical assessment and critical measurement. It is here where culturally responsive assessment and measurement reside. Finally, within culturally responsive assessment lies culturally specific assessment which is explored in greater detail in the next section.
Research Questions

To guide this inquiry, a set of seven research questions will focus on the insight of Indigenous assessment developers. Each of the first six questions address the experiences of Indigenous assessment developers with the elements of the disjuncture-response dialectic identified in Figure 1 (p. 4). The final research question explores how Indigenous assessment developers are affected by their work on culturally specific assessments within the outlined dialectic. All research questions are provided below.

1. What are Indigenous assessment developers experiences with settler colonialism in their work?

2. What are Indigenous assessment developers experiences with intellectual elimination in their work?

3. What are Indigenous assessment developers experiences with measurement disjuncture?

4. What are Indigenous assessment developers experiences with culturally specific assessment?

5. How do Indigenous assessment developers perceive their work contributes to the grander goal of intellectual amplification?

6. How do Indigenous assessment developers perceive their work contributes to the grander goal of Indigenous sovereignty?

7. How does working on culturally specific assessments affect Indigenous assessment developers?
Research Frameworks

Three relevant eras of critical theory (Horkheimer, 2018; McKenzie, 2012; Steinberg & Kincheloe, 2010) influence this research. Beginning in the 1600s, Europe saw an age of enlightenment with a focus on reason and evidence that lasted for about 200 years. In 1817, Hegel’s dialectic (2010) was introduced and centered on contradiction as a means to advance conceptual knowledge. By the 1920, German philosophers formed the Frankfurt School and promoted a multidisciplinary approach (Horkheimer, 2018) to the critical analysis of conditions that lead to social change. Their influence would last throughout the remainder of the last century and continues to influence scholars today.

In the 1950s and 60s, Paulo Freire, established what would become known as critical pedagogy (Freire, 2017; Giroux, 1997; Kincheloe, 2004, 2008; Kincheloe et al., 2011) when he integrated the critical perspective into his work educating the poor and oppressed both as a national administrator for the Brazilian government and as a banished educational reformer in other countries. In 1970, he published Pedagogy of the Oppressed (Freire, 2017) with a focus on praxis and the raising of critical consciousness. It was not until 1983 that Giroux (1983) named the approach critical pedagogy. It is under these critical frames where my theoretical framework of critical assessment resides.

Critical assessment is an answer to the question, “what would it look like to develop assessments from a critical perspective?” The emphasis on breaking existing power relations within structures places the critical perspective at odds within disciplines where it resides and this also is the case for the field of assessment. The introduction of the critical perspective brings with it a new dimension to assessment that may not be
visible from what others see as the sole disciplinary dimension: assessment. As such, this seemingly contradictory relationship between assessment and the critical perspective is described here as “orthogonal.” The two notions of assessment and the critical perspective, however, are not contradictory but, rather, create an orthogonal space between them. That space is critical assessment. Critical assessment is situated under critical pedagogy (Freire, 2017) alongside of culturally relevant teaching (Ladson-Billings, 1994, 1995b, 1995a, 2014) and sits above culturally responsive assessment (Hood, 1998; Hood et al., 2015). My definition of culturally specific assessment (Sul, 2019) is derived from culturally responsive assessment (Hood, 1998), responsive evaluation (Stake, 1973, 2011), culturally relevant pedagogy (Ladson-Billings, 1995b, 1995a, 2014) and Freire’s seminal text, Pedagogy of the Oppressed (Freire, 2017).

**Significance of the Study**

This research establishes a critical theoretic taxonomy for assessment, establishes the disjuncture-response dialectic as a theoretical framework, expands and clarifies the measurement environment, identifies a research methodology to coincide with the disjuncture-response dialectic, and establishes a generalized disjuncture-response dialectic. This research has broad implications for educational theory, educational research, and for educational practice.

To accomplish this, the study introduces concepts – settler colonialism, the logic of intellectual elimination, critical assessment, three forms of assessment alignment, measurement disjuncture, and culturally specific assessment – to the field of assessment and situates an intersectional space between assessment and critical theory. Through this framework, Western-based assessment development processes applied within Indigenous
settings are established as inherent contributors to the elimination of Indigenous knowledge systems and, ultimately, Indigenous knowledge. In their place, Indigenous-based assessment development processes applied within Indigenous settings are offered as contributors to the promotion of Indigenous knowledge systems and, ultimately, Indigenous knowledge.

From the disjuncture-response dialectic of this research, a generalized disjuncture-response dialectic (Fig. 5) is established as a theoretical framework that presents macro, meso, and micro level disjunctures and responses within an environment that encourages liberation from disruptive structures. Under this generalized perspective, individuals who respond to disjunctures within their broadly defined environments are political actors and their culturally specific practices, offered in response to multilayered disjunctures, serve as political acts that advance meso and macro level goals and challenge meso level disjunctures and ultimately stand against macro level disjunctures. At the center of the dialectic is the individual responding to the disjunctures while simultaneously working toward greater aspirational goals.

![Figure 5. The generalized disjuncture-response dialectic](image-url)
The generalized disjuncture-response dialectic removes the constraints of this research and allows for its application within other disciplines and through the lenses of other cultural worldviews.

This research includes the voices of Indigenous assessment developers to describe measurement disjuncture and to offer their insight on how to address it. Through the conduct of this research, the work of Indigenous assessment developers is described and acknowledged for two groups of audiences. The first audience consists of Indigenous educators and administrators who work within educational systems and programs that serve Indigenous learners. It is hoped that by providing practical models and examples to this audience, the development of culturally specific assessments will expand across a wider region of Indigenous communities. The secondary audience for this research consists of psychometric professionals with limited experience working with Indigenous assessment developers. The research objective for this group was to present other valid perspectives on assessment that currently are untapped by the field. This research seeks to document how developing culturally specific assessments affects the practices of Indigenous assessment developers to support their communities and challenge colonization.

**Definition of Terms**

Assessment is the representation of a domain of knowledge, skill, or affect (Popham, 2000; Thorndike & Thorndike-Christ, 2009) through the use of procedures (Thorndike & Thorndike-Christ, 2009) that allow for the translation of observations into assignments of value (Thorndike & Thorndike-Christ, 2009) permitting inferences about domain status (Popham, 2000) for the purpose of making decisions (Lynch, 2001).
Colonialism, according to Yellow Bird (1999), is when an alien people invade the territory inhabited by people of a different race and culture and establish political, social, spiritual, intellectual, and economic domination over that territory.

Conscientização, or conscientization, is the “deepening of the attitude of awareness critical of all emergence” (Freire, 2017, p. 82) and “represents the development of the awakening of critical awareness” (Freire, 2013, p. 15).

Critical assessment is assessment that (a) tends to ecosystems of power (Chavez-Dueñas et al., 2019; R. P. Foster, 2001) that influence the practice of assessment, (b) considers assessment paradigms beyond the dominant, post-positivist-influenced ones (Giroux, 1997; Lynch, 2001), (c) is grounded in a transformative (Mertens, 2009) framework for changing the human and social world that goes beyond describing it (numerically) (Freire, 1970; Pennycook, 1999), (d) integrates theory, practice, and reflection – or praxis (Freire, 2017) – regarding the practice of assessment and the role of the assessment practitioners and researchers, and (e) requires meaningful interdisciplinary collaboration (Horkheimer, 2018) that addresses sociopolitical issues within assessment. Critical assessment is situated under critical pedagogy (Freire, 2017) alongside of culturally relevant teaching (Ladson-Billings, 1994, 1995b, 1995a, 2014) and sits above culturally responsive assessment (Hood, 1998; Hood et al., 2015).

Critical consciousness – refers to the awareness of reality, the power dynamics that establish it, and one’s ability to intervene in that reality to change it (Freire, 2013).

The term “culture” will represent the ideas, beliefs, values, language, and behavioral norms shared by members of the group of individuals to whom it is applied (Nastasi et al., 2000).
Cultural discontinuity refers to the lack of cohesion between two or more cultures (Lovelace & Wheeler, 2006). Such cultural and linguistic disjunctures are often grounded in the conflicts of “beliefs, or feelings, about languages” that are the inevitable outcome of the interaction of indigenous, colonial, post-colonial, and professional academic perspectives (Kroskrity, 2009).

Cultural encapsulation is “a limited or lack of understanding of another's cultural background and the influence this background has on one’s current view of the world (L. McCubbin & Bennett, 2008).

Culturally relevant pedagogy is comprised of (a) an ability to develop students academically, (b) a willingness to nurture and support cultural competence to help students to maintain their cultural integrity while succeeding academically, and (c) the development of a sociopolitical or critical consciousness within students (Ladson-Billings, 1995a, 1995b, 2014).

Culturally responsive assessment is (a) assessment that supports the (academic) development of individuals, (b) is inclusive of a willingness to nurture and support cultural competence, (c) aims to support the development of a sociopolitical or critical consciousness within students, and (d) is focused on constructs and measures of importance to educational practitioners and other key stakeholders (Hood, 1998).

Culturally specific assessment is (a) assessment that supports the (academic) development of individuals, (b) is inclusive of a willingness to nurture and support cultural competence, (c) aims to support the development of a sociopolitical or critical consciousness within students, (d) is focused on constructs and measures of importance
to educational practitioners and other key stakeholders, and (e) functions within a system of knowledge that exists within a named worldview (Sul, 2019).

Definitional alignment regards the correspondence between the five aspects of the assessment definition (see above). To attain definitional alignment, each definitional component should both align with the others as well as reside within the same worldview in order to maintain definitional alignment.

Developmental alignment refers to the forms of alignment that must exist within the internal structure of assessments. An assessment is an operational projection of the conceptual object of assessment and alignment must exist between these two broadly-defined entities. Additionally, developmental alignment must exist both within the various aspects of the conceptual object of assessment (e.g., construct, domains, elements, stages of development) as well as within the corresponding aspects of the operational projection (e.g., framework, dimensions, items, item levels). These forms of developmental alignment are presented in Figure 3 below.

Discontinuity is the misalignment that is grounded in cultural and linguistic differences (Bougie et al., 2003; Brown-Jeffy & Cooper, 2011; Edwards, 2006; Meek, 2007).

Disjuncture is the misalignment that is grounded in cultural and linguistic differences (Appadurai, 1996; Meek, 2010; Wyman et al., 2010).

Indigenous peoples inhabit the entire world and it is important to maintain consistency when describing them. As such, this research will maintain a definition of the term “Indigenous” that is grounded, rooted, and attached to a particular geographic
location. In this research, the term will refer to Indigenous people as individuals or as groups. Furthermore, when capitalized, the term “Indigenous” will refer to those peoples who reside within developed or underdeveloped regions of their respective lands and may reside within tribal communities, U.S. reservations, First Nations, and internationally acknowledged nation-states such as the United States and Canada. Indigenous people include those who have been marginalized and have adapted to values grounded in European systems of belief including research methodologies (Chilisa, 2012; Hsia, 2006; Kovach, 2009; L. T. Smith, 2012). When speaking of a general group of Indigenous peoples, the term Indigenous will be utilized. When speaking of a specific group or individual, great attention will be paid to identify the specific Indigenous nation, nations, tribe, or tribes from which they come. The cultural, tribal, or national identification of the individual will always take precedence.

“Latinx immigrants” are defined as migrants, immigrants (i.e., undocumented and documented), and refugees from Mexico and Latin America, many of whom are descendants of or are members of Indigenous groups.

The logic of elimination refers to the summary liquidation of Indigenous people. Settler colonialism strives, through this logic, first for the dissolution of native societies and then through the construction of a new colonial base within the expropriated lands (Wolfe, 2006).

The logic of intellectual elimination refers to the summary liquidation of Indigenous peoples’ knowledge. Intellectual colonialism strives, through this logic, first for the dissolution of native societies’ knowledge and then for the construction of a new colonial knowledge within the expropriated minds.
Measurement has been defined as “the assignment of numbers to objects or events according to rule,” (Stevens, 1958, p. 384) and described as a “fundamental activity of science” (DeVellis, 2003, p. 2). Stevens (1958) described the measurement activity as “the process of mapping empirical facts and relations into a formal model – a model borrowed from mathematics” (p. 383). According to Thorndike and Thorndike-Christ (2009), “measurement in any field involves (1) identifying and defining the quality or the attribute that is to be measured, (2) determining the set of operations by which the attribute may be isolated and displayed for observation, and (3) establishing a set of procedures or definitions for translating our observations into quantitative statements of degree or amount” (p. 10).

Measurement disjuncture is the misalignment that occurs when elements of an instrument-development process from one worldview are applied to the instrument-development process of another worldview (Sul, 2019).


Responsive evaluation is a form of program evaluation begun in the early 1970s in reference to a focus on issues of practical importance to program managers and developers (Stake, 2011).

System alignment focuses on the degree to which policy elements in an education system work together to guide instruction and, ultimately, student learning (Resnick et al., 2004; Webb, 1997).
Settler colonialism is a structure of domination that strives, through the logic of elimination, first for the dissolution of native societies and then through the construction of a new colonial base within the expropriated lands (Wolfe, 2006).

Testing is a form of measurement that produces a numerical representation of a learner’s capacity within the domain of interest. Residing within measurement, testing is also a form of assessment.
Chapter II

REVIEW OF THE LITERATURE

This chapter provides a review of the literature that supports the construction of the theoretical framework for this study. This review includes definitions of assessment and assessment alignment, provides the theoretical frameworks of critical theory and critical pedagogy, reviews the definition of measurement disjuncture, introduces the theoretical framework of critical assessment, and reviews the definition of culturally specific assessment. It concludes with a review of literature regarding the effect on culturally specific assessment development on Indigenous assessment developers.

Assessment

Assessment, measurement, and testing have been described as having a concentric relationship, with testing residing within measurement and measurement falling within the larger concept of assessment (Lynch, 2001). At the outer layer, assessment refers to “the systematic gathering of information for the purposes of making decisions or judgements about individuals” (Lynch, 2001, p. 358). Within the field of educational assessment, Popham (2000) wrote that “a domain of knowledge, skill, or affect can be represented by an assessment permitting inferences about students’ domain status” (p. 5). Measurement has been defined as “the assignment of numbers to objects or events according to rule,” (Stevens, 1958, p. 384) and described as a “fundamental activity of science” (DeVellis, 2003, p. 2). Stevens (1958) described the measurement activity as “the process of mapping empirical facts and relations into a formal model – a model borrowed from mathematics” (p. 383). According to Thorndike and Thorndike-Christ
measurement in any field involves (1) identifying and defining the quality or the attribute that is to be measured, (2) determining the set of operations by which the attribute may be isolated and displayed for observation, and (3) establishing a set of procedures or definitions for translating our observations into quantitative statements of degree or amount” (p. 10). As a result, the distinguishing characteristic separating the conduct of educational assessment from educational measurement is the focus on the numerical degree or amount of the attribute under focus. For this research, assessment will be defined here as the representation of a domain of knowledge, skill, or affect (Popham, 2000; Thorndike & Thorndike-Christ, 2009) through the use of procedures (Thorndike & Thorndike-Christ, 2009) that allow for the translation of observations into assignments of value (Thorndike & Thorndike-Christ, 2009) permitting inferences about domain status (Popham, 2000) for the purpose of making decisions (Lynch, 2001).

Although measurement resides within assessment – and includes testing – assessment is not restricted to these two forms. For example, “systematic information can be gathered using nonquantitative procedures, and that information can be used to make decisions about individuals without ever quantifying the information” (Lynch, 2001, p. 358). Portfolio assessment, “a systematic appraisal of students’ collected work samples” (Popham, 2000, p. 299), can serve as an example of alternative, nonmeasurement, non-testing assessment “especially when assessment results are reported in the form of a qualitative profile, rather than a set of scores” (Lynch, 2001, p. 358). Lynch (2001) defined the performance of alternative assessment as “trying to assess from a non-postpositivist perspective or paradigm, and making use of non-quantitative techniques for data collection and analysis” (p. 361). Both Lynch (2001) and Shohamy (2001) drew a
distinction between assessments that produce numerical outputs and those that provide qualitative information. According to Lynch (2001), the selection of quantitative or qualitative assessment methods is more than a methodological choice. It is one that relies on the researcher’s epistemology and ontology. When using qualitative methods, the object of assessment is “something that is created and exists in the act of our using, inquiring and interpreting, not as an independent, objective entity waiting to be discovered and measured” (Lynch, 2001, p. 361).

**Assessment Alignment**

“As with any other product of human activity, tests are cultural artifacts” (Solano-Flores, 2011, p. 3) existing within a given worldview. As such, elements of the assessment-development process are prescribed necessarily by an unstated worldview under which they are presented that bounds all aspects of the assessment development process. Three forms of assessment alignment are influenced by this unstated worldview: definitional alignment, developmental alignment, and system alignment. When either of these forms of alignment is disrupted, validity of the assessments is affected. The first form of alignment regards the five aspects of the assessment definition provided above: a) the use of procedures that permit the representation, b) of a domain of knowledge, skill, or affect, c) allowing for the translation of observations into assignments of value, d) permitting inferences about domain status, e) for the purpose of making decisions. Each definitional component should both align with the others as well as reside within the same worldview in order to maintain definitional alignment.

Developmental alignment refers to the forms of alignment that must exist within the internal structure of assessments. An assessment is an operational projection of the
conceptual object of assessment and alignment must exist between these two broadly-defined entities. Additionally, developmental alignment must exist both within the various aspects of the conceptual object of assessment (e.g., construct, domains, elements, stages of development) as well as within the corresponding aspects of the operational projection (e.g., framework, dimensions, items, item levels). These forms of developmental alignment are presented in the figure below.

![Developmental alignment](image)

**Figure 6. Developmental alignment**

System alignment focuses on the degree to which policy elements in an education system work together to guide instruction and, ultimately, student learning (Resnick et al., 2004; Webb, 1997). Davis-Becker and Buckendahl (2013) identify system alignment as a key source of inferences about validity in the test development process, noting that “it is important to ensure that test content (e.g., items, cognitive processes, responses, scoring guides) supports these inferences by representing a sampling of the domain of the educational program (e.g., content framework, standards, test blueprint).” (p. 23).

Aligning assessments to the approved program of curriculum and instruction is also
important. Resnick, Rothman, Slattery, and Vranek (2004) noted that “if tests are not well aligned to standards, they do not validly measure those standards and a critical underpinning of a fair assessment system linked to curriculum and instruction is absent” (p. 24).

All three of these assessment alignment forms – definitional, developmental, and system alignment – are difficult enough to manage within a single worldview. The presence of additional worldviews within which these forms of alignment exist can lead to further complications. An even larger validity issue arises when assessments are developed within one worldview and applied inside of another. This occurs, for example, when assessment instruments are developed within a Western worldview and applied within an Indigenous worldview. In such a case, definitional alignment, developmental alignment, and system alignment are all broken. This is represented in the figure below.

![Figure 7. Assessment applied across Western and Indigenous worldviews](image)

There are real educational consequences related to this form of misalignment. For Native American students, the inherent competitive nature of educational assessments
negatively affects their willingness to participate (Estrin & Nelson-Barber, 1995). The heavy reliance on verbal demonstration of learning may not be culturally congruent for many Native American students who have grown up in environments that prize the showing of knowledge through other means and respect for elders (including teachers) through silence (Nelson-Barber & Trumbull, 2007, p. 136). The Canadian Council on Learning (2007) wrote that data and indicators on Aboriginal learners are limited because of their focus on the measurement of learning deficits. Additionally, such data and indicators do not address “social, economic and political factors, do not monitor progress across the full spectrum of lifelong learning, do not reflect the holistic nature of First Nations, Inuit and Métis learning, and do not reflect the importance of experiential learning” (p. 2). What, then, is the name of the problem that arises when assessment instruments are developed within one worldview and applied inside of another? Seeking an answer to this question, I sought insight from the research literature on culturally responsive assessment (Hood, 1998). This led, inevitably, through the work of prior researchers and scholars of responsive evaluation (Korzenik, 1977; Stake, 1973, 2011), culturally relevant pedagogy (Brown-Jeffy & Cooper, 2011; Ladson-Billings, 1995b, 1995a, 2014), critical pedagogy (Freire, 2017; Giroux, 1997; Kincheloe, 2004, 2008; Kincheloe et al., 2011), and, ultimately, critical theory (Horkheimer, 2018).

**Theoretical Framework: Critical Theory**

In the 1840s, Germany was undergoing rapid modernization, and this led to a surge in intellectualism to explain the accompanying societal changes. The prior centuries’ Age of Enlightenment shifted thought toward an “increased use of reason to gain knowledge of nature and apply that knowledge for human benefit” (Stone, 2014, pp.
The concept and approach to critique prominent during the 1840s was “derived from the Enlightenment (and) was developed most systematically in the work of Kant, Hegel, and the Left Hegelians” (Brenner, 2009, p. 199). Hegel’s dialectical approach (2010) would establish the foundation for critical theory. The approach is a general one and is based on the establishment and resolution of a contradiction between opposing sides. In the Science of Logic, Hegel (2010) wrote “contradiction is the root of all movement and vitality; it is only insofar as something has a contradiction within it that it moves, has an urge and activity” (p. 439). The act of exposing the contradiction serves as the foundation for the development of what would become known as critical theory. Marx utilized critique of the political economy “to show how capitalism’s contradictions simultaneously undermine the system, and point beyond it, towards other ways of organizing social capacities and society/nature relations” (Brenner, 2009, p. 200). By the end of the 1800s, social theory transitioned away from being critical and adopted a more scientific and positivistic approach that would remain in place until the end of World War I (Jay, 1973).

By 1917, the Russian revolution had begun and “the social world was in urgent need of reinterpretation” (Steinberg & Kincheloe, 2010, p. 142). World War I had left Germany devastated, responsible for postwar reparations, experiencing high inflation and unemployment, and on the verge of economic collapse (Kincheloe, 2008; Steinberg & Kincheloe, 2010). Strikes and protest movements within Germany and throughout Central Europe provided postwar conditions suitable for the launch of a socialist revolution. Yet, in 1918, when presented with this historical moment, Germany opted for a democratic socialist form of government, the Weimar Republic. In response, a group of
young German Marxist philosophers assembled to answer the question of why a socialist revolution had occurred in Russia but not in Germany. The result of these early discussions was the formation of the Institute for Social Research in Frankfurt, Germany or the “Frankfurt School” in 1923 (McKenzie, 2012). The philosophical background of the school was provided by Hegel and Marx, “who viewed social and cultural problems as being the result of the imperfections of rationality” (Swartz, 2014, p. 273). Max Horkheimer, a German philosopher and sociologist, assumed leadership of the institute in 1930 and in his inaugural lecture, he proposed critical theory as a new model for research in the social sciences (McKenzie, 2012, p. 20). To carry out the research, the institute drew together the ideas of “traditional sociological theorists, such as Marx and Weber, with the philosophy of Hegel and Kant; the psychoanalysis of Freud; the psychology of Fromm; the analysis of music, art and culture through Adorno; and numerous other specialties such as politics, history and literature” (McKenzie, 2012, p. 20). This multidisciplinary approach was used to expand the focus on social issues by integrating views from a wide variety of disciplines.

Today, a “criticalist is a researcher, teacher, or theorist who attempts to use her or his work as a form of social or cultural criticism” (Kincheloe et al., 2011, p. 164). During the conduct of critical research, the identification of contradictions both helps to undermine systems and helps to point people beyond the contradiction toward other ways of doing things. While a goal of critical researchers is to reveal hidden sources of domination in order to facilitate human emancipation, criticalists seek to “excavate the emancipatory possibilities that are embedded within, yet simultaneously suppressed by, this very system” (Brenner, 2009). Critical theory “concerns itself with issues related to
the socialization of people for existence in society, usually a society defined by dominant discourses” (Keesing-Styles, 2003, p. 2).

**Theoretical Framework: Critical Pedagogy**

The purposeful socialization of people is an aspect of critical theory that aligns it with critical pedagogy. Paulo Freire was “one of the first theorists to specifically align critical theory with the interest and needs of educational research” (Jennings & Lynn, 2005, p. 17). Throughout the 1950s and 1960s, Freire integrated critical theory within his literacy work in Brazil, Latin America, and Africa. In 1970, Freire (2017) wrote *Pedagogy of the Oppressed* and criticized what he referred to as a “banking form of education” (p. 45) where knowledge is deposited into passive empty vaults of learners and learners are never asked to question that knowledge. Within the banking model, the teacher is the center of the educational process and students are recipients of knowledge (Freire, 2017). Freire (2017) believed that this form of teaching, prevalent throughout public education until the late 20th century, removed both the object and form of instruction from societal problems and injustices.

Freire instead placed “social and political critiques of everyday life at the centre of the curriculum” (Keesing-Styles, 2003, p. 3). According to Freire, “we need to ask questions of all knowledge… because all data are shaped by the context and by the individuals that produced them” (Kinacheloe et al., 2011). Freire promoted a democratic approach where teachers posed open-ended questions, students posed solutions, and both groups worked together as equals willing to learn from one another in order to implement change. Critical pedagogy represents “the ways a teacher understands and attends to the overt and subversive power woven into the relational dynamics between teacher and
schooling, student and schooling, teacher and student, teacher and society, student and society, and all other relational elements that order both scholastic and social life” (Magill & Salinas, 2019, p. 2). While not described as critical pedagogy at the time, Freire’s seminal work would gain rapid acceptance within the United States beginning in the 1980s. Henry Giroux (1983) coined the term “critical pedagogy” to describe the merging of critical theory with the practice of teaching and learning and soon thereafter, research in the field of critical pedagogy became “one the major paradigms in contemporary educational thought” (Jennings & Lynn, 2005, p. 17).

Critical pedagogy operates from a series of foundational beliefs that center on the power of education to make social change possible. Among them are the concepts of education as praxis and education for critical consciousness. Praxis is comprised of critical action and reflection, both grounded in theory (Freire, 2017). Praxis “starts with an abstract idea (theory) or an experience, and incorporates reflection upon that idea or experience and then translates it into purposeful action” (Breunig, 2005, p. 111). Operationally, reflection follows action grounded in a theory or an abstract idea and is meant to determine whether the actions were consistent based on the theory. The reflection allows for modification of either the theory or the subsequent actions. Freire placed great importance on moving from reflection and discussion toward positive action (Jennings & Lynn, 2005, p. 17) and claimed that reflection without action is merely “verbalism” (2017, p. 60) that makes transformation impossible. Action without critical reflection, according to Freire (2017), is purely “activism” (p. 61) and in the conduct of critical pedagogy, a balance between the two “is important and necessary” (Van Duinen, 2005, p. 147). This “ongoing relationship between theoretical understanding... and action
that seeks to transform individuals and their environments” (Leistyna, 1999, p. 45) is referred to as the dialogic approach.

Viewing education as a liberatory practice, Freire hoped to raise the consciousness of learners around social, political, economic, gender, race, and class issues as an integral part of learning how to read and write. Conscientização, or conscientization, the process of developing critical consciousness, involves engagement with community members in order to construct “generative themes designed to tap into issues that were important to various students in his class” (Kincheloe et al., 2011, p. 164). Critical consciousness-raising “compels teachers to examine those difficult histories of racism, sexism, classism, homophobia, and ableism used to negate (or mute) these problematic relations within (academic) content areas” (Magill & Salinas, 2019, p. 2).

The development of a critical consciousness within learners challenges them to reflect on the various forces of inequity affecting their lives, devise strategies to combat inequities, and to act on their plans.

Critical pedagogy would lead to the development of the strands of research known as culturally relevant pedagogy (Ladson-Billings, 1994, 1995b, 1995a, 2014) and culturally responsive assessment (Hood, 1998; Hood et al., 2015).

**Measurement disjuncture**

The misalignment between assessments developed within a Western worldview and applied within an Indigenous worldview represents a special problem. In the field of measurement, this problem was unnamed until 2019, when I named this problem measurement disjuncture (Sul, 2019). In doing so, I began the process by examining the definition of measurement validity. Measurement validity refers to the degree to which
evidence and theory support the interpretations of test scores for proposed uses of tests (American Educational Research Association, American Psychological Association, and the National Council on Measurement in Education, 2014). Key elements of this definition are addressed by the terms “evidence,” “theory,” “interpretations,” “scores,” “uses,” and “tests.” The meanings of these terms within the very definition of measurement validity are grounded in and influenced by the worldview under which the instrument development occurs.

While measurement validity is not the problem at hand, measurement validity is affected by this problem. To pursue an explanation, I examined the literature on settler colonialism (Wolfe, 1999, 2006) as this act seemed to me to be a remnant of colonialism. It is within that literature where I came across two key terms. Misalignment that is grounded in cultural and linguistic differences has been referred to as “disjuncture” (Appadurai, 1996; Meek, 2010; Wyman et al., 2010) or “discontinuity” (Bougie et al., 2003; Brown-Jeffy & Cooper, 2011; Edwards, 2006; Meek, 2007). Cultural discontinuity refers to the lack of cohesion between two or more cultures (Lovelace & Wheeler, 2006). Such cultural and linguistic disjunctures are often grounded in the conflicts of “beliefs, or feelings, about languages” that are the inevitable outcome of the interaction of indigenous, colonial, post-colonial, and professional academic perspectives (Kroskrity, 2009). Based on these definitions, I identified measurement disjuncture as the misalignment that occurs when elements of an instrument-development process from one worldview are applied to the instrument-development process of another worldview (Sul, 2019). While measurement disjunctures can occur across worldviews, environments or
settings, this research will center on the measurement disjuncture that exists across Western and Indigenous worldviews.

**Effects of measurement disjuncture**

Measurement disjuncture affects the establishment of measurement validity, and, hence, the inferences made based on the scores derived from such assessments. Three effects are induced by measurement disjuncture. Measurement disjuncture penalizes individuals with limited exposure to the dominant culture and, hence, its influence on the assessment. As a result of measurement disjuncture, individuals cannot receive credit for things they know that exist outside of the dominant culture upon which the assessment is based. Both of these effects can lead to an underreporting of what individuals know. Depending on the assessment form, this can lead to various misclassification errors. For example, when testing for the presence of an attribute, an individual could be declared as having it when she does not actually have it, which represents an overestimation of the attribute status and is a Type I error. An individual could be declared as not having the attribute when she actually does have it. This represents an underestimation of the attribute status and is a Type II error. The result of these misclassification errors can be that Native American students are overrepresented (Type I error) in Special Education programs (Maureen E., 2016; Vining et al., 2017) or underrepresented (Type II error) in programs for gifted and talented students (Maker, 2020). Misclassification errors also result in the disproportional representation of Native American students receiving school discipline referrals (Brown, 2014; Whitford, 2017) and “punished more harshly for lesser violations than their peers” (Brown, 2014; Gion et al., 2018). Misclassification also occurs when patients experiencing trauma are not diagnosed as such. Gray, Brionez,
Petros, and Gonzaga (2019) claimed that many psychological disorder assessments have been developed from within the Western worldview and culture with the resulting effect being that others outside this worldview “may interpret questions differently, may have a different conceptualization of psychological wellness and illness as a whole, and may not share certain assumptions upon which such assessments implicitly or explicitly rely” (p. 534).

In the conduct of research, measurement disjunctures introduce measurement error and, unless accounted for within the research design, measurement disjunctures negatively affect research conclusions. In practical terms, measurement disjunctures contribute to the error term thereby increasing the mean square error and causing the value of the observed $F$ statistic to decrease artificially. With a smaller-than-expected $F$ statistic, researchers are less likely to acknowledge that the treatment has had an effect when, in fact, it has, which represents a Type II error. Thus, when studying programs for Indigenous people, researchers and evaluators may undervalue the influence of such programs through the application of assessment instruments developed within a Western worldview.

Finally, researchers have referred to the “active denial of the present living existence of a culture and/or cultural identity as expressed through language, behaviors, norms, values, history, and assets” by educational structures as cultural identity silencing (Leigh-Osroosh & Hutchison, 2019, p. 2). As a result of measurement disjuncture, Indigenous people must shift from their worldview to that of another and essentially alter the complexion of who they are as people in order to participate in the measurement activity.
Knowing how measurement disjuncture is introduced by researchers may allow researchers to address it. The following case examples provide evidence of how researchers and practitioners introduce measurement disjuncture through their studies and practices. These practices highlight the relative ease with which assessment developers and researchers can introduce intellectual colonialism through their practices and methods.

**Parenting Capacity Assessments**

In use throughout Canada, parenting capacity assessments (PCA) are used by child protection workers to make determinations about the fitness of parents to care for their children (Choate & McKenzie, 2015). When making important decisions about child protection, Muir and Bohr (2014) note that “the cultural, social and historical realms of Aboriginal communities” must be considered in the assessment of Aboriginal children, “especially in the context of child protection, as identifiable differences may exist between the parenting norms in Aboriginal communities and those of mainstream groups” (p. 76). The PCAs in use throughout Canada, however, are a part of larger decision-making processes that “have been constructed using Euro-North America understandings of parenting focusing on the nuclear family” (Choate & McKenzie, 2015, p. 32). To examine utility of the instruments for Aboriginal populations, Choate and McKenzie (2015) reviewed the demographic composition of the norming and validation groups of four separate Parenting Capacity Assessments (PCA): the Personality Assessment Inventory (PAI; (Morey, 1996), the Minnesota Multiphasic Personality Inventory (MMPI-2; (Butcher, 2004), the Child Abuse Potential Inventory (CAPI;
(Milner, 1986), the Adult Adolescent Parenting Inventory (AAPI; Bavolek & Keene, 2001), and the Parenting Stress Index (PSI; Abidin, 2012). Of these instruments, only the MMPI-2 reported any information about the inclusion of Aboriginal participants within the samples and only did so by referring simply to the inclusion of “a sample of Aboriginal participants consisting of a group from the Tacoma, Washington area” (Choate & McKenzie, 2015, p. 36). Researchers in Canada identify the limited research on Aboriginal child rearing as a problem (Choate & McKenzie, 2015; Muir & Bohr, 2014) contributing to the lack of development of a PCA model specific to the needs of Aboriginal families. Meanwhile, the extraction of Aboriginal children from their families continues on the basis of information obtained through PCAs such as the PAI, MMPI-2, CAPI, AAPI, and the PSI.

**The Lakota Women and Cervical Cancer Survey**

The Lakota Women and Cervical Cancer Survey (Bowker, 2017; Bowker et al., 2020) was developed to conceptualize the knowledge, beliefs, and behaviors of Lakota women with respect to the Human Papillomavirus (HPV) and cervical cancer. The survey was a modification of a previously-developed instrument constructed for use with Appalachian women (Vance & Keele, 2013). The Lakota people are one of many North American Indigenous groups with a belief system that centers on the four quadrants of the Medicine Wheel (Dapice, 2006; Stonefish & Wilson, 2012; Wenger-Nabigon, 2010). Items for the cervical cancer knowledge and beliefs of Appalachian women instrument were developed using the Health Promotion Model (HPM) and the Health Belief Model (HBM) as the theoretical frameworks (Vance & Keele, 2013). The Appalachian-focused instrument was used to examine the knowledge, beliefs, and practices of Appalachian
women regarding cervical cancer. A cursory review of the items about the behaviors related to cervical cancer revealed that neither instruments were grounded in the four quadrants of the Medicine Wheel and the philosophies of Lakota people. As demonstrated in the table below, these cervical cancer survey items administered to the group of Lakota women in the study were copied nearly verbatim from the instrument applied to the Appalachian women.

Table 1
Comparison of Cervical Cancer Survey Items of Bowker (2017) and Vance and Keele (2013)

<table>
<thead>
<tr>
<th>Lakota (Bowker, 2017)</th>
<th>Appalachian (Vance &amp; Keele, 2013)</th>
<th>Survey Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of sex partners in lifetime</td>
<td>Circle the number of sex partners in lifetime</td>
<td>Removed “circle the”</td>
</tr>
<tr>
<td>Age the first time you had sex</td>
<td>N/A</td>
<td>Added new item</td>
</tr>
<tr>
<td>N/A</td>
<td>I get recommended immunizations</td>
<td>Removed item</td>
</tr>
<tr>
<td>I get recommended Pap smears</td>
<td>I get recommended Pap tests</td>
<td>Changed “tests” to “smears”</td>
</tr>
<tr>
<td>I have had a Pap smear in the past 3 years</td>
<td>I have had a Pap smear in the past 3 years</td>
<td>No change</td>
</tr>
<tr>
<td>I have had the human papilloma virus (HPV) vaccine (Gardasil)</td>
<td>I have had the human papilloma virus (HPV) vaccine (Gardasil)</td>
<td>No change</td>
</tr>
<tr>
<td>I smoke cigarettes or chew tobacco</td>
<td>I smoke cigarettes</td>
<td>Added “or chew tobacco”</td>
</tr>
<tr>
<td>I have my sex partner use condoms</td>
<td>I have my sex partner use condoms</td>
<td>No change</td>
</tr>
<tr>
<td>I have taken birth control pills for at least 5 or more years</td>
<td>I have taken birth control pills for at least 5 or more years</td>
<td>No change</td>
</tr>
</tbody>
</table>

In this case example, the Medicine Wheel as a construct for Indigenous beliefs about the health of women was not used at all. Instead, two separate constructs, the
Health Promotion Model (HPM) and the Health Belief Model (HBM) were used as the theoretical frameworks. As a result, the instrument was a slightly modified version of one developed for use with White Appalachian women and applied to a completely different group of Lakota women with their own distinct worldview and beliefs about health.

**Evaluation of Clinical Mental-health Programs**

Mental-health screenings and assessments are often used to evaluate clinical programs that serve Latinx immigrants (Alegría et al., 2019; Cardemil et al., 2010; Farina & Mancini, 2017; Kaltman et al., 2016; Kataoka et al., 2003; Santiago et al., 2015). In many clinical programs, when Latinx immigrants present for trauma care, they are often assessed with culturally encapsulated (L. McCubbin & Bennett, 2008) instruments that fail to capture: (a) Latinx cultural experiences, values, and knowledge, (b) the specific forms of pre-migration, during migration, and postmigration traumas they may encounter, and (c) how colonization, enslavement, racism, and other oppressive forces shape their experiences. In the six studies cited above, a total of 23 unique mental-health instruments were used. Although some of the researchers attempted to be responsive to cultural and linguistic needs of these immigrants during the assessment process, this responsiveness began and ended with Spanish-language translation of the instrument.

**Child Development Assessment**

The Early Development Instrument (EDI) measures school readiness of children throughout Ontario, Canada and Australia and was developed in the 1990s. The EDI was designed “with a goal in mind: to put into a questionnaire form, and a reliable and valid format, the teachers’ informed view on the development, skills and abilities of the kindergarten children in their classroom” (Janus, 2006). The EDI contains domains of
physical health and well-being, social competence, emotional maturity, language and cognitive development, communication skills, and general knowledge (Stonefish & Wilson, 2012). Responding to the lack of cultural content of the instrument, the Indigenous Education Coalition (IEC) approached the developers of the EDI at Offord Centre of Child Studies at McMaster University seeking an assessment for their early years (preschool) learners (Stonefish & Wilson, 2012).

Representatives from each of 12 First Nations were invited to a one-day consultation process to express their desires for the assessment. The First Nations educational leaders described their worldview as one that is grounded in the four quadrants of the Medicine Wheel and sought an assessment that would represent its four areas of physical, social and emotional, mental, and spiritual and cultural development. The preferred option for this community was a culturally specific assessment based on “First Nation researchers, methodologies, and frameworks” (Stonefish & Wilson, 2012, p. 15). The EDI development team decided that because the focus areas of the existing EDI included “physical health and well-being, social competence, emotional maturity, language and cognitive development, communication skills, and general knowledge,” (Stonefish & Wilson, 2012, p. 14), the compromise was for the new cultural section of the EDI to focus only on a “student’s preparedness for school in the spiritual and cultural quadrant of the medicine wheel” (Stonefish & Wilson, 2012, p. 14). The cross tabulation of assessment sections on both the EDI and the Medicine Wheel is provided in Table 2 below.
Table 2
EDI Categories Versus Medicine Wheel Quadrants

<table>
<thead>
<tr>
<th>EDI Categories \ Medicine Wheel Quadrants</th>
<th>Physical</th>
<th>Social and Emotional</th>
<th>Mental</th>
<th>Spiritual and Cultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical health and well-being</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social competence</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional maturity</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language and cognitive development</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Communication skills</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General knowledge</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

This example provides numerous lessons. First, the Medicine Wheel as a construct for Indigenous child development was removed. The fact that the Indigenous domains were named similarly to those of the EDI ignored how a different worldview could influence the assessment of these similarly-named domains. Three-fourths of the worldview upon which the First Nations members desired as a foundation for their young children was removed from assessment consideration. The remaining quadrant would be applicable only to First Nations early-years learners and not to all early-years learners, thus, highlighting the non-collaborative nature of this assessment development partnership.

**Resilience of Adult Native Hawaiians**

The Ad-hoc Resilience Enhancing Construct (AREC) was composed of multiple instruments forming a multidimensional model of resilience for use with adult Native Hawaiians (Antonio et al., 2020) and measuring “individual internal assets and external coping resources including social support and cultural identity” (p. 3). Rather than relying on a Native Hawaiian construct of resilience, a construct based on internal assets and
external coping resources was established. Internal assets were assessed using three distinct instruments, the 6-item 2-factor Hope Scale (Snyder et al., 1997), the 5-item Satisfaction with Life Scale (SWLS; (Pavot & Diener, 1993), and the 20-item Environmental Mastery Scale (EMS; (Ryff, 1989). External coping resources were measured using the modified, shortened version of the 8-item Medical Outcomes Study, Social Support Scale (mMOS-SSS; (Moser et al., 2012), and the 4-item Native Hawaiian Cultural Identity Scale (NHCIS). Samples used for the development of the mMOS-SSS consisted of “mostly white, educated women with adequate financial resources not living alone” (Moser et al., 2012, p. 1114).

The first factor of the Hope Scale is agency and is conceptualized as an individual’s perception of being able to initiate and sustain action toward a goal. The second factor, pathways, addresses an individual’s capacity for producing the means to achieve those goals (Snyder et al., 1997). The SWLS measures an individual’s satisfaction with life as a whole (Pavot & Diener, 1993). The six dimensions of the EMS are self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth (Ryff, 1989).

Only the Native Hawaiian Cultural Identity Scale (NHCIS) reflected an assessment developed from the perspective of Native Hawaiians. The NHCIS was used to measure Native Hawaiian cultural identity based on participants’ knowledge, attitudes, feelings, and association with Native Hawaiian heritage and lifestyle, with higher scores indicating a stronger identity and affiliation with Hawaiian culture (Antonio et al., 2020).
Career Thinking of Native American Engineering Students

Colston, Turner, Mason Chagil, Jacobs, and Johnson (2019) assembled multiple instruments together to form a unidimensional model to measure the career thinking of Native American Engineering students. The instruments used were the Mapping Vocational Challenges – Engineering Version (MVC-E), the 28-item Perceptions of Barriers Scale (POB; McWhirter, 1997), the 58-item Structured Career Development Inventory, and the 27-item Career-related Parent Support Scale (Turner et al., 2003). While no information about the MVC-E was available, the MVC is a career interest assessment based on Holland’s theory, Gottredson’s Theory of Circumscription and Compromise, Social Cognitive Career Theory (Turner & Lapan, 2005). The POB is a measure of personal and contextual barriers to students’ academic and career development (McWhirter, 1997). The Structured Career Development Inventory measures students’ strengths, skills, and outcomes based on six separate, but interrelated, vocational outcomes: “(a) academic achievement, (b) positive self-efficacy expectations, (c) positive self-attributional styles, (d) vocational identity, (e) the crystallization of personally valued vocational interests, and (f) the proactive pursuit of one’s life goals and ambitions” (Turner et al., 2006, p. 54). The Career-Related Parent Support Scale measured students’ self-reports of their parents’ support in the areas of instrumental assistance, career-related role modeling, emotional support, and verbal encouragement (Turner et al., 2003). These assessments are steeped in non-Indigenous perspectives of careers, career development, and parental support.
Family Resilience

A common practice in scale development the establishment of validity by comparing results of newly-developed instruments against those of existing instruments. Such is the case in the development of the 40-item Family Resilience Inventory (FRI), defined by the authors as a culturally-grounded measure of current and family-of-origin protective processes within Native American families (Burnette et al., 2020). In this study, to establish convergent and discriminant validity, bivariate correlations between the total FRI scale and four validated measures were calculated to examine preliminary evidence of construct validity. The 25-item Social Support Index (H. I. McCubbin et al., 1982), the 28-item Resilience Research Centre Adult Resilience Measure (RRC-ARM; Liebenberg & Moore, 2018), the 6-item Multigroup Ethnic Identity Measure (MEIM; Phinney, 1992), and the 20-item Spiritual Health and Life-Orientation Measure (SHALOM; Fisher, 2010). One might consider this form of measurement disjuncture in which a collateral assessment instrument is used in support of the study instrument as measurement disjuncture by proxy.

Attempts to describe and address measurement disjuncture

Attempts to both describe and address the disjuncture within broader educational environments are not new. Cultural discontinuity is defined conceptually as “a school-based behavioral process where the cultural value-based learning preferences and practices of many ethnic minority students—those typically originating from home or parental socialization activities—are discontinued at school” (Tyler et al., 2008, p. 281). The cultural discontinuity hypothesis, which originated in the ideas of anthropologists such as Dell Hymes (1974), posited that culturally-based differences in the
communication styles of minority students’ home and the Anglo culture of the school lead to conflicts, misunderstandings, and, ultimately, failure for those students (Ledlow, 1992). Cultural discontinuity arises for students when their personal values clash with the ideals that shape their school system (Wiesner, 2006). Ladson-Billings (1995b) described the “discontinuity” problem as the gap between what students experience at home and what they experience at school with respect to their interactions of speech and language with teachers. Philips (1982) found Native American students experienced greater success and achievement at school with the inclusion of more Native American teachers, culturally relevant materials, and teaching methods that emphasize appropriate participant. Vogt, Jordan, and Tharp (1987) concluded that cultural compatibility explained school success whereas cultural incompatibility explained school failure. Morris, Pae, Arrington, and Sevcik (2006) identified the most frequent roots of educational difficulties for Native American students as “the discontinuities between home and school in terms of language, culture, ideology, and educational expectations which may be reinforced by incongruent instruction (pedagogy) and assessment methods or tools utilized in majority or mainstream schools” (p. 79).

Since the 1990s, scholars have continued to discuss cultural discontinuity, variously terming it cultural mismatch (Ladson-Billings, 1995b), cultural incongruence (M. Foster et al., 2003), cultural misalignment (Tyler et al., 2006), cultural dissonance (Ladson-Billings, 1995b; Portes, 1999; Tillman, 2002), and cultural conflict (M. Foster et al., 2003). Prior attempts were made both to describe and address the “discontinuity” problem (Ladson-Billings, 1995) or the gap between what students experience at home and what they experience at school with respect to their interactions of speech and
language with teachers. Au and Jordan (1981) described as “culturally appropriate” the incorporation of “talk story” into a program of reading instruction for Native Hawaiian students that improved upon expected scores on standardized reading tests. Mohatt, Erickson, Trueba, and Guthrie (1981) used the term “culturally congruent” to describe teachers’ use of interaction patterns that simulated Native American students’ home cultural patterns to produce improved academic performance. Jordan (1985) defined educational practices as “culturally compatible” when the culture of students is used as a guide in choosing aspects of the educational program to maximize academically desired behaviors and minimize undesired behaviors. Researchers beginning in the 1980s used the term “culturally responsive education” to describe the language interactions of teachers with linguistically diverse and Native American students (Cazden & Leggett, 1981; Erickson & Mohatt, 1982). Erickson and Mohatt (1982) suggested their notion of culturally responsive teaching could be seen as a beginning step for bridging the gap between home and school. Ladson-Billings (1995b) claimed the term culturally responsive represented a more expansive, dynamic, and synergistic relationship between the culture of the school and that of the home and greater community.

Ladson-Billings (1995b) conducted a field-altering qualitative study on the teaching methods of teachers who demonstrated consistent academic success with African American students. Ladson-Billings (1995b), grounded in Black feminist thought, introduced the theory of “culturally relevant pedagogy” to emphasize the significance of teaching to and through the cultural strengths of ethnically diverse students. Ladson-Billings (1995b) and Jordan (1985) argued for the use of culturally relevant pedagogy to engage actively and motivate students from ethnically diverse
backgrounds to improve their academic achievement. Ladson-Billings (1995b) established three criteria for a culturally relevant pedagogy that could be used to address the “discontinuity” problem: (a) an ability to develop students academically, (b) a willingness to nurture and support cultural competence to help students to maintain their cultural integrity while succeeding academically, and (c) the development of a sociopolitical or critical consciousness. In a culturally relevant classroom, a child’s culture is not only acknowledged but also seen as a source of strength that can be utilized to attain academic success.

Sociopolitical consciousness has been described as an individual’s ability to analyze critically the political, economic, and social forces shaping society and one’s status in it (Seider et al., 2018). For the last definitional criterion, Ladson-Billings (1995b) borrowed from Freire (2017) and acknowledged that students must develop a broader sociopolitical consciousness and the skills to critique the cultural norms, values, mores, and institutions that produce and maintain social inequities. The development of a sociopolitical or critical consciousness within students allows them to acknowledge and act on historical circumstances that affect their current reality (Freire, 2017; Ladson-Billings, 1995b). As such, when culturally relevant pedagogy is conducted within North America, the aftereffects of colonialism and slavery must be taken into consideration in order to develop sociopolitical or critical consciousness within students. Critical consciousness is defined here as an awareness of and desire to act against societal inequities that disadvantage learners and critical consciousness researchers acknowledge the key role that education can play in dismantling societal inequalities. Here, this requires the deconstruction of the assessment-development processes and the
identification of sources of potential discontinuities that arise between conflicting epistemologies, constructs, representations of the construct, and notions of what is considered measurable as well as methods of measurement.

Researchers in the field of program evaluation began to utilize the term “responsive evaluation” in the early 1970s in reference to a focus on issues of practical importance to program managers and developers (Stake, 2011). Stake (1973) sought to remove the emphasis on static program objectives developed by those furthest from the delivery of program services and stressed the importance of being responsive to situational realities in the management of programs and to the reactions, concerns, and issues of participants. This represented a dramatic departure from the emphasis on the use of evaluation plans that relied on preconceived notions of program expectations. Stake (1973) believed that the ultimate test of the validity of an evaluation is the extent to which it increases the audience’s understanding of the program. Stake’s (1973) work led to the stream of responsive evaluation research and practices that exist today.

Drawing upon the lineage of research in responsive evaluation and culturally relevant pedagogy, Hood (1998) argued that student learning is assessed more effectively through the use of assessment approaches that are culturally responsive. Combining the ideas of Ladson-Billings (1995) and Stake (1973), Hood (1998) promoted the development of “culturally responsive” performance-based assessments as a means of achieving equity for students of color. Hood (1998) noted that there were to be challenges and difficulties in the development of both performance tasks and scoring criteria that would be “responsive to cultural differences and adequately assess the content-related skills that are the focus of the assessment.” Culturally responsive assessment, for
example, still must address a fundamental aspect of measurement disjuncture. In the case where a culturally responsive assessment minimizes measurement disjuncture by allowing learners to fully present their whole selves within the assessment activity and to receive maximum credit for the things they know that exist outside of the dominant culture upon which the assessment is based, measurement disjuncture still penalizes learners with limited exposure to the dominant culture and, hence, its influence on the assessment.

**Theoretical framework: Critical Assessment**

Critical assessment is an answer to the question, “what would it look like to develop assessments from a critical perspective?” The critical perspective is inherently at odds within disciplines where it resides. This also is the case for the field of assessment. The introduction of the critical perspective brings with it a new dimension to assessment that may not be visible from what others see as the primary disciplinary dimension, assessment. Assessment and critical theory, however, are not contradictory but, instead, create an orthogonal space between them. That space is critical assessment. Critical assessment is situated under critical pedagogy (Freire, 2017) alongside of culturally relevant teaching (Ladson-Billings, 1994, 1995b, 1995a, 2014) and sits above culturally responsive assessment (Hood, 1998; Hood et al., 2015).

Linguistics provides an example of how these dimensions form a space known as critical language testing (Shohamy, 2001) which developed from the acknowledgement that language tests, especially high stakes language tests such as those used in citizenship applications, may lead to unintended consequences that need to be examined and evaluated. Placing the field of critical language testing within the broad area of critical
pedagogy, Shohamy (2001) viewed tests as “powerful tools – embedded in social and political contexts and agendas, related to intentions, effects and consequence and open to interpretations and values” (p. 131). Critical language testing seeks to encourage stakeholders “to question the uses of tests, the materials they are based on and to critique their values and the beliefs inherent in them” (Shohamy, 2001, p. 131). Lynch (2001) presented Shohamy’s (2001) 15 critical language testing principles within his own framework for critical applied linguistics. According to Lynch (2001), a critical approach to applied linguistics has four characteristics. First, it has an interest in particular domains such as gender, class, ethnicity, and the ways that language and language-related issues (like all human relations and activities) are interconnected with them. Next, it is based on the notion that researchers need to consider paradigms beyond the dominant, postpositivist-influenced one. It also has a concern for changing the human and social world, not just describing it. This is referred to as the “transformative agenda,” with the related and motivational concern for social justice and equality. Finally, it must be self-reflexive (Lynch, 2001, p. 363).

According to Keesing-Styles (2003), to achieve a critical approach to assessment, it must be centered on dialogic interactions so that the roles of teacher and learner are shared and all voices are validated. Additionally, assessment must value and validate the experience students bring to the classroom and importantly, situate this experience at the center of the classroom content and process in ways that problematize it and make overt links with oppression and dominant discourses. Critical assessment must reinterpret the complex ecology of relationships in the classroom to avoid oppressive power relations and create a negotiated curriculum, including assessment, equally owned by teachers and
students. Finally, it also accommodates some of the aspects of postmodernism that are seen to address the supposed “deficits” in critical pedagogy (p. 10). Van Duinen (2005) placed the liberation of people and society at the core of critical assessment and argued for the use of learner-centered assessment practices “rooted in students’ lived experiences and expressed in authentic ways” (Van Duinen, 2005, p. 145).

Critical assessment is comprised of five tenets the first of which is that it tends to ecosystems of power that influence the practice of assessment. Critical assessment shifts away from and challenges “power relationships and dominant ideologies” (Gardner & Halpern, 2016) that influence the practice of assessment. Critical assessment situates the practice of assessment within a broader, critical view of social and political relations. It focuses on the role measurement plays in questions of power, inequality, discrimination, resistance, and struggle (Pennycook, 1999). Critical assessment requires an interest in particular strata such as gender, class, ethnicity, and their various intersections (Crenshaw, 1991; Lynch, 2001; Pennycook, 1999). Critical assessment acknowledges that the assessment exercise is situated within an ecosystem of oppressive laws and policies created in support of enslavement, colonization and oppression (Chavez-Dueñas et al., 2019; R. P. Foster, 2001).

The second tenet of critical assessment is that it considers assessment paradigms beyond the dominant, post-positivist-influenced one. The culture and assumptions of positivism have exerted a powerful influence on the process of schooling (Giroux, 1997). Critical assessment expands criteria regarding both what is important to assess and how to assess it. Critical assessment is open to the development and conduct of assessments based on constructs and demonstrations of knowledge that may be defined universally or
solely within specific cultures, perspectives and worldviews. Practitioners of critical assessment caution against the reliance, weight, and value assigned to the resultant scores derived from the use of measurement instruments. Critical measurement is open to the possibility that a nonmeasurement approach may be a more appropriate form of assessment for any given case. Giroux (1997) encouraged educators to treat as problematic socially constructed assumptions that underlie classroom assessment by asking: “How do the prevailing methods of evaluation serve to legitimize existing forms of knowledge?” (1997, p. 29). Critical assessment calls into question who gets to decide what to assess, who gets to assess, and ultimately, what is considered valid assessment.

Sablan (2019) argued that, when taken with an appropriate lens, measurement theory, including survey methodology and scale development, can contribute adequately to critical race dialogues, which is due to the possibilities of counterstories being incorporated into scale development and of validation techniques refining asset-based theories. While it is acknowledged that “the running of a regression model or structural equation model, for example may appear similar across ‘critical’ and ‘noncritical’ studies,” (Sablan, 2019, p. 198), it is the intent that defines the critical nature of the analytical approach (Stage, 2007).

While critical measurement shares many characteristics with critical assessment, the focus on the construction of a numerical scale separates the two concepts. As such, attention to the construction of the measurement rule (Stevens, 1958) either at the item-level or at the domain-level is paramount. This includes a re-examination of the use of measurement methods grounded in classical test theory that seek the “true score waiting to be approximated” (Lynch, 2001, p. 362). The measurement model proposed here is
supported by the application of Item Response Theory (Embretson & Reise, 2000; Hambleton et al., 1991). Item response theory relies on the interaction between two concepts that are defined by assessment developers – item difficulty and learner ability – to model estimates of these two traits (Embretson, 2010). This differs from the Classical Test Theory approach that relies solely on total scores and does not account for item properties within the model (Embretson, 2010). Critical measurement attends to four considerations prior to the selection of the appropriate measurement model: the rating process, the level of measurement, construct multidimensionality, and the variability of item rating scales.

Critical assessment’s third tenet is that it is grounded in a transformative framework for changing the human and social world that goes beyond describing it (numerically). Those conducting critical assessment recognize their role in being critical of institutional structures and people who hold power within them as a means to lessen oppression (Breunig, 2005). Critical assessment carries within it the “transformative agenda” as well as related and motivational concerns for social justice and equality (Pennycook, 1999). Critical assessment researchers acknowledge their work is about more than instrument and scale development and participate in the development of a critical consciousness (Freire, 2017) within assessment developers. While not sufficient, critical assessment, as a necessary element of critical pedagogy, can lead to pedagogical autonomy and self-determination. For whatever Indigenous knowledge may be for people, today it is grounded in experiences situated within a constrained reality imposed through settler colonialism (Wolfe, 2006) and slavery. For some, such a constrained reality limits the capacity to imagine and to dream whereas, for others, it engenders an
imagining that there is something beyond boundaries: a different imagined reality within which definitions, structures, rules, and freedoms are self-determined. Critical assessment seeks the conduct of assessment not within the world as it exists today but within a better world imagined for tomorrow.

The fourth tenet of critical assessment is that it integrates praxis regarding the practice of assessment the practice of assessment and the role of the assessment practitioners and researchers. Critical assessment integrates theory, practice, and reflection – or praxis (Freire, 1970) – regarding the practice of assessment, and the role of the assessment practitioners and researchers. Praxis is the integration of both theory and practice, has been characterized as action and reflection upon that action (Freire, 2017). Critical assessment as a force for social change builds congruence between theory and practice while maintaining a focus that is critical of how dominant institutions wield assessment and measurement to maintain their power. Critical assessment raises questions about the reliance on assessment to define and establish systems of merit, value, and worth to sustain power imbalances. Such reflective questions, however, must be accompanied with action and the commitment to work toward change (Freire, 2017).

At the heart of critical theory is the exposure of the dialectic through dialogue which can lead to the revelation of new ways of thinking and acting (Hegel, 2010; Jay, 1973; Stone, 2014). Practitioners of critical assessment practice it by emphasizing the fractured, broken, or contradictory character of the assessment enterprise.

Critical assessment calls into question the practice of assessment (Gardner & Halpern, 2016). Prior to launching an assessment project, critical assessment calls into question the need for an assessment and, in particular, an assessment that requires a
numerical finding. Practitioners of critical assessment ask whether assessment purposes can be served without the assignment of a numerical value and, where possible, provide alternative qualitative assessment options.

Critical assessment calls into question the object of assessment. Practitioners of critical assessment ask whether the object of assessment is relevant to those to whom the assessment will be applied, whether it has been created from within a dominant paradigm, or how the object of assessment can be used as a tool to expand liberation.

Critical assessment calls into question the role of assessment researchers. Critical assessment rejects any research perspective “that claims to be able to stand ‘outside’ of the contextually specific time/space of history” (Brenner, 2009) where assessment occurs. Critical assessment developers acknowledge the role they play in advancing society through the practice of critical assessment.

The fifth tenet of critical assessment is that it requires meaningful multidisciplinary collaboration. Critical assessment involves the collaboration of experts, practitioners, scholars, and other interested stakeholders from across a variety of disciplines (Horkheimer, 2018) who are all engaged in the work of developing meaningful assessment instruments. Critical assessment is conducted by those with the rich knowledge of the object of assessment and by those with a rich knowledge of the construction of assessment instruments. Participants work as co-equals to combine their respective knowledge sets to co-construct assessment instruments. Through the conduct of critical assessment, assessment instruments as well as knowledge about critical assessment can be co-created by all participants leading to research that is “on, for, with, and by” (Czaykowska-Higgins, 2009) Indigenous people.
The theoretical framework of critical assessment is represented in Figure 4. Within it, the concentric fields of assessment and measurement are displayed with Critical Theory in an orthogonal manner. This perpendicular relationship is meant to capture how those with a critical perspective, in any discipline, are often at odds with their own disciplines. Inserting Critical Pedagogy within Critical Theory establishes the location of both critical assessment and critical measurement. It is here where culturally responsive assessment and measurement reside. Finally, within culturally responsive assessment lies culturally specific assessment which is explored in greater detail in the next section.

**Culturally Specific Assessment**

Developing assessments from within the worldview in which they are applied is one way to address the problem of measurement disjuncture. This approach has been applied in a variety of disciplines such as cancer prevention (Garcia et al., 2017), student behavior (Hitchcock et al., 2005), early-childhood education (Kinzel, 2015), and mental health (O’Brien et al., 2007; Telander, 2012; The Getting it Right Collaborative Group et al., 2019; Thompkins et al., 2020; Walls et al., 2016; Whitfield, 2017). It is referred to in the literature as a “culturally specific” or an “emic” approach (Hui & Triandis, 1985). Emic research, as opposed to etic research, refers to research that studies phenomena that exist within one culture and does not involve a focus on other cultures. These two terms are derived from linguistics where “phonetics refers to the study of general aspects of vocal sounds and their production and phonemics studies the sounds used in a particular language” (Eckensberger, 2015, pp. 111–112). The etic research approach refers to research when it is conducted “across many cultures, when the structure is created, and
when the criteria for analysis are considered absolute or universal” (Eckensberger, 2015, p. 112). The main aim of the emic approach, located at one end of the “abstraction universality-cultural specificity continuum” (Hui & Triandis, 1985, p. 132), is to focus on individual differences in attributes that are characteristic of a cultural context (Burtăverde et al., 2018).

Nastasi (2000) wrote that educational psychological services that are culturally specific “embody an individual's real-life experiences within a given cultural context…and his or her understanding of those experiences” (p. 547). A reference to the term “culturally specific assessment” appears in federal Public Law P.L. 95-561, the Indian Education Act of 1979 which called for the Assistant Secretary for Indian Affairs through the Director to “establish and maintain a program of research and development to provide accurate and culturally specific assessment instruments to measure student performance in cooperation with Tribes and Alaska Native entities” (Indian Education Act of 1979, 1983). Ten years after the passage of the Indian Education Act of 1979, Chavers and Locke (1989) wrote “We do not know of any Native-normed test of any kind. This is an area which is obviously rich in development possibilities” (p. 19). In 1995, Estrin and Nelson-Barber (1995) wrote “there is no repertoire of standardized tests in Native languages or that draw on Native cultural content and learning processes” (p. 5). Since that time, there remains limited research on the development of assessments and measurement scales from an Indigenous perspective. This research attempts to fill a research gap that is over 40 years old.
Culturally specific assessment development is the focus of this study and the formal definition of culturally specific assessment that will be utilized throughout this document is (a) assessment that supports the (academic) development of individuals, (b) is inclusive of a willingness to nurture and support cultural competence, (c) aims to support the development of a sociopolitical or critical consciousness within students, (d) is focused on constructs and measures of importance to educational practitioners and other key stakeholders, and (e) functions within a system of knowledge that exists within a named worldview (Sul, 2019). To establish how these elements are distinguished from the practice of standard assessment, each element of the culturally specific assessment definition are crossed against each of the five aspects of the assessment definition provided above: assessment is the representation of a domain of knowledge, skill, or affect (Popham, 2000; Thorndike & Thorndike-Christ, 2009) through the use of procedures (Thorndike & Thorndike-Christ, 2009) that allow for the translation of observations into assignments of value (Thorndike & Thorndike-Christ, 2009) permitting
inferences about domain status (Popham, 2000) for the purpose of making decisions (Lynch, 2001).

**Supports development of individuals**

To support the development of individuals (Ladson-Billings, 1994; Hood, 1998; Sul, 2019), the development of culturally specific assessment, as seen through the five aspects of the assessment definition, begins with the establishment of the domain of knowledge, skill, or affect to be assessed (Popham, 2000; Thorndike & Thorndike-Christ, 2009). This is referred to here as the attribute of interest. Practically, this requires the identification of the attribute, its construct, domains, elements within each domain, and stages of elemental and domain development (CoDES). In addition, the desired developmental elements of the attribute CoDES that can be affected through the conduct of the assessment must be ascertained.

The second aspect of the assessment definition is representation of the attribute through elicitation procedures that support development (Thorndike & Thorndike-Christ, 2009). When conducting measurement, an appropriate measurement model that reflects attribute development should be selected.

To translate the observations into assignments of value (Thorndike & Thorndike-Christ, 2009), as described in the third aspect of the assessment definition, representation of the attribute is examined and a judgement is rendered against or in comparison with established developmental markers or informal developmental guideposts. When conducting measurement, an appropriate measurement model that supports assignment of value to the observation of stages of development is applied.
The translation of observations into assignments of value permits the fourth aspect of the assessment definition: inferences about domain status (Popham, 2000). These inferences about domain status are based on judgements rendered against or in comparison to established developmental markers or informal developmental guideposts. With the assigned value, the location within the developmental pathway for the domain is determined. When conducting measurement, results of the application of the measurement model are used for inferences about the domain status.

Finally, under the fifth aspect of the assessment definition, the breadth of the developmental pathway for the attribute and the location within the developmental pathway are shared with the participant for the purpose of making decisions (Lynch, 2001). When conducting measurement, measurement model results are shared with the participant and the meaning of the results are clarified with the participant. All information is provided to participants to allow them to set personal development goals. Multiple possible directions for the participant are recommended based on the participant’s highest potential for growth over the developmental period. Developmental goals are documented and timelines for achieving them are discussed. A developmental plan can be defined with appropriate scaffolding techniques to support learners as they progress toward meeting their development goals.

**Nurtures and supports cultural competence**

To nurture and support cultural competence (Ladson-Billings, 1994; Hood, 1998; Sul, 2019), the development of culturally specific assessment, as seen through the five aspects of the assessment definition, includes the establishment of the desired cultural
elements of the attribute CoDES (Popham, 2000; Thorndike & Thorndike-Christ, 2009) that can be affected through the conduct of the assessment.

The second aspect of the assessment definition is representation of the attribute through elicitation procedures (Thorndike & Thorndike-Christ, 2009) that support cultural development. When conducting measurement, an appropriate measurement model that reflects cultural development should be selected.

To translate the observations into assignments of value (Thorndike & Thorndike-Christ, 2009), as described in the third aspect of the assessment definition, representation of the attribute is examined and a judgement is rendered against or in comparison with established cultural development markers or informal cultural development guideposts. Here, representation of the attribute is based on elicitation procedures that support cultural development. When conducting measurement, the measurement model that reflects cultural development should be selected.

The translation of observations into assignments of value permits the fourth aspect of the assessment definition: inferences about domain status (Popham, 2000). These inferences about domain status are based on judgements rendered against or in comparison to established cultural markers or informal cultural guideposts. With the assigned value, the location within the cultural pathway for the domain is determined. When conducting measurement, results of the application of the measurement model are used for inferences about the domain status.

Finally, under the fifth aspect of the assessment definition, the breadth of the cultural developmental pathway for the attribute and the location within the cultural developmental pathway are shared with the participant for the purpose of making
decisions (Lynch 2001). When conducting measurement, measurement model results are shared with the participant and the meaning of the results are clarified with the participant. All information is provided to participants to allow them to set personal cultural development goals. Multiple possible directions for the participant are recommended based on the participant’s highest potential for cultural development growth over the developmental period. Cultural development goals are documented and timelines for achieving them are discussed. A cultural development plan can be defined with appropriate scaffolding techniques to support learners as they progress toward meeting their cultural development goals.

**Supports critical consciousness raising**

The development of a critical consciousness within students allows them to acknowledge and act on historical circumstances that affect their current reality (Freire, 1970; Ladson-Billings, 1995; Hood, 1998; Sul, 2019). Current scholarship indicates that critical consciousness is comprised of critical reflection, sociopolitical efficacy, and critical action (Godfrey & Grayman, 2014; Watts et al., 2011). Critical reflection is the ability to analyze current social realities critically, and recognize how social, economic, and political conditions limit access to opportunity and perpetuate injustice. Sociopolitical efficacy, or motivation, encompasses one’s perceived ability to act to change social and political conditions. Critical action is the extent to which individuals actually participate in individual or collective action (Christens et al., 2016; Godfrey & Grayman, 2014).

To address the development of the critical consciousness of learners when culturally specific assessments are developed within Canada and the United States, the
aftereffects of colonialism and slavery must be taken into consideration, which includes the acknowledgement that Indigenous learners of culture, language, and cultural knowledge must confront intergenerational trauma, shame, and humiliation as part of the learning process. For example, many First Nations people are survivors of Canadian boarding-school policies that stripped them of their right to speak in their familial languages. Developers of Indigenous language assessments must acknowledge this ghastly specter of history and address it openly and directly. At the same time, such developers must acknowledge the key role that the learning of Indigenous languages can play in dismantling societal inequalities.

The development of culturally specific assessment, as seen through the five aspects of the assessment definition, acknowledges and acts on historical circumstances and power dynamics (Freire, 1970; Ladson-Billings, 1995) that affect the attribute CoDES (Popham, 2000; Thorndike & Thorndike-Christ, 2009).

The second aspect of the assessment definition calls for the incorporation of empowering responses (e.g., critical reflection, sociopolitical efficacy, and critical action) to historical circumstances and power dynamics (Freire, 1970; Ladson-Billings, 1995) that affect the elicitation of the attribute (Thorndike & Thorndike-Christ, 2009). The elicitation of the attribute should be done in a manner that addresses historical circumstances and power dynamics. When conducting measurement, an appropriate measurement model that reflects attention to historical circumstances and power dynamics should be selected.

To translate the observations into assignments of value (Thorndike & Thorndike-Christ, 2009), as described in the third aspect of the assessment definition, empowering
responses (e.g., critical reflection, sociopolitical efficacy, and critical action) to historical circumstances and power dynamics (Freire, 1970; Ladson-Billings, 1995) should influence the assignment of elemental and domain value to the participant’s representation of the attribute. When conducting measurement, an appropriate measurement model that reflects attention to historical circumstances and power dynamics should be applied.

The translation of observations into assignments of value permits the fourth aspect of the assessment definition: inferences about domain status (Popham, 2000). Here, empowering responses (e.g., critical reflection, sociopolitical efficacy, and critical action) to historical circumstances and power dynamics (Freire, 1970; Ladson-Billings, 1995) regarding inferences and the inferred level of the attribute are incorporated. When conducting measurement, results of the application of the measurement model are used for inferences about the domain status.

Finally, under the fifth aspect of the assessment definition, empowering responses (e.g., critical reflection, sociopolitical efficacy, and critical action) to historical circumstances and power dynamics (Freire, 1970; Ladson-Billings, 1995) are shared with the participant for the purpose of making decisions (Lynch 2001). When conducting measurement, results of the application of the measurement model are used for making decisions.

Addresses practical needs of stakeholders

To address the practical needs of stakeholders (Stake, 1995; Hood, 1998; Sul, 2019), the development of culturally specific assessment, as seen through the five aspects of the assessment definition, requires practitioners and key stakeholders to provide
insight and foundational knowledge regarding the representation, use, and significance of the attribute CoDES (Popham, 2000; Thorndike & Thorndike-Christ, 2009).

The second aspect of the assessment definition is representation of the attribute through elicitation procedures (Thorndike & Thorndike-Christ, 2009) that support development. Here, practitioners and key stakeholders must provide insight and foundational knowledge regarding the elicitation of the attribute. When conducting measurement, practitioners and key stakeholders must provide insight and foundational knowledge regarding the selection of an appropriate measurement model.

To translate the observations into assignments of value (Thorndike & Thorndike-Christ, 2009), as described in the third aspect of the assessment definition, practitioners and key stakeholders should provide insight and foundational knowledge regarding the assignment of elemental and domain value to the representation of the attribute. When conducting measurement, practitioners and key stakeholders should help to determine whether assignment of value to the observation of stages of development based on the measurement model are valid.

The translation of observations into assignments of value permits the fourth aspect of the assessment definition: inferences about domain status (Popham, 2000). To address this aspect, practitioners and key stakeholders provide insight and foundational knowledge regarding the process of making inferences about attribute domain status. When conducting measurement, practitioners and key stakeholders should help to determine whether assessment results will allow for inferences about the domain status.

Finally, under the fifth aspect of the assessment definition, practitioners and key stakeholders provide insight and foundational knowledge regarding appropriate decisions
that can be made based on inferences obtained through the assessment process about the attribute domain status (Lynch 2001). When conducting measurement, practitioners and key stakeholders provide insight and foundational knowledge regarding appropriate decisions that can be made based on results of the application of the measurement model.

**Named worldview**

As with any other product of human activity, tests are cultural artifacts (Solano-Flores, 2011, p. 3) existing within a given worldview. As such, elements of the instrument-development process are prescribed necessarily by the cultural worldview under which they are presented. The cultural validity of tests is the degree to which they address sociocultural influences such as values, beliefs, experiences, and epistemologies inherent within cultures as well as the socioeconomic conditions under which cultural groups exist (Solano-Flores & Nelson-Barber, 2001). Walter and Anderson (2013) argued that “quantitative data play a powerful role in constituting reality through their underpinning methodologies by virtue of the social, cultural, and racial terrain in which they are conceived, collected, analysed, and interpreted.” (p. 9).

Culturally specific assessments differ from those that are named culturally responsive (Hood, 1998) or culturally relevant (Ladson-Billings, 1994) through the addition of an additional criterion: the assessment development process functions within a system of knowledge that exists within a named worldview (Sul, 2019). Within the named worldview, an ontology and theoretical framework are applied that affect, among other things, what should be assessed, how assessments are developed, how validity and reliability are monitored, and the role of the researcher.
The development of culturally specific assessment, as seen through the five aspects of the assessment definition, concludes with the conduct of all aspects of assessment development within the worldview (Sul, 2019). All practices of the assessment development process are conducted in a manner that is consistent with the worldview and influences from outside the worldview are minimized. A summary of the culturally specific assessment definition is provided in Table 5 provided in the Appendix.

**Culturally specific assessment in practice**

Forty years after the open call for a program of research and development of culturally specific assessments for use within Native American educational settings (Indian Education Act of 1979, 1983), culturally specific assessment (Sul, 2019) is offered a potential solution to the problem of measurement disjuncture. In order to determine whether the minimization of measurement disjuncture can be achieved through the employment of culturally specific assessments, educational environments deploying assessments that meet the criteria for culturally specific assessment were sought. Such environments do exist. A renaissance of culture, language, and Indigenous knowledge is occurring throughout Aotearoa (New Zealand), Hawai‘i, tribal communities within the United States, and First Nations within Canada. It is within these communities where opportunities to explore the development of culturally specific assessments exist. The lack of representation of Indigenous culture within assessment-development processes has been met by a range of efforts. One method of developing assessments is to begin with one that already has been validated for one setting and then modify it for use in another (Borgia, 2009). Given the challenge of assessing Indigenous knowledge domains using existing assessments, some have focused their efforts on the development of
entirely new assessments grounded in the perspectives of Indigenous people (Dench et al., 2011).

**Effect on Indigenous Assessment Developers**

The final research question of this study focuses on the assessment developers and the effect of the development of culturally specific assessment on both their practices and their perceived contribution to the communities they serve. In particular, I am interested in knowing whether and in which ways these assessment developers perceive their work contributes to the grander goal of decolonization.

**Settler colonialism and the logic of elimination**

Colonialism, according to Yellow Bird (1999), is when an alien people invade the territory inhabited by people of a different race and culture and establish political, social, spiritual, intellectual, and economic domination over that territory. It includes the appropriation of both territory and resources by the colonizer and loss of sovereignty by the colonized (Yellow Bird, 1999). Patrick Wolfe (2006) defined settler colonialism as inherently eliminatory but not invariably genocidal and described the logic of elimination as the summary liquidation of Indigenous people and their societies. As with genocide, settler colonialism first strives for “the dissolution of native societies” and, then, for the construction of “a new colonial society on the expropriated land base” (p. 388). According to Wolfe (2006), the primary motive for elimination “is not race (or religion, ethnicity, grade of civilization, etc.) but access to territory” (p. 388).

Applying these same concepts, I have constructed the concept of intellectual colonialism as also being inherently eliminatory. The logic of intellectual elimination
refers to the summary liquidation of Indigenous peoples’ knowledge. Intellectual elimination strives first for the dissolution of native societies’ knowledge and then for the construction of a new colonial knowledge within the expropriated minds. As with the logic of elimination, the primary motive for intellectual elimination is not race (or religion, ethnicity, grade of civilization, etc.) but access to territory. Thus, in order to stand against the forces of intellectual elimination, Indigenous people must strive for the retention of Indigenous knowledge and then for the expansion of new Indigenous knowledge.

**Decolonization**

The fourth tenet of critical assessment is that it integrates praxis regarding the practice of assessment and the role of the assessment practitioners and researchers. Praxis is the integration of both theory and practice, has been characterized as action and reflection upon that action (Freire, 2017). Elias and Merriam (1980) wrote that “theory without practice leads to an empty idealism, and action without philosophical reflection leads to mindless activism” (p. 4). Tuck and Yang (2012) challenged scholars of decolonization to view decolonization as more than a metaphor that stands in place of actual decolonization arguing that “when metaphor invades decolonization, it kills the very possibility of decolonization; it recenters whiteness, it resettles theory, it extends innocence to the settler, it entertains a settler future” (p. 3). Tuck and Yang (2012) further explained that the decolonization metaphor, “turns decolonization into an empty signifier to be filled by any track toward liberation. In reality, the tracks walk all over land/people in settler contexts” (p. 7). Thus, decolonialization must necessarily involve the repatriation of land “simultaneous to the recognition of how land and relations to land
have always already been differently understood and enacted; that is, all of the land, and not just symbolically” (Tuck & Yang, 2012, p. 7). These scholars indicate that whether researchers work toward decolonization, autonomy, social justice, self-determination, without addressing the one attribute upon which colonization is based, access to territory, then their actions remain a theoretical exercise.

Decolonizing research methodologies are those that actively work to deconstruct colonizing practices while endeavoring to advance Indigenous self-determination (A. C. Wilson, 2004). Scholars who conduct decolonizing educational research engage in the active deconstruction of assimilative research practices in Indigenous settings (Smith, 1999). According to Smith (2012), decolonization does not involve a total rejection of Western theories, research, or knowledge. Rather, “it is about centring our concerns and world views and then coming to know and understand theory and research from our own perspectives and for our own purposes” (L. T. Smith, 2012, p. 39). Smith (2012) also framed the struggle for decolonization according to five dimensions that separately, together, and in combination with other ideas, help map the conceptual terrain of struggle for decolonization.

The first dimension is critical consciousness, which, according to Smith (2012), is “an awakening from the slumber of hegemony, and the realization that action has to occur” (p. 201). This is represented in the definition of culturally specific assessment (Sul, 2019) provided above that incorporates empowering responses (e.g., critical reflection, sociopolitical efficacy, and critical action) to historical circumstances and power dynamics (Freire, 1970; Ladson-Billings, 1995) that affect the various aspects of the assessment exercise.
The second dimension focuses on drawing upon a different epistemology and unleashing the creative spirit (Smith, 2012). This aligns with the second tenet of critical assessment that considers assessment paradigms beyond the dominant, post-positivist-influenced ones (Giroux, 1997; Lynch, 2001).

The third dimension focuses on ways in which different ideas, social categories and tendencies intersect. This aligns with the fifth tenet of critical assessment that advocates for the collaboration of experts, practitioners, scholars, and other interested stakeholders from across a variety of disciplines (Horkheimer, 2018) who are all engaged in the work of developing meaningful assessment instruments.

The fourth dimension focuses on the unstable movements that occur when the status quo is disturbed (Smith, 2012). This concept resembles Hegel’s dialectical approach (2010) that serves as a foundation for critical theory. The approach is a general one and is based on the establishment and resolution of a contradiction between opposing sides. Hegel (2010) wrote “contradiction is the root of all movement and vitality; it is only insofar as something has a contradiction within it that it moves, has an urge and activity” (p. 439).

The fifth dimension focuses on structures that reproduce material realities and legitimates inequalities and marginality (L. T. Smith, 2012). Research and, hence, assessment, are “indissolubly related to power and control, and indigenous scholars take these issues seriously nowadays, making indigenous research part of the decolonization process,” (Porsanger, 2004, p. 113), which means “being able to make decisions about the research agenda and methodologies for themselves without any outside influence” (Porsanger, 2004, p. 113).
Patel (2016) provided a set of guiding questions to considering how and to what extent educational research animates settler colonialism: What kinds of logics and relationships are being created through educational research? What kinds of practices are legitimated? What are the material effects of practices that may be echoing logics of settler colonialism?

Instead of answering these questions posed by Patel (2016) in response to settler colonialism, I have decided to reframe these questions from a decolonization perspective. These reframed questions consider how and to what extent this research on culturally specific assessments for use within Indigenous environments animates Indigenous self-determination by pushing back against intellectual elimination: What kind of logics and relationships are being created through assessment development? What kinds of assessment development practices are legitimated? What are the material effects of assessment development practices that stand against the logic of intellectual elimination?

**Summary**

This review of the literature provides a review of the elements that guide the present research. Culturally specific assessments (Sul, 2019), while a form of assessment, take on a new meaning when situated within culturally responsive assessment (Hood, 1998), culturally relevant pedagogy (Ladson-Billings, 1994, 1995b, 1995a, 2014), critical assessment, and grounded by critical pedagogy (Freire, 2017) and by critical theory (Giroux, 1979; Horkheimer, 2018; Steinberg & Kincheloe, 2010). Such assessments are offered in response to the problem of measurement disjuncture (Sul, 2019), a problem of measurement that takes on new meaning when contrasting Western and Indigenous worldviews collide to present the disjuncture. Such disjunctions within assessment are a
function of intellectual elimination which sits within the structures established under settler colonialism (Wolfe, 2006). It is under these frameworks where the current research is situated. Without this context, the focus of this research would be on the identification of factor-analyzed constructs and best-fitting Item Response Theory (Embretson & Reise, 2000; Hambleton et al., 1991) measurement models. This research, however, focuses on how these disjunctures disrupt the work and practices of Indigenous assessment developers, how these assessment developers respond to them, and how, ultimately, they view their work as a response to intellectual elimination and settler colonialism.
CHAPTER III

METHODOLOGY

This chapter provides a description of the research methodology to be deployed during the conduct of the study. It also includes a restatement of the research purpose, a description of the researcher, the research design, the data collection methods, data analysis plans, and the study calendar. It concludes with a review of the protection of human subjects and ethical considerations.

Assessments that are developed from a Western perspective and used within Indigenous environments introduce measurement disjuncture, increase measurement error, and ultimately, reduce measurement validity. The purpose of this critical comparative case study was to explore, through the experiences of Indigenous assessment developers, what measurement disjuncture is, why it is a problem, and what can be done about it. I introduced the disjuncture-response dialectic theoretical framework and through the comparative case examples, I sought to investigate how Indigenous assessment developers use culturally specific assessments as responses to measurement disjuncture, as forms of intellectual amplification that challenge intellectual elimination, and as political acts of Indigenous sovereignty that stand against forces of settler colonialism. My aim in presenting these case studies was to elevate the work of Indigenous assessment developers to support practitioners, researchers, scholars, and activists working within Indigenous environments who seek to discern information using assessments that reflects the Indigenous people they serve.
Protection of Human Subjects and Ethical Considerations

For those individuals without a strong understanding of the role of settler colonialism on Indigenous people throughout the world, conversations about it and its influence on the present study may be difficult. As a result, it is possible that interviews about the development of culturally specific assessments may wander into the area of settler colonialism and “may involve the exploration of intensely personal experiences,” causing participants to feel “awkward, ashamed, angry or even emotional, which can present investigators with a range of ethical dilemmas” (Noon, 2018, p. 82). Throughout the interviews, I relied on my close personal relationships with the participants, my understanding of their mannerisms, their voicings, and their facial expressions to monitor the effect of the interviews on the participants.

Participants were presented with letters of consent that contained information about the objectives of the study and the manner in which the investigation was conducted. During interviews, participants were allowed to opt out of any questions or express any concerns regarding the design of the study.

Ethical considerations

In this study, protection of human subjects followed the standards set by the American Psychological Association (2012). Approval to conduct the study was obtained from the University of San Francisco Institutional Review Board for the Protection of Human Subjects. Permission from the participants was obtained via electronic signature using the Qualtrics survey platform.
Interviews with the research participants took place after engagement with them on the development of their assessments. We have shared lengthy conversations about assessment development, and some of the study participants have met each other. Because of our time together, we share common overlapping assessment development experiences. For this reason, it will be important to extricate concepts and ideas that may have merged together during our time working together.

There has been limited research conducted on the development of culturally specific assessments and it is important for the field to have access to as many examples of their development. Additionally, it is important to acknowledge the important role that these assessment developers have played in their respective communities and to let other communities know that such experts, do, in fact, exist. For that reason, the naming of the participants became a topic of discussion with the participants and with the dissertation chair. Ultimately, it was decided not to name them and to protect their anonymity. Additionally, the anonymity of the names of their assessment projects and their respective organizations was preserved.

Research Questions

A set of seven research questions focused on the insight of Indigenous assessment developers and guided this inquiry. Each of the first six questions addressed the elements of the disjuncture-response dialectic represented by the image in Figure 1 (p. 4). The final research question explored how Indigenous assessment developers are affected by their work. All research questions are provided below.

1. What are Indigenous assessment developers experiences with settler colonialism in their work?
2. What are Indigenous assessment developers experiences with intellectual elimination in their work?

3. What are Indigenous assessment developers experiences with measurement disjuncture?

4. What are Indigenous assessment developers experiences with culturally specific assessment?

5. How do Indigenous assessment developers perceive their work contributes to the grander goal of intellectual amplification?

6. How do Indigenous assessment developers perceive their work contributes to the grander goal of Indigenous sovereignty?

7. How does working on culturally specific assessments affect Indigenous assessment developers?

**Research Design**

This research was conducted as a critical (Horkheimer, 2018) comparative case study (Bartlett & Vavrus, 2017). The selection of a qualitative approach coincided with a need for an in-depth and rich understanding of the phenomenon of interest. In qualitative research, the focus is on process, meaning, and understanding, and the researcher serves as the primary instrument of data collection and analysis that is inductive (Merriam & Tisdell, 2016). Qualitative case studies “share with other forms of qualitative research the search for meaning and understanding, the researcher as the primary instrument of data collection and analysis, an inductive investigative strategy, and the end product being richly descriptive” (Merriam & Tisdell, 2016, p. 37). During the conduct of case study
research, a case is studied in “real life setting or natural environment” and “context is significant to understanding the case” (Harrison et al., 2017, p. 13). As such, it is important to identify factors that influence these settings and environments. When working within Indigenous communities, for example, one must remain cognizant of the tremendous effect of colonization.

The comparative case study design

The selection of the comparative case study design (Bartlett & Vavrus, 2017) coincided with the need for a more fluid and robust structure for the study of the cases. Comparative case studies are structured according to three axes of dimension described by Bartlett and Vavrus (2017b) as the horizontal axis, the transversal axis, and the vertical axis.

The horizontal axis

Along the horizontal axis reside what are generally referred to in other forms of case studies as the cases. The homologous perspective (Bartlett & Vavrus, 2017) of the horizontal axis views the entities being compared as having a corresponding position or structure that allows for either the comparison, contrast, or juxtaposition between them (Bartlett & Vavrus, 2017). In this study, the entities being compared represent assessment development projects but with each case progressing according to the needs of the developers and their respective communities. The horizontal axis allows for the comparison of cases that are socially constructed and complexly connected (Bartlett & Vavrus, 2017). Along the horizontal axis, the Indigenous assessment developers are responding to a common problem, measurement disjuncture, brought about by a larger historical disruption within their respective communities.
The transversal axis

The transversal axis connects the horizontal elements to one another through a temporal component (Bartlett & Vavrus, 2017). In this study, the entities represent an assessment development project but with each case launching at different points in time. The result is a set of cases that have varying degrees of time dedicated to the assessment development process and located at different stages of the assessment development process. Cases, for example, may have begun the assessment development process at the same time but be located at different assessment development stages.

The vertical axis

The vertical axis tends both “to micro-level understanding and to macro-level analysis” and attends to the “ways in which historical trends, social structures, and national and international forces shape local processes at this site” (Vavrus & Bartlett, 2006, p. 96). In a vertical case study, “the researcher must also develop a full and thorough knowledge” about these larger structures in order to fully understand the phenomenon (Vavrus & Bartlett, 2006, p. 96). Bartlett and Vavrus (2017a) stressed the “importance of examining policy formation and appropriation across micro-, meso-, and macro-levels” (p. 4). Typically, the vertical axis focuses on levels represented by cities, counties, states, nations, or geographic regions. For example, Koyama (2009) described the United States federal No Child Left Behind policy as “federally-mandated, state-regulated, district-administered, and school-applied” (p.22). Max (2009) examined the government of Senegal as part of the national level and assigned “forces outside of Senegal that influenced its higher education sector, such as France and the World Bank” (p. 46), to the international level. Philips (2009) used a vertical case study approach to
explore “the efficacy of HIV/AIDS edutainment produced at the inter/national level” (p. 58).

_The critical comparative case study_

In this study, however, the vertical axis served as a means to represent the proximity of Indigenous assessment developers (IAD) to opposing spheres of influence that affect their work. The opposing spheres of influence represent a departure from the standard form of comparative case study and transitions it toward a critical comparative case study. The result is a dialectical perspective on the set of forces that influence Indigenous assessment developers. As depicted in the figure below, measurement disjuncture (MD) and the response to it, culturally specific assessment (CSA), are located at the most proximal or micro level. Intellectual elimination (IE) and the response to it, intellectual amplification (IA), are located at the mid-proximal or meso level. Settler colonialism (SC) and the response to it, Indigenous sovereignty (IS), are located at the least proximal or macro level.
Figure 9. Spheres of influence surrounding Indigenous assessment developers

With these spheres of influence as the backdrop, the vertical axis for this study results from transforming this two-dimensional depiction of the spheres of influence and aligning them according to the proximity to the Indigenous assessment developer into the one-dimensional vertical perspective provided in figure below.

Figure 10. The critical comparative case study vertical axes

The elements of the figure above also represent the proximity of Indigenous assessment developers (IAD) to spheres of influence that affect their work, namely, the concepts of measurement disjuncture (MD), intellectual elimination (IE), settler colonialism (SC), culturally specific assessment (CSA), intellectual amplification (IA), and Indigenous sovereignty (IS). This perspective on the vertical axis represents a shift from an organization-based perspective on levels of the vertical axis toward a concept-based perspective on verticality and provides a unique approach to the study of the disjuncture-response dialectic. The inclusion of two vertical axes acknowledges the dialectic nature of the perspective required for this study.

While most case study research is not about generalizability, the introduction of the vertical scale introduces the potential for commonalities in the manner in which the
Indigenous assessment developers respond to intellectual elimination and settler colonialism across cases to emerge. It also introduces the potential for the examination of commonalities across cases based on the manner in which the Indigenous assessment developers see their work contributing to the grander concepts of intellectual amplification and Indigenous sovereignty. The figure below is a summary of the elements of comparative case study and includes the three axes (horizontal, transversal, and vertical) and a depiction of cases becoming generalized as they move further upward along the vertical scale.

![Diagram](image)

*Figure 11. The critical comparative case study axes*

**Researcher Description**

Immediately prior to my work on the development of culturally specific assessments, I served as the Research Director and psychometrician for the Desired Results Access Project housed within the Napa County Office of Education. There, I worked on the development of the State of California preschool assessment, the Desired
Results Developmental Profile or the DRDP (2015). My project role was to ensure that the instrument was appropriate for all learners, including for those with special needs. In April 2016, I co-presented this work at the Culturally Responsive Evaluation and Assessment (CREA) conference in Chicago. There, I hoped that someone would see the psychometric work being done to support children with special needs and understand that these techniques could be applied to other specific groups of learners. It was there where I met Dr. Kia‘i Kanaloa, a Native Hawaiian educator working on the development of an assessment of Hawaiian cultural knowledge. She was attending the CREA conference to locate psychometric technical assistance from someone who might understand her cultural values and how they fit within the assessment she was developing in Hawai‘i. The following summer, we began our first set of collaborative meetings. What drew us together was a rich and deep understanding of the challenges in working within educational systems to bring about systemic reform in support of our students. We were two separate people both running into the same problem on different sides of the Pacific Ocean, working with two completely different populations of learners. This shared sense of struggle against state educational systems cleared many barriers between us and allowed us to dive immediately into a collaborative workspace.

Over time, I was fortunate to locate other Indigenous assessment developers working to resolve the problem of measurement disjuncture. Through our partnerships, we each have our own aspects of the work that command our interest. For me, it is on the process of developing culturally specific and psychometrically valid assessments. For the participants, it is in the completed assessments that are used to fill a need within their own culturally specific environments. Throughout each of the assessment development
processes, we came together to learn and advance in our understanding of assessment, assessment development, and their role within the larger initiative toward assessment autonomy.

Qualitative research studies are grounded in interviews and observations that introduce the subjectivity of the researcher into the study. For that reason, it is important for me to describe how my beliefs and attitudes have played a part in the conduct of this research. In discussing my work and research at various conferences and meetings these past few years, a common question I have been asked is whether non-Indigenous people can participate in this type of research. To prepare my audiences for that question, I incorporate the immigration journey of my maternal grandmother from the high plains of Central Mexico to the southern portion of the U.S. State of Texas. In telling that story, I let the audience know that there is a time and place from where we come that has framed our belief systems. Although our languages and cultural practices may shift over generations, we can search deep within ourselves, speak with older relatives, and maybe even check in with friends and neighbors of relatives who have passed away in order to gain insight into how we came to be the people we are today. Discovering one’s own familial pathway is an important stage of doing work with Indigenous people. Although I am not a member of all of the Indigenous groups with whom I collaborate, my collaborators and I often find shared histories that ultimately trace back to the arrival of Europeans to the lands referred to today as the Americas. Those shared histories are important to self-discover and acknowledge in front of those with whom we collaborate. Although I am not an expert in the Indigenous content areas of the assessments we develop, I believe that sharing my own familial history has helped me to ground myself
to my past and has allowed for collaboration on the development of assessments in the areas of Indigenous culture, language, or knowledge.

I work as a private measurement and evaluation consultant and have applied my quantitative skills as a psychometrician within Indigenous communities that deal with the ravages of racism and colonialism. These are the spaces where I can concentrate on developing and carrying out strategic, long-term, and focused strategies. Spaces such as these, where people are willing to stand for themselves and declare their assessment autonomy are, however, few and far between. Nevertheless, it is in these spaces where, despite the odds, I feel most welcomed, respected, at home and at peace. For most of my life, I did not utilize the term “Indigenous” as a self-descriptor. Being unclear of the degree and location of my Indigenous past, I chose not to disrespect the term by claiming to be something that was unclear to me. About five years ago, my work and research became focused within educational settings that support the continuation and resurgence of Indigenous people’s language, culture, and knowledge systems. With the support, acknowledgement, and encouragement of my colleagues, I finally granted myself permission to self-describe as Indigenous. This acknowledgement follows a natural trajectory for someone whose life was framed since birth through a racial and political lens. It demonstrates my desire and ability to establish my own boundaries and interact with the world with both meaning and purpose.

**Study Cases**

The cases for this study represent culturally specific assessment development process within distinct Indigenous environments. The Indigenous assessment developers who represent these cases are those who seek to break from existing conditions and
transition away from their existing bounds toward something greater (e.g., Indigenous self-determination) for their respective communities. As such, sampling was intended to represent an array of Indigenous assessment development projects.

Four categories of culturally specific assessment development processes were considered for this study: content, stage of development, cultural group, and length of collaboration. Each assessment development process has cultural, linguistic, or Indigenous knowledge as the focus of the assessment. The assessment of Dr. Kia‘i Kanaloa focuses on three domains of Hawaiian knowledge. In English, the domains are similar to the concepts of classification, observation, and synthesis and can serve as a strong foundation for Native Hawaiians. Dr. Carmen García is working on a trauma assessment that considers traumatic experiences of Latinx immigrants before, during, or post migration and considers oppressive policies that affect them and the communities within which they reside. Dr. Sienna Montañez seeks an instrument to measure one’s sense of belonging along five dimensions that include one’s relationships to other people, their Native American culture, and the natural environment. This is important for her work on well-being and suicide prevention within Native American communities.

The participants represent a roster of culturally specific assessment development projects classified according to their degree of independent progress toward the completion of their culturally specific assessment. Each assessment development process is at a different stage of development that begins with construct definition and development and continues through to the completion of pilot testing of an entire system of assessment. Each of the assessments focus on and was designed for members of a distinct target group. Finally, each of the assessment development processes represent a
different length of time collaborating on the development of a culturally specific assessment. In the case of one research participant, a nearly five-year working relationship existed prior to her inclusion in this study.

**Study Participants**

The group of study participants included Indigenous assessment developers from throughout North America and Hawai‘i with whom I have held a collaborative working relationship on the assessment projects listed above. In one of the cases, I served as a paid consultant to their respective organization. In the other two cases, I have worked on a voluntary basis. The group of study participants represents a convenience sample. My initial interactions with each of these developers centered on the development of an assessment instrument, one that would be grounded in the perspectives of those to be assessed. Over time and collaboratively, we developed a space of trust where ideas could be freely exchanged, challenged, clarified, and confirmed.

These interviews were grounded in the months and years of engagement I shared with these developers toward the development of culturally specific assessments. Our pre-interview engagement has focused on assessment development within a larger cultural space where assessments developed from an Indigenous perspective are rare or even discouraged. Our shared work has involved difficult and tense conversations about how we arrived at the predicament necessitating a culturally specific approach. It has also challenged us to envision an uplifting direction for our assessment work. At various times in our development work, we have had to pause the work to regroup after challenging conversations. Through it all, our mindsets have remained strong by keeping a positive attitude about where this work will lead. While we all have our own spaces that we
inhabit, I consider these research participants to be fellow travelers seeking to use culturally specific assessments on the same journey toward autonomy and self-determination.

**Dr. Kia‘i Kanaloa**

Dr. Kia‘i Kanaloa is the developer of an assessment of Hawaiian cultural knowledge. She is the former curriculum coordinator and director for assessment projects and activities at a Hawaiian-language immersion charter school located in Hawai‘i. She is a staunch advocate of Hawaiian sovereignty and independent nationhood. When we started working together, Dr. Kanaloa had obtained both undergraduate and master’s degrees in Marine Science and would ultimately complete her doctoral dissertation in Education in 2020. At the time of my interview with her, we had known each other for nearly five years.

I met Dr. Kanaloa at the Culturally Responsive Evaluation and Assessment (CREA) conference held in April of 2016 in Chicago. There we discussed her work on the development of her assessment and I informed her of my approach to assessment development. I expressed to her then that she was moving in a positive direction with her work and that I could tell that she was adhering to some important assessment development principles. We attended each other’s conference presentations and afterwards, agreed to work together. In June of 2016, I visited Dr. Kanaloa at her school site in Hawai‘i for a series of meetings about her assessment. As an illustration of our synchronicity, over lunch one day, I asked Dr. Kanaloa why she was using a measurement scale grounded in the work of non-Hawaiians Dreyfus and Dreyfus (1980). “I knew you were going to ask me that!” was her first reaction. As she attempted to
explain her reasoning, I stoically replied to her using the lyrics sung in 1992 by the rhythm and blues group, En Vogue, “You need to free your mind.” She replied immediately without missing a beat by completing the lyric of the Top 10 hit from the Funky Divas album, “And the rest will follow!” At the conclusion of our meetings, I told my collaborator and newly found co-conspirator, “You know, this means we are both going to have to go back to school to write all this work up for our dissertations.” I returned from those meetings and immediately applied for admission into the doctoral program in Learning and Instruction within the School of Education at the University of San Francisco. While our collaboration would end in June 2018, lasting collegial and personal relationships with her and members of her academic community remain in place to this day.

Prior to our first meeting in 2016, Dr. Kanaloa designed a system of grade-level culturally specific assessments for use within a K-12 Native Hawaiian language immersion school environment. In addition, she already had one year of experience administering the assessments she developed. All of her assessments were comprised of three domains of Hawaiian knowledge and were grounded in a comprehensive set of grade-based learning expectations for this knowledge. During our first week of meetings held in June 2016, I asked her about the source of the three domains and she replied that they were established as concepts hundreds of years ago by precontact Hawaiians. The domains first appeared in written form in the 1880s. They were documented as a result of the push for Hawaiian literacy of that era to preserve in writing the ancient language and culture of Hawaiians.
Hawaiians were one of the first cultural groups to experience success at language revitalization. Behind this success was a push for Hawaiian sovereignty that arose during the 1980s. As a result, Dr. Kanaloa functioned within post-Sovereignty Movement Hawai‘i. A foundation was established by activists and scholars who set the course for the inclusion of Hawaiian sovereignty and self-determination within her assessment development work. At the Hawaiian language immersion charter school where she worked, she had a full-time position as their Native Hawaiian curriculum, instruction and assessment specialist. This provided her with the time and resources to conduct her assessment development work.

Dr. Kanaloa had a comprehensive set of experiences providing her a robust perspective on developing culturally specific assessments. Prior to my involvement, Dr. Kanaloa had already designed, developed, and implemented an initial round of her assessments. In addition, she analyzed her assessment data and shared the results with the families and teachers at her school. In June 2018, she left for another position with another Hawaiian educational organization. Between our time working on the assessments and my interview with her, about 30 months had passed. The passage of time allowed for reflection on the development of the assessments and the application of the knowledge she gained through the assessment development process to a new environment. All these factors gave Dr. Kanaloa a greater perspective on the development of her assessments and allowed her to provide more insight into the work she completed, its potential for use in other environments, and a fuller understanding of what she was able to accomplish.
Dr. Carmen García

Dr. Carmen García is an Assistant Professor in her institution’s Counseling Psychology Department and is a licensed practicing clinical psychologist. She serves as the Research Director for a local nonprofit organization, and we met through a mutual acquaintance who felt there was potential for collaboration. After an introductory phone conversation in November 2019, she invited me to sit in on a discussion her nonprofit colleagues were having on the adoption of a program of trauma-informed care they were considering. A trauma assessment instrument was one of the components under discussion. She was searching for an alternate perspective on the conduct of trauma assessment within Latinx immigrant communities. Assessment is part of her training and she had previous experience both developing and administering instruments as part of her work as a practicing clinical psychologist. She was familiar with instrument development conducted from strictly a Western perspective and indicated that the trauma instrument promoted by her organization was a dichotomous checklist format and misaligned to the needs of Latinx immigrants. She also expressed how that particular format left her feeling empty and directionless when she took the online version of that assessment herself. At the time of my interview with her, we had spent 15 months together reviewing her assessment development plans and working toward the development of her assessment construct.

Many ideas and concepts from Indigenous Mexico and Central America remain present within Latinx people. In addition, many immigrants from these spaces are Indigenous. While there are many Latinx people who do not acknowledge an Indigenous background, I felt that the representation of both Indigenous people and culture within the
target audience for the assessment more than justified the inclusion of Dr. García within this research study. This decision ended up being significant because, while I am not a trauma scholar, I am familiar with many of the cultural experiences of Latinx immigrants through my own engagement with educational programs and services that serve migrant Latinx communities throughout California as well as my own familial experiences with the ailments we were considering for her trauma instrument. These included the concepts of “susto” and “miedo” that are Spanish terms that represent concepts derived from Indigenous ways of perceiving ailments. Through my understanding of these concepts, I was able to participate much deeper in the conversation about construct development than in the construct development conversations with the other two developers. I had a much richer understanding of how she wanted to reframe her trauma instrument.

Dr. García is Mexican and bilingual and our assessment development conversations were conducted primarily in English. She used Spanish for emphasis or to explain a concept and the domains of her assessment construct are named in Spanish. In some of our assessment development meetings, Dr. García expressed concern about whether her research on the development of this culturally specific trauma instrument would impede her path toward tenure. This was based on the potential negative reaction from her field to her work on this assessment that might affect her chances at research publications. Over time, this concern dissipated.

Dr. García and I reside in a similar geographic region and are within driving distance from each other. In addition to routine calls and web conference calls, we have met in person to discuss our assessment development work. Our assessment development conversations shifted toward the formation of a construct to more fully represent the
trauma experienced by Latinx immigrants. Eventually, we shifted our attention to the gathering of insight from Latinx immigrants and Dr. García conducted interviews to help frame the assessment construct. Throughout the COVID-19 pandemic year of 2020, we met routinely through phone calls and web conferences to establish the construct for her assessment. Our construct development work together was conducted at a conceptual level and the interview data she gathered help to frame the concepts which would become the domains of her instrument.

**Dr. Sienna Montañez**

Dr. Sienna Montañez is a faculty member in Social Work at a tribal college in Montana. She is a Native person of both Mescalero Apache and Mi’kmaq heritage and earned her Ph.D. in Expressive Therapies in 2018. At the time of my interview with her, we had spent 15 months together reviewing her construct and considering ways to move from construct to item development.

Dr. Montañez and I met at the American Indian Research Association (AIRA) conference held in October 2019 in Polson, Montana where she and I presented on our separate research projects. She presented on her doctoral research on arts-based therapy with Native Americans and I presented on my concepts of measurement disjuncture and culturally specific assessment. We met during a conference break to discuss her research and she indicated that she was looking to develop an assessment tool to support the assessment construct she developed for her doctoral dissertation. Her assessment construct was developed through a pan-Native American perspective. The participants in her doctoral study represented five federally recognized Native American tribes from the Indian reservation in Montana near the tribal community college where she was teaching.
Her arts-based research study explored how Native Americans understand the concept of a sense of place through an art making and storytelling experience that reflected their traditional cultural knowledge.

Since that initial meeting, we have continued our discussions regarding the development of a culturally specific assessment instrument based on her assessment construct. My work with Dr. Montañez has been affected by numerous factors including both geographic distance and travel restrictions due to the COVID-19 pandemic. Nevertheless, we remain in close contact via phone and web conference calls discussing her assessment construct, its meaning, and the purpose she hopes to serve with it. She has volunteered her time toward the development of her assessment and so our time together has been limited by her availability during the conduct of her full-time teaching. Her prior experience in developing assessments has been through her work on the development of assessment rubrics for use within her classrooms and workshop presentations.

**Data Collection Methods**

Data for this study consisted of approximately 6 hours and 50 minutes of audio and video recordings of the participant interviews and transcribed audio data. The interviews with Dr. Kanaloa, Dr. García, and Dr. Montañez resulted in approximately 3 hours and 30 minutes, 2 hours, and 1 hour and 20 minutes of material, respectively. This research was designed to provide the participants the opportunity to share their experiences about developing culturally specific assessments. Semistructured interviews allowed the participants to describe their experiences, to share their expertise, and to
inform others of their work. The interviews were open ended with leading questions to guide the interactions.

Smith et al. (2009) developed five steps in their interpretive phenomenological analysis (IPA) approach to qualitative case analysis. In keeping with this approach, first, the broad area of focus for the participant interviews was defined as the participants’ experience in developing culturally specific assessments. Next, the range of topic areas to be addressed in the interviews was considered and narrowed to the elements of the disjuncture-response dialectic represented by the image in Figure 1 (p. 4). Phrases used to open questions focusing on each topic area were established. Finally, the participants were provided the opportunity to review and provide feedback on the questions and to contribute other interview questions.

The interviews originally were intended to be conducted as inperson interviews. However, public health concerns brought about by the COVID-19 pandemic limited this approach, and the interviews were conducted via Zoom web conferencing software. Implications of this modified approach as it relates to the engagement of Indigenous research participants are addressed in the discussion section. Participant interviews took place over a 2-week period beginning in late January 2021. Prior to her interview, Dr. Kanaloa asked if I would be willing to share the interview questions with her. To help her prepare and knowing that doing so would affect my other interviews, I developed a two-page summary document entitled “Pre-interview framing of the research,” (Fig. 12, p. 258) that presented both the interview questions as well as the elements of the disjuncture-response dialectic (Fig. 1, p. 4). Within this summary document, settler colonialism was described as striving for the dissolution of native societies and the
construction of a new colonial society on the expropriated land base (Wolfe, 2006). An aspect of settler colonialism, intellectual elimination was defined as striving for the dissolution of native societies’ knowledge and the construction of a new colonial knowledge in the expropriated minds. Measurement disjuncture was defined as the misalignment that occurs when elements of an instrument-development process from one worldview are applied to the instrument-development process of another worldview (Sul, 2019). Culturally specific assessment was described as assessment that supports the development, nurtures and supports cultural competence, supports the development of a critical consciousness, focused on issues of importance to practitioners and other key stakeholders, and functions within a system of knowledge that exists within a named worldview (Freire, 2017; Hood, 1998; Ladson-Billings, 1994, 1995b, 1995a, 2014; Stake, 1973; Sul, 2019). Intellectual amplification was defined as the acknowledgement, revitalization, sustenance, maintenance, development, and promotion of knowledge that is grounded within named cultural knowledge systems. Finally, Indigenous sovereignty was presented as the right of a people to self-government, self-determination, and self-education which includes the right to linguistic and cultural expression according to local languages and norms (Lomawaima & McCarty, 2002).

The summary document was shared with each of the participants about a week prior to their respective interviews. At the opening of the interview, I used my own historical narrative to tell the story of how I derived each element of the disjuncture-response dialectic. This narrative begins with my initial meetings with Dr. Kanaloa in Hawai‘i and includes my attempts to resolve how such abstract concepts as settler colonialism and sovereignty were ever present within our assessment development
discussions. The inclusion and presentation of the meso layer of the dialectic that addresses both intellectual elimination and intellectual amplification was the first time this entire model was revealed to each of the developers. As such, I felt it important to take some initial interview time to review the entire model with each of the developers. At the conclusion of the presentation of my model, I asked for any clarifying questions from the developers prior to launching into the interview questions.

**Interview questions**

The seven research questions guided the research and grounded the interview questions. Interview questions were designed to adhere to the structure of the disjuncture-response dialectic given in Figure. Under the disjuncture-response dialectic, Indigenous culturally specific assessment developers are political actors and their assessment development practices, offered in response to measurement disjuncture, serve as political acts of intellectual amplification and Indigenous sovereignty that challenge intellectual elimination, and, ultimately, stand against forces of settler colonialism. As such, six themes guided the presentation of the interview questions: settler colonialism, intellectual elimination, measurement disjuncture, culturally specific assessments, intellectual amplification, and Indigenous sovereignty. A final theme focused on the Indigenous assessment developers themselves and how their work affects them. The roster of interview questions is provided in Table 3 below.
Table 3
Research and Interview Themes and Questions

<table>
<thead>
<tr>
<th>Interview Theme</th>
<th>Interview Questions</th>
</tr>
</thead>
</table>
| 1. Settler colonialism       | a) How does settler colonialism appear in your work as an assessment developer?  
                           | b) How do you address settler colonialism through your work as an assessment developer?                                                                |
| 2. Intellectual elimination   | a) How does intellectual elimination appear in your work as an assessment developer?                                                                 |
                           | b) How do you address intellectual elimination through your work as an assessment developer?                                                              |
| 3. Measurement disjuncture    | a) How would you name this problem I refer to as measurement disjuncture?  
                           | b) What is your description of it?  
                           | c) How is measurement disjuncture related to settler colonialism?  
                           | d) How is measurement disjuncture related to intellectual elimination?  
                           | e) How does measurement disjuncture appear in your work as an assessment developer?                                                                        |
| 4. Culturally specific assessment | a) For which worldview is this assessment constructed?  
                           | b) What is the focus of this assessment?  
                           | c) Once you encountered the measurement disjuncture, what did you do about it?  
                           | d) How would you describe the type of assessment you created?  
                           | e) How well does your assessment fit within the intended worldview?  
                           | f) How does your assessment counter measurement disjuncture?  
                           | g) How does your assessment counter intellectual elimination?  
                           | h) How does your assessment counter settler colonialism?                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 5. Intellectual amplification | a) How would you name this concept I refer to as intellectual amplification?  
                           | b) What is your description of it?  
                           | c) How does your assessment development work contribute to intellectual amplification?                                                                         |
                           | d) How important is it to contribute to intellectual amplification?                                                                                                                                                                                                                                                                     |
| 6. Indigenous sovereignty     | a) How would you name this concept I refer to as Indigenous sovereignty?  
                           | b) What is your description of it?  
                           | c) How does your assessment development work contribute to Indigenous sovereignty?                                                                              |
                           | d) How important is it for you to contribute to Indigenous sovereignty?                                                                                                                                                                                                                                                                  |
| 7. Indigenous assessment developers | a) How are you feeling about this assessment development project?  
                           | b) Have you accomplished your assessment development goals?  
                           | c) How has this work supported your growth as an assessment developer?                                                                                                                                                                                                                           |
Data Analysis

The Zoom conferencing software provided video recordings in MP4 format and audio recordings in M4A format. The transcripts of the interviews were automatically transcribed using the audio recording and was provided as a VTT formatted text file. Each VTT text file was then converted to a Microsoft Word file.

The content of the Zoom transcripts was timestamped according to pauses in the speech of the interview participants. These pauses did not necessarily coincide with pauses in the conversation. In fact, within any given statement, there were multiple pauses and, thus, multiple transcription timestamps embedded in the text file. For this reason, it was necessary to disassemble the transcripts by removing the artificial breaks and timestamps within the transcript. The transcribed content was reassembled while listening to the audio recordings. Hearing the recordings while reassembling the transcript data helped to maintain the integrity of the conversations. This process was completed for each interview. The result was a paragraph format representation of the interviews. The interview data for each participant were compiled then compiled into one single document. The compilation of all the interview data within one document became the focus on the data analysis.

The transcription of English-based portions of the interviews produced transcription errors that were corrected in the Microsoft Word file. These corrections were not made to the original transcripts. The process of cleaning up transcription error was complicated by the use of multiple languages by the research participants. Sprinkled throughout the interviews were terms or phrases in multiple languages. In most cases, the participants provided an English translation of the term which helped in securing the
proper spelling of the non-English term or phrase. In the case of two of the participants, I had some familiarity with some of the terms or phrases. For help with other terms or phrases, I consulted translation websites such as Wehewehe Wikiwike (https://hilo.hawaii.edu/wehe/) sponsored by the University of Hawai‘i at Hilo and Ulukau, the Hawaiian Electronic Library (https://ulukau.org/index.php) sponsored by the Hale Kuamo‘o Hawaiian Language Center of the Ka Haka ʻUla O Keʻelikōlani College of Hawaiian Language at the University of Hawaiʻi at Hilo.

The interview questions were structured around seven themes of the disjuncture-response dialectic and, thus, the interview data were regrouped into these seven themes. Once in this format, all statements by the researcher and the participants were broken into single statements for examination. This process presented approximately 1,500 themed statements that were reviewed and categorized. After much contemplation, I decided against splitting the data into categories and opted, instead, to attempt to preserve the full content of the statements provided to me by the participants. My analytical charge, thus, became one of maintaining the integrity of the voices of the participants as we attempted to explore the validity of the disjuncture-response dialectic as a construct.

Within the interviews, the participants responded to the interview questions but often spoke to me colloquially. This colloquial form of conversation meant that, rather than having to explain the backstory to elements of our conversation, they would skip over those elements to continue with an uninterrupted story, for example. I realized that in order to fully represent their voices, I would need to provide any backstory and provided a running commentary to what the participants were discussing. This process entailed the interjection of my guiding comments in support of the participants’
explanations and stories. The resultant paragraphs contain a back-and-forth flow between the participant’s words and my commentary on their words to help guide the reader through aspects of the participants’ words that might contain a backstory. I provided the backstory based on my engagement and interaction with the participants over the length of time that I have known them. Because of this approach to presenting the interview findings, member checking with the participants became extremely important.

My relationship with each of the developers was critical in getting to that form of understanding, respect, and presentation of their words. In the case of Dr. Kanaloa, at the time of my interview, I had known her for almost five years, worked at her school site on the development of her instrument with her, and co-presented on our shared work at national assessment conferences. For the other two developers, we had spent nearly two years in routine conversation about our assessment work detailing our aspirations for the work. We had developed funding proposals to support our research and had a growing understanding how our shared work fit within our academic and personal journeys. These interviews were an extension of these private and intimate conversations about our work together and conducted as such.

**Member checking**

It is important to provide the research participants the opportunity to review the researcher’s work in summarizing the interview transcripts. This review by the research participants, “where the researchers’ interpretations of the data are shared with the participants, and the participants have the opportunity to discuss and clarify the interpretation, and contribute new or additional perspectives on the issue under study” (Baxter & Jack, 2008), is also known as member checking. During member checking,
research participants can focus on key aspects of the researcher’s interview transcript summaries such as “whether the description is complete and realistic, if the themes are accurate to include, and if the interpretations are fair and representative” (Creswell, 2005, p. 252). Participants in this study were provided with a preliminary draft of the findings, summary of findings, and research conclusions. Commentary from the participants was included in the final version of the study findings, summary of findings, and research conclusions.

**Study Calendar**

This study took place over a 6-month period commencing in December 2020. Application for Internal Review Board (IRB) approval of the study was submitted on December 11, 2020 and was approved by the IRB Chair under an expedited review on December 14, 2020. Scheduling of participant interviews took place through January 15, 2021 and interviews were conducted over a 2-week period beginning on January 20, 2021. The Zoom meeting platform presented video, audio, and transcripts within one day of the interviews. Analysis of the interview transcriptions began upon receipt of the interview transcriptions from the transcription service provider. A summary of all comparative analyses was completed on April 12, 2021. Preparation of the study conclusions began on April 19, 2021. A summary of these key study dates is provided in Table 4 below.
Table 4

Summary of Study Calendar

<table>
<thead>
<tr>
<th>Date</th>
<th>Study stage</th>
<th>Stage activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 03, 2020</td>
<td>Pre-study</td>
<td>Dissertation proposal defense</td>
</tr>
<tr>
<td>Dec 04, 2020</td>
<td>Pre-study</td>
<td>IRB application submitted</td>
</tr>
<tr>
<td>Jan 08, 2021</td>
<td>Pre-study</td>
<td>IRB approval expected</td>
</tr>
<tr>
<td>Jan 08, 2021</td>
<td>Scheduling</td>
<td>Begin scheduling of participant interviews</td>
</tr>
<tr>
<td>Jan 15, 2021</td>
<td>Scheduling</td>
<td>End scheduling of participant interviews</td>
</tr>
<tr>
<td>Jan 20, 2021</td>
<td>Interviews</td>
<td>Participant 1 interview and recordings</td>
</tr>
<tr>
<td>Jan 20, 2021</td>
<td>Transcription</td>
<td>Participant 1 recordings and transcript</td>
</tr>
<tr>
<td>Jan 29, 2021</td>
<td>Interviews</td>
<td>Participant 2 interview and recordings</td>
</tr>
<tr>
<td>Jan 29, 2021</td>
<td>Transcription</td>
<td>Participant 2 recordings and transcript</td>
</tr>
<tr>
<td>Feb 02, 2021</td>
<td>Interviews</td>
<td>Participant 3 interview and recordings</td>
</tr>
<tr>
<td>Feb 02, 2021</td>
<td>Transcription</td>
<td>Participant 3 recordings and transcript</td>
</tr>
<tr>
<td>Feb 08, 2021</td>
<td>Comparative Analysis</td>
<td>Analysis of the three axes</td>
</tr>
<tr>
<td>Apr 19, 2021</td>
<td>Summary of Analyses</td>
<td>Summary of all comparative analyses</td>
</tr>
</tbody>
</table>
CHAPTER IV

RESULTS

The purpose of this critical comparative case study was to explore, through the experiences of Indigenous assessment developers, what measurement disjuncture is, why it is a problem, and what can be done about it. Through three comparative case examples, I investigated how Indigenous assessment developers use culturally specific assessments as responses to measurement disjuncture, as forms of intellectual amplification that challenge intellectual elimination, and as political acts of Indigenous sovereignty that stand against forces of settler colonialism.

The comparative case study approach is an analytical method that relies on a research lens that accounts for how the phenomenon varies across groups or sites. To apply the method, the researcher must situate the cases “within a wider landscape of relevant issues, factors, or trends” (Bartlett & Vavrus, 2017). The critical comparative case study approach presented here adds the critical perspective to the comparative case study approach through the introduction of oppositional structures at multiple levels of the disjuncture-response dialectic. The comparative case study is structured according to three axes of dimension described by Bartlett and Vavrus (2017b) as the horizontal axis, the transversal axis, and the vertical axis.

This chapter provides the results and analysis of the study interviews. The first set of the study interview results are presented within three sections addressing each of the axes of the critical comparative case study approach: the horizontal, transversal and vertical axes. Interview data along the vertical axes were comprised of the participants’
perspectives on the elements of the disjuncture-response dialectic: settler colonialism, intellectual elimination, measurement disjuncture, culturally specific assessment, intellectual amplification, Indigenous sovereignty. Following these results is a section that addresses the self-reflections of the participants as they function within the spaces of the disjuncture-response dialectic. The analysis of the study interviews follows the presentation of the results of the interviews.

**Results Along the Horizontal Axis**

Along the horizontal axis reside what are generally referred to in other forms of case studies as the cases. The cases in this study have a homologous (Bartlett & Vavrus, 2017) or corresponding position or structure and represent assessment development projects led by Indigenous assessment developers. Each case, however, has progressed according to the experiences and needs of the developers and their respective communities. Under the disjuncture-response dialectic, the horizontal axis serves to locate the Indigenous assessment developers who are responding to a common problem of measurement disjuncture.

Dr. Kia‘i Kanaloa is the former curriculum coordinator and director for assessment projects and activities at a Hawaiian-language immersion charter school located in Hawai‘i. She is a staunch advocate of Hawaiian sovereignty and independent nationhood. When we started working together, Dr. Kanaloa had obtained both undergraduate and master’s degrees in Marine Science and would ultimately complete her doctoral dissertation in Education in 2020. At the time of my interview with her, we had known each other for nearly five years. Prior to our first meeting in 2016, Dr. Kanaloa designed a system of grade-level culturally specific assessments for use within a
K-12 Native Hawaiian language immersion environment. In addition, she already had one year of experience administering the assessments she developed. In organizing the assessment system that she created, Dr. Kanaloa integrated her role as a practitioner of various forms of Hawaiian cultural knowledge into her assessment development work. All of her assessments focused on three domains of Hawaiian knowledge. During our first week of meetings held in June 2016, I asked her about the source of the three domains and she replied that they were established as concepts hundreds of years ago by precontact Hawaiians. The domains appeared in written form in the 1880s. They were documented as a result of the push for Hawaiian literacy of that era to document and preserve the ancient language and culture of Hawaiians.

Dr. Kanaloa indicated that Hawaiians were one of the first cultural groups to experience success at language revitalization. Behind this success was a push for Hawaiian sovereignty that arose during the 1980s. As a result, Dr. Kanaloa functioned within a post-Sovereignty Movement Hawai‘i. A foundation was set by activists and scholars who set the course for the inclusion of Hawaiian sovereignty and self-determination within her assessment development work. At the Hawaiian language immersion charter school where she taught, she had a full-time position as their Native Hawaiian curriculum, instruction and assessment specialist. This provided her with the time and resources to conduct her assessment development work.

Dr. Kanaloa had a comprehensive set of experiences providing her a robust perspective on developing culturally specific assessments. Dr. Kanaloa designed, developed, and implemented her assessments. In addition, she analyzed her assessment data and shared the results with the teachers at her school. In June 2018, she left for
another position with another Hawaiian educational organization. Between her time working on the assessments and my interview with her, about 30 months had passed. The passage of time allowed for reflection on the development of the assessments and the application of the knowledge she gained through the assessment development process to a new environment. All of these factors gave Dr. Kanaloa a greater perspective on the development of her assessment and allowed her to provide more insight into the work she completed, its potential for use in other environments, and a fuller understanding of what she was able to accomplish.

Dr. García is a licensed clinical psychologist and Assistant Professor in her institution’s Counseling Psychology Department. She serves as the Research Director for a local nonprofit organization, and we met through a mutual acquaintance who felt there was potential for collaboration. After an introductory phone conversation in November 2019, she invited me to sit in on a discussion her nonprofit colleagues were having on the adoption of a program of trauma-informed care they were considering. A trauma assessment instrument was one of the components under discussion. She was searching for an alternate perspective on the conduct of trauma assessment within Latinx immigrant communities. Assessment is part of her training and she had previous experience both developing and administering instruments as part of her work as a clinical psychologist. She was familiar with instrument development conducted from strictly a Western perspective and indicated that the trauma instrument promoted by her organization was a checklist format and misaligned to the needs of Latinx immigrants. She also expressed how that particular format left her feeling empty and directionless when she took the online version of that assessment. At the time of my interview with her, we had spent 15
months together reviewing her assessment development plans and working toward the development of her assessment construct.

After the initial meeting, she and I sat together in the organization’s conference room to brainstorm ideas about the assessment of trauma and the ways in which Latinx people experience, perceive, and respond to it. This led to additional meetings and conversations that revolved around an existing trauma assessment instrument and how we could transition away from perspective on trauma it encapsulated. From there, our conversations began to focus on the formation of a construct to represent more fully the trauma experienced by Latinx immigrants. Eventually, we shifted our attention to the gathering of insight from Latinx immigrants and Dr. García conducted interviews to help frame the assessment construct.

Many ideas and concepts from Indigenous Mexico and Central America remain present within Latinx people today. In addition, many immigrants from these spaces are Indigenous. While there are many Latinx people who do not acknowledge an Indigenous background, I felt that the representation of both Indigenous people and culture within the target audience for the assessment more than justified the inclusion of Dr. García within this research study. This decision ended up being significant because, while I am not a trauma scholar, I am familiar with many of the cultural experiences of Latinx immigrants through my own engagement with educational programs and services that serve migrant Latinx communities throughout California as well as my own familial experiences with the ailments we were considering for her trauma instrument. These included the concepts of “susto” and “miedo” that are Spanish terms that represent concepts derived from Indigenous ways of perceiving ailments. Through my understanding of these concepts, I
was able to participate much deeper in the conversation about construct development than in the construct development conversations with the other two developers. I had a much richer understanding of how she wanted to reframe her trauma instrument based on my own exposure to these concepts.

Dr. García is Mexican and bilingual and our assessment development conversations have been primarily in English. At times she does use Spanish for emphasis or to explain a concept and the domains of her assessment construct are named in Spanish. In some of our assessment development meetings, Dr. García expressed concern about whether her research on the development of this culturally specific trauma instrument would impede her path toward tenure. This was based on the potential negative reaction from her field to her work on this assessment that might affect her chances at research publications. This concern eventually dissipated.

Dr. García and I reside within a similar geographic region and are within close driving distance to each other. In the pre-COVID-19 pandemic times, in addition to routine phone and web conference calls, we were close enough to visit over coffee from time to time to discuss our assessment development work. Over time, our assessment development conversations began to focus on the formation of a construct to more fully represent the trauma experienced by Latinx immigrants. I explained to Dr. García that there are two broad perspectives on construct development. One is theoretically grounded and the other is experientially grounded. When an existing construct exists either within the research literature or, in the case of Indigenous assessment development, the knowledge and wisdom carried by elders, then a framework can be shaped from that construct. This was the case of the assessment of Dr. Kanaloa. In this instance, however,
Dr. García sought to base her assessment on the real-life experiences of Latinx immigrants. As such, we shifted our attention to the gathering of insight from Latinx immigrants regarding various forms of trauma they experienced. This was our plan going into 2020. The COVID-19 pandemic dramatically changed our plans.

About a month into the shelter-in-place orders issued by health departments across the country, I reached out to Dr. García and let her know that nearly all of my projects were suspended. This meant that I now had the time to think deeply with her about the development of her assessment construct. We agreed to check in with each other routinely throughout the summer of 2020. Throughout the COVID-19 pandemic year of 2020, we met routinely through phone calls and web conferences to establish the construct for her assessment. In 2020 and into 2021, Dr. García conducted interviews to help frame the assessment construct. Our construct development work together was conducted at a conceptual level and the interview data she gathered help to frame the concepts which would become the domains of her instrument.

Dr. Montañez is a faculty member in Social Work at a tribal college in Montana. She is a Native American of both Mescalero Apache and Mi’kmaq heritage and earned her Ph.D. in Expressive Therapies in 2018. At the time of my interview with her, we had spent 15 months together reviewing her construct and considering ways to move from construct to item development.

Dr. Montañez and I met at the American Indian Research Association (AIRA) conference held in October 2019 in Polson, Montana. She and I were both presenters at this conference. She presented on her doctoral research on arts-based therapy with Native Americans and I presented on my concepts of measurement disjuncture and culturally
specific assessment. We met during a conference break to discuss her research and she indicated that she was looking to develop an assessment tool to support the assessment construct she developed for her doctoral dissertation. Our initial conversation took place on a brisk walk in the hills surrounding the location of the conference meeting facility. This was a location with which she had great familiarity and provided a space for her to relay the development process and aspirations she had for her assessment. In the crisp mountain air, Dr. Kanaloa explained that her assessment construct was developed through a pan-Native American perspective. The participants in her doctoral study represented five federally recognized Native American tribes from the Indian reservation in Montana near the tribal community college where she was teaching. Her arts-based research study explored how Native Americans understand the concept of a sense of place through an art making and storytelling experience that reflected their traditional cultural knowledge.

During this initial meeting, it was clear that Dr. García had already developed a multidimensional construct. She indicated that she was providing workshops that focused on engaging with participants about aspects of her construct. I indicated to her that she might be able to compile the insights provided to her by her workshop participants into assessment items. My work with Dr. Montañez has been affected by numerous factors including both geographic distance and travel restrictions due to the COVID-19 pandemic. Dr. Montañez resides in Montana and this has limited our inperson interactions. In fact, we have not met face-to-face since that initial meeting. Nevertheless, we have held infrequent conversations via phone call and web conferences to discuss the development of her assessment. She has volunteered her time toward the development of
her assessment and so our time together has been limited by her availability during the
conduct of her full-time teaching. Her prior experience in developing assessments has
been through her work on the development of assessment rubrics for use within her
classrooms and workshop presentations.

**Results Along the Transversal Axis**

The transversal axis connects the horizontal elements to one another through a
temporal component (Bartlett & Vavrus, 2017). The transversal axis connects the cases
together and to the vertical scale. It allows for studying across and through cases. It also
allows for the exploration of how the phenomenon has changed over time. Bartlett and
Vavrus (2017) identified four key premises that inform the transversal axis: Social
phenomenon, history, time and space, and the study of history. This perspective on
premises that inform the transversal axis opened up a space for the discussion of settler
colonialism. In my model, however, I shifted this framing to the vertical axis and
addressed settler colonialism, intellectual elimination, intellectual amplification, and
Indigenous sovereignty through a modified vertical axis. In this analysis I have retained
the temporal aspect of the transversal axis.

While the selection of the study cases was limited to a convenience sample, they
varied along the transversal axis in two ways. First, much more time had passed since I
had met Dr. Kanaloa than the other two developers. Dr. Kanaloa had time to design,
develop, and implement her assessment. I met Dr. Kanaloa at the Culturally Responsive
Evaluation and Assessment (CREA) conference held in April of 2016 in Chicago. There
we discussed her work on the development of her assessment and I informed her of my
approach to assessment development. I expressed to her then that she was moving in a
positive direction with her work and that I could tell that she was adhering to some important assessment development principles. We attended each other’s conference presentations and afterwards, agreed to work together. In June of 2016, I visited Dr. Kanaloa at her school site in Hawai‘i for a series of meetings about her assessment. Our collaboration would last until June 2018.

At the time of my interview with Dr. Kanaloa, her assessment project had been completed and the passage of time allowed for the completion of the assessment development, reflection on the development of the assessment, and application of the knowledge she gained through the assessment development process to a new environment. In her interview, Dr. Kanaloa indicated that she had moved on to a new assignment and was able to apply the knowledge obtained from her previous assessment development work to her next work assignment. She expressed that her prior assessment development work had given her the confidence to take on this new work. According to Dr. Kanaloa, our shared work gave her a greater perspective on the development of her assessment and allowed her to provide more insight into the work she completed, its potential for use in other environments, and a fuller understanding of what she was able to accomplish.

I met both Dr. García and Dr. Montañez in October 2019. Dr. García and I met through a mutual friend who connected us together. Throughout the COVID-19 pandemic year of 2020, Dr. García and I met routinely through phone calls and web conferences to establish the construct for her assessment. At the time of my interview with her, we had spent 15 months together crafting and refining an assessment construct for her assessment. Our construct development work together was conducted at a conceptual
level and the interview data she gathered help to frame the concepts which would become the domains of her instrument. This level of intense focus on construct development may be what Dr. García referred to when she indicated that our work together has caused the “slowing down” of her usual assessment development process.

Dr. Montañez and I met at the American Indian Research Association (AIRA) conference held in October 2019 in Polson, Montana. She and I were both presenters at this conference and we met during a break to discuss her plans to develop an assessment. Her assessment would be based on the construct she developed for her dissertation she completed in November 2018. At the time of my interview with her, we had spent 15 months together reviewing her construct and considering ways to move from construct to item development.

A second temporal factor revolved around the amount of collaborative time spent on each of the three assessment projects. At the time of the interviews, I had spent much more development time with both Dr. Kanaloa and Dr. García on the development of their respective assessments. For Dr. García and Dr. Montañez, our work was voluntary and was conducted in addition to our other projects. As a result, we spent less time than we would have on a more full-time or part-time project.

Results Along the Vertical Axes

In this study, the vertical axes represent the proximity of Indigenous assessment developers to the elements of the disjuncture-response dialectic that affect their work. As such, two sets of vertical axes are employed to understand the assessment development environment of the research participants. The addition of the second oppositional vertical axis distinguishes the critical comparative case study from the comparative case study.
The bulk of the attention paid to the study results is spent on the vertical axes that frame the disjuncture-response dialectic. These developers have expressed that settler colonialism, slavery, and racism influence the work they do as assessment developers. Similarly, dialectical concepts of intellectual amplification, liberation, freedom, and sovereignty influence their development processes.

Under the disjuncture-response dialectic presented in Figure 1 (p. 4), Indigenous culturally specific assessment developers are political actors and their culturally specific assessment development practices, offered in response to measurement disjuncture serve as political acts of intellectual amplification and Indigenous sovereignty that challenge intellectual elimination, and, ultimately, stand against forces of settler colonialism. At the center of the dialectic is the developer responding to the disjunctures. To help vet this framework, I interviewed the people with whom I have been developing culturally specific assessments. I wanted to hear directly from Indigenous assessment developers how they experience being in and how they navigate these seven spaces in their assessment development work. With these elements of the disjuncture-response dialectic in mind, I proceeded to conduct my participant interviews.

**Participants on Settler Colonialism**

There are two key aspects of Wolfe’s (2006) definition of settler colonialism. First, settler colonialism strives for the dissolution of Native societies, and second, it seeks the construction of a new colonial society on top of the expropriated land base. He referred to this framing of the objective of settler colonialism as the logic of elimination (Wolfe, 2006) and there is a one-two punch to his framing: eliminate and replace. Settler colonialism is situated at the macro level of analysis and, as such, it is often ignored,
dismissed as irrelevant, or not even considered a component of the assessment development process. When describing how settler colonialism fits within the assessment development process, some might consider colonialism to be a relic of the distant past with no role within the conduct of research today. This perspective on settler colonialism makes it very easy to brush aside the concerns that my colleagues and I encountered in our assessment development work.

After introducing themselves and the assessment projects they were representing, each of the participants was asked to describe the role of settler colonialism within their work and how they address it in their development processes. Settler colonialism was described for the participants as a structure that “strives for the dissolution of native societies and the construction of a new colonial society on the expropriated land base” (Wolfe, 2006, pp. 387-388). Within our discussion on the effect of settler colonialism on their work, a prevailing theme of hierarchical structures emerged. Such structures, and in particular, the structural relationships grounded in dynamics of power were set in motion under settler colonialism and remain present within the systems and environments in which the participants function today.

*How settler colonialism appears in assessment development*

At the time of her culturally specific assessment development work, Dr. Kanaloa worked at a publicly funded Hawaiian immersion charter school that incorporated a Native Hawaiian curriculum she developed for the school. In speaking on the power imbalance exposed by the reliance of many Hawaiian public schools, including her former school, on federal funding, Dr. Kanaloa stated that “if you want federal funding, you do what the Federal Government says” and noted that “the balance of power is very
much in favor of that dominant culture, which is not our Indigenous culture.” The result is a “trickle-down effect that plays into every single aspect from the governor to the deputy superintendent down to the complex area superintendents to the principals down to the teacher and then inevitably down to the student who has no power.” In addition to the structural imbalances inherent within systems, Dr. Kanaloa expressed an intentional purpose for the imbalance to remain intact: “Even if we were to try and make some moves to tip the scales, a little bit, oh my God, don’t do that, because then we run the risk of making that power dynamic vulnerable.” The result, according to Dr. Kanaloa, would be a group of students “armed with such great intellect, they’re grounded in their culture. Let’s not do that, because that will be bad for the colonizer.”

To describe how this structural imbalance affects assessment within Hawaiian education systems, Dr. Kanaloa described the challenge of finding technical assistance for her assessment development project. Dr. Kanaloa constructed a school-wide system of assessment grounded in Hawaiian domains of knowledge and sought to have it serve as the state-sanctioned assessment for her charter school. After being told by the Hawaiian Charter School Administrative Office that her assessment was inappropriate for such use because it was neither “research-based” nor “psychometrically validated.” Dr. Kanaloa sought psychometric assistance from the Hawaiian Charter School Administrative Office, “and their direction was way over to the continental US, to all of these people.” Following up on leads for psychometricians provided to her “by our own state, by our own Charter School Commission,” Dr. Kanaloa noted that “when we actually got on the phone with some of them, it was very apparent that we could not go down that road. There was no interest in understanding the context of our situation, what
our learning priorities were at all for the psychometricians that we were pointed to.”

Stressing the reasoning for the situation, Dr. Kanaloa stated, “I mean it’s always been an imported industry, the whole assessment thing.” In explaining the rationale for this situation, Dr. Kanaloa indicated, “Because they know best. The Feds think they know what they’re doing. They know what is cutting edge and we’re going to just follow with what they do. So, the system is not even set up for us to grow our own.” Here, Dr. Kanaloa identified the inherently dependent relationship between Hawaiian-focused schools and external notions of what constitutes learning as one that is designed to maintain dependence.

For Dr. García, the manner in which structures that support settler colonialism appear in her work “starts with my own understanding of what an assessment developer should look like, should work like.” Elaborating, Dr. García described “a particular image that comes to my mind, you know, and I see this, like the specific professors that kept training me, which has mostly been white men.” Dr. García compares her professors and “the way in which they interacted with, with clients, with students, with people that they were assessing,” and notes “how, this is, is very different and in opposition to the ways in which, for instance, you and I interact.” Clarifying this distinction, Dr. García indicated that our way of interacting “is, it’s not transactional, you know? It’s, it’s much more inter-personal and it’s much more, community-focused, much more relational.” Dr. García, in describing her prior work developing assessments, notes that there is great emphasis on “following the steps that have been followed by, by other counseling psychologists or other evaluators in the field of mental health, which, for the most part, don’t look like me, don’t speak like me.”
Dr. García expressed a visceral reaction to the effect of settler colonialism on her physical being noting that “I almost feel like settler colonialism is, is just, this this heavy presence, you know? This heavy presence that, it’s, it’s really sneaky. It’s, it’s oppressive.” In describing how it affects her work as a developer, she indicated that settler colonialism “tries to make its way into, into the work and it tries to take over. Not only over my own approach, my own knowledge, my… and, also, who my, who my clients are, the people that [sic] I’m evaluating.” Offering a further description of the physical reaction to the definition of settler colonialism I provided to her, Dr. García indicated “when I read that, I feel heaviness in my body, and that is the heaviness that I have felt, I think, as I’ve developed professionally and clinically in my early career.” Describing further how she feels when she articulates the words “settler colonialism,” Dr. García revealed, “I don’t see the image of my clients. Like, I don’t see their faces. Like, it’s, it’s almost like settler colonialism, try, is trying to, to disappear, eliminate who they are. Like, what they’ve been through.”

Reflecting on her prior assessment development work, Dr. García indicated that because of how she was trained earlier in her career, she started doing what she was trained to do, “which was to, to create instruments that were not adequately, accurately, capturing the experiences of the people that [sic] I actually work with. So, I was, I was using instruments created by, by, by the colonizer on the colonized.” Reflecting on her experience of developing a culturally specific assessment to assess trauma within Latinx immigrants, Dr. García stated that “now, I think I’m trying to do things, in a way, where I’m having to do a lot of unlearning and a lot of undoing and cautioned that “settler
colonialism is so sneaky that it tries to take over, so, it’s almost, like, this work is just, constant.”

To describe the role of settler colonialism in her work, Dr. Montañez chose to relay a story about the process of establishing the construct for her assessment as part of her doctoral dissertation. For her doctoral study, she conducted a series of qualitative interviews about a Native American arts-based intervention she developed and was assembling her dissertation data into a formal structure. She stated that “when I was reviewing and evaluating and… coming up with, understanding, and making sense, making meaning of the stories and the artwork, I was told by my chair, that I had to utilize an already established, in research, framework.” Dr. Montañez noted that other non-Native frameworks focused on taking apart the phenomenon she was trying to describe “and I kept saying, this is not making sense, this is not making sense to me because you can’t tear the story apart, you have to look at the whole.” After reviewing several frameworks and being given an ultimatum by her dissertation chair to select an existing framework, Dr. Montañez told him, “Well, then, I’m going to stop… it’s not making sense to me. It won’t make sense and… it’s not respectful to the… research participants that I promised a respectful way, all the way through in my research design.” The interaction became a defining moment of her doctoral journey and led her to design her own analytical approach for the development of the assessment construct. “I did come up with a framework, and I wrote it up, and I got very specific about how I was analyzing the data. I created my, my analysis process.” To validate her process, Dr. Montañez indicated that “I wrote it up very specifically and, I, I conducted the analysis over and over and over again. And, I had somebody watch me conduct the analysis and…
therefore, I have an analysis process.” Dr. Montañez expressed that as a doctoral student, “I had to really fight that way of thinking, that there’s, ‘You have to do it this way.’ But it’s not, it wasn’t an Indigenous approach... So, when you ask that question, that story comes up, to my mind.”

**How assessment developers address settler colonialism**

The research participants were asked to explain how they address settler colonialism within their own work as assessment developers. After being told by the Hawaiian Charter School Administrative Office that her Hawaiian-framed assessments were not “research-based,” Dr. Kanaloa had the initial reaction of “What do you mean, our system of knowledge is not research-based?” In response, Dr. Kanaloa began by “pushing back on just the rhetoric and making them say it, making them say and articulate, well, why? What evidence, do you have that?” but ultimately recognized that pushing back occurred within “a conversational space; we had no power whatsoever to change any of the context to that. We’ll get the answers but we cannot. We don’t have any mana (power) to do anything about it.” According to Dr. Kanaloa, a second strategy involved pointing “out the double standard nature of what they were feeding us. You know, tell me how all of these other mechanisms are research-based. What, what, are they using? Who validates them? And so forth, and so forth.” When given the response that external assessment developers validate themselves, Dr. Kanaloa responded to the Hawaiian Charter School Administrative Office by exposing the double standard for assessment developers by raising the question, “But then we cannot validate our own selves. Is that what you’re saying?”
Dr. Kanaloa indicated that the most challenging aspect of responding to these assessment power dynamics was that “we had to get better at knowing the game, knowing assessment from the colonizer lens. We know it from our Indigenous lens.” According to Dr. Kanaloa, “we had to understand that game to try and figure out how to beat them at that game. Or at least tip the scales just a little bit more in our favor.” According to Dr. Kanaloa, the result was, “almost like learning a third language. You know, we know English, we know Hawaiian and now, we gotta, we gotta speak assessment, and we have to understand it in in their context.” Kōnane is a Hawaiian game of strategy and “it’s almost like chess or checkers but, but a little bit more complicated, where you have to plan many moves ahead.” In response to this new assessment terrain in which she found herself, Dr. Kanaloa described her new work as “Okay, we’re gonna have to play kōnane, then. We got to understand how to play that game, and we have to outmaneuver.” Noting that “it was never about a single school,” her goal was to “at least, get our foot in the door, knowing that if one school could do that, then we keeping our foot there so everybody else can bring their foot.” Addressing the challenges of taking on the systems of assessment, Dr. Kanaloa stated that since her school did not have much power in the power dynamic, her approach became a grassroots approach. Expressing the frustration of the situation, Dr. Kanaloa indicated that “there was no Senator we could, we could turn to, our own Charter Commission pointed us to that same colonizer and that same model.” She realized that “if anything was going to be done,… it would have to come from us at the school level” and that “the potential benefit for the collective is there.”
When asked how she responds to settler colonialism in her assessment development work, Dr. García self-reflected that “I think I’m starting to, to develop an awareness, for, for that that oppressive voice that, that sneaks in, that tells me that, that things have to be done the dominant way.” Dr. García indicated that this dominant way is “the way that the things have been done in the past by, by people in the field, again, that, that don’t look like me, that don’t speak like me.” In practicing this self-awareness, Dr. García noted that “the way that I try to do that is, first, I try to listen to it, I try to pay attention to it.”

Methodologically, Dr. García indicated that she has a new perspective on assessment development and expressed how she is learning, “in order to take to take on settler colonialism, because it is such a, a dominant force, that, I, it’s almost like I cannot take it on alone. Like, I have to do it in collaboration with others.” She noted that this is a challenge for her because “I used to work independently and almost, like, alone, you know? And it was just about making sure that that I could, you know, publish and get things out… and now I’m realizing that I cannot do this alone.” Expanding on this idea, Dr. García expressed a need to collaborate with others and through open dialogue, “talk to each other,… listen to that that sneaky voice that settler colonialism has, that oppressive dominant voice, tease that apart,… deconstruct it and figure out how could we move beyond that, and sit in that tension.” Dr. García noted that sitting in the tension presented by settler colonialism into the assessment development process would require her to ask, “How could we listen to it, while understanding, that, that does not serve us, and that does not serve, truly, the people that we’re doing this for, which is our community.” According to Dr. García, this involves “creating, I think, new frameworks,
like you’re doing right now, new models, that, that resonate and that that help us understand that there’s a reason why things have been designed a particular way.” Dr. García expressed concern that there is a reason why existing trauma instruments “have been designed in a particular way, and they have been designed with a particular population in mind” by noting that “it’s almost like that has been intentional. And, and it excludes the communities that we are a part of.” Dr. García concluded by offering how she thinks about and tries to challenge settler colonialism is “by situating myself as a part of the community that I want to work with, and I want to serve, that I want to be engaged with, but in a new space.”

**Participants on Intellectual Elimination**

In the Americas, the logic of elimination (Wolfe, 2006) did not result in the complete and total annihilation of all Indigenous people. Those Indigenous people who remained after European contact had to be integrated into the new colonial society. One way Indigenous people were integrated into the new European-based society was and is through *intellectual* elimination that strives for the dissolution of Native societies’ knowledge and the construction of a new colonial knowledge in the expropriated minds. In Figure 1 (p. 4), intellectual elimination occupies the meso level space between the macro level of settler colonialism and the micro level of measurement disjuncture. It is this intellectual elimination that I believe has been missing in the conversation about assessment development. As demonstrated in Chapter II, intellectual elimination is being conducted by assessment developers and scholars today. As such, it is extremely important for us to address intellectual elimination by regarding it as an aspect of actual
elimination. To do so, I felt it important to hear from the participants how intellectual elimination appears in their work and how they deal with it.

**Intellectual elimination within development**

I began my conversation about intellectual elimination with Dr. Kanaloa by asking her how it appears in her assessment work. Dr. Kanaloa spoke immediately and directly about “one of the big factors that is even beyond the school … level” that she described as “the intentional commercialization of Hawaiian culture, again, by the colonizer the settlers of this space.” Through this commercialization, according to Dr. Kanaloa, “they set up Hawaiian culture to be perceived or to have only value in the space of entertainment.” Through this practice, Dr. Kanaloa stated that “there is no value to the culture beyond that, beyond the hula dancers, with the grass skirts and well look at those artifacts that they did way back then.” For example, according to Dr. Kanaloa, presentations of Hawaiian culture might be accompanied by statements such as “Let’s sprinkle a little of Hawaiian culture at the blessing of an office building. Or, you know, the untying of the maile lei.” She continued with her explanation, “Let’s have a person in garb. Let’s have the entertainment hula dancers, and all of these other people come and perform.” According to Dr. Kanaloa, these statements are a reflection of “the intersection with settler colonialism.” She considers the entire framing of Hawaiian culture through this entertainment lens to be “strategic” and is promoted “so much that it becomes the perception, that, that is what, that’s the extent to which Hawaiian culture exists.” The problem with this framing, according to Dr. Kanaloa is that “It is not in the intellect and even in our educational systems and schools that try to highlight or try to try to utilize Hawaiian intellect.”
It was at this point in the interview where Dr. Kanaloa moved toward an
important point that she would raise throughout the interview. Dr. Kanaloa described how
a distinction is drawn between Hawaiian knowledge and culture and that this distinction
is deliberate. She, however, insists that Hawaiian knowledge is part of the Hawaiian
culture and is being pushed out of the realm of knowledge that Hawaiians should be
learning. She raised an important question to further this point: “Where are the money
shots that show that true intellect, that true thinking, that thought, that analysis, that
synthesis?” Dr. Kanaloa identified as an example, the “aesthetics of that practice of
mahīʻai” or traditional Hawaiian farmers and noted that “the money shot is not that of
the, that mahīʻai, that farmer, sitting there and studying weather patterns.” Dr. Kanaloa
further stressed the point noting that “Studying how the kalo reacts to different water
flows. That’s not a money shot. Nobody wants to see that. That’s not sexy.”

Dr. Kanaloa noted that “the elimination of the intellectual aspect of culture… is
actually what drives everything else” and described how “hula is a personification of
what is happening in the environment, it was the committed and careful observation of
environment that led to the composition of those chants that talk about everything
happening in the Hawaiian universe.” Unfortunately, according to Dr. Kanaloa, in
Hawaiian schools, “we want to focus just on May Day, where every grade level can do a
little dance something. You have a fake court with somebody from one color from each
island.” Dr. Kanaloa stated that the result is “Again, you’re commercializing and you’re
diminishing the actual substance of our culture. But that’s what gets parents to the
school.” This commercialization, stated Dr. Kanaloa, “has infiltrated our collective
understanding, our collective acceptance of what Hawaiian culture is. Meaning that it’s
just the aesthetics, it’s absent of intellect.” Dr. Kanaloa indicated that as a result, “if that is the predominant perception that is being promoted, it makes it so hard to then try and validate the actual intellectual excellence of our culture, when it’s being placed side by side with that.” This separation of intellect from culture, continued Dr. Kanaloa, is part of a “bigger picture, the bigger scheme of things” that has infiltrated “the space of public education, because again, we’re operating in that bigger bubble of what Hawaiian culture is supposed to be: stay in your lane of entertaining people, don’t enter our lane of intellect.” This framing of culture that separates intellect, Dr. Kanaloa concluded, is present throughout Hawai‘i and makes the entire situation “a frustrating place to be.”

Referring to how intellectual elimination shows up in her assessment development work, Dr. García, described how she feels that as an Assistant Professor, she “kind of has to, go through, jump through a few hoops, in order to make sure that… the work that I’m doing is valued, and how it matters, in particular. Like, it’s, it’s making sure that I get, get published.” As a result, Dr. García began “to pay attention of whose work is given visibility,… whose assessments are given visibility, whose assessments are being used, whose ideas, theories, instruments, are being published and distributed.” Early in her career, Dr. García realized that “I don’t see many people, again, who, who come from my same cultural background and who have the cultural background of the communities that, that I work with, the Latinx community, in mind.” This lack of representation, acknowledgement, and recognition represents a problem, according to Dr. Kanaloa, because “if we are not given, given a space to put, our, our understandings, or theories, or knowledge, or values out there, then, where does that go?” In prior assessment development projects, described by Dr. García as “where I feel like I need to abide and
comply with that cookie-cutter approach, that dominant way of being, that, that the field of psychology, like, tells me I need to make sure that I, you know, that I fall under those guidelines, and that if I don’t, then I’m not going to be, you know considered.” What happens next, according to Dr. García is that “sometimes what you end up doing is, again, you end up becoming a part of that oppressive system.” Once that line is crossed, Dr. García noted that “you end up developing instruments that you already know, are not going to fully assess what you’re trying to assess.” Dr. García suggested that intellectual elimination appears through “the colonizer telling you that how you think instruments need to be developed, that the construct that you end up developing, that, the instrument that you end up developing is not worthy.” She added, “Or that it’s not adequate, even though you know, based on your conversations with, with the people that you’re working with, that,… in fact, it does speak to their, to their experiences.”

Dr. García noted that our joint work “makes me feel hopeful that models like yours, like, give me a language, like a visual, to understand what is happening, you know?” She indicated that receiving a feedback letter from a peer-reviewed journal reviewer “who is evaluating your work based on their own understandings of, of what that work should look like – it’s really easy to internalize that.” The result of such internalization and self-doubt, according to Dr. García is “colonial mentality… you end up almost like again becoming the oppressor by behaving like the oppressor” in the development of assessments meant to serve people from marginalized groups.

My conversation with Dr. García turned to the effects of intellectual elimination on the development of assessment instruments and, ultimately, the clients she serves. She responded, “there is so much, then, that can go wrong because of intellectual
elimination.” Expanding, Dr. García noted that “if the instrument that I’m developing is not… not deemed acceptable or adequate, and I end up using something different, then, one, their, their knowledge, their values and their experiences are not being documented or not being, assessed.” Dr. García provided a glimpse into the intake assessment process in her field “to at least have a little bit of history, about the client, and who the client is.” According to Dr. García, “if we cannot shed light on that, through, through assessment, through documentation,” this could lead to situations where “we end up basing our treatment, a diagnosis, you know, psychological care, based on instruments that are not necessarily assessing what we want to assess, then so much could wrong.” Expanding, Dr. García indicated, “And so much, could, you know, like, that it could lead to some serious, like, some problematic concerns. Like, you could end up medicating someone based on the wrong diagnosis.” Dr. García paused briefly to reflect before adding, “I mean, we’re focusing on the individual, but if you think about all of the individuals that you’re assessing, you could impact an entire community, by misdiagnosing and providing inadequate psychological care.”

I spent much time developing and refining my theoretical framework for this study. As a result, I was interested in exploring the story that Dr. Montañez told me about her interaction with her thesis advisor regarding the theoretical framework she was developing. I wanted to know, in particular, what she felt was at the heart of that conflict and why she felt it happened. Dr. Montañez responded that “I think that that happened because, you know I, that you, had to draw from published material. And with Native, I think there’s more now people utilizing in developing Indigenous approaches. At the time, there wasn’t.” The immediate problem, according to Dr. Montañez was lack of
academically published materials caused by a lack of Native researchers and scholars. As a result, the more readily available published literature that did not fully represent Native perspectives presented Dr. Montañez with a conflict. She expanded upon this lack of representation by indicating, “So, the conflict was, it, one, it’s not culturally relevant. It wasn’t culture, what I was, you know, moving towards, wasn’t culturally relevant, relevant. It wasn’t specific.” Dr. Montañez felt that she was being forced by her advisor to use materials that were not reflective of her research participants and “It was inappropriate. It wasn’t really respectful of the voices of the participants, which I promised to do. And I wanted to hold that promise.” Speaking on the suggestion to use materials developed in a non-Native environment for her Native research participants, Dr. Montañez noted that of the strategy itself “it’s not a catch-all, every analysis process isn’t a catch-all, even if it is arts-based.”

**Addressing intellectual elimination within development**

When asked how she addressed intellectual elimination within her assessment development process, Dr. Kanaloa explained, “it was literally researching as much as I could about assessment development and metrics and progressions and understanding it so that I could speak that language.” In addition to understanding the realm of assessment from a Western framework, she sought to remain true to her Hawaiian perspective and struggled with “figuring out how to synthesize all of that and apply our ‘ōiwi (native, Indigenous) lens to that framework, which was kind of tricky because I needed it to look, feel, and walk Hawaiian.” According to Dr. Kanaloa, maintaining this balance between two worldviews meant that “I needed to figure out a way where I could parallel it to the colonizer people so that they could recognize.” Role playing, Dr. Kanaloa continued,
“You call it, content and performance standards? We call it… [Hawaiian construct] learning expectations.” Dr. Kanaloa considered it “learning the game, doing what we do, through our lens, and through what we know education, educational rearing is about, but then being able to communicate it back to them in their own language.” Walking with feet in these two environments with separate standards for learning and performance “for me was, was, hard to do. I was, a team of one and…there’s no precedent.”

Speaking of the work of prior Native Hawaiian assessment scholars, Dr. Kanaloa noted that “they were looking at assessment in terms of applying metrics and all of that to just evaluating learning on the on a bigger scale statewide.” Dr. Kanaloa drew a distinction between these scholars and their focus on existing large-scale assessment data and what she was attempting to accomplish by noting that “they weren’t looking at it or doing the work of creating our own assessment, from our own lens, all the way through.” In particular, according to Dr. Kanaloa, the large-scale perspective of these scholars meant necessarily that, “they were coming at it from this end, and I needed to come at it from below the dirt, you know?” Her challenge was in finding support for her charge of developing Hawaiian-framed assessments that would support student learning at the grassroots-level which made it “very difficult for me to even figure that out, and this was before long before I met you that kind of helped me translate some of the things through our dialogue.” To move forward, Dr. Kanaloa applied her “[Hawaiian construct] lens that I have developed and honed over the years.” Expanding, Dr. Kanaloa noted that this lens helped her “to make sense, because [Hawaiian construct] is all about understanding the interconnections of everything, how to take something apart, understand it in its parts, and then putting it back together.” Throughout the entire assessment development
process, although she found it “difficult,” Dr. Kanaloa remained committed to “really understand it using our own intellect, the lens, the pedagogy, the framework of [Hawaiian construct], that intellect, to understand their system and then figure out how to create it in our image but mirror for them.”

When asked about how she dealt with intellectual elimination in her work, Dr. García drew a distinction between what she used to do and what she does now. In describing her former practices, Dr. García explained, “it’s really easy to just kind of think about, like, how can I tweak, how can I, like, reform work that has already been done, to be adapted to work with the particular populations that [sic] I’m assessing.” After reorienting her perspective toward the development of culturally specific assessments, Dr. García noted, “And now, I’m saying that’s just not going to work, which before, I would do, I would tweak, I would just change things up a little bit.” Expanding further about her new approach, Dr. García explained, “Now, I’m thinking you know, we need to create something entirely new, something that, you know, I, I need to move beyond, I shouldn’t even look at.”

Dr. García spoke about one of the practices that informs instrument development, the literature review and explained, “Like even when I conduct like a literature review, I’m super cautious because I don’t want that necessarily to, to shape my understanding of the clients that I’m serving.” As a result, Dr. García noted that now, “rather than, than going to the experts, experts, the whatever the dominant, the dominant actors deem to be the experts, I go to, to the people that I serve.” For the current assessment development project on which we are collaborating, Dr. García spoke directly with members of the affected community and asked “how do you, how do you understand this? How do you,
how do you experience that? What resonates with you? Like, what comes up for you?” In addition to hearing the direct voices of the members of the affected community, Dr. García indicated that it’s also important to approach “the people who are actually considered to be the experts within the community, who are often the elders.”

In describing this approach that she applied to the instrument development process we share, Dr. García noted that “we decided to conduct several interviews in a way, where… it’s almost like we were really intentional about doing things completely different.” The interviews conducted by Dr. García were “conversational, making sure that, you know, I wasn’t necessarily doing what I would normally do, which is follow this protocol and, and systematic methodical ways.” In particular, Dr. García stressed that her interview process “was much more and interpersonal, more community oriented” and was mindful of taking a “systemic approach, where we were especially listening to the people who were recognized by the community as people who, who had a good understanding, a good grip on the unique experiences of, of, Latinx immigrants.” In describing this approach, Dr. García noted, “So, yeah, I think, I just moved, being, being completely engaged with the community and, and elevating their knowledge, bringing that to the forefront.”

Because she works with the Latinx immigrants many of whom use Spanish as their primary language, I wanted to know what Dr. García thought about the practice of simply translating an existing instrument from English to Spanish. In particular, I was curious to know from her how this practice affects the documentation of the experiences of Latinx immigrants. Adding additional commentary to my question, Dr. García stated, “they’re often also using, like, translation companies.” The practice of using direct
translation of instruments adds an additional set of issues because, according to Dr. García, “language matters, and that was, you know, what, what I think you saw in the recent presentation that I, that I did, that language shapes reality.” Through the direct translation of instruments, according to Dr. García, “you’re not only changing the words but you’re actually changing the experience of the people that you’re assessing, the people that you’re working with.” Dr. García suggested that an alternative to direct translation of existing instruments is the grounding of the instrument development work in the language of the communities of people being assessed. Dr. García emphasized, “it’s really important to… speak in the language of, of the communities that you’re talking about” and, in particular, “in the language that actually has cultural and an emotional significance to the populations that you’re speaking about, and that you’re speaking for.” The result of this thinking, according to Dr. García was that “all of the interviews that I conducted were conducted in, and the client, the client’s, or the interviewee’s language.” Dr. García explained that the emphasis on the integration of the language of the community members served by her instrument did not stop there. She indicated that upon completion of her interviews, “even when we were thinking about the construct, those words were left intact. Like, we didn’t necessarily translate things, even the quotes were left in Spanish.” Dr. García further explained that the original Spanish-language quotes carried into the construct development phase where, “we could sit with that and continue to go back to the original quotes, to the original experience.” Finally, Dr. García spoke further about the reliance on the original language of the interviewees in the naming of the instrument domains, noting that “we’re not even, you know, translating
the specific domains into, into, English. We’re leaving the domains in Spanish so that it’s, it’s transparent. It, it’s, it speaks to their experiences, and it is culturally specific.”

I wanted to learn more from Dr. Montañez how she addressed intellectual elimination in her work developing the construct for her instrument. In particular, I wanted to know how she resolved the conflict with her thesis advisor regarding the construct framework she would develop for her doctoral dissertation. With this in mind, I asked her if she would describe the analysis process that she ultimately selected to establish the construct of her instrument.

She began by explaining, “So, in our way, when we, much of our ceremony is, in our way, is that we greet the morning… we start with the East, then the South, the West and the North, in prayer and in our ceremony.” Although often described as a ritual that centers the individual with respect to the four directions, this process is more like an embodiment of the worldview of many Native people. Dr. Montañez integrated this perspective into her construct development phase because “you can really see the world and see even the ceremony in, those, in different ways, even with moving or one’s body. So, that’s what I did.” To visualize her data from this perspective, Dr. Montañez explained how she integrated the physicality of viewing the world of her gathered information from the four directions: “I put all of the artwork and the stories right next to each other and I got on top of a table.” Clarifying her approach, Dr. Montañez explained, “I put things down on the floor, and I moved my entire (body), and I looked down, like a bird’s eye view, on the, on all of the, the artwork and the stories.” According to Dr. Montañez, from this vantage point, “I moved my body from the East to the South to the West and to the North and looked at it from these different perspectives. And, I, that’s
how it emerged.” The integration of a physicality grounded in her worldview within her analytical process was not provided for in any of her research methods courses and, yet, Dr. Montañez explained “that was part of the analysis process for me, to see it in this way. I also then looked… then, things just popped out, I mean it just was so clear.”

In her data gathering process, the “art directive” provided to her research participants was, “Incorporate symbol, shapes, colors, and designs that would represent your sense of place.” These elements, according to Dr. Montañez, were all “embedded onto a paper moccasin that we developed because it’s the shortcut.” Providing an example of what the participants wrote to describe their sense of place in their own words, Dr. Montañez paraphrased, “a sense of place is about my ancestry.” Dr. Montañez noted that ancestry was an important aspect of all of her research participants. In classifying the statements of her research participants, Dr. Montañez “did color code them, but that was just for me to be able to get my head around all of the words.”

Reflecting on the conflict with her advisor over the use of an existing instrument to gather her data, Dr. Montañez explained, “But if I would have chosen another assessment, I don’t think I would have seen very clearly the images and, and, the colors and the designs that the participants were referring to.” Dr. Montañez provided further insight into the unique information she was able to obtain from her arts-based data-gathering approach by describing what her research participants provided to her. According to Dr. Montañez, one of her research participants explained that “a sense of place to me is about, and place, you know, a place is this, is everything place is, who I am.” Dr. Montañez noted that her research participants utilized images of a particular flower and explained “but that flower is embedded in the oral stories and, and their
tradition, and it’s the medicine. It really is used for medicine and it’s used in ceremony.”

Explaining the significance of the expression of this flower within her data-gathering process, Dr. Montañez offered, “So, that one little image has a deeper, far-reaching meaning.” When her research participants offered her this unique, culturally specific artistic and visual information, Dr. Montañez was able to understand the significance of it. But at the conclusion of the data-gathering process, she was left with an additional question of, “How can you put that into a quantitative, I mean, you know, throw it through, put it through some analysis process. It’s just, yeah, very challenging.”

Participants on Measurement Disjuncture

In our various discussions, my colleagues and I described a mismatch between, in our work, a Western perspective on assessment and an Indigenous perspective. I would later define this mismatch as measurement disjuncture (Sul, 2019). Measurement disjuncture is situated at the micro level of analysis.

Naming it

I began my work on the development of culturally specific assessments without the nomenclature that I have today. In fact, it was not until almost 3 years into our joint work that I formally introduced the concept of measurement disjuncture to describe the problem Dr. Kanaloa and I were working together to resolve. In 2019, I formally introduced the definition at a joint talk given by myself and Dr. Kanaloa at the 2019 Culturally Responsive Evaluation and Assessment (CREA) conference held in Chicago, Illinois. There I unveiled the definition as “the misalignment that occurs when elements of an instrument-development process from one worldview are applied to the instrument-development process of another worldview” (Sul, 2019).
During this stage of the interview, I took the time to ask Dr. Kanaloa how she might explain this concept to others. She initially replied with a familiar example that she has shared in our joint presentations, “I go back to, you know the square peg round hole thing, that a lot of people can easily wrap their head around. And that can translate out across multiple contexts.” Dr. Kanaloa quickly transitioned to an alternate explanation, one grounded in the natural space that surrounds her former school and where she practices her caretaking of a fishpond. I knew the exact space to which she was referring because she took me there during our very first week of meetings. During subsequent visits, we would return to the space where her students from her school learn to practice [Hawaiian construct]. Continuing her explanation of the phenomenon I refer to as measurement disjuncture, Dr. Kanaloa emphasized, “for me to understand the assessment world, I had to kind of frame it in in how would I understand the system that is, like, my, my, fishpond.” There, Dr. Kanaloa indicated, she must “understand the whole system and all of the parts in order to understand what I need to do” and proceeded to use a storytelling approach to explain how she understands and communicates measurement disjuncture to others. According to Dr. Kanaloa, a fishpond is a human-constructed environment at the shore of her island, and it utilizes a wall of stones placed, one by one, by kiaʻi loko (fish-pond caretakers). The wall is used as a barrier to entrap fish within an area accessible to the care takers from the shore. With this setting in mind, Dr. Kanaloa explained that “measurement disjuncture is kind of like, if you had a group of kiaʻi loko, group of fish-pond caretakers, that [sic] have learned this, have have been trained in this, they’re going to make, they’re going to start building the wall from the eastern side.”
Continuing her story, Dr. Kanaloa introduced “these groups of masons and architects and archaeologists and anthropologists and whatever the hell that study this kind of thing from a scholarly perspective or from a from a different context” who start from the West and are adamant in insisting that “Yeah, I know how to build a wall around, I don’t know, around the White House, I don’t know, whatever it is.” According to Dr. Kanaloa, as the walls of the two wall construction teams become closer together, “our wall, is… just the right height, just the right thickness, it follows the footprint, that the ʻāina (land) is calling for.” In this scenario, the wall represents a “footprint… dictated by the wave action that’s happening, the topography of it, or whatever, and we followed that line.” To maintain the wall’s line, “although there’s 30 something of us, we’re all working in tandem and we’re following that same line so everything is a nice smooth arc.”

Contrasting against those coming from the West, whom she describes as “the other guys,” Dr. Kanaloa stated that “and none of them can agree as to where, where the line is. Or all of them have different ideas of what the wall should look like.” Mimicking their words, Dr. Kanaloa said, “Well, I’ve studied, in, in Australia and Africa, and da da da da da,” and “But I’m the, the, archaeologist that found this, whatever, whatever.” The result, according to Dr. Kanaloa is complete conceptual disagreement “and so what you see on the West side is not even a cohesive wall. It’s just piles of rock kind of all in any kind form.” Further, Dr. Kanaloa stated, “But all of them are saying that their way is the valid way because of X, Y, Z, and all of that kind of stuff” and continued, “But it does not function for that system and even looking at it you’re like, ‘Oh my God! Square peg in... And how is that even a wall? What the hell is that?’”
It does not stop there because, according to Dr. Kanaloa, “they just keep their ground and saying ‘yeah, but we are the people, we are the archaeologists, we are the anthropologists, we’re the architects, whatever whatever. You guys are the laborers.’” Dr. Kanaloa summarized her concept of measurement disjuncture as “that mentality of the colonizer thinking that their way is the way, even though it does not even come close to even touching the context of that system that they’re building for.” Concluding, Dr. Kanaloa stated, “To me, that’s… what it’s like with the measurement disjuncture. It just doesn’t match.”

Measurement disjuncture, expressed by Dr. Kanaloa as this form of working relationship, “Doesn’t honor the intellect, the know-how, the experience, of the kia‘i loko. It doesn’t work with it, it works against it,” and it never comes from the perspective of “How can I, the architect, support your endeavor,…, your vision? How can my knowledge as an anthropologist contribute? It’s never… in that context. Except when we met you. It’s always in a… dominant submissive kind of relationship.”

Reflecting on her work at the Hawaiian language immersion charter school, Dr. Kanaloa stated, “when we could be enhancing education,… when the whole intention was to diversify the way our students learn, that would have been the perfect place to have that kind of coming together of the minds.” Noting instead that the working relationship with those on the Hawaiian State Charter Commission, Dr. Kanaloa stated, “It is still the oppressive nature of ‘We’ll let you do curriculum how you like – yay do your Hawaiian things – but we still going to evaluate that learning from our lens.’” Dr. Kanaloa concluded by comparing the system of evaluation for charter schools, including those where teaching and learning occurs in the Hawaiian language, takes her back to
“the guy who designed the pile of rocks is evaluating the work of that kiaʻi loko that’s been a caretaker for that space for 20 plus years. It just doesn’t make sense. And it’s frustrating as hell.”

Dr. Montañez expressed measurement disjuncture by stating “What comes to my mind, is misalignment, you know?” Continuing, she recalled, “I remember one instructor said, ‘if you’re right on with your research question, then everything else is going to flow.’ And I really wanted to, you know, be very attentive to that flow.” Although not Salish, most of Dr. Montañez’s doctoral research participants were Salish and her research was conducted on Salish land. Keeping this in mind, Dr. Montañez set out to understand “What does place, how can it be interpreted in… Salish?” as well as “what place is in the Salish language.” After conversing with her participants, Dr. Montañez came to understand that the word “Salish” itself means “people, we are the meat of the land,” and, “human beings are the meat of the land.” Dr. Montañez took this definition as confirmation that she was on the right path toward a final construct for her assessment stating, “That’s how you interpret it, and so I felt like, oh my gosh, I’m way on target here, because human beings are the meat of the land.” Another group of participants in her study represented the Sqélixw Cu’uts people and in their language, “Sqélixw Cu’uts means,… we are the meat of the land.” Upon learning this, Dr. Montañez “was, like, ‘Yes!’ I feel like I’m in alignment, with the question, with the prompt, you know, with the question, with my, my, how I’m proceeding.” According to Dr. Montañez, “we are the meat of the land,” represents “a way of being and a way of knowing” that encourages alignment between people and their place on their land. In other words, Salish and Sqélixw Cu’uts people express who they are as people through the very concept of
alignment. Dr. Montañez stated that when we are “in our best way of knowing in this modern world, then, we, our way of knowing and our way of being as Indian people, are aligned... I think that I tell you that story because disjuncture means misalignment.”

Knowing that she had an alignment conflict with her doctoral thesis advisor, I asked Dr. Montañez how she felt about the conduct of her research, knowing she was seeking this kind of deep alignment. Dr. Montañez stated, “I was just going to stop. I just said, ‘Well, no, I’m not going to do that.’ And he said, ‘You have to,’ and I said, ‘Well, then, I stop.’” Returning to the concept of alignment, Dr. Montañez expressed how she told her thesis advisor, “You made a promise to me that I was going to be able to use an Indigenous research approach.” Dr. Montañez explained that her approach was “purposeful, it’s respectful, I’m thinking about every step of the way” and expressed her concern about switching approaches at the conclusion of her study by stating, “I’m not going to blow, I’m not going to misstep now.”

The conflict over her study approach led to an impasse in the working relationship with her advisor in which, “there was no conversation after that for quite some time until I decided that, okay, what I need to do is explain it then.” Taking the approach of writing up her analysis process to “explain what I’m doing, and see what happens” paid off for Dr. Montañez because, according to her, “And then it made sense. I guess it made sense to him.” Reflecting on those events, Dr. Montañez noted, “It was a big turning point, because I said I wasn’t going to continue,” and she remembered telling her thesis advisor, “Well, I’m not going to do it that way… I’ll just, I don’t want to stop, but if I can’t go any further, than I guess I can’t go any further.” Although it was a difficult period in the conduct of her dissertation research, Dr. Montañez reflected on her optimism at finding a
working solution by stating, “But I know me. I knew there was a way.” Dr. Montañez stated of her thesis advisor, that in the end, “I think that, and, even he said, he learned as much from me as, as he, that I, probably more than he’s ever learned from a student.”

Dr. Montañez was upfront about not taking the conflict personally because “It’s not just me. I think it’s because the approach, I don’t know if there’s been an Indigenous person in that, in that doctoral program before me, doesn’t sound like there was. I call it misalignment.”

I inquired of Dr. Montañez what she thought was behind this episode and she replied, “Well, you know as much as we want to think that we are culturally aware and culturally sensitive, he wasn’t from an Indigenous community. He’s not at all been in a Native community.” Offering further clarification, Dr. Montañez explained, “He hasn’t ever, you know, visited, or understood, I think, our way of being, which isn’t just with one visit,” and noted that “he was incredible really and helped me along in so many ways, but… you don’t know what you don’t know and I think he wanted to get me finished.”

Dr. Montañez continued that she heard similar stories from “other people, other Native people, other Indigenous people, whether they be Maori, or First Nations,” who were “simultaneously doing a research, uh, doctoral research… and they all had the same, every single one of them had the same story.” Dr. Montañez then spoke directly to the problem “dealing with this tension of” doing research from a Native perspective by expressing that “here we are, in the academy” that “has accepted Indigenous research at one, at some level.” The entire proposition falls apart, according to Dr. Montañez when Native people are told that, “oh, yeah, we’re accepting” graduate applicants into our institution and “that we’re good, we’re cool with this.” Dr. Montañez explained that such
institutions, “don’t really know what they’re, they’re agreeing to, and promising” the Native students accepted into their graduate programs.

Dr. Montañez shared one final source misalignment that appeared in her doctoral research as she was gathering information about her assessment construct by stating, “Well, you know, I had to also, really, argue that stories or, or comments, that some of the elders and the different people had said, is also data. So, stories are data.” To retain these stories as data within her dissertation, Dr. Montañez stated that “I had to, um, you know, as long as I cited them properly.” According to Dr. Montañez, stories are the vehicle of the transmission of knowledge from elders and, “Our elders…have this wealth of information and… are our source of knowledge… perhaps they haven’t gone to formal training or formal school, doesn’t matter, but they’ve got this traditional cultural knowledge” that is shared through the use of storytelling. Dr. Montañez noted that “I did cite, and that story is data. So, I had to argue that.” The result was that Dr. Montañez was able to incorporate “the comments from my elders and from my, you know, ancestors” within “my literature review and, that sort of thing yeah.”

**Participants on Culturally Specific Assessment**

Having gone through the first three disjuncture elements of the disjuncture-response dialectic with my research participants, I turned to the right-hand side of Figure 1 (p. 4) where culturally specific assessment resides and serves as a counterbalance to measurement disjuncture. Culturally specific assessment is situated at the micro level of analysis.
Worldview and focus of the assessment

I wanted to hear from each of the developers how they would describe their assessments. In particular, I was interested in their descriptions of the worldview and focus of their assessments. In response to this line of inquiry, Dr. Kanaloa stated that her assessment development work “was based solely on Hawaiian world view of how we understand and interact with our universe” and that her assessment framework represents “that lifestyle, of, of understanding our universe, our place in it, and, therefore, how do we interact with our universe, and how do we adapt to that ever-changing universe.” The construct for the assessment was derived from three domains of Hawaiian knowledge representing the categorization of things in the universe, keen observation, and the analysis and synthesis of information. According to Dr. Kanaloa, these domains are interdependent and “they kind of all happen at the same time.” The assessment was intended to measure “learning that was guided by a set of progressive expectations of… (construct) learning that the teachers and I co-developed from pre-K through 12th grade.” Although the array of grade-level assessments was “meant to mirror… the mandated state standards… that was one intention. But the real intention was for us to figure out what are these benchmarks of learning to support our students’ learning of our three Hawaiian domains of knowledge.” Dr. Kanaloa explained that the design of “the learning expectations was more for us in designing the learning experience, but it doubled as ammunition to show the powers that be that we are a standards-based educational school.” The assessment was grounded in a set of grade-level learning expectations, “and so, our assessment measured those… specific learning expectations and we designed all of the items through” the pedagogy of the Hawaiian practice that was being assessed.
Dr. García is designing an assessment to measure trauma as experienced from the perspective of Latinx immigrants. When, asked to expand upon the definition of this group, Dr. García noted that, “so, it’s, one, Latinx-identified folks who have gone through migration experiences” that could mean “people who have gone through migration experiences, that [sic] could be the immigrants themselves, or it could be people who have gone through immigration experiences, but who have encountered the challenges and the trauma of migration secondhand.” According to Dr. García, by providing a more robust picture of those affected by immigration experiences, her trauma instrument is appropriate for “the people who are a part of the family or community system that have still experienced trauma as a result of, of everything, that that their loved one has gone through.” Dr. García indicated that, in short, the “the population that we are specifically talking about are people in, the, the Latinx community who have immigrated or have a loved one who has gone through that process.”

I asked Dr. García to expand upon the term “Latinx,” and she obliged with a thorough definition. She began her explanation with, “So, it’s Latinos… the folks who were assigned male at birth. Latinas, people who have been assigned female at birth and then people in between that gender binary. So, it could be people who identifies two-spirit.” Dr. García continued with her definition with the inclusion of “People who are, who don’t, who are agender, don’t see gender. People who are gender fluid. People who identify as trans… anyone in between that gender binary.” Summarizing, Dr. García described Latinx people as “pretty much people of Latin American descent who are under the entire gender umbrella.”
I also wanted to understand how Dr. García integrates the concept of indigeneity within her definition of Latinx. She addressed the topic by describing the concept of the wide mixture of peoples who came as a result of colonization. In Spanish, this concept is named “mestizaje” (mehz-ti-zah-heh) that refers to the mixture or mixing of races subsequent to colonization. Dr. García explained, “I think we have, because of mestizaje… this… broad notion of what Latinx means” but established that “when we’re thinking about Latinx, I think about it as, as, as the ethnicity, not necessarily the race. And so, I’m thinking about people of different like ethno-racial backgrounds. So, that could mean people who are, like, Afro-descendant, Indigenous-descendants.” At this point, Dr. García recognized that in order to answer this question fully “using this model, we probably have to go back to, to our, our participants and ask, you know,… how do they understand the word Latinx.” Further, Dr. García expressed that it would be important to ask the participants “Who do they, who do they believe falls under, like, the category of Indigenous or who, like, when they think, when they think about identification, would they identify as Indigenous?” Dr. García provided a caveat with this line of inquiry because “I think, because of, also, anti-indigeneity within, you know, Latin America, people have not really considered their, their, Indigenous background.” I found it fascinating observing Dr. García transform her response to an interview question about terminology into a full-fledged research study. She concluded that “it would be interesting to have a conversation with them about that and that’s a part of, I think, of intellectual elimination too. That we, we are not taking the time to truly think about that.”

When asked what she plans to assess with her instrument, Dr. García explained, “what I am trying to, to evaluate are the traumatic experiences that an individual, their
family, or their community goes through, endures, encounters, as a result of premigration, migration, post-migration experiences and experiences with enslavement, colonization, and oppression.” Dr. García described the gap that her instrument is intended to fill by explaining that “in the past, when people have used instruments to assess trauma, they don’t necessarily, specifically, there, to my knowledge at least, there isn’t an immigration trauma instrument.” The general practice in her field, according to Dr. García is that “There are trauma instruments that have been used on, on immigrant and refugee communities” that have been developed with other populations in mind. Dr. García stated that “there isn’t specifically an instrument that that assesses immigration trauma and not with Latinx communities, specifically,” and, in particular, she stressed “certainly not, not instruments that take into consideration, like, the different levels that we’ve discussed: the micro level, the meso level and the macro level.” What is missing in the field, according to Dr. García, are instruments that consider “the individual experiences that, that, someone goes through when they encounter trauma before, during, or post migration,” and that bothers to ask, “what experiences traumatic experiences do they encounter as a result of immigration policies and other policies that seek to oppress them.” Her instrument seeks to expand the definition of those affected by immigration trauma to address broader questions such as, “how is the community, in general, like the entire community impacted as a result of” the totality of the “combined, the individual experiences” of immigrants. This definitional expansion, according to Dr. García, includes “the experiences of coping with and trying to manage the stress that comes with, you know, the reality of being an immigrant, anti-immigrant sentiments, xenophobia, all of those different factors, different oppressive forces.”
Dr. Montañez relied upon the artistic expression of her research participants to provide her the insight necessary to build a construct to represent a sense of place for Native people. Prior to the interview, I had provided each of the participants a copy of Figure 1 (p. 4) and each of them could reference it throughout the interview. One of the elements of Figure 1 (p. 4) is the concept of Indigenous sovereignty and this concept caught the attention of Dr. Montañez as I asked her to describe the worldview for which her assessment would be most appropriate. In response, Dr. Montañez stated that “what jumps out for me, the Indigenous sovereignty, is about one’s voice. To me, that’s what that means.” According to Dr. Montañez, “Indigenous sovereignty is being able to, to have, in a respectful way, that one’s way of knowing and way of being, is respected and treasured.” Dr. Montañez utilized a form of artistic expression to help form the construct of her assessment because, according to her, “the cultural expression is a way that is, the arts is a way,… can be around one’s cultural expression, which shows one’s identity, what one’s thinking.” Self-reflecting, Dr. Montañez asked “If we want to be, if we want to have Indigenous sovereignty, what does that mean?” After a brief moment, Dr. Montañez self-replied, “That means that our way of being and our way of knowing is respected and it’s relevant.” As a result, according to Dr. Montañez, “therefore, our way of, our approach, in a culturally specific assessment needs to be aligned with that, our way of being, in our way of knowing.”

Dr. Montañez explained that “The reason that arts-based research is, was appealing to me and important for me is that it’s a way that one expresses oneself through imagery, and it’s a, it’s an authentic expression of self.” When people find it difficult to express themselves through language, the arts provide an alternative pathway for them to
share their experiences with others. According to Dr. Montañez, such expressions are nonlinear and “It’s like this big holistic, big, circle. It envelops a lot of ways of knowing. And so, the arts is an authentic expression of self, and so I that’s why I’m choosing to go that route.”

What did you do about it?

I wanted to explore how the research participants responded to the concept I refer to as measurement disjuncture through their respective assessment projects. In my work with Dr. Kanaloa, we dedicated time to the assignment of value, in particular, to the assignment of points per rating level for each of her assessment items. It was my understanding that under traditional forms of assessment from an Indigenous perspective, there are no numbers involved, whatsoever. As such, curious about this focus on the assignment of points, I asked Dr. Kanaloa about this phase of our work. She replied, “But those were necessary, so, so that we could have a language to communicate to everybody outside, right? To see that what we were doing, same same as what you guys doing.”

Developer emphasized that the reliance on the assignment of value through the use of points systems was “So, they, they couldn’t have something to use against us.”

Dr. Kanaloa described her challenges in figuring out this aspect of her assessment development work by indicating that “When I was deciding points and we had many conversations about ‘why is this worth this much in this one?’” To resolve such questions, Dr. Kanaloa relied on her practitioner training to help her think through “Why would something be worth more?” and forced her to express formally “what is the task asking the students to do, you know, and how does that equate to credit or point value?”

Reflecting on our joint work together, Dr. Kanaloa noted, “I appreciated our
conversations and you’re questioning about the why, because it forced me to be able to make sense for myself, why this and this.” This form of external questioning was important to Dr. Kanaloa, because “I always want to have plenty ammunition, and I want to be like, yeah, hit me,… what next? What next? Okay, boom here’s the answer for that. Now what? What? What? Okay, boom, here’s that.” Returning to her previous reference to kōnane, the Hawaiian game of strategy, Dr. Kanaloa stated that having someone who could question her decisions was appreciated, because “You know, so I wanted to be in, I was, that’s part of the fight mode of, ‘I want to be five moves ahead.’” Operating under the belief that “we had one shot, I think, to to do this,” Dr. Kanaloa expressed the importance of both constant and over preparation in the defense of her assessment development methodology in front of external reviewers from her State Charter School Administrative Office or from federal reviewers. She also indicated that “having a psychometrician that could understand our ʻōiwi (native, Indigenous) lens but at the same time, understand that that other side of it, was essential for my development as an assessment developer.” Dr. Kanaloa explained, “Because I didn’t have to translate for you and then try and understand that other language, you know?” Continuing, Dr. Kanaloa noted that “at the same time, it validated when… I had questions but you’re able to answer it then it also validated for me that my thinking was where it should be.” For Dr. Kanaloa, our working process helped to strengthen her confidence in the rating scales she developed and she expressed that “You know that it wasn’t just pulling anything out of the air and arbitrarily assigning value or differentiating value, there was a systemic way based on our construct.”
I asked Dr. García to describe the strategies she used when she experienced the phenomenon I refer to as measurement disjuncture. She replied, half-jokingly, “I went to you.” I pressed Dr. García to consider a bit further back into her development process and asked what she might have done previously when she noticed that something was off in her instruments or instrument development processes. Dr. García prefaced her response by indicating that “I’m going to answer as a clinician, first. So, I would use instruments that I knew were assessing trauma.” From there, Dr. García would then, relying “on my knowledge of, of immigration matters or immigration concerns,... I would consider the different material that I had before me.” Eventually, Dr. García would “in my mind I would try to figure out what would be the best course to take for, for the client.” The entire process for a single individual would leave Dr. García with “a lot that I had to sit with. And there was a lot that I had to tease apart.” With so many decision points based on information gathering techniques that might be inadequate, Dr. García noted that “So, again, there’s so much room for things to go wrong,” in particular, and most especially, “if you’re kind of making all of those decisions at the same time.” Dr. García indicated that “I would try to ask questions that would help me” and that “I almost had to create or customize the questions to, to understand the experiences of each individual. The result, according to Dr. García was that “I would focus on the individual, but then I would miss the other layers, the community layers.”

That was then. Dr. García believes that now “I’m starting to take things a little bit more slowly, and I remember, I told you that I felt like my mind was, like, being pulled in very different directions. I remember telling you, like, ‘I need to take a break… Can we, like, come back in several weeks because I am completely overwhelmed?’”
As part of our construct development phase, Dr. García conducted personal interviews with Latinx immigrants in Mexico about their immigration experiences. She was determined to locate her formal instrument construct within the interview data and recalled “sitting with, like, all of the interview transcripts.” The interview data gathered by Dr. García were “from participants of different ages, different nationalities, who had different experiences, some of them had migrated themselves, some of them were in the process of migrating, some of them were family members of people who had migrated.” Dr. García described the challenge of locating her construct through her interview data, asking herself, “How am I going to put all of this together? How am I gonna create a construct that can speak to, to those experiences?” Dr. García realized quickly that it would take some time and it would require “just kind of existing in that tension and just sitting with that tension and letting that settle before, before moving forward.”

As a result of working from a culturally specific lens, Dr. García expressed that, “The pace changed. The approach changed. It wasn’t sterile, like, it wasn’t clear. It was muddy, at times. And so, I think, also kind of creating space for that understanding that trauma in itself is, is complex.”

For her, the slowing down of the construct development process was a form of validation of her methodology because, according to Dr. García, “If trauma’s complex, and, and colonization, and immigration and all, are deeply traumatic events, like, how is that also showing up during the, the development process, the instrument development process?” Dr. García also expanded upon her proximity to the construct she was building expressing that, “Like, I noticed myself, I think, also, sometimes even feeling a little triggered by, by, the process, because I am a member of the community, you know? I am
an immigrant. I do identify as Latinx.” Raising an important point about the role of subjectivity in her construct development, Dr. García noted that “normally, what I would do is, I think I would, would have said, like you are, you’re sitting too close to this information, like you need distance.” This time, Dr. García explained that “I think I gave myself permission to exist in that space, to be a part of, of, the conversation to, to, see what, what, like, what was coming up, not only in my mind.” Reflecting on her previous practices, Dr. García noted that “Usually, what I would, what I would have done is I would have focused on my thoughts,” to self-reflect on questions such as “Like, what’s, how am I conceptualizing this? Like, how can I put this into boxes? How can I put this into buckets?” With the current project, however, “it wasn’t clear, like, it wasn’t clean.” Further, Dr. García noted that “And this time around, like, I was like, oh, it’s not just that things are coming to your mind,” which was often the focus of her prior instrument development processes. Working from a different perspective, Dr. García acknowledged that “things are coming up in your own life, showing up, showing up in your heart, things are being experienced in your spirit,” and self-reflected that “maybe you just need to, to listen to that a little bit more.”

Dr. García explained that much of her prior instrument development work was spent alone. Reflecting on our approach to the development of her construct, Dr. García said that it was important to be able to work with, “someone who I knew understood and… felt comfortable sitting in that complexity. And then, doing that together, of, you know, how could we organize this in a way that makes sense?” Acknowledging that working from this new perspective, Dr. García indicated that “it didn’t make sense for a
really long time and so that’s, that’s another part of that. Like, you know, being, being patient with the process.”

**How well does it fit?**

I wanted to know how the participants felt about the fit of their instruments for their intended audiences. Dr. Kanaloa openly admitted, “I do have a bias, since I am the developer,” but also expressed that she had built in protocols to have others check her work, indicating “that’s why we had external people to paka (carefully examine with wisdom) it, so, to look at it. You, our (internal) team,… external researchers from the (University of Hawai‘i at Mānoa) College of Education,… our partnerships with other schools… trying to implement it.” For Dr. Kanaloa, each of these external reviewers served as “points of evaluation of whether or not this, was, was true to it, right?” Another form of validation for Dr. Kanaloa was in the how she was able to determine through the assessment process that she was able “to develop that lens in our students and, more importantly, in our in our teachers. Because how can you teach through that lens if you don’t have it yourself?” Dr. Kanaloa indicated that the fact that her assessment was “far removed from the simple bubbling-in, selected-response types of questions that would not authentically demonstrate (the) knowledge and skill sets.” Expanding further, Dr. Kanaloa emphasized, “I cannot whittle down that kind of intellect that’s way up here to a multiple-choice assessment.”

Regarding the question of construct fit, Dr. García stated, “I think we are relatively close.” The reasoning for this level of fit expressed by Dr. García came from the fact that “the pace has changed and we’re, we’re, we’re working in ways where we’re slowing down.” Referencing the image of the square peg in a round hole to point out that
the slowing down of the process is important because “we want to make sure that, that we have the validation that we need to actually, confidently, say that, that we are in that, you know, independent, culturally specific circle.” Dr. García indicated that it is important to be within that circle “where we are, you know… we’re thinking about the unique worldview of the communities that we’re working with.” In terms of having a more definitive statement about her instrument’s degree of fit, Dr. García referenced our future development plans and acknowledged, “But I think that I would feel confident once we, we’ve talked about piloting this. We’ve talked about, you know, interviewing more people, introducing them to what we have.” She expressed that “I think that there’s still different phases, that we have to go through for, for me to confidently say that we are, we are in that space.” Concluding this line of questioning, Dr. García indicated that “I would say that, I mean, I’m feeling very hopeful that we’re close.”

Participants on Intellectual Amplification

It was challenging for me to figure out what to name the meso level space of Figure 1 (p. 4) that represents the response to intellectual elimination. After some time, I settled on the concept of intellectual amplification. The term “amplification” came to me from the realm of mathematics and is a term familiar to people who listen to music, play an electric instrument, or have attended an outdoor concert where amplifiers are used. Amplifiers take a smaller sound and make it larger. The term intellectual amplification, thus, is intended to convey the various ways in which Indigenous voices can be heard in response to intellectual elimination. Intellectual amplification begins with the acknowledgement that Indigenous culture, language and knowledge systems exist. It also includes revitalization, sustenance, maintenance, development, and the promotion of
culture, language, and knowledge systems. I wanted to know what the developers thought about this concept of intellectual amplification and how their work contributed to it.

**What is it?**

I asked Dr. Kanaloa how she might describe the intellectual amplification concept of growing and nurturing and she replied, “For me, it goes well beyond acknowledgement and promotion, but it starts with that, right?” Explaining why there is a need for the amplification, Dr. Kanaloa exclaimed, “The need for amplification is because we have to compete with another system of intellect that speaks, that always has the frickin’ microphone!” Furthering her explanation, Dr. Kanaloa continued that “And we’re in the back, trying to you know advocate from the back, with no microphone and a crowd of thousands. So, to penetrate some of these systems that idea of amplification, is, is I think a starting point.”

Dr. Kanaloa took the opportunity to return to a point she expressed earlier in the interview regarding the very definition of the term “culture.” She noted that “And it’s, again, part of the realization that culture is not about the aesthetics. Culture is our intellectual origins, right?” For Dr. Kanaloa, this acknowledgement represents “flipping that script for people” and causes many to ask “Wait, what? Culture is what?” The common understanding of culture represents an additional challenge for Dr. Kanaloa. She indicated, “I think, for some, that might be a big lift because of… the commercialization of so many Indigenous cultures.” To overcome this challenge, Dr. Kanaloa stressed, “We almost have to flip for ourselves and come to the realization that, yeah, culture is talking about intellect. It’s not separate from academics.” For her, “intellectual realization, like,
just realizing that culture is intellect” represents an important stage of the concept of intellectual amplification.

I asked Dr. García how she might name or describe this concept of intellectual amplification, and she replied, “I would say, something to the extent of, maybe, like, unearthing.” She stated that her rationale for selecting this term was because “I do feel like settler colonialism tries to, to, bury, you know, the knowledge that, that we have, that our communities have.” Dr. García then referenced the proverb, “They tried to bury us, but they didn’t know we were seeds,” in order to convey the swirling concepts of intellectual elimination and intellectual amplification. She continued, “it’s like settler colonialism tries to bury you. And so, through intellectual amplification we tried to unearth, so that more growth could, could, can continue, so there can be more amplification after that.” Dr. García continued, “I feel like there is, I don’t know why, but, but the word preserve, preservation comes to mind.” Even though acknowledging the intellectual growth aspect of her work, Dr. García noted, “But there’s… so much knowledge and so many resources that the community already has and that’s why I’m, like, talking about unearthing.” Dr. García expressed that through her work, “my hope would be that by unearthing, like, there would be, like, a, like, a ripple effect to this, an intergenerational ripple effect.”

At this stage of the interview, it was clear that Dr. García was floating in and out of the metaphorical space she had established in response to this line of inquiry and began to tie the notion of burying back to her profession. She explained “that, like burying, the oppression that has happened, has been… deeply traumatic, but also, you know, it has, it has led to, in my field, work that has been deeply detrimental.” Dr. García
expressed a hopefulness that, “If we start working on… acknowledging and promoting the knowledge of these communities, my hope would be that there would be, like, an intergenerational healing as a result.” Dr. García then shared a reflection that conveyed the effect the development of her instrument was having on her stating, “I know you’re asking about, like, the, the assessment development process, but I would think that it would help the developer, help the developer experience healing.” For if the developer is a central component to the process and is being affected in a positive direction by it, then, according to Dr. García, “the people that are being assessed would experience, would, would have an encounter with someone, us, the evaluator,” who had experienced healing and “that would be a like a corrective emotional experience.” If it is an evaluator who has experienced healing that is performing the assessments, “that in itself would be healing,” according to Dr. García. She intimated that a developer who has not experienced healing would not understand the effect of improper instrument development and, further, would not allow a scenario where “someone’s going through… that checklist where they have to fill it out in maybe a language that they don’t speak, or maybe the items are not fully capturing, you know, what needs to be captured.” In noting the stress induced by such assessment processes, Dr. García concluded, “I would predict that it definitely doesn’t lead to healing.” Explaining the potential effect of intellectual amplification through her instrument development work, Dr. García described a “ripple effect that would result in, in, healing at the individual level but, also, hopefully, as a result of this work being done, frequently, with intentionality, that, that it would heal, you know generations.”

This interview process provided me an opportunity to unveil this concept of intellectual amplification to these developers for the first time. Dr. Montañez reacted
quite enthusiastically to the concept, noting, “Well, I’m just looking at the intellectual amplification. I love that! I’ve never seen that before and I really like that!... It’s a pathway, right?” In fact, she was able to discern from the image in Figure 1 (p. 4) that through intellectual amplification, “you have this Indigenous sovereignty, but it moves into that.” She immediately took to the amplification term and indicated that “It’s an expression and it’s expression that allows for one’s intellectual understanding to be broadcasted.” Dr. Montañez then transitioned into a story about her doctoral research participants to explain, “I was showcasing the work, these the moccasins and… different researchers, the participants, came and they came to the art show. And they could, then, they also talked about their own experiences.” Dr. Montañez shared with me the reason for her fondness for the expression, indicating “I love the idea that, I mean I like that term, ‘intellectual amplification’ because one of the elders, there are some elders who participated, who were, who were at the art show,” who served as reviewers. According to Dr. Montañez:

“The reviewers said, ‘this is how I want our people to be expressed, to be shown in the world, not this continual other way of, whatever, negative, negative, whatever we see in the newspapers. This is how I want our people to be illuminated in this way.’”

This experience shared by Dr. Montañez meshed with my description of intellectual amplification, the second or meso layer of my Figure 1 (p. 4). She concluded by restating, “And so, so, I like that second, ‘intellectual amplification.’ I haven’t seen that.”
To uncover the meaning and importance of the concept of intellectual amplification for Dr. Kanaloa, I asked her why she considered it to be important. Dr. Kanaloa explained that it is critical to ask questions routinely such as, “What is the state of our people and is that the state that we want to be in?” Expanding upon this concept, Dr. Kanaloa continued, “Or do we want to see our people thriving more and thriving more in what way?” For Dr. Kanaloa, “the common denominator in in all of those ambitions that I want for my people comes down to education in terms of how do we equip ourselves, our students, with the lens of our kūpuna (ancestors).” Reflecting on the proverb, “Great and numerous, is, that is the intelligence of the Hawaiians,” Dr. Kanaloa proffered the idea that her kūpuna (ancestors) are not the only ones with great wisdom and suggested that “For me that’s, that’s a starting point, but that’s not the endpoint.” Dr. Kanaloa continued, “The endpoint is being able to tap into that ancestral intellect and be able to utilize that intellect, to develop the lens through which we see our entire world.” She recalled a phrase that she used to use with her high-school students: “infiltrate and perpetuate.” Acknowledging the potential that all Hawaiians have within them, Dr. Kanaloa would tell her students, “I don’t care what field you go into, whether it’s a mechanic, lawyer, nurse practitioner, landscaper, whatever. We need our worldview in as many spaces as we can infiltrate.” Further, according to Dr. Kanaloa, “we need to not only infiltrate those, those, spaces, but we need to perpetuate our worldview, because that is going to be the key to our survival here on an island.” She concluded the thought by explaining, “The more influence we have in spaces that make key decisions, the more likely we will have a thriving people versus a surviving people.”
When Dr. García was asked to describe the larger effect of her work on the broader community, she acknowledged the importance of validating their experiences simply through the naming of those experiences. She explained, “If we are, if we are able to give it a name so, for instance, duelo and pena (mourning and grief), like, that domain, it’s validating and acknowledging the deep loss that they have experienced.” Dr. García stated that the naming process opens up a new conversation in which, “We could go back and talk about, like, just focus on that (duelo and pena).” The naming conversation, in turn, would allow for “gaining more knowledge and maybe even go into more detail about what that might look like or what’s experienced, specifically, when we talk about duelo and pena.” This instrument development process, according to Dr. García, might even lead to understanding how duelo and pena “show up in different scenarios beyond the immigration experience.”

Asked to explain how important it is for her to contribute to intellectual amplification, before responding, Dr. García reviewed the domains of her instrument, “It’s so… interesting because I’m thinking, okay, so, just focusing on those domains, because I, I’m like, looking at them right now and it’s… one, nervios (agitated nerves). Two, desaliento y desesperanza (discouragement and helplessness). And then, third domain, duelo y pena (mourning and grief).” Continuing with her response, Dr. García began to articulate other potential lines of research inquiry that might emerge from her instrument, “Either we could go deeper into understanding, like, what happens when you take immigration away? But also, like, what is the opposite of nervios?” She proposed other questions such as “What is the opposite of desaliento y desesperanza (discouragement and helplessness)? What is the opposite of duelo y pena (mourning and
grief)? You know, when there isn’t a feeling of helplessness. What’s, what’s, on the other side?”

Reflecting back to the image in Figure 1 (p. 4) that I had shared with her, Dr. García explained, “I feel like, right now, like, sometimes the work of healing is, is to name the experience, to first validate.” After this, the work shifts. According to Dr. García, “But then, as, as we are, you know, moving in the direction of, of sovereignty.” After pausing, she continued, “like, what is this new space, like, what is, what is this desired vision of, of your, your experience?”

Given her enthusiastic reaction to my explanation of the concept of intellectual amplification, I was curious to hear from Dr. Montañez how she thought her work contributes to it. Dr. Montañez incorporated an artistic experience in much of the work and teaching she does and so it was not difficult for her to bring that into her doctoral research. Responding to my question, Dr. Montañez explained that “the arts allows for one’s voice to be amplified, therefore, it’s the authentic expression itself.” Through a case example from her doctoral research study, Dr. Montañez expanded further by explaining that when somebody shares “even a little tiny part of the cultural knowledge system,… when one person paints that flower, they are, they are embedding in their cultural knowledge and their oral story from time immemorial to now.” Reflecting on this concept, Dr. Montañez stated, “It is unbelievable that, that, that one image of the flower is the oral story, is an ancestral story, talks about medicine, talks about one’s way of being.” The depth of information gathered through artistic expression is possible, according to Dr. Montañez “because that particular flower can only be harvested at a certain time and a certain prayer goes with that, and then a certain, you know, ceremony
only, only that is used in this certain, in this ceremonial way” and when it is expressed and shared it “contributes to the well-being of the people in itself.” Realizing that she uncovered something significant, Dr. Montañez exclaimed, “Okay, so that is big!”

**Participants on Indigenous Sovereignty**

If culturally specific assessment serves as a counterbalance to measurement disjuncture, then what are the counterbalances to those two other spaces of settler colonialism and intellectual elimination? With this question in mind, I came up with the right-hand side of this image to describe those counterbalances. To counterbalance settler colonialism, I returned to our assessment development conversations that included topics such as sovereignty and nationhood and self-determination. Based on these conversations, I placed Indigenous sovereignty or the right of a people to self-government, self-determination, and self-education that includes the right to linguistic and cultural expression according to local languages and norms (Lomawaima & McCarty, 2002), at the macro level in direct response to settler colonialism. With this as the background, I sought to understand how these developers feel their work contributes to the grander goal of Indigenous sovereignty.

In response to my inquiry, Dr. Kanaloa indicated that, “For Hawaiians, I can speak in that context, sovereignty is a normalized word. Especially since 1993, where we had the 100-year anniversary of our overthrow, right? That was, that was the age of the sovereignty movement.” According to Dr. Kanaloa, in 1993, Hawaiians speaking forcefully about sovereignty “were talking about nationhood... But now, it’s, it’s, how do we exercise our sovereignty or take back our sovereignty in... in everything.” Today, according to Dr. Kanaloa, “It’s no longer confined to the picture of of nationhood. We’re
talking about sovereignty in all of the, all of these spaces.” Noting the limited attention to educational sovereignty, Dr. Kanaloa explained, “I don’t know if people look at education in the same kind of way with the same urgency. You know, nation building? Land? Very urgent. Education kinda is this outlier, but it is a gateway to everything else.”

Dr. Kanaloa acknowledged her view on this is biased by roles as a second generation educator “who’s also a practitioner.” This vantage point allows her to perceive education “as the pipeline and how we affect the worldview of the people that we would want in all of these spaces.” Referencing the seemingly impenetrable fortress depicted in one of her favorite films, Dr. Kanaloa explained that “Education also seems like this big Death Star that we cannot infiltrate, you know?” She acknowledged that when Hawaiians are called upon, “we can have a community block access to a mountain, to stop the construction of a telescope, we can have thousands of people there.” Expressing one’s sovereignty in that situation, according to Dr. Kanaloa, “It’s a visual. It’s something I can physically do to exercise my sovereignty and to perpetuate my desire for sovereignty in that we decide for ourselves what this land is.” Dr. Kanaloa then asked a critical question for her fellow Hawaiians, “How do you do that for an educational system and it have the same kind of feel or attraction?” The challenge, according to Dr. Kanaloa, is that education is “just a different animal and a something that, I mean, education is always kind of on the back burner in in most governmental decisions.” To shift the conversation, Dr. Kanaloa explained that even though “sovereignty and education is a fairly newer ideology,” “to shift the conversation, “I sure as hell use that phrasing when I was speaking to parents.” According to Dr. Kanaloa, her phrasing caught the attention of parents who not only asked her “This is really what this assessment is about?” but also “understood
real quick what we’re trying to do.” Dr. Kanaloa noted that the parents were able to buy into this thinking “because they could see that context of exercising our sovereignty for nationhood.” Which opened the door for legitimate conversations around such topics as, “How should your child be learning? What should your child be learning about? Would you have this or would you rather have this? Would you want the choice? Would you want the same?”

Dr. Kanaloa compared her work on her assessment with what happens when a volcano erupts and creates a flow of lava. According to Dr. Kanaloa, after the eruption, “there’s certain plants that that come up first, right?... And you know, pioneer organisms, they call it in English, right?... I see (my assessment) as being that very first fern… that pops up in that lava flow.” Referencing the image in Figure 1 (p. 4), Dr. Kanaloa explained how “that lava flow is this idea of Indigenous sovereignty, coming in and… laying everything clean, wiping out everything on the left side of your your diagram.”

According to Dr. Kanaloa, her assessment is, “That pioneer plant that’s going to make way for all of the other plants to start to populate this lava flow in the image of our ancestors, right?” Dr. Kanaloa expressed confidently through her metaphor that her assessment would be “in the image and in the the context of what that environment should have.” Dr. Kanaloa stressed, “So, we’re not the tangerine tree popping up in the middle of a lava field, or a mountain apple tree. We’re that ‘ōhi’a tree that’s popping up,” which would, in turn, lead toward others following her lead because, as Dr. Kanaloa expressed, “when one or he does it, it leads for all the other ‘ōhi’a to be able to do that and develop that space. So, at the very least, (my assessment) did that.”
I explained to Dr. García that in selecting “Indigenous sovereignty,” I was looking for a proper concept to counter that of settler colonialism within my image in Figure 1 (p. 4). I asked her what she would place as the title for that upper right corner that would serve as both as counterbalance to settler colonialism and express the concept of growth. Dr. García responded nearly immediately, “I think I would call it Indigenous liberation because I feel, like, liberation recognizes the, the oppression. That there was oppression before, like, autonomy.” Expanding upon her selection of the term, Dr. García explained, “And for some reason, like, think there’s power in liberation, but it still recognizes the wounds, the wounds that, that, had been left, you know, by, by settler colonialism. So, I think I would call it Indigenous liberation.” To Dr. García, the term liberation expresses “freedom from the oppressor” because liberation represents “a space where... there’s power,... where there is healing, where there’s... honoring of... who you are, of your strengths of your resilience, of the resources, the knowledge.”

Dr. García pointed out that even when liberation is attained, “there’s still struggles, so it’s not like... there’s the Indigenous liberation and then there are, like, fireworks and everybody is, you know, healed.” With Indigenous liberation, according to Dr. García, “there’s this recognition that there are wounds, and, then, there’s still, like, resistance, like resistance to not, resistance to that, that, oppressive, the oppressive tactic, tactics of the colonial, of the colonists, the colonizer.” Responding to my suggestion that one must remain vigilant, even in a sovereign space, Dr. García acknowledged, “With Indigenous liberation there’s, you are, like, responsible and in charge of, of, designing... a new community for your community... in that design, there is no, no room for the
oppressor.” An aspect of operating in that environment is “again, recognizing that the oppressor is going to try to find its way into, into that structure, that new structure.”

I asked Dr. García how the work on her assessment contributed to the construction of that new space. She replied, “So, we’re talking about a new, a new design, that is, I think, like, by the community, for the community.” Dr. García acknowledged “that maybe the colonizer, the oppressor, might say that, that’s not the way to go about assessing or evaluating “ but it would be important for her to respond by taking distance from that and, and just, just honoring the experiences of Latinx communities and, and the, the traumatic experiences that they’ve been through.”

Reitering her point about nomenclature, Dr. García stated that “through the naming of those experiences, through that validation, hopefully the healing process can start.”

In response to my question about how important it is for her to contribute to liberation through her work, Dr. García acknowledged that for her, personally, “I mean it’s, yeah, it’s healing too. It’s, because, again, it’s like things have changed.” The term, “White gaze” refers to the assumption that a phenomenon must be perceived through the perspective of a White observer and Dr. García referenced it to further explain that her research now is not intended for, “I’m going to say for the ‘White gaze,’ for, for the gaze of peer reviewers.” Instead, Dr. García expressed that through this new form of assessment development, it “feels different to know.. that your work matters because it’s actually accurate, you know?” She now reassures herself by saying, “It’s okay, it’s adequate – it’s accurate,” whereas, “before,… it was always like, ‘Well, we’ll, we’ll see, you know, we’ll see, we’ll see what we can do with that.’” Concluding her thoughts on
what it is like to work in this newly-constructed space, Dr. García expressed confidently, “Yeah, it feels good. It feels great.”

I wanted to learn about the aspirational aspect of the work of Dr. Montañez. In particular, I was interested in knowing whether there was something bigger behind the work that she is doing? Dr. Montañez, after a lengthy pause, stated humbly, “I don’t know. I can just do the little part that I can do.” Some further reflection followed before Dr. Montañez continued, “and then if it’s that one little piece that is integrative,… and if it’s relevant and respectful, then.” She concluded her thought returning to her original response to my inquiry, “So, but I can just do that one little piece.”

Dr. Montañez was more open in sharing how she felt her work was addressing the concerns of elders and “how we are promoted as Native people is or shown is not in the best light because it’s, like, with, whatever, you know, we have researchers come in.” Dr. Montañez shifted into a reflection on her process of securing funding to support some of the work she does at her Tribal College indicating that “I know I have to paint a bad picture to, to get a grant.” The narrative that is told in those grant applications, according to Dr. Montañez, include such framings as “That we’ve got the highest suicide rate.” Through the proposal process, Dr. Montañez continued, “you know, you have to paint this really, look at the deficits of what, who we are, as people, and how we, how we, the big bad and the ugly data: drug, alcohol, blah blah,” which represents a contradiction for Dr. Montañez who explained, “But that’s not who we are, as people, and I think that, that, get quote unquote, ‘amplified.’” She expressed that the result is that “people have this opinion about who we are, as a people and, as opposed to what was just revealed with these images that were displayed” within the artwork of her research participants.
Returning to experience with the elder attendees of her research participants artistic showing, Dr. Montañez noted, “So, in terms of the, what the elders are saying is that we want to only, certainly, we want to be promoted in this way and display.”

At this point, Dr. Montañez directed the conversation to non-Native people who seemingly fetishize the culture of Native people. She stated, “You love our stories, our, our, and our ceremony, you know, and you get to go to Sun Dance or whatever, and then, and you love our art, but you don’t really love us.” Dr. Montañez expressed that, “I sense that, you know?” She also remarked how “that discriminatory edge comes my way, to, you know, when you’re going to a store and then you’re followed all over because, you’re, somebody thinks you’re going to steal something.” In such cases, Dr. Montañez explained, “And I think it’s because of the color, you know, your skin. That definitely is prevailing.” The edge of discrimination that is felt by Dr. Montañez includes challenges to her qualifications. She noted, “And, or you know, yeah I got a doctorate, but I didn’t really have to work hard for it. I was just passed. I get that a lot in education.”

Dr. Montañez indicated that there was a point to her description of these experiences. She stated, “I share that one little example about, no matter how high of education” that she might have attained, she still encounters those who “have that particular idea that somebody still views you, as you know, ‘Oh, you’ve got a doctorate, but.’” The result, according to Dr. Montañez is that her hard work in academia is, “You know, it’s minimized. That’s racism.” A point she wished to express through the telling of these personal incidents was that in every other space, Native people are portrayed negatively. But in the small safe spaces she created for her research participants, Dr. Montañez desired something different. She summarized, “So, if, you know, every chance,
we can just display what the elders were saying,” and articulated, “that, you know, ‘We want to promote our culture in this way.’” Dr. Montañez stated, “that’s the bigger story that they were talking about.” Referencing the words of the elders who attended her research participants’ artistic showing, Dr. Montañez concluded that they wanted, simply, a space for sharing, “this is who we are as good people.” Through her work and research, Dr. Montañez seeks to provide those spaces for Native people.

**Participant Self-reflection**

Finally, within the image depicting the disjuncture-response dialectic (Figure 1, p. 4) resides a seventh element. The Indigenous assessment developer is situated in the midst of these six spaces. It is the developer who must complete their assessment development work while these multiple levels of turmoil are going on around them. Inspired by the Freire’s notion of tending to the role of the researcher throughout the conduct of research, I inquired with each of the developers how they felt the work was affecting them. I mentioned to Dr. Kanaloa that, as a result of our initial meetings in 2016, I immediately enrolled in a doctoral program and within a year, she would be enrolled in her own doctoral program. Back then, I knew our initial discussions would lead me back to her, in some manner or fashion. Dr. Kanaloa responded by indicating that others have been inspired through her work to enroll in doctoral programs and that these “people are waiting, because then they can cite your work in their assessment work and, similarly, for me, my dissertation allows them to cite (my work) in this kind of functionality.” In terms of how the work affected her, Dr. Kanaloa noted that she felt she was “strong” as a curriculum developer but, “In the summative assessment, on a school-wide scale, was very new. But I knew the interconnection of curriculum, instruction, and
an assessment.” Speaking about the assessment development process, Dr. Kanaloa reflected, “I’ve talked to you a little bit about a couple of times, was, this process allowed me to decolonize my own mind and to amplify my own intellect.” Dr. Kanaloa clarified by stating, “because I was in that whole part of the dissolution of the knowledge, thinking, like, ‘Who the hell am I? I don’t know nothing about assessment development and I have no skill set in this! I don’t know what the hell I’m doing!’” Accentuating the point, Dr. Kanaloa noted, “But that’s the colonization, right?” To resolve her self-doubt, she sought the advice and counsel of others she trusted. Reflecting on our joint work, Dr. Kanaloa expressed, “But, it was in our conversations that somebody who is a psychometrician, kind of validating that part.” Referencing the support she received from keepers of cultural knowledge, Dr. Kanaloa acknowledged, “I had Auntie Pua, guys of (her cultural project) teams, to validate that content part, right? And, the culture part.” According to Dr. Kanaloa, the support she received from knowledgeable elders helped her to move forward knowing that she was “designing with, to the integrity of (her project construct).”

What remained for Dr. Kanaloa were lingering doubts such as, “But would this fly in the assessment world?” Utilizing the language of my image in Figure 1 (p. 4), Dr. Kanaloa stated, So, all of those things contributed to that intellectual elimination part, right? It kind of crept in there.” Dr. Kanaloa indicated that what drove her through these periods of self-doubt were the actions of the Hawaiian Charter School Commission. She explained, “The Commission pissed me off when they just said, ‘well, no,… all of the things that you’ve done is irrelevant, because this is not research-based.’ That pissed me off to no end and I was like ‘Oh hell no! I am not letting you go with that!’” According to
Dr. Kanaloa, this abrupt response “kind of was the catalyst to me decolonizing, because I’m, like, ‘Get over yourself, you got to just do it.’” During the initial stages of our work together, I felt necessary to ascertain whether her approach to assessment would align well with hers. Dr. Kanaloa credited our work together, stating “But conversations with you and your, your, approach to psychometric consultation accelerated that decolonization because I could answer all of your questions.” In fact, after our first week of meetings, Dr. Kanaloa had good answers to my psychometric questions and that she had the potential for developing something significant. She continued to reflect that “I did have rationale for all of that, and it wasn’t so much that I researched how to do it.” Rather, Dr. Kanaloa stated about the two perspectives she was maintaining within her assessment development work, “I just looked at both things as ‘Okay, what is the picture I need to paint for them so things like the blueprint, you know the progression, what I need to make the picture look like for them?’”

In terms of benefits of her work, Dr. Kanaloa mentioned her transition from teacher to assessment developer allowed her to have a greater influence on her community, stating, “Me as a one teacher, had an impact on 200 plus kids versus the 15 or 20 I would have in my class and then potentially impact multiple communities through working with them.” The entire experience set up for her “kind of like a perfect storm of… things to put me in that position where I could potentially have that kind of broader impact.” She also stated a side-benefit to her work on the development of her system of school-wide assessment: “I really enjoyed sticking it to people who thought that we couldn’t do it. I really, really took some joy in that, in busting their bubble of suppression and being able to counter lots of things,” which was important to Dr. Kanaloa, “Because
it felt like I was speaking on behalf of so many people that wanted to just stick finger to all these, these, oppressive systems and, and, people in power.” She described the potential for influence on her fellow Hawaiians that she sees in her work through the inspiration she might give to others, noting “and when one of us can do it, then we all can do it.” Acknowledging that, for Dr. Kanaloa, although it was “my own selfish by-product of, of, this process,” she expressed hope that she “kind of shook their foundation, a little bit.” She reasoned, “Because, then they have to look at, ‘Perhaps there is this disjuncture I may not want to acknowledge it publicly, but, aw, she has a point, damn it!’” Dr. Kanaloa fully acknowledged that her ability to shake things up for members of the Hawaiian Charter School Commission through the conduct of her assessment development work and “You know, the possibility of them of rocking… them from their foundation, I took lots of pleasure in.”

At the time of her interview, the assessment project of Dr. García was at the construct development phase. I wanted to know what she thought about the entire assessment development project. She replied, “I feel like I’ve grown personally, professionally.” In explaining the difference between developing a culturally specific assessment and others she has developed, she noted, “It’s definitely more work, like, it’s, it’s, it’s hard work and there’s a lot of, you know, feeling comfortable with, with, with these tensions.” In describing the work of sifting through the vast amount of interview data she gathered for the development of the instrument construct, Dr. García also expressed that “there’s also emotional labor that, that goes behind, you know, sitting with all of those experiences.” The payoff, for Dr. García, was that, “At the same time, it’s really freeing to move beyond settler colonialism, or to try to move beyond it.”
Referencing her capacity to deal with the push-pull nature of working toward a fixed concept of assessment liberation, Dr. García noted, “I don’t feel like there’s this fixed space because there is that pull… That’s where the practice comes in… and the resistance, like, you have to resist it.” Dr. García stressed, however, that “I feel like I’m starting to develop a muscle for it.”

In response to my inquiry about whether she had accomplished her assessment development goals, Dr. García stated, “I, actually think, honestly, that, that we’ve surpassed.” She continued, “Like, if, if you would have told me that we would have been here, at this point, yeah.” After pausing briefly, Dr. García expressed that “We’ve surpassed, I’ve surpassed, we’ve moved beyond the initial expectations, expectations that I had at the beginning.” Acknowledging the progress she has made on her assessment development work, Dr. García also pointed out that she was “also, like, recognizing that, that there’s so much more work to do, we are, like, yes, we’ve surpassed expectations, our expectations of the work but I mean, we’re getting started.”

I asked Dr. García how she thought her work on this particular assessment project supported her growth as an assessment developer. Comparing this form of instrument development with her prior work on the development of instruments. Dr. García responded, “I think there’s, like, authenticity. Like, there’s, there’s much more authenticity and, in what I’m doing it’s, it’s transparent.” In response to a follow-up question about how this work has affected her, Dr. García stated, “I feel like I’m becoming more transparent, because I’m having to, like, reflect on, like, critically reflect on every step of the process.” The result for Dr. García is that “I’m having to be, like, accountable, responsible, transparent, authentic, organized, because… of all of those
tensions. I have to… ground myself, and I have to get organized before moving forward. I’m slowing down.”

Throughout our work together, Dr. García has expressed the tension of pursuing work that truly benefits her community and work that will garner her tenure and promotion as an academician. I believe she was referencing this tension with her description of how she has been affected by her instrument development work, stating, “I’m starting to find new purpose in the work that’s in line with, with my values.”

Expanding on this thought, Dr. García continued, “Which is so interesting, right, because you have, like all of these personal values. But then, in the professional world, you’re having to maybe do things different… to move up,” within a “system that’s not designed for you.” Acknowledging that there is the possibility that her work and research may not be accepted within her academic or professional fields, Dr. García expressed, “That, there’s also some, like, sacrificial will behind, behind doing, doing this work where, if the dividends, if you know the, the recognition from the field, if it’s not there, like, I’m okay with that.” The result has been, according to Dr. García, “a level of also honoring my values. And I think that there’s a level of new maturity, I think.” Summarizing, Dr. García stated, “there’s almost like a little bit more integration between my personal and professional values now.”

Through her dissertation study, Dr. Montañez had developed a construct that she hoped to grow into a full-fledged assessment. I asked her how she was feeling about her instrument development work. She replied, “Well, I want to get somewhere I’m feeling antsy. I’m feeling like we talk, and, then, I go back, and I start looking at all this stuff.” The pace of the progress has left Dr. Montañez feeling, “I just want to get, I want to get
on with things. And I want to go back to, let’s just do a Likert scale.” When confronted with the urge to use a Likert scale, Dr. Montañez noted, “I started looking up Likert scales and then I go, oh that’s not going to work.” Dr. Montañez expressed, “I feel a little stuck right now,” and that “I’m hoping to move forward and to, really, you know, I hope something emerges.”

Dr. Montañez relayed a story about a class that she is teaching to two separate groups, one Native and the other non-Native. The class incorporates the artistic expression methodology that was prominent in the development of her assessment construct. In particular, she described the two different reactions to the course she is teaching to these two groups of learners. From her Native students, the typical response, according to Dr. Montañez, has been along the lines of “Oh my gosh, I loved this class, because I learned more about who I am as a person. And my identity.” According to Dr. Montañez, the reaction to the same class from her non-Native learners has been more like, “I love this class. I’ve learned so much in this class about how to proceed and utilize, I’ve got more things in my toolbox, and how to proceed when I work with children who are in trauma.” In the second class of non-Native learners, Dr. Montañez noticed that “I have never received comments about, ‘I learned so much about who I am as a person.’” Experiencing these two distinct forms of responses to the same class where, she addressed the lack of self-learning from her non-Native learners, stating, “I’m not sure why that’s not revealed because I’m doing the same things, but it definitely is different.”

Dr. Montañez acknowledged that the space defined by the words of her Native students as “I’ve now learned so much about who I am, my understanding of myself,” is
the space “where I want to settle.” Reflecting on the meso layer element of the right side of my image in Figure 1 (p. 4), intellectual amplification, Dr. Montañez indicated that this space she is seeking for her work, “Is that midsection, that little orange section, and maybe I’ve been wanting to do, maybe I just, that’s where I think I need to be.” Dr. Montañez continued, “I’ve learned so much and I’ve got all these techniques and these therapeutic ways in which I can work with people, but who cares? I mean that’s cool.”

Pressing forward to make her point, Dr. Montañez explained, “But what is really, really, really beautiful and makes my heart happy is that, ‘Oh my gosh, I learned!’ I mean personal growth.” According to Dr. Montañez, “And so, if somebody’s going to emerge or have that, those, that discernment from a class, that’s where I want to hang out.”

Dr. Montañez acknowledged the learning she has experienced by stating, “So, I think I from this I’ve learned something. I think I’m hanging out in the wrong space.”

Again, referring to the intellectual amplification space in the image of Figure 1 (p. 4), Dr. Montañez stated, “That’s where I want to be.” The reason, according to Dr. Montañez, “is that, there’s acknowledgement of personal growth and personal awareness and one’s cultural understanding is emerging… it’s illuminated. So, um, I think I’ve been hanging out in the wrong spot.”

**Analysis of Findings**

The analysis of findings is presented in four sections that address the views of the participants on the elements of the disjuncture-response dialectic, a discussion on assessment versus measurement, construct development, how the developers function within their respective development spaces, and concludes with a discussion of the generalized disjuncture-response dialectic.
According to these developers, settler colonialism can seep into the development process, even before any instrument development takes place. It does so in the form of the developers’ self-doubt when considering whether they even belong in these instrument development spaces. Dr. García expressed in her own mind she had an image of who is allowed to create instruments and that image did not include her. In reference to the reliance on external assessment consultants by the Hawaiian Charter School Administrative Office, Dr. Kanaloa stated, “The system is not even set up for us to grow our own.” Overcoming this form of self-doubt was a form of decolonizing for Dr. Kanaloa. During the developmental stage, Dr. García expressed the reliance of her field on following procedures and practices established by researchers that “don’t look like me, don’t speak like me.” The internalization of self-doubt regarding one’s fitness for assessment development contributes to the maintenance of structures that marginalize non-Western beliefs about assessment.

Another way settler colonialism appears in the establishment of assessment priorities and practices from groups external to the communities which these developers serve. This affects the work of Indigenous assessment developers through the definition of what constitutes assessment and the forms of learning that are considered important to assess. According to Dr. Kanaloa, “The go-to for authority is that of the colonizer because that’s what’s out there. That’s what the powers that be deem the authority on everything.” She continued that Hawaiʻi has educational content standards that “come from the ʻāina ʻē, the mainland, way far away,” and that “We are still bound, handcuffed, to those standards that have little to do with our priorities for learning.” Dr. Kanaloa
continuously challenged the imposition of both federal and state requirements upon her public charter school and was acutely aware of her lack of authority to change such requirements. She stated, “The priorities of the people in power that make all of the decisions, even if somebody in the state legislature government, even the governor’s office wanted to tip things more in the Indigenous favor, the system is not set up to do that.”

Remnants of settler colonialism remain in subtle, other less overt ways in which the practices and personal well-being of these developers were affected. In referencing the holistic perspective that she wished to maintain, Dr. Montañez challenged her dissertation advisor during the analysis phase of her construct development noting that “you can’t tear the story apart, you have to look at the whole.” A different framing of the analysis process desired by Dr. Montañez had to be obtained in the absence of guidance from her dissertation advisor. Dr. García expressed that she experienced settler colonialism through the manner in which “I feel heaviness in my body, and that is the heaviness that I have felt, I think, as I’ve developed professionally and clinically in my early career.” Dr. Montañez, in the throes of her dissertation study, experienced it in the challenge from her dissertation advisor: “And that is where I had to really fight that way of thinking, that there’s, ‘You have to do it this way.’ But it’s not, it wasn’t an Indigenous approach that I was trying to draw from at that time.”

Intellectual elimination refers to the removal and replacement of Indigenous knowledge within Indigenous people and communities. Under the disjuncture-response dialectic, it is practiced at the meso level space just outside of the assessment development work of these developers. It is important to consider the purpose of
intellectual elimination. With the ultimate goal of access to territory, intellectual elimination seeks to persuade Indigenous people to drop the knowledge systems through which they view and understand the world in favor of those of the colonizers. Dr. Kanaloa provided the context for intellectual elimination by describing the “mounting suppression of intellect with the purpose of eliminating it so that there is no obstacle for the dominant culture to have to fight against.” She also expressed that intellectual elimination appeared in the very foundations of her work due to “the intentional commercialization of Hawaiian culture, again, by the colonizer, the settlers of this space” which led to the culture “to be perceived or to have only value in the space of entertainment.” This effective removal of Hawaiian knowledge from the culture has been deep enough to affect the self-perceptions of Hawaiians with the result being that centuries of Hawaiian knowledge has been abandoned. Dr. García expressed that she observes intellectual elimination within her field by noting the ideas, theories, and instruments that are granted greater visibility and use in her field come from dominant groups. She has experienced instances of needing “to abide and comply with that cookie-cutter approach, that dominant way of being,” presented within her field of psychology in order for her work to be considered. With the result being, “You end up, almost like, again, becoming the oppressor by behaving like the oppressor.”

One of the ways that intellectual elimination can occur is through the exclusion of Indigenous knowledge based on standards and practices that do not represent the concepts and ideas of Indigenous developers. Dr. Montañez challenged her dissertation advisor over what she felt was his insistence upon her using an established methodology that was drawn from published material. She pointed out that in many academic
disciplines, the voices of Indigenous scholars are absent. With the lack of Native researchers in her field, Dr. Montañez was left with the option of selecting a research methodology that “wasn’t culturally relevant, relevant. It wasn’t specific. It was inappropriate. It wasn’t really respectful of the voices of the participants, which I promised to do.”

At the core of the disjuncture-response dialectic is the measurement disjuncture brought about by the introduction of elements of the assessment development process from one worldview into another. I defined this concept to encapsulate the numerous ways in which Indigenous perspectives on assessment are interrupted by external perspectives. Frequently, this occurs subconsciously when developers are making choices about what and how to measure. Other times, the power dynamics that surround assessment development decisions force an adherence to Western assessment systems from Indigenous people and communities. In my definition, I did not address the intent behind the measurement disjuncture and chose only to define it descriptively. By situating it within the meso level concept of intellectual elimination and macro level concept of settler colonialism, the intent of measurement disjuncture becomes more clearly associated with the goals of both of these concepts. Disjuncture is a misalignment that, when placed within the context of the disjuncture-response dialectic, serves a purpose. In her work, Dr. García noted that mental health screenings and assessments “often fail to capture Latinx cultural experiences, values, and knowledge because they are developed and administered from a Eurocentric perspective.” When asked to provide a description of the effect of measurement disjuncture, Dr. García replied that it provides “Inaccurate or inadequate conclusions” that “maintain the dominant order; a hierarchy.
that prioritizes Eurocentric thought, experience, and values and that keeps ignoring, oppressing, and controlling non-dominant knowledge.”

Dr. Kanaloa expressed measurement disjunctures through the use of a metaphor within a story about the comparison of the construction of a fishpond seawall by Hawaiian seawall builders against a seawall constructed by Western-trained scientists. She summarized her concept of measurement disjuncture as the “mentality of the colonizer thinking that their way is the way, even though it does not even come close to even touching the context of that system that they’re building for.” This sense of self-assuredness and arrogance is not a remnant of settler colonialism but, rather, a continued feature of it. Detecting misalignment requires paying close attention to one’s surroundings but also requires one to be open to the possibility that it even exists. Measurement disjuncture is a misalignment, according to Dr. Montañez. She reflected on one of her instructors who said, “If you’re right on with your research question, then everything else is going to flow,” and she expressed that “And I really wanted to, you know, be very attentive to that flow.” For Dr. Montañez, a research process that does not maintain that flow, lacks alignment. To support the alignment of work toward Hawaiian-defined goals and outcomes, Dr. Kanaloa encouraged non-Hawaiian external consultants to ask, “How can I, the architect support your endeavor, support your vision? How can my knowledge as an anthropologist contribute?” According to Dr. Kanaloa, these types of interactions are lacking in Hawai‘i.

Culturally specific assessment shares the center of the disjuncture-response dialectic along with measurement disjuncture. It represents a micro level response to the problem of measurement disjuncture and, in the disjuncture-response dialectic, is situated
within the broader aims of intellectual amplification and Indigenous sovereignty. The act of beginning a culturally specific assessment development project necessarily removes a developer from the confines of a space that does not fully represent or serve the needs of Indigenous people. Dr. Montañez explained that having Indigenous sovereignty “means that our way of being and our way of knowing is respected and it’s relevant.” As a result, according to Dr. Montañez, “therefore, our way of, our approach, in a culturally specific assessment needs to be aligned with that, our way of being, in our way of knowing.”

Culturally specific assessment differs from culturally responsive assessment by the inclusion of the named worldview within which the assessment development takes place. The addition of the named worldview provides the entryway for the inclusion of culturally specific assessments designed for use within Indigenous environments. Dr. Kanaloa stated that her culturally specific assessment development work “was based solely on Hawaiian world view of how we understand and interact with our universe,” and that her assessment framework represents “that lifestyle, of, of understanding our universe, our place in it, and, therefore, how do we interact with our universe, and how do we adapt to that ever-changing universe.” She noted that although she considers the assessment to be culturally specific, the principles under which it was constructed are applicable across other Indigenous environments and disciplines where a separate culturally specific assessment is desired.

To transition culturally specific assessments away from being reactions to disjuncture, such assessments can move the field toward multiple directions and areas of understanding that are untapped. For example, standard assessments of trauma that are intended to serve a broad population are often not specific enough to meet the needs of
Latinx immigrants, a significant proportion of all the immigrants within the United States. Dr. García indicated that her assessment is intended to evaluate “the traumatic experiences that an individual, their family, or their community goes through, endures, encounters, as a result of pre-migration, migration, post-migration experiences and experiences with enslavement, colonization, and oppression.” These new directions are an important aspect of the disjuncture-response dialectic. These developers seek not only to respond to significant issues affecting their work, they also seek to move their disciplines toward a new direction, one where their student, clients, participants are served more effectively.

Intellectual amplification represents the meso level space that sits above culturally specific assessment and within Indigenous sovereignty. It represents the space of both resistance and hope for a better way of serving the needs of Indigenous people. It is important to acknowledge the challenge of moving toward a space of self-determination and autonomy. For Dr. Kanaloa, Indigenous people, living under settler colonial structures, have internalized their proper places in society making the realization that culture incorporates knowledge and that “intellectual realization, like, just realizing that culture is intellect” an important stage within the concept of intellectual amplification.

The self-acknowledgement of one’s own agency is often dependent upon understanding the strengths and gifts we have within us. Expressing and using those gifts are often challenging for Indigenous people. Dr. Garcia expressed the concept of intellectual amplification as the metaphorical unearthing of the knowledge and strengths of a people and that through her work, “my hope would be that by unearthing, like, there would be, like, a, like, a ripple effect to this, an inter-generational ripple effect.” The
ripple effect that Dr. García imagined acknowledged that developers can also be affected by their work on culturally specific assessments. Which, she proposed, could lead to instances where “the people that are being assessed would experience, would, would have an encounter with someone, us, the evaluator,” who had experienced healing and “that would be a like a corrective emotional experience.”

Intellectual amplification would appear to exist in stages that begin with acknowledgement, to an unearthing of strengths toward something greater. Of the elements of the disjuncture-response dialectic, intellectual amplification is what drew the immediate attention of Dr. Montañez who discerned from the image in Figure 1 (p. 4) that, through intellectual amplification, “you have this Indigenous sovereignty, but it moves into that.” She immediately took to the amplification term and indicated that “It’s an expression and it’s expression that allows for one’s intellectual understanding to be broadcasted.” Dr. Montañez relayed the story of an elder expressing gratitude for the artistic display of research participants after seeing so many displays of Native people in a negative light. The highlighting of these developers through this very research is meant to follow in this direction of amplification.

Indigenous sovereignty serves as a macro level response within the disjuncture-response dialectic. This concept incorporates such elements as Indigenous self-determination and Indigenous autonomy that serve as grander objectives for the work of Indigenous assessment developers. As with other aspects of the disjuncture-response dialectic, it important to understand that selection and description of this macro level is dependent upon the developer designing the assessment. Dr. Kanaloa explained that Hawai‘i has had an Indigenous sovereignty movement since the 1990s and this allowed
her to intersperse the language of sovereignty in her discussion with parents about her assessment development work. She indicated that although “sovereignty and education is a fairly newer ideology but I sure as hell use that phrasing when I was speaking to parents.” According to Dr. Kanaloa, her phrasing caught the attention of parents who not only asked her “This is really what this assessment is about?” but because of the decades-long sovereignty movement, also “understood real quick what we’re trying to do.”

Asked to frame the concept of sovereignty, chose a different term that exists within the same universe as sovereignty. Dr. García stated “I think I would call it Indigenous liberation because I feel, like, liberation recognizes the, the oppression. That there was oppression before, like, autonomy.” Within her definition, she acknowledged the dialectical oppression that precedes liberation and referred to it as “freedom from the oppressor.” She expressed a new direction for Indigenous people in articulating what might exist within this liberatory space by stating “It’s a space…where there’s power, where there is, where there is healing, where there’s, like, the honoring of, of, who you are, of your strengths of your resilience, of the resources, the knowledge.” Her description of this liberatory space provides insight into how she feels Indigenous people are treated outside that space. For Dr. Montañez, the concept of sovereignty is a much more personal construct. Working toward this form of sovereignty relies on a firm understanding and appreciation of one’s own contributions. When asked what larger goal her work serves, Dr. Montañez, after a lengthy pause, stated humbly, “I don’t know. I can just do the little part that I can do and then if it’s that one little piece that is integrative,… and if it’s relevant and respectful, then.” She concluded her thought returning to her original response to my inquiry, “So, but I can just do that one little piece.” For Dr.
Montañez, her work was validated by elders who let her know that her work helped to promote their culture in ways that demonstrate to others “this is who we are as good people.”

At the center of the disjuncture-response dialectic sits the developer who must consider the swirling of elements as they progress toward their goal of developing instruments that reflect the needs, concerns, and experiences of Indigenous people. As expressed above, one of the challenges of overcoming the forces of settler colonialism is the self-doubt implanted within the minds of Indigenous people. For Dr. Kanaloa, an initial hurdle was overcoming her own insecurity about assessment development. Speaking about the effect of the culturally specific assessment development process on her, Dr. Kanaloa reflected, “This process allowed me to decolonize my own mind and to amplify my own intellect because I was in that whole part of the dissolution of the knowledge.” She indicated that under settler colonialism, Hawaiians are led to believe that there are some disciplines that are just not for them. Dr. Kanaloa clarified by stating that she began her assessment development project thinking, “Who the hell am I? I don’t know nothing about assessment development and I have no skill set in this! I don’t know what the hell I’m doing!” She quickly transitioned to thinking, “Get over yourself, you got to just do it.”

Each of these developers expressed the personal growth they experienced through their assessment development. Dr. García expressed, about the entire assessment development project, “I feel like I’ve grown personally, professionally.” In explaining the difference between developing a culturally specific assessment and others she’s developed. She noted, “It’s definitely more work,” and requires of her “feeling
comfortable with, with, with these tensions,” but explained, “At the same time, it’s really freeing to move beyond settler colonialism, or to try to move beyond it.” Despite the difficult conversations that surround such heavy concepts as settler colonialism and intellectual elimination and their effect on Indigenous people, these developers remain hopeful and optimistic about the work they are doing. Dr. García reflected that while “there’s so much more work to do,” and that “yes, we’ve surpassed expectations,” she acknowledged, “but, I mean, we’re (just) getting started.” She also noted that the work has introduced a new authenticity in the work that she is doing, causing her to “critically reflect on every step of the process.” The result is that she feels she is “having to be, like, accountable, responsible, transparent, authentic, organized?” In slowing down her processes, Dr. García expressed that “I think I’m starting to find new purpose in the work that’s in line with, with my values.”

One of the challenges in working on assessments from a non-Western perspective is the familiarity of so many researchers and practitioners with the standard level of agreement scale approach to assessment. This perspective on assessment has influenced Dr. Montañez who indicated that, at times, “I want to go back to, let’s just do a Likert scale and I started looking up Likert scales and then I go, oh that’s not going to work.” This one statement provides an indication of the transition Dr. Montañez is making as she moves away from the level of agreement scale approach. She is currently in an in-between space and acknowledged that “I feel a little stuck right now. So, I’m hoping to move forward and to, really, you know, I hope something emerges.” Removing the dependency on these forms of assessment familiar to academicians leaves a gap that can be filled with newer forms that have yet to be discovered. This space represents a
tremendous opportunity for instrument developers. Dr. Montañez, reflecting on the meso
layer element of the right side of my image in Figure 1 (p. 4), intellectual amplification,
indicated that the space she is seeking for her work is “that midsection, that little orange
section, and maybe I’ve been wanting to do, maybe I just, that’s where I think I need to
be.”

Assessment versus measurement

This study focused on the views of three independent Indigenous assessment
developers. In each of these cases, during our development work, the assessment
developers expressed to me a desire for a numerical value to represent the degree of the
traits under observation. The pursuit of a numerical value in the case of Dr. Kanaloa was
in response to the educational system within which she was operating. Numerical
measures of standing and progress are important outcomes within the educational
reporting structures in use at her charter school. Dr. García and Dr. Montañez were under
no such obligations but function within disciplines that utilize numerical scales as key
sources of information about individuals. The numerical scale as an objective makes each
of these projects a measurement exercise.

In traditional Indigenous environments, numerical representations of the degree of
a trait are not as heavily sought. Rather, those representations are compared against the
experiences of humans, and their interactions with plants, animals, elements of nature,
and the cosmos. Further, stages of development are based on the perspective of the guide
or mentor observing the progress of an individual making comparisons against cultural
standards and practices. Are there assessment processes that can be developed that rely
on such comparisons against cultural standards rather than on numerical representations along a scale? More research is needed to explore these possibilities.

Construct development

The review of the literature presented here demonstrated that the selection and use of instruments previously validated within the research literature has not served Indigenous communities well. This begs the question, must construct development be driven by this reliance on the literature? As Dr. Kanaloa pointed out, there has not been time to develop Hawaiian psychometricians who can then devote their time to scholarly research activities such as the development of Hawaiian-based instruments. When there is a lack research literature on construct development within communities marginalized within society, where can we turn? These three Indigenous assessment developers demonstrate that there are other approaches to the development of assessment constructs. Construct development can come from the legacies of a people, their oral stories, the voices of the elders, or the experiences of the people to be assessed. These developers provide a path forward that contributes to the research literature on culturally specific construct development and validates these constructs.

Construct development through the lens of marginalized communities has its own challenges. Construct development that relies on the insight of only those within the group might produce biased instruments. But what does bias mean in a culturally specific environment? Additionally, the influences of settler colonialism and intellectual elimination might be strong enough to introduce Western elements when framing the construct. When discriminatory hierarchies are embedded within the environment where the construct development occurs, even the Indigenous assessment developers may not be
aware of the levels of disjunctures present in their environments or have developed fully their aspirations for how these disjunctures can be resolved. To address these concerns, it is important to maintain a multidisciplinary collaborative team that retains a critical perspective throughout the construct development process. Otherwise, social inequities within the environmental structures served by the assessment exercise can be reproduced. These developers challenge the existing structures that frame construct development.

How can they work in these spaces?

Each of the three Indigenous assessment developers under study perceived that existing instruments and systems of assessment were not adequately meeting the needs of the people they serve. Prior to the conduct of this research, that gap between assessments and the needs of people from marginalized groups was unnamed. Today, I refer to it as measurement disjuncture (Sul, 2019). In the cases presented here, Indigenous assessment developers decided that the best way to resolve that disjuncture was to develop culturally specific assessments. More research is needed on what leads to the decision to develop culturally specific assessments. In particular, what is it about these individuals that pushed them to venture into the culturally specific development space? Who or what gave them the permission to work in these spaces?

Each of these three developers stood fast against the standard perspectives on assessment development in order to create instruments from an underrepresented perspective. In two of the cases, the projects were independent research projects. Dr. Montañez chose this project for her dissertation and stood strong against the objections of her advisor. Dr. García looked into the faces of deported immigrants and recognized the need for a better way to acknowledge their trauma. Dr. Kanaloa was working within a
state education system and sought to challenge the norms of her educational system through the creation of a schoolwide system of culturally specific assessments. What lessons can the measurement profession take from these developers?

**The generalized disjuncture-response dialectic**

Throughout this research journey, I have been fortunate to share my experiences across a wide array of audiences in North America, Hawai‘i, and the African continent. Based on the reception that I have received in these venues, it is clear that there is something that exists beyond the disjuncture-response dialectic presented here. What would this work look like outside of Indigenous and assessment environments? Are there still layers of interconnected and opposing structures? From the disjuncture-response dialectic of this research, a generalized disjuncture-response dialectic (Fig. 5, p. 35) is proposed as a theoretical framework that presents multi-level disjunctures and responses within an environment that encourages liberation from disruptive structures. Under this generalized perspective, individuals who respond to disjunctures within their broadly defined environments are political actors and their culturally specific practices, offered in response to multilayered disjunctures, serve as political acts that advance liberatory goals. At the center of the dialectic is the individual responding to the disjunctures while simultaneously working toward greater aspirational goals.

**Summary**

The results presented in this section addressed the seven research questions that framed this critical comparative case study. Qualitative interviews with three Indigenous assessment developers were conducted to understand their experiences with settler colonialism, intellectual elimination, measurement disjuncture, and culturally specific
assessment development. In addition, the interviews provided insight into how Indigenous assessment developers perceive their work contributes to the grander goals of intellectual amplification and Indigenous sovereignty. Finally, this study provided insight into how working on culturally specific assessments affects Indigenous assessment developers.

Critical theory was present within the research methodology and supported the development of the disjuncture-response dialectic as a promising framework with which to examine the work of Indigenous assessment developers. The disjuncture-response dialectic addressed the multitiered challenges faced by Indigenous assessment developers, their responses to those challenges, and their aspirational goals for their work and their surrounding communities within which they serve.
CHAPTER V

STUDY PURPOSE, PARAMETERS, FINDINGS, DISCUSSION, IMPLICATIONS, RECOMMENDATIONS, AND SUMMARY

This chapter contains the purpose of the study, summary of findings, study assumptions, limitations and delimitations, implications for educational theory, implications for educational research, implications for educational practice, recommendations, and an afterward on research as transformation.

Purpose of the Study

Assessments that are developed from a Western perspective and used within Indigenous environments introduce measurement disjuncture, increase measurement error, and ultimately, reduce measurement validity. The purpose of this critical comparative case study was to explore, through the experiences of Indigenous assessment developers, what measurement disjuncture is, why it is a problem, and what can be done about it. I introduced the disjuncture-response dialectic theoretical framework and through the comparative case examples, I investigated how Indigenous assessment developers use culturally specific assessments as responses to measurement disjuncture, as forms of intellectual amplification that challenge intellectual elimination, and as political acts of Indigenous sovereignty that stand against forces of settler colonialism. My aim in presenting these case studies was to elevate the work of Indigenous assessment developers to support practitioners, researchers, scholars, and activists working within Indigenous environments who seek information that reflects the Indigenous people they serve.
Parameters

The study parameters focus on the assumptions, limitations, and delimitations of the study outlined below.

Assumptions

Assessment is defined here as the use of procedures that permit the representation of a domain of knowledge, skill, or affect allowing for the translation of observations into assignments of value permitting inferences about domain status for the purpose of making decisions. For this study, it is assumed that these elements of the assessment definition can be expressed during the qualitative interviews by the research participants using terminology that is relevant to them. For example, although not using the exact terms, the participants will be able to identify and classify construct domains, understand them, and articulate their meanings using the language of their choice.

The participants bring with them an understanding the role of assessment within their respective settings. Further, the participants are aware that there exist varying degrees of the trait of interest and that it can be represented through procedure.

Assessment is a universal activity, inherent within and across cultures. It may be practiced differently within each culture but serves a shared purpose: the identification of an individual’s representation of a domain of knowledge, skill, or affect. Assessment can be used for ordering or classification purposes.

Culturally specific assessment and culturally responsive assessment are nearly identical concepts. Culturally responsive assessments typically are developed from within the dominant worldview. Culturally specific assessments, however, are developed within
a named worldview (Sul, 2019). Culturally responsive assessment (Hood, 1998) is practiced from within the dominant worldview and that worldview is often unnamed.

**Limitations**

The focus of this research was on the experiences of three Indigenous assessment developers from North America and Hawai‘i with whom I have collaborated on the development of culturally specific assessments. I have known each of them for a period of time between 18 and 60 months. There was an original attempt to delimit the research participants to those working on assessments within educational settings. I found it necessary to expand to include assessment development processes in other disciplines. Each of the Indigenous assessment developers have earned doctoral degrees within their various areas of expertise. Interviews were conducted in English. Other languages were utilized throughout the interviews to stress particular points.

**Delimitations**

This research did not address the experiences of Indigenous assessment developers with whom I have not collaborated on the development of culturally specific assessments. Nor does it involve individuals with whom I have limited engagement over the past 18-60 months. This research does not involve Indigenous assessment developers who have not earned college degrees within their various areas of expertise. It did not involve the primary use of other languages besides English.

Although culturally specific assessments differ from culturally responsive assessments through the introduction of the named worldview, this study does not attempt to incorporate the views of culturally responsive assessment developers.
Additionally, this study does not attempt to incorporate the views of non-Indigenous culturally specific assessment developers.

**Findings**

The purpose of this critical comparative case study was to explore, through the experiences of three Indigenous assessment developers, what measurement disjuncture is, why it is a problem, and what can be done about it. To accomplish this, I established the disjuncture-response dialectic theoretical framework to understand more fully the problem of measurement disjuncture and how Indigenous assessment developers respond to it. Through three case examples, I investigated how Indigenous assessment developers use culturally specific assessments as responses to measurement disjuncture, as forms of intellectual amplification that challenge intellectual elimination, and as political acts of Indigenous sovereignty that stand against forces of settler colonialism. The findings are divided into two broad sections that focus on the structure and functional spaces of the disjuncture-response dialectic.

*The structure of the disjuncture-response dialectic*

This study was conducted through the theoretical framework of the disjuncture-response dialectic (DRD) represented by the image in Figure 1 (p. 4). Under the DRD framework, measurement disjuncture is an aspect of both settler colonialism and an outcome of intellectual elimination whereas culturally specific assessments serve as responses to measurement disjuncture. Such assessments serve as forms of intellectual amplification that challenge intellectual elimination, and serve as political acts of Indigenous sovereignty that stand against forces of settler colonialism. The DRD integrates both vertical (Bartlett & Vavrus, 2014; Vavrus & Bartlett, 2006) and dialectical
(Hegel, 2010; Jay, 1973; Stone, 2014) perspectives. In this study, the framework provided structure for the research questions as well as the interview questions. As such, the resultant research findings are framed according to the disjuncture-response dialectic.

**Vertical framework**

The selection of the comparative case study design (Bartlett & Vavrus, 2017) coincides with the need for a more fluid and robust structure for the study of the cases. The comparative case study is structured according to three axes of dimension described by Bartlett and Vavrus (2017b) as the horizontal axis, the transversal axis, and the vertical axis. Along the horizontal axis reside the study cases. The transversal axis connects the horizontal elements to one another through a temporal component (Bartlett & Vavrus, 2017). In this study, the vertical axis serves as a means to represent the proximity of Indigenous assessment developers to spheres of influence that affect their work. The theoretical framework included two sets of vertical levels upon which to examine the phenomenon. These developers have expressed that settler colonialism, slavery, and racism are indeed embedded within the work they do as assessment developers. Similarly, intellectual amplification, liberation, freedom, and sovereignty are aspects of their development processes. For these developers, these multileveled concepts are omnipresent and are expressed through the care and attention they pay to these issues as they develop assessments. This perspective on the vertical axis represents a shift from an organization-based perspective on levels of the vertical axis toward a concept-based perspective on verticality and provides a unique approach to the study of the disjuncture-response dialectic.
Dialecticism

The theoretical framework incorporates dialecticism with which to examine the phenomenon. These developers have expressed that aspects of their work are simultaneously reactive and transformational. The introduction of disjunctures elicits a response. Although that response is often reactive, under the dialectic model, and as expressed by these developers, the response also can be transformative. This transformative nature of their responses helps to move from a response toward a new space Dr. García referred to as “Indigenous liberation.” It situates the development of culturally specific assessments as a response to the phenomenon of measurement disjuncture.

Within the functional spaces of the disjuncture-response dialectic

To explore what happens within the various spaces of the DRD, I interviewed Indigenous assessment developers with whom I have been developing culturally specific assessments. I wanted to hear directly from them how they experience being in and how they navigate these seven spaces in their assessment development work.

Settler colonialism

Dr. Kanaloa expressed that she experienced settler colonialism with respect to the imposition of both federal and state requirements upon her public charter school: “The priorities of the people in power that make all of the decisions, even if somebody in the state legislature government, even the governor’s office wanted to tip things more in the Indigenous favor, the system is not set up to do that.” Dr. García expressed that she experienced settler colonialism through the manner in which “I feel heaviness in my
body, and that is the heaviness that I have felt, I think, as I’ve developed professionally and clinically in my early career.” Dr. Montañez, in the throes of her dissertation study, experienced it in the challenge from her dissertation advisor: “And that is where I had to really fight that way of thinking, that there’s, ‘You have to do it this way.’ But it’s not, it wasn’t an Indigenous approach that I was trying to draw from at that time…”

**Intellectual elimination**

Dr. Kanaloa expressed that intellectual elimination appeared in the very foundations of her work. Dr. Kanaloa repeatedly stressed that “the intentional commercialization of Hawaiian culture, again, by the colonizer, the settlers of this space, and so, in doing so, they set up Hawaiian culture to be perceived or to have only value in the space of entertainment.” This effective removal of Hawaiian knowledge from the culture has been deep enough to affect the self-perceptions of Hawaiians with the result being that centuries of Hawaiian knowledge has been abandoned. This, according to Dr. Kanaloa has been intentional: “It doesn’t want to train people who will eventually become their adversaries. They don’t want to train people that’s going to shake things up in the system that’s working for them.”

Dr. García expressed that she observes intellectual elimination within her field by noting the ideas, theories, and instruments that are granted greater visibility and use in her field come from dominant groups. She has experienced instances of needing “to abide and comply with that cookie-cutter approach, that dominant way of being,” presented within her field of psychology in order for her work to be considered. With the result being, “You end up, almost like, again, becoming the oppressor by behaving like the oppressor.” Dr. Montañez challenged her dissertation advisor over what she felt was his insistence upon her using an established methodology.
that was drawn from published material. With the lack of Native researchers in her field, Dr. Montañez was left with the option of selecting a research methodology that “wasn’t culturally relevant, relevant. It wasn’t specific. It was inappropriate. It wasn’t really respectful of the voices of the participants, which I promised to do.”

**Measurement disjuncture**

Dr. Kanaloa expressed her concept of measurement disjuncture through the use of a metaphor within a story about the construction of fishpond seawall. Dr. Kanaloa summarized her concept of measurement disjuncture as “that mentality of the colonizer thinking that their way is the way, even though it does not even come close to even touching the context of that system that they’re building for.” Dr. Montañez stated that, for her, “What comes to my mind is misalignment you know?” She reflected on one of her instructors who said, “If you’re right on with your research question, then everything else is going to flow,” and she expressed that “And I really wanted to, you know, be very attentive to that flow.” For Dr. Montañez, a research process that does not maintain that flow, lacks alignment.

**Culturally specific assessment**

Dr. Kanaloa stated that her culturally specific assessment development work “was based solely on Hawaiian world view of how we understand and interact with our universe,” and that her assessment framework represents “that lifestyle, of, of understanding our universe, our place in it, and, therefore, how do we interact with our universe, and how do we adapt to that ever-changing universe.” When asked what she plans to assess with her culturally specific assessment instrument, Dr. García explained, “what I am trying to, to evaluate are the traumatic experiences that an individual, their
family, or their community goes through, endures, encounters, as a result of pre-
migration, migration, post-migration experiences and experiences with enslavement,
colonization, and oppression.” Dr. Montañez explained that having Indigenous
sovereignty “means that our way of being and our way of knowing is respected and it’s
relevant.” As a result, according to Dr. Montañez, “therefore, our way of, our approach,
in a culturally specific assessment needs to be aligned with that, our way of being, in our
way of knowing.”

**Intellectual amplification**

For Dr. Kanaloa, the path to intellectual amplification includes the realization that
culture incorporates knowledge and that “intellectual realization, like, just realizing that
culture is intellect” represents an important stage of the progress toward intellectual
amplification. Dr. García expressed the concept of intellectual amplification as the
metaphorical unearthing of the knowledge and strengths of a people and that through her
work, “my hope would be that by unearthing, like, there would be, like, a, like, a ripple
effect to this, an inter-generational ripple effect.” Dr. García also acknowledged that
developers can also be affected by transformational experiences with culturally specific
assessment development leading to instances where “the people that are being assessed
would experience, would, would have an encounter with someone, us, the evaluator,”
who had experienced healing and “that would be a like a corrective emotional
experience.” Dr. Montañez was able to discern from the image in Figure 1 (p. 4) that,
through intellectual amplification, “you have this Indigenous sovereignty, but it moves
into that.” She immediately took to the amplification term and indicated that “It’s an
expression and it’s expression that allows for one’s intellectual understanding to be broadcasted.”

**Indigenous sovereignty**

Dr. Kanaloa explained that while Hawai‘i has had an Indigenous sovereignty movement since the 1990s, “sovereignty and education is a fairly newer ideology,” but “I sure as hell use that phrasing when I was speaking to parents.” According to Dr. Kanaloa, her phrasing caught the attention of parents who not only asked her “This is really what this assessment is about?” but because of the decades-long sovereignty movement, also “understood real quick what we’re trying to do.” Asked to frame the concept of sovereignty, Dr. García responded nearly immediately, “I think I would call it Indigenous liberation because I feel, like, liberation recognizes the, the oppression. That there was oppression before, like, autonomy.” When asked what larger goal her work serves, Dr. Montañez, after a lengthy pause, stated humbly, “I don’t know. I can just do the little part that I can do and then if it’s that one little piece that is integrative,… and if it’s relevant and respectful, then.” She concluded her thought returning to her original response to my inquiry, “So, but I can just do that one little piece.”

Speaking about the effect of the culturally specific assessment development process on her, Dr. Kanaloa reflected, “I’ve talked to you a little bit about a couple of times, was, this process allowed me to decolonize my own mind and to amplify my own intellect.” Dr. Kanaloa clarified by stating, “because I was in that whole part of the dissolution of the knowledge, thinking, like, ‘Who the hell am I? I don’t know nothing about assessment development and I have no skill set in this! I don’t know what the hell I’m doing!’” Dr. García expressed, about the entire assessment development project, “I
feel like I’ve grown personally, professionally.” In explaining the difference between developing a culturally specific assessment and others she’s developed. She noted, “It’s definitely more work, like, it’s, it’s, it’s hard work and there’s a lot of, you know, feeling comfortable with, with, with these tensions,” but explained, “At the same time, it’s really freeing to move beyond settler colonialism, or to try to move beyond it.” Reflecting on the meso layer element of the right side of my image in Figure 1 (p. 4), intellectual amplification, Dr. Montañez indicated that the space she is seeking for her work, “Is that midsection, that little orange section, and maybe I’ve been wanting to do, maybe I just, that’s where I think I need to be.”

**Discussion**

The study addressed seven research questions that framed this critical comparative case study. Qualitative interviews with three Indigenous assessment developers were conducted to understand their experiences with settler colonialism, intellectual elimination, measurement disjuncture, and culturally specific assessment development. In addition, the interviews provided insight into how Indigenous assessment developers perceive their work contributes to the grander goals of intellectual amplification and Indigenous sovereignty. Finally, this study provided insight into how working on culturally specific assessments affects Indigenous assessment developers.

Critical theory was integrated within the research methodology and supported the development of the disjuncture-response dialectic as a promising framework with which to examine the work of Indigenous assessment developers. The disjuncture-response dialectic addressed the multitiered challenges faced by Indigenous assessment
developers, their responses to those challenges, and their aspirational goals for their work and their surrounding communities within which they serve.

**Implications**

The introduction of a new theoretical framework can have implications at multiple levels. This section contains implications of the introduction of the disjuncture-response dialectic theoretical framework for educational theory, implications for educational research, and implications for educational practice. It also addresses implications of a generalized disjuncture-response dialectic as broader theoretical framework that encompasses the one established for this research.

**Implications for educational theory**

This section reviews the implications for educational theory according to the four broad themes of critical theoretic taxonomy, disjuncture-response dialectic as theoretical framework, expansion and clarification of the measurement environment, and the identification of a research methodology.

**Establishes a critical theoretic taxonomy for assessment**

This research establishes a taxonomy for assessment that is grounded in Critical Theory (Giroux, 1979; Horkheimer, 2018; Steinberg & Kincheloe, 2010). To do so, it provides formal definitions of both assessment and critical assessment. Further, it presents a methodology for establishing robust definitions of assessment forms by crossing the forms against the formal definition of assessment presented here. Using this methodology, more robust definitions of culturally specific assessment and culturally responsive assessment are presented here for the first time. Under the proposed
taxonomy, culturally specific assessment is situated within culturally responsive assessment (Hood, 1998) and critical assessment, each of which are grounded by critical pedagogy (Freire, 2017) and critical theory (Giroux, 1979; Horkheimer, 2018; Steinberg & Kincheloe, 2010).

Establishes the disjuncture-response dialectic as a theoretical framework

The disjuncture-response dialectic (DRD) is established as a theoretical framework for understanding assessments and assessment development. The DRD integrates both vertical (Bartlett & Vavrus, 2014; Vavrus & Bartlett, 2006) and dialectical (Hegel, 2010; Jay, 1973; Stone, 2014) perspectives. Under the DRD, Indigenous culturally specific assessment developers are political actors and offer their assessment development practices in response to intellectual elimination and settler colonialism and in support of intellectual amplification and Indigenous sovereignty. This theoretical framework provides for a generalized disjuncture-response dialectic that expands the focus of this research to culturally specific assessment developers who are political actors who offer their assessment development practices in response to discipline-specific and structural levels of disjunctures and in support of discipline-specific and structural levels of aspirational goals.

Expands and clarifies the measurement environment

This research situates measurement disjuncture as a problem of measurement and assessment. It situates culturally specific assessment as a form of assessment. In addition, it expands assessment development to include discipline-specific and structural levels of disjunctures and aspirational goals.
Identifies a research methodology to coincide with the disjuncture-response dialectic

This research integrates a dialectical perspective within a comparative case study approach (Bartlett & Vavrus, 2017) that incorporates a unique vertical axis representing the proximity of measurement disjuncture, culturally specific assessment, intellectual elimination, intellectual amplification, settler colonialism, and Indigenous sovereignty to the work of Indigenous assessment developers. This research also establishes a generalized critical comparative case study approach that incorporates a unique vertical axis representing the proximity of disjunctures and aspirational goals to the work of assessment scholars, researchers, and practitioners.

Implications for educational research

This section reviews the implications for educational research according to the four broad themes of critical theoretic taxonomy, disjuncture-response dialectic as theoretical framework, expansion and clarification of the measurement environment, and the identification of a research methodology.

Establishes a critical theoretic taxonomy for assessment

As a result of this research, educational researchers may clarify their own definitions of assessment prior to conducting research on the development and use of assessments. A formal definition of critical assessment is provided and educational researchers can utilize, challenge, or expand upon it within their own research. This definition opens a space for the conduct of research on the development and use of critical assessments. A model for the definition of a multitude of assessment forms is provided and educational researchers can utilize, challenge, or expand upon it within their
own research. This definition opens a space for the conduct of research on the development and use of these assessment forms. A robust definition of culturally specific assessment is provided and educational researchers can utilize, challenge, or expand upon it within their own research. This definition opens a space for the conduct of research on the development and use of culturally specific assessments. The assessment taxonomies of educational researchers may be updated to account for both critical assessment and culturally specific assessment presented here.

*Establishes the disjuncture-response dialectic as a theoretical framework*

This research provides a model that educational researchers may use to incorporate vertical and dialectical perspectives when conducting research on the development and use of culturally specific assessments. Under this theoretical framing, educational researchers may incorporate into their research and practice the concept that culturally specific assessment developers are political actors who offer their assessment development practices in response to discipline-specific and structural levels of disjunctures and in support of discipline-specific and structural levels of aspirational goals.

*Expands and clarifies the measurement environment*

Educational researchers may acknowledge, identify, and examine measurement disjuncture present within their assessment development research models. In addition, educational researchers may acknowledge, identify, examine and develop culturally specific assessments in response to measurement disjuncture. To address measurement disjuncture through culturally specific assessment, educational researchers may acknowledge, identify, examine and address external disjunctures and embed aspirational
goals at the discipline-specific and structural levels within assessment development research models.

**Identifies a research methodology to coincide with the disjuncture-response dialectic**

This research provides a model that educational researchers may use to study the integration of a dialectical perspective within a comparative case study approach (Bartlett & Vavrus, 2017) that incorporates a unique vertical axis representing the proximity of measurement disjuncture, culturally specific assessment, intellectual elimination, intellectual amplification, settler colonialism, and Indigenous sovereignty to the work of Indigenous assessment developers. Educational researchers may choose to study critical comparative case study approaches that incorporate a unique vertical axis representing the proximity of disjunctures and aspirational goals to the work of assessment scholars, researchers, and practitioners.

**Implications for educational practice**

This section reviews the implications for educational practice according to the four broad themes of critical theoretic taxonomy, disjuncture-response dialectic as theoretical framework, expansion and clarification of the measurement environment, and the identification of a research methodology.

**Establishes a critical theoretic taxonomy for assessment**

As a result of this research, educational practitioners may learn, use, promote, develop, and advance practices that monitor the degree to which culturally specific assessments, critical assessments, various assessment forms, and, broadly, assessments
are developed with definitional fidelity. Educational practitioners may utilize the proposed assessment taxonomies to locate their own assessment development practices.

_Establishes the disjuncture-response dialectic as a theoretical framework_

Educational practitioners may learn, use, promote, develop, and advance practices that incorporate vertical and dialectical perspectives on the development and use of assessments.

Under this theoretical framing, educational practitioners may incorporate into their practice the concept that culturally specific assessment developers are political actors who offer their assessment development practices in response to discipline-specific and structural levels of disjunctures and in support of discipline-specific and structural levels of aspirational goals.

_Expands and clarifies the measurement environment_

Educational practitioners may acknowledge, identify, and examine measurement disjuncture present within their assessment development practices. In addition, educational practitioners may acknowledge, identify, examine and develop culturally specific assessments in response to measurement disjuncture. To address measurement disjuncture through culturally specific assessment, educational practitioners may acknowledge, identify, examine and address external disjunctures and embed aspirational goals at the discipline-specific and structural levels within assessment development practices.
Identifies a research methodology to coincide with the disjuncture-response dialectic

Educational practitioners may choose to apply knowledge obtained from the use of a dialectical perspective within a comparative case study approach (Bartlett & Vavrus, 2017) that incorporates a unique vertical axis representing the proximity of measurement disjuncture, culturally specific assessment, intellectual elimination, intellectual amplification, settler colonialism, and Indigenous sovereignty to the work of Indigenous assessment developers.

Educational practitioners may choose to apply knowledge obtained from critical comparative case study approaches that incorporate a unique vertical axis representing the proximity of disjunctures and aspirational goals to the work of assessment scholars, researchers, and practitioners.

Generalized disjuncture-response dialectic

From the disjuncture-response dialectic of this research, a broader generalized disjuncture-response dialectic (Fig. 5, p. 35) is established as a theoretical framework that presents macro, meso, and micro level disjunctures and responses within an environment that encourages liberation from disruptive structures. Under this generalized perspective, individuals who respond to disjunctures within their broadly defined environments are political actors and their culturally specific practices, offered in response to multilayered disjunctures, serve as political acts that advance meso and macro level goals and challenge meso level disjunctures and ultimately stand against macro level disjunctures. At the center of the dialectic is the individual responding to the disjunctures while simultaneously working toward greater aspirational goals. The generalized disjuncture-
response dialectic removes the constraints of this research and allows for its application within other disciplines and through the lenses of other cultural worldviews.

**Recommendations**

It will be important to continue learning about the six spaces of the disjuncture-response dialectic through additional interviews with Indigenous assessment developers who are developing culturally specific assessments. Such interviews may help to expand upon the definitions of intellectual elimination and intellectual amplification. Interviews with a group of Indigenous assessment developers who develop culturally responsive assessments may provide insight into the differences between the assessment development processes of these two similar groups of assessment developers.

The disjuncture-response dialectic framework was necessary to accommodate the work of Indigenous assessment developers that standard assessment frameworks did not address. It is important for measurement and assessment scholars, researchers, and practitioners to consider that Indigenous assessment developers’ framing of assessment development may warrant expansion toward broader structural factors and aspirational goals that may influence the development and practice of assessment. In addition, it will be important for scholars, researchers and practitioners to expand the attention to the role of intellectual elimination and intellectual amplification within their respective disciplines.

As a practicing psychometrician, I was drawn toward the micro level concepts in this framework. In particular, the measurement disjuncture and the development of culturally specific assessments are what drew me into this research in the first place. Based on my experience in developing measurement scales, I believe that there are
measurement models that align well within Indigenous environments where domains of knowledge are often considered both holistic and interdependent. The selection of an appropriate measurement model for culturally specific assessments should be based on the following four considerations: the rating process, the level of measurement, construct multidimensionality, and variability of item rating scales. The multidimensional random coefficients multinomial logit model or MRCMLM (Adams et al., 1997) is a between-item multidimensional partial credit model (PCM) and is an extension of the unidimensional PCM (Masters, 1982). The PCM itself is grounded in the 1-parameter logistic (1PL) Item Response Theory (IRT) model, commonly referred to as the Rasch Model (Rasch, 1960). The use of MRCMLM will satisfy all four of these measurement considerations.

Although the focus of the disjuncture-response dialectic of this research is on measurement disjuncture, disjunctures occur within other aspects of the research exercise. Attention to these other areas where disjunctures occur may uncover, for example, methodological disjuncture as well as analytical disjuncture. The generalized disjuncture-response dialectic provides for the exploration of disjunctures within other environments such as policing, healthcare, and emergency preparedness through the lenses of other cultural groups.

This research has provided preliminary content for the development of culturally specific assessment development presentations, workshops, classes, and certificate programs. To support Indigenous assessment developers, it will be important to create a convening space where they can share their work, get feedback, and re-energize
themselves to continue in their assessment development efforts. Such a space should be open to others wishing to learn how to develop culturally specific assessments.

Finally, this research provides the structure for the development of an academic program in critical assessment. Such a program could offer theoretical, research-based, and practicum courses around the five broad themes of the critical theoretic taxonomy, the disjuncture-response dialectic as both a specific and generalized theoretical framework, the expansion and clarification of the measurement environment, and the critical comparative case study methodology.

**Summary**

These case examples demonstrate how a confluence of themes permeate the work of these developers. Their work is at once responsive and transformative. Through their responses to disjunctures, these Indigenous assessment developers seek simultaneously to disentangle from the dynamics of power and transition toward a new space where freedom, sovereignty, and liberation are possible. These developers set a charge for Indigenous people to do likewise within their respective fields, disciplines, jobs, families, and personal lives.

Just as these developers have found a way to integrate all these concepts and move themselves and their communities forward, so, too, can we all. We each have a space within which we function, one in which we operate, imagine, construct, build, raise our children, or engage with friends and colleagues. It is within all these spaces where we carry within us the potential for the establishment of that transformative and liberatory free space. These developers have selected their response to the disjunctures that have disrupted the lives of their respective communities. I have been honored and humbled to
share their pathway toward a cherished brightness. Through the telling of their stories, I hope that others will find inspiration to a dedication toward transformation.
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APPENDIX

Elements of culturally specific assessment definition
Table 5

Elements of culturally specific assessment definition

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<tbody>
<tr>
<td>Supports development (Ladson-Billings, 1994; Hood, 1998; Sul, 2019)</td>
<td>Identifies the attribute, its construct, domains, elements within each domain, and stages of elemental and domain development (CoDES). Identifies the desired developmental elements of the attribute CoDES that can be affected through the conduct of the assessment.</td>
<td>Representation of the attribute is based on elicitation procedures that support development. The appropriate measurement model that reflects attribute development is selected.</td>
<td>Representation of the attribute is examined and a judgement is rendered against or in comparison with established developmental markers or informal developmental guideposts. Appropriate measurement model that supports assignment of value to the observation of stages of development is applied.</td>
<td>A judgement is rendered against or in comparison to established developmental markers or informal developmental guideposts. The location in the developmental pathway is determined. Results of the measurement model are used for inferences about the domain status.</td>
<td>The breadth of the developmental pathway for the attribute is shared. The location within the developmental pathway is shared. Information is provided to participants in order for them to make decisions about ways to advance to the next stage of their development.</td>
</tr>
<tr>
<td>Nurtures and supports cultural competence (Ladson-Billings, 1994; Hood, 1998; Sul, 2019)</td>
<td>Identifies the desired cultural elements of the attribute CoDES that can be affected through the conduct of the assessment.</td>
<td>Representation of the attribute is based on elicitation procedures that support cultural development. The appropriate measurement model that reflects cultural development is selected.</td>
<td>Representation of the attribute is examined and a judgement is rendered against or in comparison with established cultural markers or informal cultural guideposts. Appropriate measurement model that supports assignment of value to the observation of stages of cultural development is applied.</td>
<td>A judgement is rendered against or in comparison to established cultural markers or informal cultural guideposts. The location in the cultural developmental pathway is determined. Results of the measurement model are used for inferences about the domain status.</td>
<td>The breadth of the cultural developmental pathway is shared. The location within the cultural developmental pathway is shared. Information is provided to participants in order for them to make good decisions about ways to advance to the next stage of their cultural development.</td>
</tr>
</tbody>
</table>

Table 5 continues.
| Develops critical consciousness (Freire, 1970; Ladson-Billings, 1994; Hood, 1998; Sul, 2019) | Acknowledges and acts on historical circumstances and power dynamics (Freire, 1970; Ladson-Billings, 1995) that affect the attribute CoDES. |
| Incorporates empowering responses (e.g., critical reflection, sociopolitical efficacy, and critical action) to historical circumstances and power dynamics (Freire, 1970; Ladson-Billings, 1995) that affect the elicitation of the attribute. |
| Incorporates empowering responses (e.g., critical reflection, sociopolitical efficacy, and critical action) to historical circumstances and power dynamics (Freire, 1970; Ladson-Billings, 1995) regarding inferences and the inferred level of the attribute. |
| Incorporates empowering responses (e.g., critical reflection, sociopolitical efficacy, and critical action) to historical circumstances and power dynamics (Freire, 1970; Ladson-Billings, 1995) regarding decisions based on inferences and the inferred level of the attribute. |

| Responsive to practitioners and key stakeholders (Stake, 1995; Hood, 1998; Sul, 2019) | Practitioners and key stakeholders provide insight and foundational knowledge regarding the representation, use, and significance of the attribute CoDES. |
| Practitioners and key stakeholders provide insight and foundational knowledge regarding the elicitation of the attribute. |
| Practitioners and key stakeholders provide insight and foundational knowledge regarding the assignment of elemental and domain value to the representation of the attribute. |
| Practitioners and key stakeholders provide insight and foundational knowledge regarding the process of making inferences about attribute domain status. |

| Named worldview (Sul, 2019) | Seeks to grow and advance knowledge about the attribute CoDES within the worldview. |
| Conducted in a manner that is consistent with the worldview. |
| Influences from outside the worldview are minimized. |
| Seeks to grow and advance knowledge about the elicitation of the attribute within the worldview. |
| Conducted in a manner that is consistent with the worldview. |
| Influences from outside the worldview are minimized. |
| Seeks to grow and advance knowledge about the assignment of elemental and domain value through the elicitation of attribute within the worldview. |
| Conducted in a manner that is consistent with the worldview. |
| Influences from outside the worldview are minimized. |
| Seeks to grow and advance knowledge about the process of making inferences about attribute domain status within the worldview. |
| Conducted in a manner that is consistent with the worldview. |
| Influences from outside the worldview are minimized. |

| Table 5 Continued | Seeks to grow and advance knowledge about the process of making decisions to support people within the worldview. |
| Conducted in a manner that is consistent with the worldview. |
| Influences from outside the worldview are minimized. |
Disjuncture-Response Dialectic

Under the disjuncture-response dialectic, Indigenous culturally specific assessment developers (D) are political actors and their culturally specific assessment development practices (2), offered in response to measurement disjuncture (1), serve as political acts of intellectual amplification (4) and Indigenous sovereignty (6) that challenge intellectual elimination (3), and, ultimately, stand against forces of settler colonialism (5). At the center of the dialectic is the developer responding to the disjunctions or the misalignments that are grounded in cultural and linguistic differences (Appadurai, 1996; Meek, 2010; Wyman, et al., 2010).

![Diagram of Disjuncture-Response Dialectic]

<table>
<thead>
<tr>
<th>Settler Colonialism</th>
<th>Indigenous Sovereignty</th>
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<tr>
<td>Settler colonialism strives for the dissolution of native societies and the construction of a new colonial society on the expropriated land base (Wolfe, 2006, pp. 387–388).</td>
<td>Sovereignty is the right of a people to self-government, self-determination, and self-education which includes the right to linguistic and cultural expression according to local languages and norms (Lomawaima &amp; McCarty, 2002).</td>
</tr>
<tr>
<td>Intellectual Elimination</td>
<td>Intellectual Amplification</td>
</tr>
<tr>
<td>Intellectual elimination strives for the dissolution of native societies’ knowledge and the construction of a new colonial knowledge in the expropriated minds.</td>
<td>Intellectual amplification is the acknowledgement, revitalization, sustenance, maintenance, development, and promotion of knowledge that is grounded within named cultural knowledge systems.</td>
</tr>
<tr>
<td>Measurement Disjuncture</td>
<td>Culturally Specific Assessment</td>
</tr>
<tr>
<td>The misalignment that occurs when elements of an instrument-development process from one worldview are applied to the instrument-development process of another worldview (Sul, 2019).</td>
<td>Supports development, nurtures and supports cultural competence, supports the development of a critical consciousness, focused on issues of importance to practitioners and other key stakeholders, and functions within a system of knowledge that exists within a named worldview (Freire, 2017; Hood, 1998; Ladson-Billings, 1994, 1995b, 1995a, 2014; Stake, 1973; Sul, 2019).</td>
</tr>
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</table>

Figure 12. Pre-interview framing of the research