Assessing the Reliability and Validity of the Kessler Psychological Distress Scale in the

Aboriginal and Torres Strait Islander Population

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mandaang guwu.

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Abstract

Aboriginal and Torres Strait Islander people are the first people of Australia. Consequences of colonisation and ongoing societal marginalisation and racism has led to significant health and wellbeing impacts on this population. Aboriginal and Torres Strait Islander people view health through a Social and Emotional Wellbeing (SEWB) framework. There are currently no measures of SEWB, with proxy measures used instead. The Kessler Psychological Distress Scale is a measure of psychological distress often used as a proxy for measuring SEWB. This thesis uses mixed-methods and best-practice approach to assess the reliability and validity of the culturally-modified, 5-item Kessler Psychological Distress Scale (K5) in the Aboriginal and Torres Strait Islander population. The results of this study found good internal consistency, construct validity, convergent validity, and divergent validity. The K5 was also found to have good clinical utility in indicating depressive and anxiety disorders at a cut-off of 10. Assessment of K5 face validity indicates that the measure achieved face validity for psychological distress but fails to accurately measure SEWB. Thus, the K5 is a valid measure of psychological distress for Aboriginal and Torres Strait Islander people, but the measure fails as a measure of SEWB.

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Introduction

Psychological distress and mental illness have negative impacts on health and wellbeing and are prevalent among Aboriginal and Torres Strait Islander Australians (Calma, Dudgeon & Bray, 2017; Sherwood, 2013). The National Aboriginal and Torres Strait Islander Social Survey (2014–2015) provides the most recent population representative data, with 29% of Aboriginal and Torres Strait Islander people over the age of 15 reporting a mental health condition. Rates were slightly higher for females than males (ABS, 2016). Twenty-two percent of Aboriginal and Torres Strait Islander people without long-term health conditions reported experiencing high or very high levels of psychological distress. Those reporting a mental health condition were almost three times as likely to have experienced high or very high psychological distress levels compared to those without a mental health condition (ABS, 2016).

Aboriginal and Torres Strait Islander peoples' concept of health and wellbeing is broader than physical and mental health, and is most commonly described as a holistic Social and Emotional Wellbeing (SEWB) concept. The National Aboriginal and Islander Health Organisation (now the National Aboriginal Community Controlled Health Organisation) were first to define this concept in the National Aboriginal Health Strategy. SEWB was described as the social, emotional, and cultural wellbeing of the whole community, not merely the physical wellbeing of an individual, in a whole-of-life view (National Aboriginal Health Strategy Working Party, 1989). SEWB incorporates physical and mental health, relational, spiritual and cultural components (Dudgeon et al., 2014).

Attempts have been made to quantify elements of SEWB; notably in 2009 a committee of Aboriginal and Torres Strait Islander and non-Indigenous representatives

developed a module to attempt this (AIHW, 2009). Factors included positive wellbeing, cultural identification, anger, discrimination, psychological distress, and removal from natural family. The report concluded that, despite the battery of measures included in the SEWB module, it did not cover the concept entirely (AIHW, 2009). Further, the measures included in the SEWB module were pre-existing measures that were not developed with or by Aboriginal and Torres Strait Islander people and with unknown validity, limiting cultural relevance. Quantifying and measuring SEWB in culturally appropriate ways are consistently called for by Aboriginal and Torres Strait Islander communities, but a comprehensive measure remains incomplete (AIHW, 2009; Grande, et al., 2017). The Kessler Psychological Distress Scale is a commonly used proxy measure of SEWB in clinical and research settings (AIHW, 2009). There is limited research on the validity of the Kessler Psychological Distress Scale for Aboriginal and Torres Strait Islander peoples (Stolk, Kaplan & Szwarc, 2014).

The aim of this study is to assess the reliability, validity, and clinical utility of a modified Kessler Psychological Distress Scale (the K5) using a national sample of Aboriginal and Torres Strait Islander people. First, I provide a brief contextualisation of Aboriginal and Torres Strait Islander history and trauma, detailing impacts on health and wellbeing. I then outline the concept of SEWB as the foundation of health and wellbeing (including mental health) for Aboriginal and Torres Strait Islander people. Next, I provide an overview of Kessler Psychological Distress Scale validity studies and present my aims. I conclude with a detailed validation study of the K5 scale utilised by the Mayi Kuwayu study – The National Study of Aboriginal and Torres Strait Islander Wellbeing.

Historical and Contemporary Trauma and Related Impacts

Aboriginal and Torres Strait Islander peoples are the first people of Australia, having lived on and from the land for tens of thousands of years (Clarkson et al., 2017). Archaeological records place Indigenous people in Australia to at least 65,000 years ago,

with an excavation site from the Madjedbebe rock shelter on the western edge of the Arnhem Land plateau, in the Northern Territory of Australia, recording some of the earliest tools from humans worldwide (Clarkson et al., 2017). There is a long and complex history of Aboriginal and Torres Strait Islander cultures in Australia, including unique and diverse languages and social organisations (Barta, 1987).

Colonisation in Australia began in 1788 when the British deemed the country uninhabited and claimed Australia for the British empire, despite Aboriginal and Torres Strait Islander peoples' existing agriculture, industry, and communities (Maddison, 2011). Violent methods consistent with genocide[1] were used to drive Aboriginal and Torres Strait Islander people off their land, remove access to traditional foods, and disrupt social and cultural customs and practice (Madley, 2008). The violent dispossession of Aboriginal and Torres Strait Islander people occurred across the continent, including in the most remote inland and island places (Maddison, 2011). For example, 20,000 Aboriginal people in Palawa were killed in raids, and Aboriginal people of the Kimberley region in Western Australia were kept as prisoners and slaves of pastoralists (Smith, 2000). Frontier wars, massacres, and unspeakable violence plagued Aboriginal Australia, with only a minority of Aboriginal and Torres Strait Islander people surviving (Barta, 1987). From the onset of colonisation, there were significant negative impacts on wellbeing, kinship structures, and culture broadly (Sherwood, 2013).

Many Australian Government policies have had detrimental impacts on the lives, health, and wellbeing of Aboriginal and Torres Strait Islander peoples (Madley, 2008). Australia's Federation in 1901 refused to recognise Aboriginal or Torres Strait Islander

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[1] Using the definition from the United Nations *Convention on the Prevention and Punishment of the Crime of Genocide*, this relates to any act "committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group" (United Nations, 1951).

people, and subsequent legislation has controlled Aboriginal and Torres Strait Islander people physically, economically, and spiritually (Smith, 2000). As early as the 1860s and into the 1970s, Aboriginal and Torres Strait Islander people were subjected to forced labour, slavery, and underpaid work (Korff, 2019). During this era, each colony of Australia had its own laws that legalised the commercial control non-Indigenous Australians had over Aboriginal and Torres Strait Islander people (Gray, 2007). This "Stolen Wages" period, forced Aboriginal boys into work typically on pastoral properties and Aboriginal girls into work typically as domestic servants (Wilson, 2014). Wilson (2014) demonstrated the ongoing negative impacts on Aboriginal and Torres Strait Islander peoples' wellbeing due to disempowerment (including lower socio-economic status from stolen wages), trauma from physical and sexual abuse, removal from families and traditional lands, and fear of violence.

The Stolen Generations are a stark example of Government policy aimed at forcibly assimilating Aboriginal and Torres Strait Islander people into non-Indigenous Australian society. Between 1910 and the 1970s, one in three Aboriginal and Torres Strait Islander children were taken from their families and put into non-Indigenous families or institutions, including missions or reserves, where they were forbidden from speaking Aboriginal and Torres Strait Islander languages or practicing culture (Norgrady, 2019). Research indicates that Aboriginal and Torres Strait Islander families whose history involves Stolen Generation members are likely to have children living outside of their traditional clan, tribal, or language group and are disconnected physically and spiritually from their traditional Country (Norgrady, 2019). Further, people removed during the Stolen Generations and their descendants experience poorer health and wellbeing outcomes, lower educational and socioeconomic outcomes, and increased trauma, than those not removed (AIHW, 2018b; Calma et al., 2017).

These institutionally racist policies exemplify historical and ongoing trauma for Aboriginal and Torres Strait Islander peoples, with detrimental impacts on health and wellbeing. Racism is an act of power in which one group of people systematically disadvantage others though social and institutional norms and practices, from a belief that the group in power is superior (Augoustinos, 2013). Institutional racism is this power expressed though economic, political, and other institutions that maintain unequal relationships (Larson, Gillies, Howard, & Coffin, 2007). Racism is explicitly linked to health and wellbeing outcomes (Larson et al., 2007; Paradies, 2018). The effects of racism on mental health is especially strong, beginning in childhood. A longitudinal study of childhood racial discrimination found that 14% of Aboriginal and Torres Strait Islander children between 5 and 10 years old who experienced racial discrimination had poorer mental health, sleep difficulties, and were at high risk for clinical emotional or behavioural difficulties (Shepherd, Li, Cooper, Hopkins, & Farrant, 2017).

Transgenerational trauma, defined as secondary exposure to trauma through generational transfer, negatively impacts health and wellbeing of Aboriginal and Torres Strait Islander peoples (Healing Foundation, 2015). Generational transfer can occur though social processes, including:

- forced removals and negative effects of other government policies,

- exposure to violence and abuse,

- witnessing the effects of past traumatic experiences of family and community members,

- embodying negative coping mechanisms from traumatised family members, and

- limited knowledge of family and community structures causing disturbances to community life (Healing Foundation, 2015; Dudgeon, Milroy, & Walker, 2014).

The link between experiencing trauma and related negative impacts on health and wellbeing is well documented (Clama et al., 2017). The effects on health and wellbeing of transgenerational trauma include poor mental and physical health, substance use, interaction with the criminal justice system, distrust in relationships, and negative coping strategies (Healing Foundation, 2015; Silburn et al., 2006).

Decades of attempted destruction of Aboriginal and Torres Strait Islander families and communities, coupled with contemporary racism, trauma, and marginalisation in the healthcare system has negatively impacted the health and wellbeing of Aboriginal and Torres Strait Islander people (Sherwood, 2013). This is demonstrated by the disproportionate burden of mortality and morbidity (Dudgeon et al., 2014). Sixty-seven percent of Aboriginal and Torres Strait Islander youth experience low to moderate levels of psychological distress, and 33% experience high to very high levels of psychological distress (AIHW, 2018). Intentional self-harm is 2.4 times higher in Aboriginal and Torres Strait Islander people than the general population (Sherwood, 2013).

The resilience of Aboriginal and Torres Strait Islander people is continually demonstrated despite historical and ongoing experiences of racism and trauma and their impacts on health and wellbeing (Atkinson, 2013). However, these experiences have also had significant negative impacts on many Aboriginal and Torres Strait Islander peoples' connection to Country, cultural beliefs and knowledge, language, family, kinship and community, cultural expression and continuity, and self-determination and leadership (Calma et al, 2017; Salmon, 2018). Emergent research has identified that a stronger cultural and language connection is linked with improved SEWB among Aboriginal and Torres Strait Islander people (King, Smith, & Gracey, 2009).

Social and Emotional Wellbeing

Many Aboriginal and Torres Strait Islander people define health and wellbeing holistically as SEWB, including psychological distress and mental health. SEWB differs from biomedical definitions of health and mental health that focus on the absence of disease or psychiatric disorder, respectively (Murrup-Stewart, Searke, Jobson, & Adams, 2018). It is defined as the harmonisation of physical, social (including relationships), emotional, spiritual (including cultural obligations), and environmental wellbeing of the self (including one's mental health), family, community, and Country (Salmon, 2018; Dudgeon et al, 2014).

SEWB is affected by socioeconomic status (including financial circumstances), access to employment, housing and overcrowding, access to education (not limited to secondary education but also including tertiary education), access to community resources, and exposure to stressful life events including racial discrimination and family or community violence (Dudgeon et al., 2014). SEWB is political, as the extent that communities are able to resist assimilation into non-Indigenous Australian culture and retain cultural continuity is often seen as an act of defiance, but it is crucial for community health and wellbeing. Political factors influencing SEWB include ongoing issues of land and water management and control of resources, cultural security, and the right to self-determination and sovereignty (Dudgeon et al., 2014).

A number of different SEWB frameworks have been developed by community organisations and governments for various audiences; whether that be for specific Aboriginal or Torres Strait Islander communities, or a broader general framework. A national model of SEWB for Aboriginal and Torres Strait Islander people was developed by members of the Australian Indigenous Psychologists Association and communities (Dudgeon et al., 2014). The national SEWB framework contains seven components; a connection to spirituality, the body, the mind, family and kin, community, culture, and Country (Figure 1).
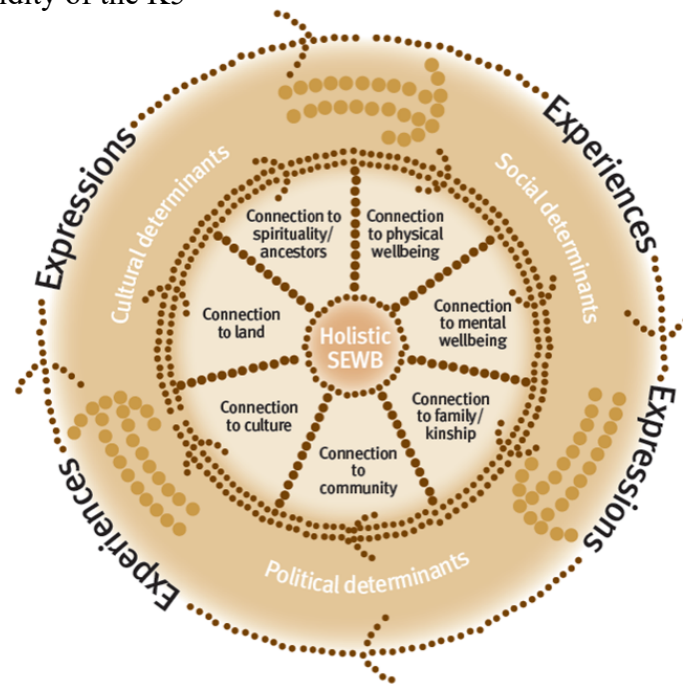
Figure 1. National Model of Social and Emotional Wellbeing. Gee, Dudgeon, Schultz, Hart & Kelly, 2013, as cited in Commonwealth of Australia, 2017.

SEWB differs from psychological theories of wellbeing. The Ryff Scale of Psychological Well-Being has six components (self-acceptance, ties to others, autonomy, managing environments for personal needs, purpose in life, and growth and development as a person) that are individually focused (Seifert, 2005). The national SEWB framework, however, is more applicable to Aboriginal and Torres Strait Islander people as it is developed with culture and collectivism at the forefront. As there is limited literature on a culturally-sensitive psychological model of SEWB, the national SEWB framework is used as the guiding theoretical model with the adopted factors: Country and spirituality; mental and physical wellbeing; family, kinship, and community; and cultural connection and expression (Dudgeon et al., 2014).

Country and spirituality.

An Aboriginal and Torres Strait Islander understanding of Country encompasses a deep physical, spiritual, and emotional connection to the land. Country is understood as the life-giver, the link to ancestors, and the birthplace of spirituality (Behrendt, n.d.; Pascoe, 2014). Spirituality is tied to the Dreaming, and its creation stories explain how spiritual

creation beings formed Country and people (Grieves, 2009). Evidence of sacred sites around Australia link Aboriginal and Torres Strait Islander people to the Dreaming, Country, and ultimately their cultures (Pascoe, 2014). As Professor Stanner acknowledges, spirituality and the Dreaming are ever present in the lives of Aboriginal and Torres Strait Islander peoples:

Although the dreaming conjures up the notion of a sacred, heroic time of the indefinitely remote past, such a time is also, in a sense, still part of the present. One cannot 'fix' the Dreaming in time: it was, and is, everywhere (Stanner, 2010, p. 58).

Spirituality is a collective and communal act that prioritises the community over the individual (Armstrong, 2002). It is practiced in Aboriginal and Torres Strait Islander communities through song and dance ceremonies, identification with skin-group and totems, or the transference of knowledge passed through the generations from Elders to youth (Armstrong, 2002). Many Aboriginal and Torres Strait Islander people are disconnected from Country and their spirituality due to colonisation and forced removals from family, negatively impacting health and wellbeing (Dudgeon et al., 2014). Spirituality is a protective factor in Aboriginal and Torres Strait Islander mental health and wellbeing (Parker, 2012).

Mental and physical wellbeing.

Physical wellbeing is the absence of illness or disease and the normal biological functioning of the body, while mental wellbeing relates to cognitive function, emotions, and psychological illnesses (Dudgeon, et al., 2014). There is evidence of Aboriginal and Torres Strait Islander people experiencing symptoms of mental illnesses before colonisation, however, cultural protections were in place to mitigate these symptoms (Dudgeon et al., 2014). In the Torres Strait, for example, cultural mechanisms that maintain good mental health and wellbeing revolve around the *Mari Gethal* (Hand of the Spirit). This is a role of a male relative of a deceased person who informs the family of the death and arranges the funeral proceedings. Through the funeral and grieving process, the *Mari Gethal* makes

appropriate choices in the delivery of the funeral, but also plays an important role in facilitating community healing, grieving, and protection against mental illness (Dudgeon et al., 2014).

Family, kinship and community.

Kinship systems define a person's biological and social relationships to others, place in community, and identity. Aboriginal and Torres Strait Islander cultural concepts of family and kinship are diverse, including a complex network of relationships into extended family relations and the wider community (Warburton & Chambers, 2007). Kinship and community systems are important in improving wellbeing and can protect mental health among Aboriginal and Torres Strait Islander people experiencing stressors (Salmon, 2018; Dietsch et al., 2010). For example, a study of Aboriginal women giving birth found that the relationship between negative outcomes and stresses of relocating from their hometowns to give birth is mediated by their strong kinship relationships (Dietsch et al., 2010).

Self-determination and community leadership are important for maintaining kinship and community relationships. Self-determination refers to one's ability to have control over their lives, in economic, social, and cultural aspects. It is the right to be involved in decision-making and implementation, and autonomy in outcomes over one's self and community (Human Rights Commission, n.d.). Community control, leadership opportunities, and role modelling from Elders are all key aspects of self-determination that ensures Aboriginal and Torres Strait Islander health and wellbeing is controlled by the community (Salmon, 2018). Self-determination and leadership are recognised in research ethics protocols as essential when working with Aboriginal and Torres Strait Islander peoples (AIATSIS & The Lowitja Institute, 2013). Self-determination in a research setting means community ownership, control, access, and possession of research data. It ensures consent from and benefit to

Aboriginal and Torres Strait Islander people, respects cultural and spiritual beliefs, and protects against a history of being over-researched (AIATSIS & The Lowitja Institute, 2013).

Cultural connection and expression.

Each Aboriginal or Torres Strait Islander group has their own unique culture that has developed over tens of thousands of years. These distinct cultures have their own agriculture, aquaculture, housing, and laws that are interconnected with the natural and spiritual environment (Pascoe, 2014). Since colonisation and the resulting damage of Aboriginal and Torres Strait Islander cultures, there has been a need for cultural healing and the reclamation of lost aspects of culture and language (Salmon, 2018). Ways to reconnect with culture include learning from Elders, providing cultural activities for youth, learning form the land including gathering bush tucker, engaging in music and arts, and fishing and hunting (Salmon, 2018).

Language is an important component of cultural connection and expression. Before colonisation, there were over 250 Indigenous languages and 800 dialects spoken in Australia. Indigenous languages formed the basis of community, land boundaries, and the passing on of oral knowledge and traditions (AIATSIS, 2019). As of the 2016 census 10% of Aboriginal or Torres Strait Islander people spoke an Indigenous language (ABS, 2017). There are approximately 150 Indigenous languages currently spoken, but because many of these language speakers are older Aboriginal and Torres Strait Islander peoples this information is at risk of being lost. From these, only around 20 languages are currently spoken across generations and remain strong (AIATSIS, 2019). Speaking Indigenous languages is associated with a number of positive health and wellbeing outcomes, including an improvement in physical health, increased levels of self-reported happiness, and higher community interconnectedness (Salmon, 2018). Cultural activities and experiences, including

language and inter-generationally transferred values, customs, and activities, are associated with increased health, wellbeing, and socio-economic outcomes (Dockery, 2010).

Measuring SEWB

Valid measurement of SEWB is important for optimising research and clinical practice aimed at improving SEWB (Newton, Day, Gillies & Fernandez, 2015). Prior to 2004, SEWB was measured using tools developed within Western understandings of mental health, which had questionable cultural applicability for Aboriginal and Torres Strait Islander people (AIHW, 2009). In an attempt to mediate this, the interim 2004–05 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) module included eight domains related to SEWB: psychological distress, impact of psychological distress, positive wellbeing, cultural identification, anger, life stressors, discrimination, and removal from natural family (AIHW, 2009). This NATSIHS module was developed during a one-day workshop and utilised pre-existing measures relevant to components of SEWB. The module was limited in its applicability because it was not a comprehensive measure of SEWB, and the majority of the domains selected are negatively focused, rather than the strengths-based approach recommended as best practice in Aboriginal and Torres Strait Islander health and wellbeing research (Fogarty, Bulloch, McDonnell & Davis, 2018).

The module itself was psychometrically tested by comparing results from each eight sections with each other and with five other variables to assess internal, convergent and divergent validity. These tests found the module to be valid (Newton et al., 2015), however, because the module is not strengths-based and not a comprehensive measure of SEWB, it cannot be considered culturally sensitive (Newton et al., 2015). Thus, there is currently no comprehensive and culturally-sensitive measurement instrument for SEWB (Stolk, et al., 2014). Without a comprehensive measurement instrument of SEWB, proxy measures are

used in clinical and research settings. One of such SEWB proxy measures is the Kessler Psychological Distress Scale.

The Kessler Psychological Distress Scale

Psychometric scales are utilised to measure psychological constructs because they are minimally invasive, relatively convenient due to the short time to administer and score, and support standardisation in clinical settings (Robinson, 2017). Psychometric scales usually have multiple items to reduce random measurement error and allow for a more accurate understanding of the construct (Gliem & Gliem, 2003). Short form multi-item psychometric scales are used to identify and measure change in symptoms of psychological distress in clinical and research settings (Staples et al., 2019).

The Kessler Psychological Distress Scale is a short-form psychometric scale that measures psychological distress in clinical and research settings, including measuring population levels of distress. Psychological distress can be defined as "a state of emotional suffering associated with stressors and demands that are difficult to cope with in daily life" (Arvidsdotter, Marklund, Kylén, Taft & Ekman, 2015, 687). The Kessler Psychological Distress Scale was developed in 1992 by Professors Kessler and Mroczek using a population sample to measure non-specific psychological distress across the United States population for the National Health Interview Survey (NHIS) (Kessler et al., 2003). It was developed because this non-specific psychological distress factor was present in a range of disorders (Sampasa-Kanyinga, Zamorski & Colman, 2018). The Kessler Psychological Distress Scale has also been used in clinical settings to identify people who are experiencing high rates of distress and require treatment (Kessler et al., 2002).

Best practice principles for item and scale development begins with the identification of the domain and item generation by an expert panel (Boateng et al., 2018). In constructing the Kessler Psychological Distress Scale, researchers collected 612 questions from 22 sources

and removed redundant or unclear questions to reduce the total questions to 235 (Andrews &

Slade, 2001). These were sorted into 15 domains representing major depression, generalised

anxiety disorder, and positive affect. An advisory panel consistently rated 45 of the 235 items

as being clear. The next step in best practice scale development is to pre-test the questions

within the target population (Boateng et al., 2018). The 45 items were mailed out in the pilot

NHIS survey, and following its revision based on item response theory, 32 questions

remained. These items were then used in a telephone pilot survey in the NHIS (Kessler et al.,

2002). Data from this pilot survey informed the further reduction of items by the expert

advisory panel to form the Kessler 10 (K10; with 10 items) and the Kessler 6 (K6; with 6

items) (Andrews & Slade, 2001).

　　　　Both the K10 and K6 are scored on a 5-point Likert scale with the following response

options: "None of the time", "A little of the time", "Some of the time", "Most of the time",

and "All of the time" (Staples et al., 2019). The items are scored from 1 for "None of the

time" to 5 for "All of the time". For both K10 and K6, items are scored and summed, and a

total score is created. Possible K10 scores range from 10 to 50, and K6 scores range from 6 to

30, with higher scores indicating higher levels of psychological distress. In the development

of the K10 and K6, best practice was achieved for its used in the general American

population (Boateng et al., 2018).

　　　　The 5-item version of the Kessler Psychological Distress Scale (K5) was developed as

a subset of the K10 (Department of Health, 2018). Item 4 "So depressed that nothing could

cheer you up" and item 6 "Worthless" from the K6 are both removed for the K5 and the K10

item "so sad that nothing could cheer you up" is included (AIHW, 2009). The culturally

sensitive version of the K5 was developed in consultation with Aboriginal and Torres Strait

Islander people for the NATSIHS SEWB module (McNamara et al., 2014). The culturally-

sensitive K5 was then adapted through extensive community consultation for use in the MK

survey (Jones et al., 2018). The Mayi Kuwayu (MK) K5 includes a truncated version of the

K10 item "so sad that nothing could cheer you up" ("Sad"), and slight wording changes to

two items: item 2 "Hopeless (have no hope)" and item 4 "Everything was an effort (have no

energy)". This increases face validity and cultural appropriateness while still retaining the

ability for comparison with the K6 and K10. Possible K5 scores range from 5 to 25, with

higher scores indicating higher rates of psychological distress (Department of Health, 2018).

Table 1 outlines the three versions of the Kessler Psychological Distress Scale.

Table 1

Compassion of scale items in the K10, K6 and K5.

Kessler 10 (K10)	Kessler 6 (K6)	MK Kessler 5 (K5)
In the past 4 weeks how often have you felt…		
1. Tired out for no good reason?		
2. Nervous?	1. Nervous	1. Nervous
3. So nervous nothing could calm you down?		
4. Hopeless?	2. Hopeless	2. Hopeless (have no hope)?
5. Restless or fidgety?	3. Restless or fidgety?	3. Restless or jumpy?
6. So restless you could not sit still?		
7. Depressed?	4. So depressed that nothing could cheer you up?	
8. That everything was an effort?	5. That everything was an effort?	4. Everything was an effort (have no energy)?
9. So sad that nothing could cheer you up?		5. Sad
10. Worthless?	6. Worthless?	

Reliability and Validity of the Kessler Psychological Distress Scale

Validity is the extent to which a measurement instrument truly represents the concept

it is designed to measure (Price, Jhangiani & Chian, 2015). It is necessary to determine that

tools such as the Kessler Psychological Distress Scale are valid in populations that they are

utilised in, including the general population and other populations (Cornelius, Groothoff, van

der Klink, & Brouwer, 2013). Common psychometric assessments on measures include

validity and reliability assessment, which involves one or more of the following: face

validity, construct validity, internal consistency/reliability, convergent validity, and divergent

validity (Price et al., 2015). Additional statistical processes can incorporate assessment of

measures for clinical utility - such as Receiver Operator Characteristics (ROC) curves.

Previous research has assessed these types of reliability, validity and clinical utility of

Kessler Psychological Distress Scales in different populations, including the general

Australian population (Furukawa, Kessler, Slade & Andrews, 2003). However, only limited

assessment of these have been undertaken for the Aboriginal and Torres Strait Islander

population in Australia (Jorm, Bourchier, Cvetkovski & Stewart, 2012).

Internal consistency/reliability.

Internal consistency measures whether the individual items in a scale measure the

same underlying construct (Streiner, 2010). Scales measuring one construct ideally have high

internal consistency, reflecting high homogeneity of individual items. Cronbach's alpha is the

most frequently used statistic to determine internal consistency (Streiner, 2010). Cronbach's

alpha is a correlation of the items within the scale that can range from 0 to 1, with an

acceptable range between 0.7 and 0.9. Cronbach's alpha scores over 0.9 indicate that some

scale items are highly heterogeneous and therefore there may be some redundancy in scale

items (Gliem & Gliem, 2003).

The K6 and K10 have demonstrated internal consistency in US, Dutch, and French

populations. Excellent internal consistency in the K6 (α=0.89) and some redundancy in the

K10 (α =0.93) were demonstrated in a US sample that overrepresented people with Hispanic

names and people living in areas that had a predominance of African American residents

(Kessler et al., 2002). Good internal consistency was also demonstrated in a Dutch sample of

people with physical or mental disabilities. In this study, K10 internal consistency indicated

some redundancy in items (α=0.92), and K6 had good internal consistency (α=0.88; Cornelius, et al., 2013). In a French study of 71 patients admitted to the emergency department for alcohol related issues, researchers used Cronbach's alpha for the K10 and K6 to determine their internal consistency. Internal consistency was achieved for the K10 (α=0.84) and the K6 (α=0.76) (Arnaud et al., 2010). A study of Australian injecting drug users aged 16 years and older, living in Melbourne, assessed the internal consistency of the K10 (Hides et a., 2007). They determined that the K10 had good internal consistency using Cronbach's alpha (α =0.84) (Hides et a., 2007). Internal consistency studies show that the K10 has redundancy in some scale items, while the K6 has good internal consistency.

Construct validity.

Construct validity examines the degree to which a test measures what it is intending to measure (Thompson & Daniel, 1996). A Principal Components Analysis (PCA) is a multivariate statistical approach used to determine construct validity (Williams, Onsman & Brown, 2010). PCA indicates how many underlying constructs the measure possesses by grouping the measurement items into clusters based on a shared variance. For an instrument designed to measure one construct, items that are either weakly or strongly correlated may be removed, with an ideal correlation coefficient over 0.30 (Williams, Onsman & Brown, 2010; Yong & Pearce, 2013).

The K10 scale was designed to measure a unidimensional construct of psychological distress, however the construct validity assessment of the K10 demonstrates more than one underlying construct (Sampasa-Kanyinga et al., 2018). One Australian study found four underlying factors (negative affect, nervous, lethargy, and agitation) and two second order factors (depression and anxiety) for general population Australians (Brooks, Beard & Steel, 2006). The study concluded that the K10 was a short measure of anxiety and depression symptoms, rather than of psychological distress (Brooks et al., 2006).

Further studies strengthen the two-factor structure in the K10 and similarly for the

K6. A 2010 Australian study assessing the K10's validity in the general population across the

lifespan grouped participants into four age groups (18–34, 35–64, 65–74, and 75+ years).

This study found that the two-factor model of anxiety and depression was valid across all age

groups (O'Connor & Parslow, 2010). A 2012 Australian study of the K10 and K6 used a

clinical sample of Sydney participants with clinical mental health disorders, and a community

sample from the 2007 Australian National Survey of Mental Health and Wellbeing. Study

findings indicated that for both the K10 and K6, two-factor model of anxiety and depression

was the best fit for a clinical sample, and that the general population had a unidimensional

structure (Sunderland et al., 2012). The construct validity of the K10 and K6 determined

through factor analysis indicate that the underlying constructs are likely representing

depression and anxiety.

Convergent validity.

Convergent validity is the degree to which a measure is positively correlated with a

theoretically similar measure (Westen & Rosenthal, 2003). To determine convergent validity,

the correlation coefficient is used. This is a value ranging between -1 to 1, where scores near

0 indicate a weak relationship between the two measures, and scores closer to -1 and 1

indicate a stronger relationship between two measures, either a negative or positive

relationship respectively (Trochim, 2006). A frequently used measure of comparison to the

K10 and K6 is a diagnosis of anxiety, depression, or other mental health disorders.

The 1997 National Survey of Mental Health and Wellbeing in Australia included the

K10. One Australian adult from each private dwelling in all states and territories in Australia

was invited to complete the survey; however, this study does not indicate how many

Aboriginal or Torres Strait Islander peoples participated. Significant positive correlations

between the K10 and a current diagnosis of anxiety and affective disorders indicated

convergent validity (Andrews & Slade, 2001). In the aforementioned French emergency

department study, researchers assessed the convergent validity of the K10 and K6 by

correlating each with the Hospital Anxiety and Depression Scale (HADS) (Arnaud et al.,

2010). In this sample, the correlation between the K6 and HADS was 0.84 ($p<0.01$), and the

correlation between the K10 and HADS was 0.71 ($p<0.01$). These correlations were both

significant, indicating good convergent validity (Arnaud et al., 2010). Overall, both the K6

and K10 have adequate convergent validity.

Divergent validity.

Divergent validity is the degree to which a measure is negatively correlated with a

theoretically dissimilar measure (Westen & Rosenthal, 2003). As with convergent validity,

the correlation coefficient is used to determine how correlated two measure are. For divergent

validity, it is expected that two measures result in a correlation close to 0 indicating a weak

relationship (Trochim, 2006). A recent study of undergraduate psychology students

investigated the correlation between reported positive affect and K10 total score. Positive

affect was defined as "pleasurable engagement with one's environment, and feelings such as

enthusiasm" (Ripper, Boyes, Clarke & Hasking, 2018, 3). This study found significant

negative correlations between the K10 and positive affect, indicating divergent validity.

Clinical utility.

Clinical utility is investigated though ROC curve analysis. The curve can be used to

evaluate the diagnostic ability of measures by finding optimal cut off values for diagnosis

between "diseased" and "non-diseased" patients (Hajian-Tilaki, 2011). A ROC curve

displays the trade-off between sensitivity and specificity of a diagnostic test, where, as

sensitivity increases, specificity decreases across various thresholds (Kumar & Indrayan,

2011). Sensitivity is the proportion of respondents who reported being diagnosed with mental

disorder who were also identified by the K5 cut-off as having a mental illness (true-positive

cases); and specificity is the proportion of respondents who reported not being diagnosed with a mental disorder who were also identified by the K5 cut-off as not having a mental illness (true-negative cases). The area under the ROC curve (AUROC) indicates the accuracy of the measure. Possible values are between 0-1, where a value of 1 indicates a measure with 100% accuracy (Hajian-Tilaki, 2011).

In a Dutch study, both the K10 (AUROC=0.806), and the K6 (AUROC=0.796) had good clinical utility in detecting any DSM-IV mood or anxiety disorders that occurred over the past 30 days (Cornelius et al., 2013). The study also found the optimal cut off scores of or above 24/50 for the K10 and a score of or above 14/30 for the K6 for discriminating between those with a mood or anxiety disorders and those without. A study using data from the 1997 and 2007 Australian National Surveys of Mental Health and Well-being (general population adults aged 65 years and older) found similar results. The AUROC was 0.86 for the K10, indicating good predictive power in detecting people with an affective or anxiety disorder. A score of 15/50 indicated moderate to severe levels of psychological distress and was deemed the cut off point for the K10 for affective or anxiety disorders (Anderson et al., 2013). Their comparison with the older age group to those under 65 years old did not yield any significant differences in the AUROC values or cut off scores, indicating that the K10 had valid clinical utility over the lifespan in detecting mood and anxiety disorders.

A national study of the general Australian population assessed the clinical utility of K10 and K6 in screening for mood and anxiety disorders against the World Health Organisation Composite International Diagnostic Interview (Furukawa et al., 2003). The K10 (AUROC=0.90) and the K6 (AUROC=0.89) performed similarly in their ability to detect mood and anxiety disorders (Furukawa et al., 2003). The Australian study on injecting drug users in Melbourne also used ROC curves to assess the K10's clinical utility in detecting current mood and anxiety disorders, as determined from relevant questions form the Patient

Health Questionnaire (Hides et al., 2007). They determined that a K10 cut-off value of 27/50 was adequate in detecting mood and anxiety disorders. This point has a sensitivity of 78% and specificity of 74% (Hides et al., 2007). Australian studies using ROC curves indicate that the K10 and K6 both have good clinical utility in screening for mood and anxiety disorders.

Face validity.

Face validity is "whether the test appears (at face value) to measure what it claims to" (McLeod, 2013). The face validity of the K6 and K10 has been assessed a limited number of times. One study that used the K5 to determine improvements in SEWB was the Family Wellbeing Pilot Study (Whiteside et al., 2016). This study included a sample of 30 Aboriginal men under 25 years of age, with current emotional distress or patterns of impulsiveness, drug use, and potential violence. A 9-item version of the Kessler Psychological Distress Scale was used. This combined the K5 with an additional 4 positive wellbeing items, (calm and peaceful; happy; full of life; and full of energy) where a greater score indicated greater wellbeing. The study used qualitative and quantitative data together to determine the face validity of the K5. The K5 had face validity, demonstrated by participants' understandings of the K5 concepts. Participants also indicated how the items in the K5 were relevant in their daily life. The 9-item version of the Kessler Psychological Distress Scale was also found to be culturally sensitive. This study demonstrated that the K5 is a culturally-sensitive measure of one component of SEWB that has face validity. The study did not assess other forms of validity (Whiteside et al., 2016).

Aboriginal and Torres Strait Islander peoples.

The validity of the Kessler Psychological Distress Scale has critical implications for clinical use and research in Aboriginal and Torres Strait Islander populations. The K5 is commonly used as a proxy measure for SEWB (AIHW, 2009). The K5 was developed from

the K10 for Aboriginal and Torres Strait Islander peoples. Some validation work has been completed, but a full psychometric evaluation has not yet occurred (AIHW, 2009).

A 2014 cross-cultural validation study examined the measurement properties of the K10 and K5 in Aboriginal and Torres Strait Islander people by using data collected from the "45 and Up Study"; a longitudinal cohort study of people aged 45 years and over from New South Wales (McNamara et al., 2014). The study used the K10, and the K5 embedded in the K10. This meant that the K5 did not include the culturally-modified wording or clarifying descriptors. The results found agreement in the classification of distress between the K10 and K5 (p=0.54), indicating the K5's ability to identify psychological distress in older Aboriginal and Torres Strait Islander people despite being half the length of the K10. It also found that the K10 had some item redundancy (Cronbach's α=0.93), and the K5 had adequate internal consistency (Cronbach's α=0.88). A confirmatory factor analysis supported the theory of a single underlying factor structure, psychological distress, for both measures (McNamara et al., 2014). This study demonstrated internal and construct validity of the K10 and K5 for measuring unidimensional psychological distress among Aboriginal and Torres Strait Islander people aged 45 years and older.

Determining the validity of the K5 for measuring psychological distress is important for appropriate health and wellbeing assessment for Aboriginal and Torres Strait Islander people in clinical and research settings. Appropriate clinical assessment can indicate treatment need and therefore improve access to suitable services. In research settings, use of valid measurement instruments can provide robust evidence at the population level. In turn both population and clinical evidence help to inform health policy and direct funding.

Present Study

It is both feasible and important to assess the reliability, validity and clinical utility of the K5 for Aboriginal and Torres Strait Islander peoples. The Kessler Psychological Distress

Scales have had limited assessment of their psychometric properties for Aboriginal and Torres Strait Islander peoples. In this thesis, I use the largest national sample of Aboriginal and Torres Strait Islander peoples to date to assess the reliability, validity, and clinical utility of the a modified K5. The aim of this thesis is to assesses the internal consistency/reliability, and convergent, divergent, construct, and face validity of the K5 for measuring SEWB among Aboriginal and Torres Strait Islander people. I also include an assessment of the clinical utility of the modified K5.

Hypotheses express a relationship between two or more variables and must be capable of empirical testing (Motheral, 1998), therefore hypotheses are not generated for assessing validity of a measure. Given this, hypotheses have not been included in this thesis.

Method

Participants

Mayi Kuwayu national study of Aboriginal and Torres Strait Islander wellbeing.

The MK study is a national longitudinal study of Aboriginal and Torres Strait Islander wellbeing (Jones et al., 2018). Participants were recruited for the baseline data collection by postal survey by Medicare or through community or event recruitment. A national sample of Aboriginal and Torres Strait Islander people was identified through the Medicare Enrolment Database. Participants are Aboriginal and/or Torres Strait Islander adults aged 16 years and over that responded to the MK postal survey or were recruited by community researchers from 30 October 2018 to the close of beta data collection (MK beta data as at 19/08/2019, n=7,377). Of those who participated in the beta data collection, the 6,988 participants (2,086 men, 4,192 women, and 8 others) with a total K5 score were included in this analysis, while 389 people who had at least one missing item on the K5 and were excluded.

Participation in the study was on a voluntary basis and consent was provided by each participant (Jones et al., 2018). Each survey had a unique code assigned to the participant for

follow-up, and their identifying information was stored separately to the completed

questionnaires to ensure confidentiality. Ethics was approved by the Australian Institute of

Aboriginal and Torres Strait Islander Studies (protocol E030/22052015), ANU Human

Research Ethics Committee (protocol 787), and from an additional 10 State and Territory

committees, including relevant Aboriginal and Torres Strait Islander organisations (see

Appendix A for full list).

Face validity.

Face validity was assessed to determine whether participants were interpreting the

items in the K5 in their intended way (Ouimet, Carini, Kuh & Bunnage, 2001). All focus

group participants were Aboriginal and/or Torres Strait Islander staff and students aged 16

year and over from the ANU who were purposefully recruited (Rabiee, 2004). Participation

was voluntary. Each participant provided informed consent to participate. The focus groups

participants were known to each other and confidentiality was discussed (Rabiee, 2004).

Full informed consent was acquired before commencing the focus group and audio

recording. Participants were each given a copy of the K5 and asked the describe each word

used in the K5 items. Follow up questions, relating to psychological processes, included

"what are the thoughts/feelings/behaviours behind this concept?". Participants were also

asked to explain the meaning of SEWB. Responses were visually mapped on a white board

and audio recorded. Appendix B presents the focus group schedule and questions.

Focus groups were held in locations known to be cultural safe on the Australian

National University campus (Hamilton, n.d.). Cultural safety was further ensured by

commencing the focus groups with an Acknowledgement of Country by the researcher and

having participants introduce themselves and their cultural background. Participants were

then given an overview of the MK study and the purposes of the current focus group. The

focus groups were conducted by an Aboriginal researcher with experience conducting focus

groups with Aboriginal and Torres Strait Islander people. The total time for each focus group

was approximately 60 minutes. Both focus groups were audio recorded and transcribed by

Type Transcripts (Type Transcripts, 2019). Observational notes were also taken by the

researcher. NVivo Version 11 (QSR International, 2015) supported the qualitative analysis.

The qualitative data was approached through a framework analysis and a thematic

approach as outlined by Rabiee (2004). The following steps undertaken: familiarisation with

the data; identifying a thematic framework; indexing and sorting out quotes; charting and

rearranging data under themes; and mapping and interpretation.

Materials

The MK survey was developed to measure Aboriginal and Torres Strait Islander

health and wellbeing. There are three questions used in this thesis from the MK survey: the

K5 which assesses psychological distress, Q50 which asks about level of happiness over the

past four weeks, and Q53 which asks about lifetime diagnosis of anxiety, depression or other

mental health condition (Table 2).

Table 2

Questions analysed from the MK survey

Name	Question	Response Options
K5	In the last 4 weeks about how often did you… … feel nervous? … feel hopeless (have no hope)? … feel restless or jumpy? … feel everything was an effort (have no energy)? … feel sad?	All of the time; Most of the time; Some of the time; A little of the time; None of the time
Q50	In the last 4 weeks about how often did you feel happy?	All of the time; Most of the time; Some of the time; A little of the time; None of the time
Q53	Has a doctor ever told you that you have…	"Depression" "Anxiety" and/or "Other mental health conditions"

Analytical approach

Internal consistency/reliability.

Cronbach's alpha scores were used to assess internal consistency, measuring homogeneity of items in a once-off test (Streiner, 2010). There is some debate around the minimum sample size needed for an accurate and stable Cronbach's alpha; however, for reliability studies, in general the recommended sample size is a minimum of 400 participants (Charter, 1999).

Construct validity.

To determine construct validity, PCA was used (Thompson & Daniel, 1996). A PCA is used in construct validity to determine the number of underlying components the measurement items are related to. Factor loading on the principle components (eigenvectors) is > |3|. PCA was used for a data driven approach, rather than a CFA which is led by a pre-proposed model (Matsunaga, 2010). The minimum sample size for an PCA is 300 participants (Yong & Pearce, 2013).

Convergent validity.

Convergent validity was assessed using binomial logistic regression with data from the K5 and MK survey item Q53 that asks participants to indicate if they have ever been diagnosed with "anxiety", "depression" or "any other mental illness". First, K5 categories were created based on the NATSIHS scoring, where Low=5–<8; Moderate=8–<12; High=12–<15; Very High=15–25 (AIHW, 2009). Q53 scores then were dichotomously coded as yes/no. By correlating a participant's K5 score with Q53 we can determine whether these two measures are appropriately related. Chi square was utilised to determine the relationship between psychological distress (K5) and Q53.

Divergent validity.

To determine the divergent validity of the K5, binomial logistic regression was used. K5 categories were created as in convergent validity. Q50 was chosen as a proxy for psychological wellbeing as psychological distress and psychological wellbeing are understood to be at disparate ends of the psychological wellbeing continuum (Winefield, Gill, Taylor, & Pilkington, 2012). A "happiness" score was created by merging participant scores from Q50 into two categories: "low happiness (including response options None of the time and A little of the time) and "high happiness" (including response options Some of the time, Most of the time and All of the time). Chi square was utilised to determine the relationship between psychological distress (K5) and happiness (Q50). It is expected that psychological distress from K5 scores has an inverse relationship to increasing happiness measures in Q50.

Clinical utility.

Clinical utility was assessed using ROC curve analysis. Sensitivity, specificity, positive-predictive value, and negative-predictive value were calculated for each score on the K5 and data indicating ever been diagnosed or never been diagnosed with anxiety or depression. Cut-off criteria is seen as a trade-off between sensitivity and specificity, with a score between 0.7-0.8 typically used for sensitivity and a score around 0.7 typically used for specificity (Kumar & Indrayan, 2011). The positive-predictive value is the probability that a person who reported being diagnosed with a mental disorder is a true positive; and the negative-predictive value is the probability that a person who reported not having a mental disorder is a true negative (Porta, 2004).

Results

Participants in this study were 6,988 Aboriginal and Torres Strait Islander people aged 16 years and older (male=2,671, female=4,193, other=8, missing=116). For geographic location, 46% of participants lived in major cities, 47% lived regionally, and 7% of

participants lived remotely (missing=1%). Under one percent of participants had attended no school, 3% had attended primary school as their highest level of education, while almost 50% had attended some secondary school as their highest level of education. Forty-seven percent of participants had attended tertiary education as their highest level of education (education missing<1%). A total of 3,771 participants were employed in paid work, while 722 were unemployed and 1185 people were retired. Participants were able to select more than one form of employment, so percentages and missing data are not presented (Table 3).

Table 3

Demographic Information.

Variable	*n*	%
Age group		
16-24	601	9.43
25-49	2,086	32.73
>50	3,687	57.84
Gender		
Male	2,671	38.87
Female	4,193	61.02
Other	8	0.12
Remoteness		
Major city	3,160	45.84
Regional	3,221	46.72
Remote	512	7.43
Education level		
No school	42	.61
Primary school	224	3.23
Some high school	1,103	15.93
Year 10	1,529	22.08

Table 3 (*continued*).

Year 12	796	11.49
Certificate/Diploma	1,908	27.55
University	1,323	19.10
Employment		
Paid employment	.	3,771
Unemployed	.	722
Retired		1,185
Carers	.	374
Studying	.	726
Community Development Program	.	76
Disabled/sick	.	810

Table 4 presents the proportion of participants with low, moderate, high and very high psychological distress (K5 categories) as indicated by the NATSIHS cut-off scores (AIHW, 2009). Sixty-one percent of participants had low-to-moderate levels of psychological distress, while 39% experienced high-to-very high levels of psychological distress.

Table 4

Distribution of sample by level of psychological distress.

K5 Category	*n*	*%*
Low 5–<8	2,063	29.52
Moderate 8–<12	2,195	31.41
High 12–<15	1,079	15.44
Very High 15–25	1,651	23.63

Analyses of K5 category by age group, gender, and remoteness category are presented in Table 5. Pearson's chi-squared test was used to identify significant differences within

independent variable categories and K5 score categories. An alpha level of 0.05 for all statistical tests was considered significant (Table 5).

There was significant variation in psychological distress by age (Pearson chi2(6)=106.34, p<.001). Psychological distress was highest in the 16-24 age group, with 51% of participants reporting high to very high levels of psychological distress. More participants 50 years and older reported low levels of psychological distress than people younger than 50 years.

There was significant variation in psychological distress by gender (Pearson chi2(6)=65.17, p<.001). A larger proportion of females reported high to very high levels of psychological distress than males, with 42% of women reporting high to very high levels, compared to 35% of men.

There was significant variation in psychological distress by remoteness (Pearson chi2(12)=36.74, p<.001). Thirty percent of people living in remote areas reported high to very high levels of psychological distress. Psychological distress was reported at similar levels for those in regional areas and major cities: 39% of people in regional Australia and 40% of people in major cities reported high to very high levels of psychological distress.

Table 5

Demographic information by K5 level of psychological distress severity (%).

Variable	Low (5-<8)	Moderate (8-<12)	High (12-<15)	Very High (15-25)
Age group				
16-24	19.30	29.95	21.13	29.62
25-49	25.12	32.50	16.35	26.03
>50	34.07	31.06	14.02	20.86
Gender				
Male	34.48	30.77	13.78	20.97
Female	26.33	31.84	16.48	25.35

Table 5 (*continued*).

Other	12.5	12.5	12.5	62.50
Remoteness				
Major city	27.97	31.65	15.85	24.53
Regional	29.96	30.89	15.46	23.69
Remote	36.52	33.79	13.67	16.02

Internal Consistency/Reliability

Cronbach's alpha was used to determine internal consistency, with results indicative of excellent internal consistency ($\alpha=0.89$). Homogeneity of items was not indicated. Average inter-item covariance was 0.83.

Construct Validity

The PCA demonstrated a unidimensional construct. The scree plot confirms a one component solution, as the elbow appears at factor number 2 (Figure 2).
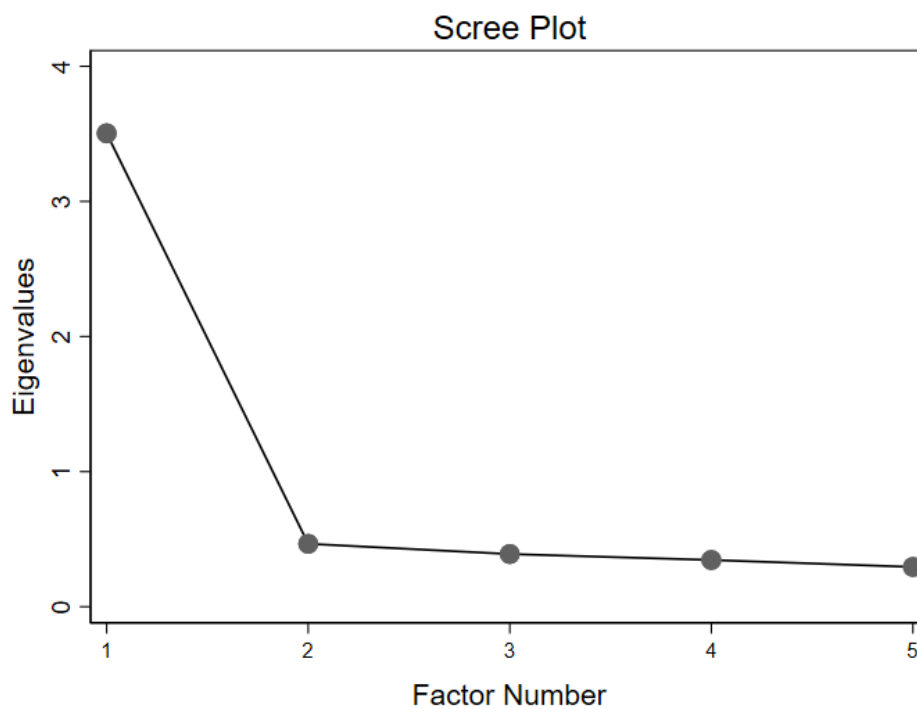

Figure 2. Scree Plot of Eigenvalues.

Table 6 depicts the results of the PCA. One component structure is apparent, as all variables load onto Component 1, and all values are positive. The other components fail to have all variables load onto them and are a mixture of positive and negative values. Finally, 70.08% of the variance in the model is explained by one component.

Table 6

Principal Component Analysis.

Variable	Comp1	Comp2	Comp3	Comp4
K5_nervous	**0.4317**	**0.7383**	0.0905	0.5102
K5_hopeless	**0.4629**	-0.0482	**-0.3789**	-0.2744
K5_restless	**0.4529**	0.1747	**0.4165**	**-0.7016**
K5_effort	**0.4357**	**-.05979**	**0.5307**	**0.3996**
K5_sad	**0.4522**	-0.2544	**-0.0627**	0.1116

Convergent Validity

Thirty-six percent of participants reported ever being diagnosed with depression. Findings of convergent validity testing indicate that participants who reported moderate psychological distress were almost three times as likely to report ever being diagnosed with depression compared to those who reported never being diagnosed with depression. Participants who reported high psychological distress were over six times as likely to report ever being diagnosed with depression compared to those who reported never being diagnosed with depression. Finally, participants who reported very high psychological distress were over twelve times as likely to report ever being diagnosed with depression compared to those who reported never being diagnosed with depression (Table 7).

Table 7

Convergent validity: K5 and ever diagnosed with depression.

Level of psychological distress	No report of clinical depression % (n)	Reported clinical depression % (n)	Odds Ratio of reporting clinical depression (95%CI)
Low (5-<8)	87.30 (1,801)	12.70 (262)	1 (ref)
Moderate (8-<12)	69.93 (1,535)	30.07 (660)	2.96 (2.52, 3.46)
High (12-<15)	53.01 (572)	46.99 (507)	6.09 (5.12, 7.27)
Very High (15-25)	35.19 (581)	64.81 (1,070)	12.66 (10.74, 14.92)

Thirty percent of participants reported ever being diagnosed with anxiety. A similar pattern of results was seen in the convergent validity of K5 against a clinical anxiety diagnosis. Findings of convergent validity testing indicate that participants who reported moderate psychological distress were two and a half times as likely to report ever being diagnosed with anxiety compared to those who reported never being diagnosed with anxiety. Participants who reported high psychological distress were almost five times as likely to report ever being diagnosed with anxiety compared to those who reported never being diagnosed with anxiety. Finally, participants who reported very high psychological distress were almost ten times as likely to report ever being diagnosed with anxiety compared to those who reported never being diagnosed with depression (Table 8).

Table 8

Convergent validity between the K5 and any diagnosis of anxiety.

Level of psychological distress	No report of clinical anxiety % (n)	Reported clinical anxiety % (n)	Odds Ratio of having clinical anxiety (95%CI)
Low (5-<8)	88.32 (1,822)	11.68 (241)	1 (ref)
Moderate (8-<12)	74.08 (1,626)	25.92 (569)	2.65 (2.24, 3.12)
High (12-<15)	60.61 (654)	39.39 (425)	4.91 (4.10, 5.89)
Very High (15-25)	43.31 (715)	56.69 (936)	9.90 (8.38, 11.68)

Nine percent of participants reported ever being diagnosed with any other mental health condition (Table 9). Findings of convergent validity testing indicate that participants who reported moderate psychological distress were almost two times as likely to report ever being diagnosed with other mental illness compared to those who reported never being diagnosed with other mental illness. Participants who reported high psychological distress were three and a half times as likely to report ever being diagnosed with other mental illness compared to those who reported never being diagnosed. Finally, participants who reported very high psychological distress were over seven times as likely to report ever being diagnosed with other mental illness compared to those who reported never being diagnosed with other mental illness (Table 9).

Table 9

Convergent validity between the K5 and a diagnosis of other mental illness

Level of psychological distress	No other mental illness % (n)	Other mental illness % (n)	Odds Ratio of having other mental illness (95%CI)
Low (5-<8)	96.8 (1,997)	3.2 (66)	1 (ref)
Moderate (8-<12)	94.08 (2,065)	5.92 (130)	1.90 (1.41, 2.58)
High (12-<15)	89.34 (964)	10.66 (115)	3.61 (2.61, 4.93)
Very High (15-25)	79.95 (1,320)	20.05 (331)	7.59 (5.77, 9.97)

Divergent validity

Low happiness included response options "None of the time" and "A little of the time" and *High happiness* included response options "Some of the time", "Most of the time" and "All of the time". Findings of divergent validity testing indicate that participants who reported moderate psychological distress were 0.51 times as likely to report high happiness compared to those who reported low happiness. Participants who reported high psychological distress were 0.22 times as likely to report high happiness compared to those who reported low happiness. Finally, participants who reported very high psychological distress were 0.05

times as likely to report high happiness compared to those who reported low happiness

(Table 10).

Table 10: *Divergent validity between the K5 and happiness*

Level of psychological distress	Low happiness % (n)	High happiness % (n)	Odds Ratio happiness (95%CI)
Low (5-<8)	2.77 (57)	97.23 (2,001)	1 (ref)
Moderate (8-<12)	5.25 (115)	94.75 (2,075)	0.51 (0.37, 0.71)
High (12-<15)	11.52 (124)	88.48 (952)	0.22 (0.16, 0.30)
Very High (15-25)	34.41 (563)	65.59 (87.66)	0.05 (0.04, 0.07)

Clinical Utility

The clinical utility of the K5 for identifying depression was determined using ROC

curves (Figure 3).

Area under ROC curve = 0.7554

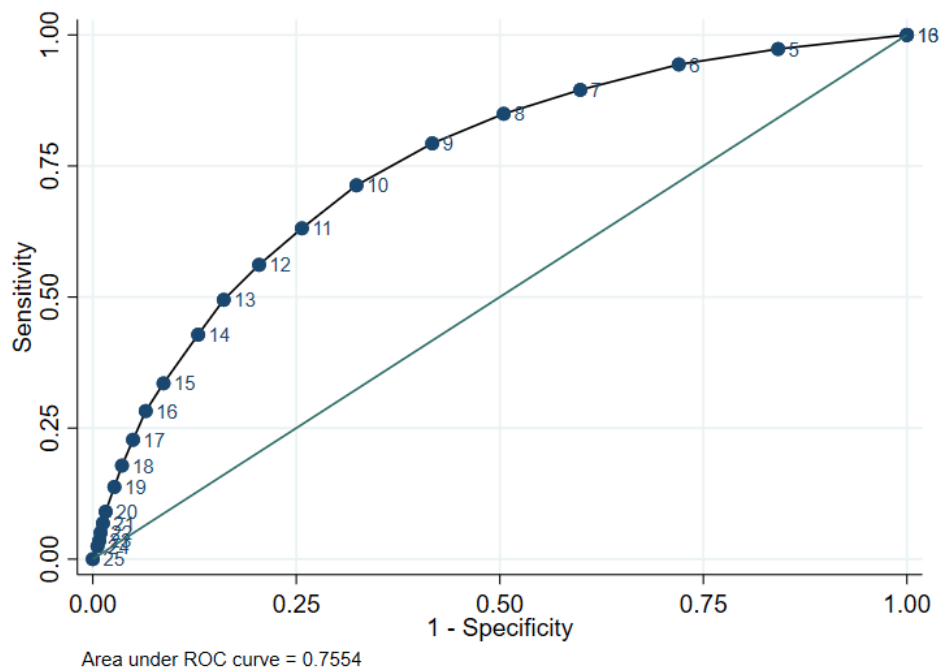*Figure 3.* Results of ROC Curve: Depression.

The K5 cut off score of 10/25 is the optimum score as an indicator of depression

(Table 11). This score was selected as a trade-off between sensitivity and specificity, where

sensitivity was maximised. This was chosen as the risks of not identifying someone who has

depression are higher than identifying someone with depression who does not have it.

Table 11

Measures of agreement for K5 cut off scores for depression.

	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
K5 Score		Diagnosis of Depression		
≥ 9	84.95%	49.52%	17%	3%
≥ 10	**79.31%**	**58.30%**	**19%**	**4%**
≥ 11	71.31%	67.61%	22%	4%
≥ 12	63.11%	74.31%	25%	5%
≥ 13	56.14%	79.57%	27%	6%
≥ 14	49.46%	83.92%	31%	6%
≥ 15	42.82%	87.06%	33%	7%

Note. K5 score starts at 9 (rather than 5) and ends at 15 (rather than 25) as to capture the middle section of the K5 score scale.

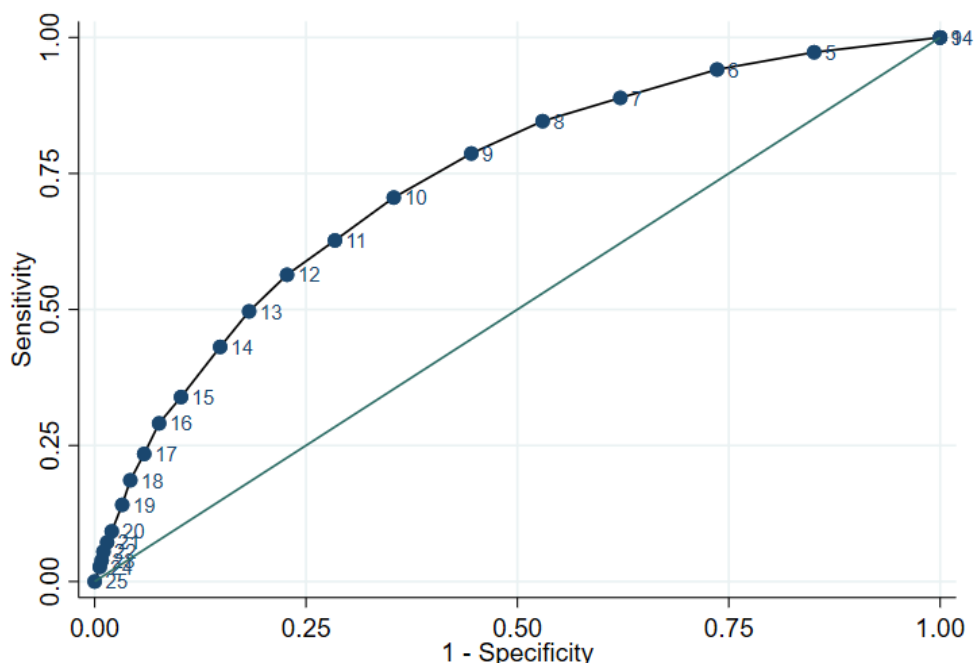The clinical utility of the K5 for identifying anxiety was determined using ROC curves (Figure 4).

Figure 4. Results of ROC Curve: Anxiety.

The K5 cut off score of 10/25 is the optimum score as an indicator of anxiety (Table 12). This score was selected as a trade-off between sensitivity and specificity, where sensitivity was maximised. This trade-off was chosen as the risks of not identifying someone who has anxiety are higher than identifying someone with anxiety who does not have anxiety.

Table 12

Measures of agreement for K5 cut off scores Anxiety.

	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
K5 Score		Diagnosis of Anxiety		
≥ 9	84.62%	47.02%	16%	3%
≥ 10	**78.67%**	**55.45%**	**18%**	**4%**
≥ 11	70.57%	64.63%	20%	5%
≥ 12	62.69%	71.58%	22%	5%
≥ 13	56.38%	77.25%	25%	6%
≥ 14	49.65%	81.73%	27%	6%
≥ 15	43.11%	85.16%	29%	7%

Note. K5 score starts at 9 (rather than 5) and ends at 15 (rather than 25) as to capture the middle section of the K5 score scale.

Prioritising sensitivity ensures that people who are experiencing anxiety symptoms are identified. The risks of not identifying someone with either depression or anxiety when they do have it may be high, for example, if they have suicidality. The risk of incorrectly identifying someone as having depression or anxiety when they do not have it are low. These people will progress for further referral and treatment. This is not a high risk as the K5 is used as a screening tool, not a diagnosis tool, so further investigation would then identify those people without depression or anxiety.

Face Validity

Face validity of the K5 was assessed through focus groups with Aboriginal and Torres Strait Islander people. Results presented here are of the K5 terms, major themes across the focus groups, understandings of the concept of SEWB, and the links between the K5 concept and SEWB. A requirement under the best-practice framework for scales is the consistency of understanding the items of a measure (Boateng et al., 2018). The focus groups are evidence that this has been achieved.

Nervous.

Focus group participants described "nervous" as feeling anxious or scared. They described the common physiological sensations of being nervous. As one participant stated:

I think nervous is more like a bodily response, like your heart is beating faster.

Other physical sensations included "butterflies in your stomach" and experiencing "sweaty palms and kind of shallow breathing." Participants also pointed out that nervousness was not necessarily a negative emotion:

Or you get nervous because you're excited about something. So, it can be like a

positive sometimes.

Hopeless.

Participants described "hopeless" as feeling depressed, defeated, and empty. A common theme was that an individual feeling hopeless has "given up". They described hopelessness "like it's the end" where people think there's "no way out":

There's somebody that's hit rock bottom.

They've pretty well reached a state of "I'm dysfunctional now".

One participant stated that people feeling hopeless are defeated and plan for the end:

I would imagine you get quite self-destructive, and coming back to isolated, but kind

of giving your belongings or your thoughts away, kind of doing the last type things.

Restless.

"Restlessness" was described as both a physical and mental experience. Participants described it as feeling physically "fidgety", and the mental component was described as:

... Over-thinking about something, and I [feel] like I can't rest.

Jumpy.

Participants described "feeling jumpy" as a physiological reaction to external events, including the anticipation of events:

So jumpy sort of implies to me that you're a little bit on edge... I always think of it as a reaction to something.

They also mental awareness in the context of feeling jumpy:

You're almost, like, hyper vigilant. You're very aware of your surroundings.

Effort.

"Feeling as though everything is an effort" was commonly associated with a person who has "shut down" and physically cannot do anything:

A classic image that comes to mind is you just lay down doing nothing.

Participants also described how, when you feel like everything is an effort, this relates to even the simplest, day-to-day tasks:

Like a bit crazy, you just feel like previously so busy, and then this next thing, it feels like it takes so much effort that you feel crazy, while washing up the dishes: "why am I going insane washing up the dishes?"

I was going to say that, yes, where even getting up out of bed and having a shower is about as much as you can manage that day.

No energy.

Participants described "having no energy" as both a physical and a mental experience:

So, there can be no physical energy or no mental energy.

For physically having no energy, participants stated that it may be due to feeling "overworked" and is similar to feeling as though everything is an effort. When describing mentally having no energy, participants also stated that while people can be mentally tired, it is hard to switch-off:

I think they can also think about the people that they might be letting down by not doing what they're supposed to be doing.

Sad.

Participants described sadness as a feeling of isolation and aloneness. They discussed the beginning of sadness as "trembling", and your eyes start "welling up" so you begin to cry. Sadness was described as "an intense emotion" on a continuum of emotions:

Sometimes you can get upset over different things but you wouldn't classify it as sad. So being sad is something that is further down on the spectrum.

Sadness was linked to mental illnesses:

I think sadness is linked with mental health, right, because it's an emotion, but then it's also like depression and anxiety and that kind of thing because they are like illnesses that kind of exaggerate the sadness.

Participants spoke about the stigma of feeling sad, especially when related to a mental health issue that prolongs sadness:

People are hesitant to identify with sadness… people don't want to say they've been sad for such an elongated time.

"There's also a stigma about having to justify it." "True, sometimes you can't explain why you're sad, you're just sad".

Finally, participants spoke about the stigma of sadness, and how you are expected to contain and hide the emotion:

Yeah true, you're not really allowed to be sad around other people.

Links between K5 concepts.

Participants drew links between the K5 concepts, often stating how one concept would occur first, with another concept as the "after-effect":

What contributes to jumpy and restless could be nervousness or the worry. It could be either of those. So they're probably related to those two.

Participants also created links between concepts:

I think all of them are connected, but especially with this one, when you've got no energy, you could still be worried about the all things you're not doing; you're nervous about how people are going to react to that; you're kind of losing hope because you just can't be fucked to deal with it. Yeah, I think they are all connected in that way.

The concepts were also described as being interconnected in a linear way:

I think all of them are connected, but especially with this one, when you've got no energy, you could still be worried about the all things you're not doing; you're nervous about how people are going to react to that; you're kind of losing hope because you just can't be fucked to deal with it. Yeah, I think they are all connected in that way.

K5 concepts are not always negative.

Participants gave many examples of how each concept is not necessarily related to negative emotions:

It doesn't necessarily indicate a bad thing, though, like a negative kind of emotional state. It can also just be a Netflix and chill day.

"Or you get nervous because you're excited about something. So it can be like a positive sometimes". "Yeah, like a new experience."

Participants also described other factors that may cause these emotions that are not related to psychological distress, including alcohol and other drugs, financial pressures, engaging in activities such as speeches, or experiencing other medical and health issues. One participant stated:

> *Yeah, and if you physically – if you run a marathon, you've definitely got no energy.*

Another participant described a situation where someone may be restless because of external influences:

> *So, yeah, restlessness can – it's not necessarily a bad thing. I mean, it – especially if you're just – if you're waiting for somebody or something like that you can feel a little bit restless. It's not necessarily a negative thing.*

SEWB.

The second half of the focus group asked participants how they would describe SEWB. The key themes that arose were social groups, emotions, identity and spirituality, balance, external influences, health and illness, self-care, and knowledge or terminology about SEWB.

Social groups.

Social groups were the main theme of SEWB. Participants described social groups as a way for "allowing connection and engagement with other people." One participant described the influence of social groups as "how you're supported by friends and family." Participants also described the different social groups they belong to:

> *It's like having your work friends and then your personal, close friends outside of work.*

Participants also discussed the different effects that good friends have on your SEWB compared to bad friends:

I think you come away feeling energised from your good friends, and then just feeling

so drained to be around the shit friends. And also frustrated, like you just want to get

your good friends and be like "Oh my God, guess what this bitch said".

Emotions.

Participants predominately described how people are unable to accurately describe

their internal emotional state:

So you could look at your emotional well-being and think, "yeah, I'm coping, I'm

fine, everything's going well but coping, just hanging in there" – when in actual fact

you're not, you're maybe worried about things or nervous about things but you think

you're doing fine.

Emotional wellbeing is probably something that's overlooked. So awareness of the

way you're feeling and that kind of stuff.

Identity/spirituality.

Identity and spirituality were described as two interconnected factors of SEWB by

some participants. One participant described spirituality as:

How connected you feel to home and your family ties is really important for your

emotional wellbeing, and a feeling of wholeness.

Another participant described identity as:

A perception of self. It can be a self-assessment of how you are or how you perceive

yourself.

Participants also spoke about how spirituality is connected to other factors of SEWB:

Emotional and spiritual wellbeing are kind of linked in a way. Even if it's a circle.

Balance of SEWB factors.

Participants spoke about the importance of balance between all SEWB factors in having good SEWB. This was often described as balancing each factor of SEWB alongside basic needs like food and shelter:

For me, this relates back a bit to … feeling positive about myself to then have a positive social and emotional well-being which is then like living a healthy life, so healthy lifestyle, eating well, exercising, that sort of thing I think relates.

I think it's about having a balance as well, like having that balance of your basic needs and your self-care and your support. Because you could have a really good self-care time, but then not really have good support friendships and support there.

External influences.

Participants described a number of external factors that can have either negative or positive effect on SEWB. This ranged from "basic needs" to participating in activities that can enrich a person's life:

I feel like doing things like pushing you out of your comfort zone [or] challenging things, to help you grow.

One participant described how financial stressors can have negative impacts on SEWB:

For example, if you're not doing well financially, you might not have a good social and emotional wellbeing.

Another participant spoke about the positive effects on SEWB from external factors like the weather:

I think the weather is really big. The other day it was finally hot enough for me to whip my Birks out, and I was so happy about that, like finally Spring's there. Take pics of the grass and shit.

Health or ill-health.

Participants described how illness and disability can have negative impacts on their SEWB:

So well-being is, well, from my perception, is a positive thing. So it would be the absence of what we talk about in what's classically considered health, right, which is really illness. So the absence of conditions, diseases.

They also described how illnesses and disability in their family affects their own SEWB:

Or like if someone in your family has cancer, or you know.

So if your family or friends or someone are ill, that you can't do anything about it, so it's just taking energy or stress and worry.

Self-care.

Self-care was described as an important part in SEWB. One participant described self-care as:

Doing something that you enjoy, like doing something social, probably like sport, it could be dance, painting, anything. Like you'd have, what's it called, me-time or something?

Knowledge about SEWB.

Participants spoke about the importance of knowing about SEWB and knowing how to describe SEWB in being able to identify difficulties in their lives. One participant described how this knowledge about SEWB and mental illness empowers people to talk about their issues and connect with others:

And knowing that you're not alone in that sense, having the terminology means that there's other people out there that know what you're going through.

One participant, when asked how they would describe SEWB, spoke to their lack of knowledge in the subject, and how knowledge about SEWB varies between different people:

> *Well, I don't know, that's the thing. That's probably other things that people know*
>
> *about that we're not picking up on, right.*

Another participant spoke about the need for culturally sensitive discussions about

psychological distress and mental illnesses:

> *There's an episode [in the T.V. show 'Grown-ish'] and it's about young African*
>
> *American kids at uni in America, and there's this episode where they're trying to talk*
>
> *about mental health, and half the kids don't understand; they can't say they're*
>
> *anxious or depressed or emotionally unhappy, because they don't understand what it*
>
> *means. And it's only once they relate it to something they knew, it's like "Has*
>
> *anybody here ever felt like a rapper with the name Li'l in the title" or something, and*
>
> *they're like "Oh yeah [I get it]".*

Participants also discussed how it is not only the concepts that bring ambiguity into the K5,

but also the scale and its scoring itself:

> *... And with the scale, are you always getting people who interpret the scale*
>
> *differently. Or 'one' to some will be really fine, 'one' to some will be terrible, and I*
>
> *don't feel like it gives you enough scope to fully understand how the person feels.*
>
> The focus groups clearly indicate that the K5 does not comprehensively measure

SEWB of Aboriginal and Torres Strait Islander people. As one participant stated:

> *There's links [between the K5 concepts and SEWB], obviously, but I feel like if this*
>
> *was trying to measure my social and emotional wellbeing, I don't think it would*
>
> *capture it.*

Another participant described how the concepts in the K5 do not cover the entire scope of

SEWB, especially the interconnectedness people have with their community and external

factors that may affect SEWB:

I find these words don't give context, it's just like it's very individual and internal, whereas, yeah, I just feel like it doesn't shed light on things that are happening outside, that may be impacting on these sort of feelings or vice versa.

Findings suggest that the K5 is measuring some components of SEWB, however, it is not a comprehensive measure health and wellbeing for Aboriginal and Torres Strait Islander peoples (i.e. SEWB). The K5 is not an adequate proxy measure for the concept of SEWB

Discussion

The purpose of this study was to assess the reliability, validity, and clinical utility of a culturally modified Kessler Psychological Distress Scale (the K5) using a national sample of Aboriginal and Torres Strait Islander people. The K5 was found as a reliable and valid measure of psychological distress with good clinical utility among a national sample of Aboriginal and Torres Strait Islander people; however, not as a valid measure of SEWB. The analytic approach used is best practice in assessing the reliability and validity of scales (Boateng et al., 2018). The K5 demonstrated good internal reliability, no indication of item redundancy, and high homogeneity of items. Construct validity was achieved, with one underlying component that captured 70.08% of total variance. The K5 showed good convergent validity against depression and anxiety, and good divergent validity against a measure of happiness. Clinical utility findings, including K5 cut-off scores for 10, are informative for clinical diagnosis assessment. Assessment of face validity of the K5 showed that participants understand the items in the K5 and see them as a progression of intensity along one dimension. Participants stated that K5 items capture parts of their SEWB but made it clear that they do not fully address SEWB.

Internal Consistency/Reliability

Good internal consistency of the K5 was achieved in the Aboriginal and Torres Strait Islander population (α=0.89). This result is likely due to the short nature of the K5. Reducing

the number of items in a measure increases the likelihood that it is only assessing one

construct. Items from the longer K10 that were weakly correlated may now be absent in the

K5. The result is consistent with previous literature on the reliability of the K6 (Kessler et al.,

2002; Cornelius et al., 2013).

Construct Validity

The K5 has construct validity in the Aboriginal and Torres Strait Islander population

as determined through PCA. One underlying component was found which accounts for

70.08% of total variance, confirming unidimensionality of the K5. Previous literature has

found that the K10 and K6 likely have two components (Sunderland et al., 2012).

Unidimensionality of the K5 is supported through focus group data. Participants revealed that

the items used in the K5 are linked sequentially, with some concepts occurring first before

emotions and feelings are heightened, transforming into the other items.

Convergent Validity

In this study, convergent validity was achieved. For the depression and anxiety

analyses, the majority of participants in the low or moderate psychological distress category

had no clinical diagnosis of depression or anxiety. The majority of those in the very high K5

category had a clinical diagnosis of either depression or anxiety. This finding agrees with

previous literature on the convergent validity of the K6 and K10 when correlated with

diagnoses of anxiety and affective disorders (Andrews & Slade, 2001; Arnaud et al., 2010).

This study's finding that lifetime diagnosis of either depression or anxiety is

correlated with psychological distress could be due to their long-term nature and high relapse

rates. Rates of depression relapse across a lifetime are high: with at least 50% of people who

recover from a first depressive episode having at least one more, and 80% of those with two

depressive episodes having another (APA, 2000). Anxiety disorders are chronic, and relapses

are common (Yonkers, Bruce, Dyck & Keller, 2003). One in three people with anxiety who

discontinue their treatment will relapse, and one in six who complete treatment will relapse

(Batelaan et al., 2018). This is further supported in the literature as people who have a

diagnosis of depression or anxiety are more likely to have higher levels of psychological

distress than those without (ABS, 2016).

Divergent Validity

Divergent validity of the K5 was assessed using a happiness measure as a proxy for

psychological wellbeing. There is a clear divergence between happiness and the K5 results:

as psychological distress increases, happiness decreases. The literature supports the result the

more psychologically distressed people are, the lower their happiness (Winefield et al.,

2012). These results may be affected by data categorisation issues, as there were low

numbers in the "Not at all" and "A little bit category". However, divergent validity was still

achieved.

Clinical Utility

The clinical utility of the K5 in detecting a diagnosis of depression or anxiety was

determined. The optimum cut off for the K5 in both mental illnesses was a K5 score of 10/25.

According to the NATSIHS scoring cut-offs based on data from Aboriginal and Torres Strait

Islander people, a score of 10 falls into the "moderate" category (AIHW, 2009).

The purpose of a screening measure, like the K5, is to detect as many true positives as

possible. While a score of 10/25 may initially appear low, this ensures that the measure is

capturing as many people as possible for referral for diagnostic assessment and treatment.

There is a tension in the Australian healthcare sector between treating patients with mental

illnesses and not overburdening the system with people who do not need its services. The

mental healthcare sector in Australia is strained, with 12.4% of GP visits related to

psychological problems including depression and anxiety (Cook, 2019). A K5 cut-off score

of 10/25 would maximise the entry of people who need treatment into the system, while

allowing true negative cases to be filtered out of the healthcare system through diagnostic

assessment or referred to other low intensity supports or interventions for moderate

psychological distress.

Face validity K5

> **Face validity of the K5 items.**

Each item of the K5 discussed in the focus groups achieved face validity for

psychological distress. One reason for this is that participants understood each concept and

provided consistency in descriptions of each item. For example, "nervousness" was

consistently described as feeling scared or anxious in relation to the anticipation of events.

The feeling that "everything was an effort" was consistently described as someone who has

completely shut down and where even the smallest of tasks are difficult. Face validity for

psychological distress is further evidenced by the linear connections drawn between the

concepts by participants. Participants often stated that nervousness was an initial emotion that

is followed by hopelessness or having no energy. This continuum describes a unidimensional

nature of the measure, for example, with a participant stating:

> *I feel like worry would come first, because even you wake up and are still exhausted,*
> *you start worrying straight away about other things that you need to do, like all the*
> *stuff that's going on, and then it might become like the hopelessness, or all the other*
> *ones can follow on from that.*

> **Face validity of SEWB.**

Discussions of the links between the K5 and SEWB in the focus groups indicate that

face validity was not achieved for SEWB. The K5 items were described as part of SEWB, but

not fully representing it. One reason that the K5 did not achieve face validity for SEWB is

because the K5 items do not capture components of the national SEWB model as designed by

the Australian Indigenous Psychologists Association (Dudgeon et al., 2014). Key factors of

SEWB raised by both focus groups were social connections, a connection to identity or self, physical health and illness, and a balance between person needs and external needs, including that of your community. These factors are not captured in the K5 items, which are negatively and individually focused, whereas SEWB is strengths-based and focuses on family and community connections for health and wellbeing (National Aboriginal Health Strategy Working Party, 1989).

Limitations

Aboriginal and Torres Strait Islander people have different conceptions of health and wellbeing than non-Indigenous Australians and therefore findings from this study cannot be generalised to Australia's general population.

The MK study is a national longitudinal study which was not designed to be a representative sample; rather it was designed to capture a diversity of experiences. However, this will not impact on the robustness of reliability and validity testing. The focus groups were coded by a sole coder. While this may place some issues in the major themes extracted from the focus groups, these themes were discussed with colleagues/supervisors. The study relied on self-report data, which may have affected the responses. Participants engaging with self-report data may respond to questions based on item properties in the measure or based on the social desirability to respond positively (Paulhus, 2017). The MK survey was designed to mediate these issues. First, the MK survey was developed with extensive community consultation to ensure it maintained cultural sensitivity and was accepted by Aboriginal and Torres Strait Islander communities. Secondly, the survey was deidentified to increase confidentiality and anonymity.

The K5 measure used in the MK study and in this thesis was culturally adapted and includes clarifications for two items. This means that it varies from the original K5. However, since the concepts in each item remain the same, and the descriptors' purpose is to increase

understanding by participants, not change the concepts within the items, face validity of the culturally modified K5 remains intact, and this data can still be compared to other literature on the K5.

Finally, the ROC curve analysis calls for gold standard data (i.e. a current diagnosis from a healthcare professional) for comparison with the K5 (Kumar & Indrayan, 2011). There is no gold standard data available on current rates of a clinically diagnosed depressive or anxiety disorder in the Aboriginal and Torres Strait Islander population. This thesis used a lifetime diagnosis of anxiety or depression in place of a gold standard, and due to the chronic tendency of depression and anxiety, the results still serve their purpose.

Future Research

This thesis recommends future research develops a culturally sensitive and valid, comprehensive measure of SEWB for Aboriginal and Torres Strait Islander people in collaboration with Aboriginal and Torres Strait Islander community members. To accurately measure Aboriginal and Torres Strait Islander health and wellbeing, biomedical models and indicators may not be relevant due to the significant impacts of colonisation, trauma, grief, loss (of land, culture, spirituality, and freedom), and ongoing social marginalisation on health and wellbeing (Grande et al., 2017). A SEWB measure would strengthen research and clinical practice in Aboriginal and Torres Strait Islander health and wellbeing because these measures developed for and by Aboriginal and Torres Strait Islander people have the greatest potential to be culturally safe and relevant in clinical, measurement, and screening settings. The only way to truly assess Aboriginal and Torres Strait Islander health and wellbeing is through Indigenous-developed tools (Grande et al., 2017).

Conclusion

Aboriginal and Torres Strait Islander people experience high levels of psychological distress because of historic and contemporary colonisation, trauma, racism, and

marginalisation from society. The K5, as a culturally modified measure of psychological distress, is a valid measure of psychological distress in the Aboriginal and Torres Strait Islander population. The K5 has clinical use in the Aboriginal and Torres Strait Islander population as a screening tool for psychological distress. A score of 10 or above is indicative of a person needing further assessment and diagnosis. The K5 is not a valid measure of SEWB (i.e. psychological distress is only one component of SEWB). Since there is no comprehensive SEWB measure, however, the K5 may continue to be used as a proxy until future development of a SEWB measure. Future research is required to develop SEWB measures for Aboriginal and Torres Strait Islander people that embodies their understanding of health and wellbeing.

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Appendix A

List of Research Ethics Committees and protocol numbers

1. Aboriginal Health and Medical Research Council (AH&MRC) NSW: 1268/17

2. Aboriginal Health Research Ethics Committee SA: AHREC 04-17-723

3. ACT Health 2018/ETH/00205

4. Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS): E030/22052015

5. Australian National University Human Research Ethics Committee: 2016/787

6. Central Australian Human Research Ethics Committee (CAHREC) CA-17-2810

7. Metro Couth, Queensland: HREC/2019/QMS/56115

8. NT Department of Health & Menzies: 2017-2804

9. Nunkuwarrin Yunti

10. St Vincent's Hospital Melbourne HREC: 132/17

11. University of Tasmania (UTAS): H0016473

12. Western Australian Aboriginal Health Ethics Committee (WAAHEC): 787

Appendix B

Focus Group Transcript

I acknowledge the lands on which we are meeting today, the ancestral lands of the Ngunnawal and Ngambri peoples. I pay my respects to Elders, past and present, who will forever be a part of this place. I also acknowledge my own ancestors of the Wiradjuri nation. I'd like to extend my respect to all Aboriginal and Torres Strait Islander people here today and thank you all for making the time to participate in this research.

The Mayi Kuwayu study, or MK study, is the largest national cohort study of Aboriginal and Torres Strait Islander adults that seeks to create an understanding of how culture affects Indigenous wellbeing and health outcomes. The study is led and governed by Aboriginal and Torres Strait Islander peoples.

My Honours thesis is part of the MK study, and this focus group is part of my data collection for my thesis. The goal of the focus group today is to hear people's perspectives about one of the measures in the MK study, and help me see how this question is understood by Aboriginal and Torres Strait Islander peoples. This is the existing measure we will be talking about today.

Understanding what these terms mean helps us better measure our own health and wellbeing, and your participation today will help us determine whether the question we are discussing is a good measure of our own health and wellbeing. I'll give you a few moments to read over the measure.

Your participation today is completely voluntary, so you're welcome to leave at any time. Everything you say today will be unidentified so when I'm using information from this focus group in my thesis it won't be traced back to any of you. I will also be audio recording so I don't miss anything that's been said today. Is everyone okay for me to record the focus

group? I have a sign in sheet here, so if you're all willing to participate today please fill this out.

We have 9 questions to go through that are based on the measure on your handout. As I ask each question I'll write up some of the main points onto the whiteboard so we can create a better sense of what each concept means. Feel free to be as honest about your answers as possible, as there are no wrong answers today. I only want to gain an understanding of your knowledge and experience of the questions I ask. Some of the questions I ask may bring up some personal stories and some might be sad or hard to talk about, but I want to you focus on telling me what you think the concepts mean to Aboriginal and Torres Strait Islander people, rather than telling personal stories.

1. Can you give us a brief introduction to yourself and who your mob is?

2. How would you describe the word "nervous"?

3. How would you describe "hopelessness" or "having no hope"?

4. How would you describe the word "restless"?

5. How would you describe "feeling jumpy",?

6. How would you describe the phrase "everything was an effort"?

7. How would you describe the phrase "having no energy"?

8. How would you describe the phrase "sad"?

9. How would you explain what social and emotional wellbeing means?

What are the thoughts/feelings/behaviours behind this concept?

That brings us to the end of the focus group. How is everyone feeling? What can you do today for self-care? I know that some of the things we talked about can be upsetting so we have some information here about support services for mob that may be helpful. Please let me know if you need help accessing these services. Thank you for your discussions today; all of your answers are really important to better understanding our own health.

Appendix C.

ANU Research School of Psychology
Honours Milestone Completion Form
(Print a separate copy of this form.)

Student's Name: *Makayla-may Brinckley*   Student's Number: *4555 9202*

Milestone 1. Presentation of Research Proposal

This is to be done in Semester 1 prior to the commencement of data collection. Typically, presentations should be made about three months after the start of the semester (i.e., April/May or October/November for mid-year students). This should be arranged with students' supervisor.

Supervisor's Signature: _____   Date: *16 May*

Milestone 2. Mid-Course Progress Report

This must include a meeting with the Honours Convenor or their delegate(s) to discuss progress. This is due in June/July or January/February for mid-year students.

Supervisor's Signature: _____   Date: *24 July*

Milestone 3. Major Data Collection and Analyses Completed

One month prior to the submission of the thesis, both the supervisor and the student must sign off on the scope of all data collection and data analysis required for the completion of the thesis, indicating that they think the thesis is on track. If they think the thesis is not on track, this needs to be discussed with the Honours Convenors immediately and the reasons for the problems explained. Extensions to the thesis due date will only be given for delays caused by unforeseen factors outside of students' control.

Supervisor's Signature: _____   Date: *26|9|19*

Student's Signature: _____   Date: *26/9*

Milestone 4. Thesis Draft Submitted to Supervisor and Feedback Returned by Supervisor

Two weeks prior to the submission of the thesis, both the supervisors and the student must confirm that the first draft of the thesis (excluding the Discussion section) has been submitted to the supervisor and has been returned to the student by the supervisor with comments.

Supervisor's Signature: _____   Date: *2/10/19*

Student's Signature: _____   Date: *2/10*