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Validation of the first peoples cultural capability measurement tool with undergraduate health students: A descriptive cohort study

Roianne West^{a,b,c,*}, Kyly Mills^{a,b,c}, Dale Rowland^{a,b,c}, Debra K. Creedy^{a,c}

^a Griffith University, Gold Coast, QLD 4222, Australia

^b First Peoples Health Unit, Gold Coast, QLD 4222, Australia

^c Menzies Health Institute, G40 Griffith Health Centre, Griffith University, Gold Coast, QLD 4222, Australia



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ABSTRACT

Background: Health professional graduates require the capacity to work safely, both clinically and culturally, when delivering care to Indigenous peoples worldwide. In the Australian context, the *Aboriginal and Torres Strait Islander Health Curriculum Framework* (The Framework) provides guidance for health professional programs to integrate, teach and assess Aboriginal and Torres Strait Islander peoples' (First Peoples) health content. There is, however, a lack of validated tools that measure the development of students' cultural capabilities.

Objectives: To validate the Cultural Capability Measurement Tool with a cohort of health professional students.

Design: A descriptive cohort design was used.

Setting and Participants: All students ($N = 753$) enrolled in a discrete First Peoples Health course at an Australian university were invited to complete the Cultural Capability Measurement Tool.

Methods: The tool was tested for reliability, content and construct validity using confirmatory factor analysis; and concurrent validity using and the Cultural Understanding Self-Assessment Tool.

Results: A sample of 418 (73% response rate) was recruited. Most participants were enrolled in the Bachelor of Nursing program ($n = 369$, 82%). The Cultural Capability Measurement Tool had a Cronbach's alpha coefficient of 0.86. A five-factor solution was confirmed which reflected the cultural capability domains and accounted for 51% of the variance. Scores correlated with students' cultural understanding ($r = 0.28$, $p < 0.001$).

Conclusions: Successful implementation of The Framework requires instruments to measure changes in students' cultural capabilities. Measuring nursing students' cultural capabilities can inform their development, identify areas of strengths and deficits for educators, and will ultimately contribute to the development of a culturally safe nursing workforce.

1. Introduction

Australia's Aboriginal and Torres Strait Islander people are one of the oldest documented surviving and thriving cultures in the world (Rasmussen et al., 2011). The traditional custodians of mainland Australia are the Aboriginal Peoples and the traditional custodians of the Torres Strait Islands are the Torres Strait Island Peoples known together as the Aboriginal and Torres Strait Islander peoples or hereafter Australia's First Peoples. The term "Indigenous" refers to the descendants of the original inhabitants' of a geographical area (Corntassel, 2003) of which in the context of this paper is Australia. Although surviving and thriving the adverse effects of colonisation continue to be seen in lower life expectancy, higher likelihood of hospitalisation, higher rates of chronic and preventable illnesses and poorer self-reported health compared to the non-Indigenous Australian population (Australian

Institute of Health and Welfare, 2015). Higher education providers have a critical role in ensuring prospective nurses have the capacity to work safely, both clinically and culturally, when delivering care to First Peoples (Universities Australia, 2011; Department of Health, 2014; Phillips, 2004).

The impact of including First Peoples curricula in higher education health programs cannot be underestimated. In addition to improving students' confidence and preparedness to work with First Peoples (Hunt et al., 2015; Paul et al., 2006) such learning can influence positive shifts in attitudes towards First Peoples (Hunt et al., 2015; Thackrah et al., 2015; Pedersen and Barlow, 2008). The ways in which this content is taught and assessed however, differs markedly across higher education institutions in Australia (Department of Health, 2014). In response to this variability, the Australian Department of Health introduced the *Aboriginal and Torres Strait Islander Health Curriculum Framework*

* Corresponding author at: First Peoples Health Unit, Griffith University, Parklands Drive, Southport, QLD 4222, Australia.
E-mail address: r.west@griffith.edu.au (R. West).

(Department of Health, 2014) (hereafter, The Framework). This standardised framework provides guidance for health professional programs to integrate, teach and assess First Peoples health content in Australia. The Framework describes five key cultural capabilities that lead to the provision of culturally safe care: Respect; Communication; Safety and Quality; Reflection; and Advocacy, and adopts the notion of “cultural capability” as its foundational concept (Department of Health, 2014).

Various definitions of terms have been used to describe the unique characteristics of clinically safe health care for Aboriginal and Torres Strait Islander peoples. A mutual understanding of key terms is critical to appreciating how graduate cultural capabilities are being developed through the Framework and in the context of this paper, measured by the Cultural Capability Measurement Tool. The terms and definitions below have been chosen specifically for the discourse within which the term is located and the paradigm from which the term has emerged.

Cultural capability implies the demonstrated capacity to act on cultural knowledge and awareness through a suite of core attributes that are acquired through a dynamic lifelong-learning process (Department of Health, 2014). In Australia cultural competence is described by Indigenous Australians in the colonial context as the awareness of one's own culture and knowledge, an understanding of, and sensitivity to other cultural beliefs and practices, coupled with the ability to interact with people from different cultural backgrounds in ways that are considered appropriate by those people (Universities Australia, 2011). In New Zealand, the term “cultural safety” is often used in preference to “cultural competence” and originated from Maori nurses in the colonial context of New Zealand and defined as is an outcome of nursing and midwifery education that enables safe service to be defined by those that receive the service (Ramsden, 2002). Cultural capability encapsulates cultural competence and cultural safety and offers a holistic approach which is transferable and responsive, and can be adapted to new and changing contexts and moves beyond the application of a simple knowledge and skill set (Duignan, 2007; Stephenson and Weil, 1992). Within The Framework, each capability has key descriptors of attitudes, values, skills and knowledge that students must demonstrate in order to develop the associated capability (Department of Health, 2014).

2. Background

Impact evaluation of discrete courses that aim to develop cultural capability both internationally and within the Australian context are rare. A search of major databases was conducted for articles published within the last decade, that described tools tested with health professional students. Search terms were broadened to include diverse terms relating to cultural capability, including “cultur* (competen* OR safe* OR aware* OR respect OR respon* OR secur*).” Sixty articles described tools that measured health professional students' development of cultural competencies, but the aims, population of interest, and educational interventions varied significantly. Most papers did not focus on an Indigenous population, but development of “multi-cultural” or “cross-cultural” competencies. Interventions included cultural immersion experiences (Allen et al., 2013a; Glickman et al., 2015; Smith et al., 2015; Isaacson, 2014), cultural competency short-courses or workshops (ranging from three to 10 h) (Carter et al., 2006; Chen et al., 2012; Khauv and Alcantara, 2012; Nichols-English and Guion, 2008), lectures, key-note presentations or forums (Lim et al., 2008; Sanner et al., 2010), online short-courses (Evans and Hanes, 2014; Carpenter et al., 2015) or integration of cultural competency components throughout an entire program or curriculum (Genao et al., 2009; Shattell et al., 2013; Bahrke et al., 2014; Hughes and Hood, 2007). Of these sixty articles, seven described testing a tool with health professional students who had undertaken a discrete course. Four of these had a specific Australian First Peoples focus.

Published tools included the Inventory for Assessing the Process of

Cultural Competence among Healthcare Professionals - Student Version (IAPCC-SV) which has been used in the United States to measure health student's cultural competencies following implementation of a discrete course. Based on Campinha-Bacote's model of cultural competence in health care delivery (Campinha-Bacote, 2007), the 20-item IAPCC-SV relates to cultural awareness, cultural knowledge, cultural skill, cultural encounters, and cultural desire. Scores indicate the extent to which a student is performing at a specified level of cultural proficiency, cultural competence, cultural awareness, or cultural incompetence. A Cronbach's alpha of 0.78 was reported (Moran Fitzgerald et al., 2009). The IAPCC-SV has been used with pharmacy students ($n = 12$) after completing an elective course on cultural competence (Durand et al., 2012), as well as in a discrete course for a mixed student cohort (nursing, allied health and pharmacy) ($n = 106$) (Hawala-Druy and Hill, 2012). However, both discrete courses focused on multi-cultural and cross-cultural groups, rather than Indigenous peoples from colonised countries or other specific cultural group.

In the Australian context, the Trans-cultural Self-Efficacy Tool (TSET) and Quick Discrimination Index (QDI) have been used to assess changes in students' perceptions of discrimination and transcultural self-efficacy. The TSET (Jeffreys, 2015) consists of 8 items that measure confidence on a 10-point rating scale, with three subscales (cognitive, practical and affective) reflecting self-efficacy strength or level of self-efficacy perception. The QDI (Ponterotto et al., 2002) captures prejudicial attitudes with two subscales that appraise general attitudes towards racial diversity (cognitive subscale), and affective attitudes towards personal contact with racial diversity (affective subscale). The TSET was tested with undergraduate students ($n = 33$) enrolled in a discrete community nursing course which addressed cross-cultural care and antidiscrimination (Allen et al., 2013b). Whilst some learning activities centred on First Peoples communities, the course predominantly focussed on people from migrant and other culturally diverse backgrounds.

The Impact of the Aboriginal Health Undergraduate Curriculum Survey (IAHUC) (Carr et al., 2011) was initially used to assess First Peoples health content integrated across a dental curriculum. The IAHUC was also adapted and tested with a cohort of midwifery students after undertaking a discrete, compulsory, first-year First Peoples health course (Thackrah et al., 2015). An “attitude thermometer” of favourable to unfavourable attitudes towards First Peoples (Pedersen and Barlow, 2008) was included to assess changes that could be attributed to unit content. However, both studies used small samples and 8 of IAHUC items demonstrated poor test-retest reliability (Carr et al., 2011).

The Attitude Towards Indigenous Australians (ATIA) scale and Knowledge, Interest and Confidence (KIC) items were completed by undergraduate nursing students enrolled in a discrete First Peoples health course (Hunt et al., 2015; Ramjan et al., 2016). The 18-item ATIA scale (Pedersen and Barlow, 2008) measures negative attitudes related to collective guilt, empathy and racial resentment about First Peoples, with higher scores indicating more negative attitudes towards First Peoples. The three-item KIC scale measures self-reported knowledge, interest and confidence when working with First Peoples. A pre-post intervention survey of students ($n = 249$) showed promising results in decreasing negative attitudes towards First Peoples, and increasing knowledge, interest and confidence in working with First Peoples (Hunt et al., 2015).

Tools used in discrete courses for health professional students have largely focused on the development of cross-cultural or multi-cultural capabilities, limiting their applicability to the Australian context or indeed to other colonised countries with Indigenous populations. Tools used to evaluate discrete First Peoples health courses within the Australian context, have tended to focus on knowledge, attitudes and understanding of First Peoples history, culture and health, rather than important behaviours relating to specific cultural capability development. Moreover, reports of reliability and validity of tools were only

provided in one study (Hunt et al., 2015).

Given the recent introduction of The Framework, it is timely to test tools that measure the development of students' cultural capabilities when undertaking discrete First Peoples health courses. The Cultural Capability Measurement Tool (CCMT) was developed following a staged, decolonising process which centred on First Peoples' knowledges (West et al., 2017). Pilot tested with a cohort of third year midwifery students ($n = 49$), the CCMT demonstrated good internal reliability (Cronbach alpha = 0.89–0.91) (West et al., 2017). The aim of this paper is to test the reliability and validity of the CCMT with a large cohort of health professional students.

3. Methods

3.1. Design

The study utilised a descriptive, cohort design.

3.2. Sample

Convenience sampling was used to recruit participants enrolled in a 12 week, discrete First Peoples health course that aligned with the Framework. A sample of 277 was required to achieve a 5% margin of error and 95% confidence interval.

3.3. Measures

The online survey consisted of three sections. The first section asked participants to provide demographic information including age, gender, degree program, and enrolment type (domestic/international), whether students identified as being of First Peoples background or other ethnic group, and previous cultural awareness or safety education or training.

The second component was a 7 item Cultural Understanding Self-Assessment Tool (CUSAT) that asks participants to rate their current level of cultural understanding on a 5-point Likert scale of 1 = non-existent to 5 = excellent. Items related to students' understanding of: First Peoples history; significance of cultural protocols within the local community; need for culturally appropriate communication and capacity to communicate safely; need for a strengths-based approaches to First Peoples health; role of reflective practice in First Peoples health; and, role of the healthcare system in improving First Peoples health.

The third section was the 25 item CCMT which has five factors that reflect the capability constructs within The Framework: Respect (Factor 1); Communication (Factor 2); Safety and Quality (Factor 3); Advocacy (Factor 4) and Reflection (Factor 5). Responses are given on a 5 point Likert scale of 1 = strongly disagree to 5 = strongly agree. The published pilot study recommended eight items be removed due to negative inter-item correlations and correlations of < 0.2 (West et al., 2017). After consultation with the *Cultural Capability Research Team*, (West et al., 2017) three items (Ramsden, 2002; Evans and Hanes, 2014; Carpenter et al., 2015) were retained in the current study due to the identified importance of the items in measuring cultural capability within the First Peoples cultural context.

3.4. Approach to Analysis

Descriptive statistics and frequencies were used to analyse age, gender, enrolment and program. Negatively worded items on the CCMT were reverse coded. Tests for scale reliability and validity included: item analysis, confirmatory factor analysis, subscale analysis and internal reliability. Correlations between factor and total scale scores as well as item-subscale correlations were calculated. Total scores were calculated for the overall scale and each subscale as well as CUSAT items. Pearson's correlation tested associations among continuous scores. *t*-tests examined differences among groups. Data were analysed using the *Statistical Package for the Social Sciences (SPSS) 22.0* (2014)

personal computer version.

3.5. Procedure

The survey was uploaded to the online course website. Students were encouraged by emails from academics to complete the survey prior to and after completion of the course. All responses were coded using an identification number and a researcher not associated with the course analysed all responses in a group format to maintain confidentiality.

3.6. Ethical Considerations

Ethical approval was granted by the Griffith University Human Research Ethics Committee: (PBH 40–10-2012 HREC). The research was guided by the *National Health and Medical Research Council's Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research (Values and Ethics)* (National Health and Medical Research Council (NHMRC), 2003) which ensured that First Peoples perspectives were centred in the collection, analysis and dissemination of the research. Importantly, the research was led and controlled by First Peoples researchers. This is imperative, given the history of unethical research practices in Australia arising from colonisation, which continue to have a profound impact on First Peoples (National Health and Medical Research Council (NHMRC), 2003; Dudgeon et al., 2014a; Laycock et al., 2011). To address these negative influences, First Peoples led and controlled research that centres First Peoples knowledges and practices, confronts research that often occurs from an "other" lens using western systems of knowledge (Laycock et al., 2011). This project was undertaken by a *Cultural Capability Research Team*, driven by researchers from predominately First Peoples backgrounds and led by an Aboriginal principal investigator.

4. Results

4.1. Participant Characteristics

The course is a core unit for undergraduate health professional programs including nursing, dental technology, dental prosthetics, midwifery, nutrition, occupational therapy, paramedicine, physiotherapy, sports development and public health. In other health programs, the course is offered as an elective. A total of 753 students were enrolled in the course in semester one, 2016. Six hundred and fifty-five students commenced the online survey. Of these, 418 completed the CCMT (response rate of 55.51%). Missing data were due to incomplete responses. The average age of participants was 26.18 years, ranging from 17 to 60 years. The sample was predominantly women ($n = 393$, 89.12%), enrolled in the Bachelor of Nursing program ($n = 369$, 82%) as domestic students ($n = 392$, 87.5%). Students were from diverse ethnic backgrounds, with the majority being Caucasian Australian ($n = 232$, 56.45%). Fourteen students (3.41%) identified as First Peoples. Participant characteristics are presented in Table 1.

Over 40% ($n = 202$) of students reported having prior experience of cultural safety education, but only 12.92% ($n = 58$) of students had completed the online, university-level cultural awareness module. Most students ($n = 419$, 93.74%) agreed/strongly agreed that they expected to be more culturally aware as a result of doing this course (Table 1).

4.2. Factor Analysis

The 25-item CCMT contained appropriate sampling adequacy for factor analysis in accordance with the Kaiser-Meyer-Olkin (KMO), measure of sampling adequacy ($r = 0.89$) and Bartlett's Test of Sphericity (Chi Square = 30.50, $p < 0.001$). Construct validity was evaluated through principal components analysis with varimax rotation revealing a five component solution (Table 2). The five factors had

Table 1
Participant characteristics.

Participant characteristics	n (%)	Mean (SD), range
Age		26.18 (8.78), 17–60
Gender		
Female	393 (89.12)	–
Male	48 (10.88)	
Program		
Nursing	369 (82)	–
Allied Health ^a	29 (6.44)	
Health and Biomedical Science	23 (5.11)	
Midwifery	16 (3.55)	
Other ^b	13 (2.89)	
Ethnicity		
Caucasian/Australian	232 (56.45)	–
Asian	58 (14.11)	
UK/English	17 (4.14)	
African	16 (3.9)	
First Peoples	14 (3.41)	
European	12 (2.92)	
Other ^c	62 (15.1)	
Enrolment		
Domestic	392 (87.5)	–
International	56 (12.5)	
Prior experience of cultural safety education		
Yes	202 (43.72)	–
No	260 (56.27)	
Completion of university, online First Peoples health cultural awareness module		
Yes	58 (12.92)	–
No	391 (87.08)	

^a Includes occupational therapy, oral health, nutrition and dietetics and sports development.

^b Includes double degrees and other programs that offer the course as an elective.

^c Includes participants who have identified with two or more ethnicities, or participants who identified a religion.

Table 2
Rotated components matrix with factor loadings.

Item number	Component					Extraction
	1	2	3	4	5	
1	0.437					0.368
2	0.365		0.435		0.426	0.527
3	0.486		0.465		0.321	0.557
4	0.574					0.445
5			0.723			0.558
6	0.469			0.442		0.479
7		0.683				0.532
8		0.634				0.417
9	0.535					0.402
10	0.401		0.560			0.551
11		0.712				0.572
12			0.631			0.503
13	0.630					0.480
14	0.442		0.508			0.465
15	0.699					0.520
16	0.702					0.525
17	0.571					0.374
18				0.753		0.615
19				0.375	0.606	0.520
20				0.731		0.619
21		0.664				0.580
22		0.729				0.631
23	0.507	0.314			0.356	0.544
24				0.630		0.471
25					0.703	0.600

Extraction method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization, rotation converged in 6 iterations.

eigenvalues > 1 and accounted for 51% of the variance. The factors were named according to their respective cultural capability domains with The Framework. Factor 1, *Respect*: 10 items (1, 3, 4, 6, 9, 13, 15, 16, 17, 23); Factor 2, *Communication*: 5 items (7, 8, 11, 21, 22); Factor 3, *Safety and Quality*: 5 items (2, 5, 10, 12, 14); Factor 4, *Reflection*: 3 items (18, 20, 24); and Factor 5, *Advocacy*: 2 items (19, 25) (Table 3).

4.3. Reliability

The CCMT was found to have good total internal reliability with a Cronbach alpha of 0.86. Reliability co-efficients for Factors 1, 2, and 3 were good, but low for Factors 4 and 5 (see Table 3). The CUSAT was also found to be an internally reliable scale with a Cronbach alpha of 0.88. There was a significant increase in overall CCMT scores from baseline (M = 96.45, SD = 11.43) to post-course (M = 101.47, SD = 13.50) (t (127) = 5.14, p < 0.001). There was also a significant increase in total mean CUSAT scores from baseline (M = 20.30, SD = 5.34) to post- course (M = 27.14, SD = 4.60) (t (130) = 14.6, p < 0.001). CCMT scores were found to be correlated with students' self-assessment of their cultural understanding (CUSAT) score (r = 0.28, p < 0.001).

5. Discussion

The CCMT was found to be reliable and valid. The CCMT is the first tool to measure the development of health professional students' cultural capabilities in the First Peoples Australian context. Findings from the confirmatory factor analysis revealed The Frameworks' cultural capability domains. Whilst The Framework specifies five capabilities, each capability is interconnected and mutually dependent on one another (Department of Health, 2014). As First Peoples cultures are too nuanced for a set of measurable competencies, the flexible and dynamic nature of capabilities are realistic when working within diverse First Peoples cultural contexts (Paul et al., 2012). This was reflected in the analysis which revealed a number of items split-loaded across more than one factor.

5.1. Respect

The items in Factor one aligned with the capability of *Respect*. According to The Framework, *Respect* refers to students' acknowledging First Peoples' ways of knowing, being and doing in the context of history, culture and diversity (Department of Health, 2014). For health professional educators, ensuring that nursing students not only gain, but incorporate an understanding of historical factors into practice, is paramount in the development of culturally safe care (Ramjan et al., 2016; Thackrah et al., 2014). Fundamental to this respect within Australian higher education institutions, is the inclusion of discrete curricula that focus specifically on students' development of cultural capabilities regarding First Peoples, rather than “multi-cultural” capabilities. Incorporation of First Peoples health education into “other” multi-cultural groups denies their position as Australia's First Peoples, as well as their unique cultural, historical and political plight, with potential flow-on effects for students in terms of the development of cultural respect. (Dunn et al., 2010).

5.2. Communication

Whilst the second factor consisted of items from the *Communication* capability, items also related to health practice. Items such as “I feel comfortable working with First Peoples” (item 8) and “Understanding First Peoples cultural beliefs impacts on my practice as a health profession” (item 7) highlight a practice-based component, but may also point to the important role that culturally responsive communication plays in nursing practice. This finding was echoed in the pilot study, which also found that all communication items were split-loaded, suggesting that

Table 3
Factor summary of the CCMT.

Factor	n	Item-correlation (range)	Intraclass correlation	Eigen value	% of variance explained	Loading range	α	Mean total score (SD)
1	10	0.21–0.46	0.327	6.68	26.72	0.54–0.69	0.83	40.05 (5.43)
2	5	0.30–0.56	0.374	2.13	8.53	0.49–0.71	0.75	18.99 (3.10)
3	3	0.27–0.41	0.347	1.81	7.24	0.31–0.63	0.73	20.74 (2.35)
4	3	0.30–0.46	0.357	1.20	4.79	0.31–0.46	0.62	8.66 (2.5)
5	2	0.23–0.23	0.22	1.36	4.04	0.34–0.36	0.36	6.81 (1.36)
CCMT total					51.42		0.86	95.24 (10.47)

culturally safe communication may include an understanding and application of other interrelated capabilities (West et al., 2017).

5.3. Safety and Quality

Within The Framework, the *Safety and Quality* capability (Factor three) refers to students' capabilities to effectively apply evidence and strengths-based approaches when working with First Peoples (Department of Health, 2014). Central to The Framework is ensuring that students have the knowledge and skills to identify high-quality evidence that will inform their practice in positive ways (Department of Health, 2014). As application of best available evidence is essential for nurses to deliver high quality, culturally safe care, it is important students develop their skills and knowledge in this area during their professional programs.

5.4. Reflection and Advocacy

Although the factor analysis revealed 5 factors according to The Framework, Factor four (three items) and Factor five (2 items) lacked internal reliability. Cronbach's alpha levels are a function of the number of items, so factors with few items will often have low reliability. Items in Factors four and five represent the capabilities of *Reflection* and *Advocacy*, with some overlap between the two. *Reflection*, within The Framework engages students to examine and reflect on their own culture, professional culture, and dominant cultural paradigms (Department of Health, 2014). Importantly, a “critical reflective” lens encourages students to explore their own identity and the power and privilege associated with their social positioning (Department of Health, 2014). This element has its tenants in critical studies of whiteness and requires students to engage with the political and ideological nature of health practice (Dudgeon et al., 2014b; Howard, 2016). The transformative potential of critical reflection resides in this interrogation. There is potential for nursing students who engage in this discourse to engender cultural change after graduation (Kickett et al., 2014).

6. Limitations and Future Research

There are many areas of future research development with the CCMT. Two factors were unreliable and further work needs to be undertaken to strengthen the internal consistency of Factors four and five. The correlation between CCMT and CUSAT scores was anticipated, with students who reported high levels of understanding of cultural issues being more likely to have high overall cultural capability scores. However, as with any self-report scale, there is the possibility that students may over report their own understanding. Moreover, there is the potential, specifically in the cultural competency space, for social desirability bias. This bias may have affected results if students tended to give answers that were deemed to be “socially desirable” and has been found to influence measures of cultural competence in other cohorts of health students (Lee and Khawaja, 2013; Ohm and Rosen, 2011). Controlling for this bias in future research could involve the use of a recognised measure of social desirability alongside the CCMT.

Similarly, as this cross-sectional study used convenience sampling,

we cannot infer causal relationships between application of The Framework and development of health students' cultural capability. Further research examining other factors that may predict changes in cultural capability is warranted. Additionally, as previous research has revealed a significant decline in students' knowledge, attitudes and views towards First Peoples over time (Paul et al., 2006), following a cohort of students through their program and into clinical practice may provide educators with important information about best-placed cultural capability educational interventions.

The CCMT was piloted with midwives, and now validated with a large sample of health professional students, predominantly nursing. Although the sample was ethnically diverse, there was still a dominance of Caucasian Australians. Student groups with a different ethnic profile or professional orientation may respond differently to the CCMT. Further testing with samples of students enrolled in diverse health programs is necessary. Lastly, our study may have been strengthened with the inclusion of a recognised scale on cultural attitudes to test concurrent validity of the CCMT. Although we did find a correlation with students' responses on the CUSAT, concurrent validity with a standardised measure was not assessed.

7. Conclusions

The CCMT was found to be reliable and valid when tested with a large cohort of health professional students at an Australian higher education institution. The scale is suitable for use with nursing and midwifery students. The factor analysis confirmed that CCMT items reflect the interconnected capabilities of the recently introduced Framework. Significantly, measuring the development of nursing students' cultural capabilities may offer important implications to higher education institutions in the development of a culturally safe nursing workforce. Further research is required to benchmark learning and teaching approaches across universities nationally and internationally.

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