A Critical Review of the Existing Quantitative Intercultural Competence Assessment Instruments

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The rapid pace of globalisation has created a substantial demand for, and subsequently ongoing evolution in, the conceptualisation of intercultural competence (IC). However, it remains unclear whether assessment methodologies have kept pace with these theoretical shifts. This paper presents a critical review of 57 quantitative IC assessment instruments published between 1980 and 2025. These instruments were identified from a pool of 3503 papers sourced from major databases including ERIC, Google Scholar, ProQuest, PsycINFO, PSYNDEX, Scopus, and Web of Science. Despite the increasing demand to develop global citizens, the review revealed an overreliance on self-report Likert-type surveys, which accounted for 98% of the tools analysed. Significant flaws were identified in these traditional measures, namely social desirability, also known as 'faking', cognitive biases, and limited ability to assess actual behavioural and cognitive skills. The study examined alternative formats such as Situational Judgement Tests and Intercultural Scenario-based items, highlighting their potential to provide more direct behavioural evidence despite challenges in internal consistency. The findings suggest that more innovative quantitative approaches are needed to accurately assess IC.

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Introduction

The rapid advancement of new technologies and globalising trends have made the modern world increasingly interconnected. This heightened global connectivity has resulted in an unprecedented extent of direct and indirect interactions between individuals from diverse linguistic and cultural backgrounds. Such interconnectedness is easily observable in the accelerated mobility and accessibility of diverse resources including knowledge, goods, as well as people (Held et al., 1999). Consequently, two contrasting outcomes have emerged: an expansion of new communicative opportunities and a set of serious challenges rooted in the complex dynamics of intercultural communication.

While novel communication opportunities, both virtual and face-to-face, are now accessible to global populations, these interactions are frequently susceptible to a broad spectrum of challenges. For instance, intercultural encounters can escalate into cultural conflict if the participants lack the necessary competencies. Therefore, individuals require a fundamental attribute to manage these opportunities effectively.

A globalised world calls for globally competent citizens. For example, the global labour market demands candidates who can collaborate effectively and communicate successfully, criteria that have become among the most sought-after employee attributes in the contemporary employment (World Economic Forum, 2018). Given the rising diversity within workplaces and intensified worldwide interconnections, the modern market faces an array of challenges stemming from intercultural interaction. Consequently, employees need more than effective interpersonal skills; they must possess the specific ability to interact positively with individuals from diverse backgrounds (Lantz-Deaton & Golubeva, 2020; Sercu, 2004; Watkins & Smith, 2018).

It is, therefore, unsurprising that one of the most essential qualities for success in today's world is "the ability to interact successfully and efficiently with culturally different others" (Brüstle & Vogt, 2023). Formally labelled as (hereafter IC), this attribute is now critical for

individuals engaging with a globalised society. Within this context, developing IC is a prerequisite for shaping individuals into the "global citizens" sought by the modern global market, a process that requires incorporating behavioural and interactional elements into learners' communicative repertoire (Fantini, 2009). As a result, IC has emerged as a key qualification for the 21st century (Brislin, 2010; Dodrige, 1999), and a decisive factor influencing individual employability (Crossman & Clarke, 2010; European Commission, 2014). This raises a critical question: where are the most effective opportunities for IC training?

The answer is the higher education sector (Deardorff & Arasaratnam-Smith, 2017; Lantz-Deaton & Golubeva, 2020). Higher education institutions across numerous countries have increasingly integrated IC training into their core curricula (Arasaratnam-Smith 2017; Deardorff, 2009). These institutions have developed programs that expose learners to cultural differences, aiming to equip them with the essential skills for successful communication and effective interaction with individuals from diverse linguistic and cultural backgrounds (Paige & Goode, 2009). As these institutions strive to prepare students for a diverse workforce, the demand for robust assessment methods has intensified.

Higher education institutions have also sought to internationalise both online and on-campus curricula by placing greater emphasis on students' IC (O'Donovan & Mikelonis, 2005). However, for these crucial educational initiatives to remain effective and keep pace with the evolving global cultural landscape (Deardorff & Arasaratnam-Smith, 2017), institutions must accurately assess their impact. As Fantini (2009, p. 457) contends, such efforts are futile without robust instruments designed "to predict intercultural success, monitor intercultural process, or measure the outcomes of an intercultural experience" (Fantini, 2009, p. 457). Consequently, educators and researchers face the critical task of determining which pedagogical frameworks and evaluative tools must effectively capture the growth of a student's intercultural communicative repertoire.

Therefore, the diverse conceptualisations of IC must be supported by compatible and validated measurement tools. This paper addresses this

essential need by critically reviewing the existing quantitative IC assessment tools, evaluating the strengths and limitations of each.

The paper is structured as follows: the subsequent section will conceptualise IC, followed by a discussion of IC assessment. Next, the methodology will be detailed, preceding the penultimate section dedicated to results and discussion. Finally, the paper concludes by summarising the findings and offering recommendations for future research.

What is IC?

In this section, we will briefly touch on the conceptualisations of IC before addressing its implications for assessment.

Despite a growing body of literature on IC, underscoring its significance, IC conceptualisation remains contested. Despite more than four decades of research, there is still a notable lack of consensus regarding both the terminology and definition of this construct, both within and across disciplines.

Writing more than 15 years ago, Spitzberg and Changnon (2009) identified more than 300 different concepts and factors associated with IC. They also noted a long list of terms used interchangeably with this construct. These terms are still growing in number and include biculturalism (Berry, 1997), plurilingualism (Piccardo, 2013), global competence (Organisation for Economic Co-operation and Development (OECD), 2018), transcultural competence (Kramsch, 2012), intercultural adaptation (Ruben & Kealey, 1979), and cross-cultural competence (Magala, 2005) among many others. More recently, Deardorff (2020) compiled a list of terms used to refer to IC across various academic disciplines in the United States, as illustrated in Table 1.

The literature on IC reveals a wide range of definitions, with some scholars (e.g., Lantz-Deaton & Golubeva, 2020; Sercu, 2005) identifying attitudes, knowledge and skills as core components. Other frameworks further expand this list to include personality, trait, motivation, and

awareness as distinct dimensions of IC (Deardorff, 2020). Spitzberg and Changnon (2009) define IC as "the appropriate and effective management of interaction between people who, to some degree or another, represent different or divergent affective, cognitive, and behavioural orientations to the world." (p. 7) in which appropriateness refers to how the performer views their actions to be a proper action in the host environment, while appropriateness is determined by how those actions are viewed by members of the host culture (Fantini, 2009). Brüstle and Vogt (2023, p.9) define IC as "a complex conglomerate of several elements that are needed to interact effectively and appropriately with others who are culturally different from oneself".

Table 1 Terms used for IC across academic disciplines in the US.

Term	Discipline
Engineering	Global competence (Caspersen, 2002)
Healthcare and social work	Cultural competence (Campinha-Bacote, 2002)
Business	Cultural intelligence (Early & Ang, 2003) or intercultural effectiveness (Portalla & Chen, 2010)
Education	Global competence (Mansilla & Jackson, 2022), intercultural competence (Deardorff & Arasaratnam-Smith, 2017, global citizenship (Goren & Yemini, 2017), global learning (Anderberg et al., 2009)

Sabet and Chapman (forthcoming) have proposed a distinction between a competency-based (process-oriented) and a competence-based (outcome-oriented) classification of the existing definitions of IC. Within this framework, competency refers to the attributes such as knowledge, skills and attitudes that can contribute to achieving an outcome, namely competence. Competence, in turn, refers to the practical application of the knowledge in real-world scenarios (Trompenaars & Wooliams, 2009). Thus, while the former focuses on the processes and attributes that facilitate the development of IC, the latter emphasises the quality of the endpoint- how successfully an individual interacts with culturally diverse others.

Barrett and Borghetti (2025) argue that although the term IC has been extensively used by scholars in psychology and intercultural education, its meaning has not undergone sufficient critical reflection. They attribute this to "the widespread uncritical endorsement of traditional definitions of IC that have been put forward by several senior scholars in the field, who emphasise the ability to communicate effectively and appropriately in intercultural situations as the key characteristics of IC" (p. 93). To address this conceptual gap, Barrett and Borghetti (2025) propose a more refined definition of IC, developed through a constituent analysis of the terms 'culture', 'intercultural' and 'competence'.

They argue that the traditional definitions of IC are overly narrow, as they focus exclusively on individuals' ability to communicate effectively and appropriately in intercultural situations. They contend that IC is a far broader construct, encompassing contexts that do not necessarily involve direct interaction. This includes activities such as reading texts, reflecting on cultural issues, and making judgements.

Barrett and Borghetti (2025) propose an inclusive definition of IC, drawing on perspectives from psychology and intercultural education. They suggest that IC comprises a combination of attitudes, values, knowledge, skills and critical skills that enable individuals to:

- Understand and respect other people who are perceived to have different cultural affiliations from oneself.
- Respond appropriately, effectively and respectfully when interacting and communicating with such people, and to establish positive and constructive relationships with them.
- Understand oneself and one's own multiple cultural affiliations by reflecting critically on one's encounters with cultural 'difference'.
- Take action, alone or with others, to promote and defend people's dignity and rights, especially when threats to their dignity and rights are a result of the perception of cultural difference(s). (p. 95)

This definition aligns with the outcome recommended by Deardorff (2020), who advocates for the adaptation and integration of multiple definitions to achieve a comprehensive and holistic conceptualisation of IC.

IC assessment

The ongoing lack of clarity surrounding the conceptualisation of IC has had a significant impact on the assessment of IC instruments. Persistent unresolved issues, particularly the question of what constitutes IC beyond language proficiency, which itself contributes to successful intercultural interaction (Fantini, 2009), continue to obscure the discourse on IC assessment.

As a result, IC remains the subject of continual scrutiny, with scholars seeking greater understanding and consensus regarding its definition. The numerous efforts have consistently produced a wide array of conceptualisation, resulting in a proliferation of qualitative and quantitative IC assessment tools, now numbering as many as 140 (Deardorff, 2017). Nevertheless, the assessment of IC remains a major challenge (OECD, 2017), and is still surrounded by many misconceptions and ambiguities (Deardorff, 2020).

IC assessment tools are just as varied as the theoretical models of IC from which they are derived. Examples include the Process Model of Intercultural Competence (Deardorff, 2006), The Integrated Models of Intercultural Communication Competence (Arasaratnam, 2006), The Intercultural Competence Model (Byram, 1997), and the Developmental Model of Intercultural Sensitivity (Bennett, 1986). This diversity stems from the wide range of constituents and dimensions that different models seek to measure. However, if the underlying conceptual ambiguity is not addressed, focusing solely on assessment may result in limited validity or effectiveness (Fantini, 2009).

The lack of clarity regarding what constitutes IC complicates the development and selection of appropriate assessment instruments. Without a shared understanding of the construct's core components

(Deardorff, 2006; Moloney, 2020), assessment tools risk being inconsistent, fragmented or misaligned with their intended purpose. Therefore, establishing clear and contextually relevant definitions of IC is a necessary precursor to the effective evaluation of its development and outcomes.

The literature on IC assessment tools reveals a range of contradictory and often confusing trends (Fantini, 2009). Some instruments adopt broad titles that encompass multiple abilities, while others focus narrowly specific subcomponents of IC. Certain tools place greater emphasis on language skills rather than cultural factors, whilst others do the reverse. Additionally, some instruments are designed with an international, thereby overlooking important intercultural variations within a single country. There are also tools that are ambiguous in scope and lack a clear purpose. In light of this diversity, the present review does not differentiate between these distinctions and instead includes all types of instruments, regardless of their underlying conceptual assumptions.

Reliable and valid measures of IC are essential for both researchers and practitioners, particularly evaluating the effectiveness of selection, training and development programs for sojourns (Chen & Gabrenya, 2021). For instance, in the context of tertiary education, robust IC assessment instruments serve two key purposes: they enhance the capability of institutions to produce graduates who are interculturally competent, and they support the delivery of high-quality programs that will contribute to student development through meaningful educational experiences (Griffith et al., 2016).

Deardorff and Arasaratnam-Smith (2017) advocate for "newer voices and diverse perspectives" (p. 1) in the ongoing discourse, calling for an expansion in the conceptualisation of IC. Research suggests that a "multi-measure, multi-perspective approach" (Deardorff, 2020, p. 498) is essential for the effective assessment of IC. Achieving this requires a comprehensive understanding of existing assessment tools, as well as critical awareness of their respective, which can inform the development of innovative approaches to address these shortcomings. The literature has seen significant reviews of IC assessment tools from different

perspectives, for example, those focused on higher education (Griffith et al., 2016), and those used alongside tools assessing social, emotional and intercultural competencies (Müller et al., 2020). However, to the best of the researchers' knowledge, no review exists that critically examines the full range of quantitative IC assessment tools, regardless of context in the past 45 years. To address this gap, this paper provides a critical review of existing instruments used to assess IC, providing fresh insights into the development of novel approaches in line with scholarly recommendations.

To this end, the paper is guided by the following three research questions:

1. What different types of IC assessment instruments are already available in the IC literature?
2. What are the flaws and weaknesses of each type of assessment instrument?
3. What techniques are available to reduce the impact of these weaknesses and flaws?

Empirical research in IC assessment

The growing prominence of IC, marked by a surge in related publications during the 1970s, led to an increased demand for IC assessment instruments in the 1980s. This demand accelerated further in the early twenty-first century, driven by rising global migration, the expansion of multicultural workplaces, and the heightened emphasis on global citizenship within institutions (Bennett, 2015). Tertiary education institutions recognise that assessing students' IC is crucial for producing competent graduates (Griffith et al., 2016). Consequently, numerous efforts have been made to develop measurement tools that address the limitations of existing instruments, resulting in a diverse array of IC assessment tools in the literature. Various recommendations have also been proposed to ensure that assessments accurately capture students' IC (Sercu, 2004). Nevertheless, the effective assessment of IC remains a significant challenge (Fantini, 2009).

In a study employing the Delphi methods across 24 postsecondary institutions in the United States, Deardorff (2004, p120) found unanimous agreement among participants regarding the importance of and the necessity of its assessment. Analysis of responses on a four-point scale (ranging from 'not important' to 'extremely important') revealed that more than half (54%) rated the assessment of IC as 'extremely important', slightly less than half (42%) as 'important', with only a small minority (4%) selecting 'somewhat important', and none indicating that it was 'not important'. These findings underscore the consensus among researchers that IC should be measured. Nevertheless, despite the proliferation of assessment instruments targeting various aspects of IC, no single tool is capable of capturing the construct in its entirety.

Deardorff (2006) suggests that both quantitative and qualitative methods are appropriate for assessing IC. IC assessment can be used to evaluate an individual's level of cultural proficiency at a certain point in time and their ability to apply it in practice. Such assessments can serve a diagnostic purpose, enabling the identification of dimensions that require further development, as well as functioning as tools to evaluate the effectiveness of training programs (Perry & Southwell, 2011). However, IC assessment tools vary considerably in terms of the specific constituent of IC constituents they address. For example, some instruments focus on elements such as open-mindedness, effectiveness, intercultural sensitivity, or cultural empathy (Hammer & Bennett, 1998; Matveev & Nelson, 2004). In addition to serving summative purposes, well-designed IC assessment tools can actively foster the development of IC in students by encouraging effective reflection (Houghton, 2013). This aligns with Fantini's (2009) argument that IC development is an ongoing and longitudinal process; therefore, individuals should be given opportunities to reflect on and assess their own IC development.

There are key considerations in the development and the use of IC assessment instruments. One fundamental aspect is the suitability of the measurement method for its intended purpose. For instance, it is important to determine whether the tool is designed for practical teaching contexts or for application in empirical research. Users of the instrument must also be aware of its validity; that is, they need to understand the

theoretical framework underpinning the test   and whether the instrument accurately measures what it purports to measure. The plurality of IC conceptualisations further complicates the comparison of assessment tools, making the selection of the most effective instrument a challenging task.

Deardorff (2009) identifies several common pitfalls in the measurement of IC, which are summarised as follows:

1. Lack of clear definitions: Assessment efforts often proceed without a clearly articulated or prioritised definition of IC drawn from the existing literature.
2. Lack of planning: Assessments are sometimes implemented without a coherent plan, resulting in misalignment between what is measured, the specified goals, and the intended learning objectives.
3. Copying other's methods: Methods or instruments are blindly borrowed from others without any adjustments to the specific program goals.
4. Single person responsibility: Assigning the responsibility for IC assessment to a single individual, particularly at the end of a program, limits opportunities for collaboration and prevents the integration of formative and summative assessment.
5. Misaligned tools: Too often, the methods or instruments employed may not align with the stated specified goals or objectives.
6. Over reliance on one single method: Given the complex and multifaceted nature of IC, relaying on a single assessment method is insufficient; a multi-perspective approach is essential.
7. Attempting to measure everything: Trying to assess the entire construct of IC at once is impractical. Instead, it is necessary to prioritise the most important aspects.
8. Collecting data without action: data are sometimes collected without being used for evaluation, program development or

stakeholder communication. The most effective approach is to collect only data that will be used.

9. Omitting the evaluation process: Skipping the evaluation of assessment plans and tools can hinder future program improvements and limit opportunities for student reflection on IC development.

10. Absence of baseline or control group: Failing to include a collect baseline data or a control group makes it difficult to decide whether the learning experience or intervention really contributed to learner development. To ensure the efficiency of such interventions, these elements can function as reliable sources.

In a separate work, Deardorff (2020) outlines several key principles for the assessment of IC:

1. Definition: IC needs to be clearly defined within the specific context in which it will be applied before it can be measured. Assessor needs to have a precise understanding of what is to be assessed. This may involve adopting multiple definitions, as these can be complementary and contribute to a more comprehensive and holistic understanding.

2. Prioritisation: Given the complexity of IC, often conceptualised through the elements of knowledge, skills and attitude, it is essential to determine which components are most significant for assessment. These should then be developed into measurable and specific outcome statements. Measurable IC outcomes can vary across disciplines. For example, the competencies required of an interculturally competent social worker may differ from those expected of an engineer (Deardorff, 2009). Objectives should be formulated according to the SMART criteria: Specific, Measurable, Action oriented, Realistic and Time delineated.

3. Alignment: This is one of the crucial principles for ensuring assessments are valid. It involves steps to ensure that "activities/experiences are aligned to learning outcomes which are aligned to goals" (p. 499). The evidence collected should correspond to the learning outcomes. It is crucial to identify which aspects of IC are being measured by each method or instrument and to ensure alignment with specific learning objectives (Fantini, 2009).

4. Evidence identification: A critical initial step in assessing IC the identification of evidence that demonstrates both direct and indirect improvements in learners' competence and progress towards learning goals. Direct evidence may include observations, reflections or peer reviews, while indirect evidence can be gathered through focus groups, interviews or surveys conducted outside the learning experience. Given the complexity of IC, a single instrument or method is generally insufficient. Therefore, triangulation, using multiple sources, ideally three, is recommended to ensure validity and reliability. Care must be taken to ensure that these sources measure the same aspects of IC and are aligned with the specified goals and learning outcomes (Deardorff, 2009).

5. Use: Using assessment data is paramount, as it is the primary reason for the assessment. The information derived can provide learners with ongoing feedback and support in developing their IC, as well as serve as a resource for evaluating overall student progress and identifying needs for learning interventions.

One of the sectors in which IC assessment tools are most extensively used in is higher education, where students must be assessed and certified to demonstrate their IC development as a result of participating in study abroad programs or intercultural activities. Such certification can serve as evidence of IC (Griffith et al, 2016; Sinicrope et al., 2007). Further, to evaluate the effectiveness of these programs, it is essential assess learners

prior to their participation. The need for IC in higher education is closely linked to the future development of both institutions and students.

Pinto (2018) identifies a twofold rationale for the importance of IC development in higher education: firstly, to produce graduates capable of addressing complex global issues and overcoming intercultural conflicts, and, secondly to meet the internationalisation needs of higher education such as generating additional revenue through international student recruitment, attracting high-potential students, and producing "effective university ambassadors for increased brand recognition" (Griffith et al., 2016, p. 1). Consequently, to remain competitive, higher education institutions must invest substantially in the development and assessment IC.

The implementation of IC assessment is often accompanied by anxiety and confusion. Common responses among individuals undertaking IC assessment include avoidance, ignoring the process, feelings of panic, even when the procedure and starting points have been clarified. (Deardorff, 2009).

To provide further scholarly insights into IC assessment and to encourage the adoption of more varied assessment strategies, Fantini (2009, p. 462- 465) presents a comprehensive account of general assessment considerations that should be applied in developing IC assessments tools, as outlined in Table 2.

Deardorff's (2006) Delphi study on the assessment of IC identified a range of assessment methods that received between 80% and 100% agreement among experts. These include case studies, interviews, a mix of quantitative and qualitative measures, qualitative measures, analysis of narrative diaries, self-report instruments, observation by others or members of the host culture, judgement by self and others, the development of specific indicators for each component or dimension of IC and triangulation.

Table 2 Assessment considerations important in the development of IC assessment tools

Areas to assess	Deciding on which areas of IC to address
Test types	Purpose for which the test is to be used: - Readiness tests - Placement tests - Diagnostic tests - Aptitude tests - Attitude tests - Proficiency, communicative, or competence-based tests - Criterion-reference and norm-references tests - Bilingual or culture-language dominance tests - Formative tests - Achievement or standardized tests
Test formats	- Direct versus Indirect - Discrete versus Global
Assessment techniques and strategies	- Closed and open-ended questions - Objective strategies that involve scoring (e.g., matching items, true/false questions, multiple-choice questions, cloze or gap-filling items) - Oral and written activities (e.g., paraphrasing, translation, essay) - Active and passive activities - Individual and interactive activities in pairs or groups - Dialogue, interviews, debate, and discussion - Demonstrations, poster sessions, role-plays, and simulations - Structured and unstructured field tasks and experiences - Questionnaires that require self-evaluation, peer evaluation, group evaluation, and/or teacher evaluation

As scholars in the field (e.g., Fantini, 2009; Lantz-Deaton & Golubeva, 2020) have suggested, employing a variety of methods is essential for obtaining comprehensive information about learners' performance in IC. The use of diverse assessment strategies provides more valuable tools for effectively monitoring and assessing the development of IC.

Methodology

The present study aims to provide a critical review of quantitative IC assessment instruments published over the past 45 years. The details of the methodology used to in this paper are present in the subsequent sections.

Databases search

The data collection process involved a thorough literature search focused on the range of IC assessment instruments currently available. Although this was not a systematic literature review, relevant elements from The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework were adopted to enhance the rigour and systematicity of the data collection stage, alongside a flow diagram as suggested by Petticrew and Roberts (2009, p. 291). The initial stage entailed searching for articles in which IC instruments had been employed over the past 45 years (1980-2025). The following databases were used to source relevant articles: ERIC (Education Resources Information Centre), Google Scholar, ProQuest, PsycINFO (Psychology), PSYNDEX, Scopus (natural sciences, engineering, and medicine), and Web of Science (natural and social sciences and the humanities).

Search terms

To control the breadth and scope of the search terms, various strategies were employed, including the use of Boolean operators such "*……"*," AND, and OR as recommended by Hammerstrøm et al. (2010). Different variations of each search term were applied to each database; for

example, terms such as "*cultur*", and combinations like (assess* OR evaluat* OR test OR measur*) were used. Keywords associated with measurement (e.g., "psychometric", "assessment" and "measure", as well as those related to intercultural competence (e.g., "intercultural competence", "cross-cultural awareness") were included. Table 3 provides a comprehensive list of the search terms.

Table 3 List of search terms

Intercultural competence	Assessment
- Communicative competence	- Assessment
- Cross-cultural adjustment	- Measure
- Cross-cultural awareness	- Test
- Cross-cultural adaptation	- Measure
- Cross-cultural communication	- Instrument
- Cultural adjustment	- Tool
- Cultural awareness	- Scale
- Culture shock	- Questionnaire
- Effective intergroup communication	- Inventory
- Global competence	
- Global competitiveness intelligence	
- Intercultural adjustment	
- Intercultural competence	
- Intercultural learning	
- Intercultural sensitivity	
- Intercultural training	
- Mobility	
- Multicultural competence	
- Multiculturalism	
- Sociocultural adaptation	
- Cultural Diversity	

Eligibility criteria

To ensure consistency and clarity, a set of objective criteria was developed to judge the quality of each paper and its selection. The review was limited to papers published between 1980 and 2025, a period of 45

years. The reason for choosing such a long period is in line with Deardorff's (2006) observation that "just as culture is ever changing, scholars, opinions on intercultural competence change with time" (p. 258). A review of previous IC literature supports this perspective highlighting that, over the past four and a half decades, increasing scholarly attention has been devoted to this construct. Consequently, a critical literature review at this stage offers valuable insights into the most dynamic period in IC research. Only peer-reviewed papers and dissertations were included in the search process. Papers were restricted to those written in English, reflecting the researchers' language competence and the limited availability of relevant peer-reviewed journals in other languages for this context. Papers employing quantitative approaches were selected.

Selection process

The search process began with an initial retrieval of 3,503 articles based on the established search criteria applied across the selected databases. Subsequently, the titles of these articles were systematically screened by one of the authors, resulting in the selection of 93 papers and the elimination of 21 duplicates. The remaining 72 articles then underwent abstract screening and eligibility criteria checks, which reduced the pool to 55 articles. This number was later increased to 57 following the inclusion of two additional papers identified through manual searches of reference lists. Figure 1 illustrates the selection process of the articles.

Data analysis

The key information from the selected articles was extracted and entered into an Excel spreadsheet. The spreadsheet comprised four columns: number, instrument (representing the name of the instrument), description (detailing the format of instrument), author(s) and date, followed by components constituting IC included in each instrument, as shown in Table 4. The categorisation process resulted in the identification of 55 IC assessment tools, followed by two tools identified manually and added later. Each instrument was classified according to

its format, and the number of items as well as the dimensions assessed by each tool were subsequently described.
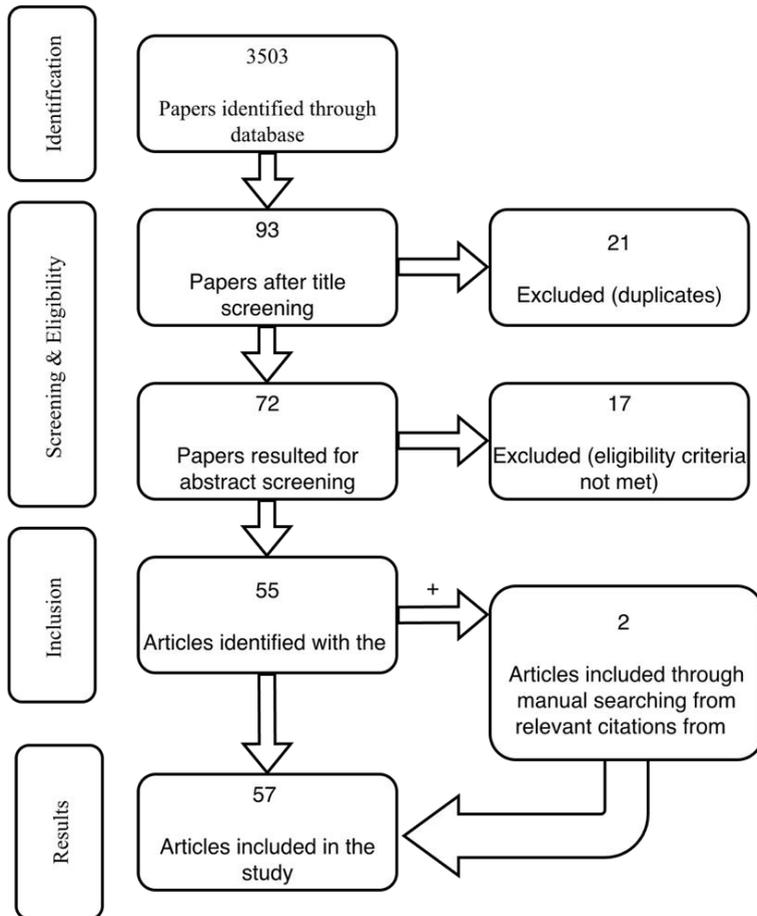

Figure 1 Flowchart of the selection process

To address Research Question 1, the types and formats of the instruments were systematically analysed. For Research Questions 2 and 3, the weaknesses and flaws of each instrument type, as well as possible

solutions to mitigate these issues, were identified through a critical review of the existing literature on IS assessment.

Results and Discussion

The search resulted in the identification of 57 IC assessment tools that met the inclusion criteria, which are alphabetically listed in Table 4. In response to Question 1, we found a predominance of Likert-type self-report surveys among IC assessment tools: of the 57 instruments, 56 (98%) were Likert-type self-report surveys. This finding corroborates Deardorff's (2006) report of overreliance on self-report measures in IC assessment, as well as Griffith and Harvey's (2000) observation that surveys along with portfolios are among the two of the most commonly used formats for the measurement of IC. It also aligns with Griffith et al.'s (2016) finding that majority of survey-based IC assessments rely on Likert-type items, which are self-reports (Deardorff, 2017; Fantini, 2009). Portfolios are excluded from the scope of this paper, as the primary focus is on quantitative assessment instruments.

Regarding Research Question 2, our critical review of the literature indicates that while self-reports are suitable for evaluating declarative knowledge and attitudinal constructs, they are not appropriate for assessing behavioural and cognitive skills (Byram, 1997; Deardorff, 2006; Gabrenya et al., 2011), which require more direct and objective forms of measurement.

When used to assess IC, self-reports measures are subject to several notable flaws (Griffith et al., 2016). Firstly, when administered to young participants, these individuals may lack sufficient multicultural experience, making it difficult for them to accurately reflect on their IC behaviours and skills. In other words, a lack of exposure can affect responses to items that require intercultural experience. This limitation is particularly evident among school aged participants and first-year university students, who often have limited exposure to other cultures. Secondly, self-reports may be influenced by cognitive biases, with respondents tending to answer "items based on their idealistic self" (p.

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23). Thirdly, self-report instruments may fail to adequately assess interactional tendencies or capture certain components of IC.

Another challenge inherent in the use of self-reports is faking behaviour, where the respondent might deliberately refuse to provide accurate information or portray themselves differently to create a more favourable impression (Griffith et al., 2016; Griffith & Peterson, 2008). Two possible motivations for such behaviour are: individuals may deceive themselves into believing that that they would genuinely react in a certain way, or they may seek to conform to socially acceptable norms, gain approval and avoid criticism (King & Bruner, 2000). Faking behaviour, also known as social desirability bias in psychology (Crowne & Marlowe, 1960), can also occur in case study methods, where respondents are presented with an intercultural scenario and asked to describe how they would respond (Lantz-Deaton & Golubeva, 2020). Among the collected IC assessment instruments, one Likert-type tool (2%), the Intercultural Sensitivity Inventory (ISI), was scenario-based but remained close-ended, requiring respondents to select from seven Likert-type options.

To address Question 3, which focuses on the limitations and flaws associated with Likert-type self-report surveys, we identified several solutions and alternative assessment types. Griffith et al. (2016) propose two techniques to minimize the effects of faking in self-reports. The first technique involves the use of external items, items that are not associated with the construct under study and have no impact on the overall score. Two types of external items commonly used are bogus items and social desirability items. As Griffith et al. (2016) explain, these items "are the ones that appear to be related to the construct (e.g., ICC), trait, skill, or task of interest, but the objects or scenarios described in the items do not actually exist" (p. 24). In social desirability items, the desire to provide answers to questions in such a way that others might view them favourably is measured. However, Griffith and Peterson (2008) report that social desirability items fail to overcome the effects of faking.

The second technique, employing alternative item types, that is, items other than Likert-type items, involves a process which makes faking a

difficult task for the examinee. This technique is used to reduce faking but is unable to eliminate it. Two items are used in this technique: forced-choice items and situational judgement tests (SJT). In the former, the respondent is given a number of equally important options to choose from (Christiansen et al., 2005). Jackson et al. (2000) and Martin et al. (2002) report that compared to Likert-type formats, forced-choice items are significantly more effective in reducing the occurrence of faking. However, two limitations have been identified with their use in comparison to Likert-type items: the need for a high number of items and psychometrically related scoring concerns (Griffith et al., 2016).

In the case of SJTs, respondents are provided with a situation related to the task, delivered in multimedia, written or video format, and are asked to select from a list of options the hypothetical response (i.e., possible behaviour) they would choose in that situation (Whetzel, & McDaniel, 2009). Among the instrument's reviewed in this study, only non-Likert-type instrument (2%), the Cross-cultural Social Intelligence (Ascalon et al., 2008) used this format, requiring respondents to indicate the action they would take in response to a scenario. Additionally, two other SJTs (4%) were identified in the collection: the Intercultural Sensitivity Inventory (ISI), (Bhawuk & Brislin, 1992) which was a Likert-type survey and the Global Awareness Profile, Corbitt (1998), which Likert-type and multiple-choice items.

Situational judgement tests

A situational judgement test (SJT) is an instrument used to measure IC by evaluating how test-takers respond to hypothetical situations. SJTs can be close ended, where respondents select from a set of pre-defined options, or open-ended, where participants produce their own answers to prompts. These tests are primarily employed to assess knowledge or behavioural components (Lievens, et al., 2008). Knowledge prompts

require respondents to choose the best response in relation to a situation (Griffith et al., 2016) or to rank given responses (Whetzel & McDaniel, 2009). In the assessment of behavioural components, participants are

required to choose their likely behaviour from a series of given actions (Whetzel & McDaniel, 2009).

SJTs have been shown to possess strong content, criterion and face validity (Whetzel & McDaniel, 2009), but the multidimensional nature of SJT items tends to lower their internal consistency, demonstrated as Cronbach's alpha (Griffith et al., 2016). To overcome this shortcoming, it is recommended to use test-retest reliability or parallel forms, rather than Cronbach's alpha, when calculating the reliability of such items is (Whetzel & McDaniel, 2009). The Cross-cultural Social Intelligence, the only non-Likert-type instrument in this study, was developed through a rigorous and multi-phase process by 184 cross-cultural subject matter experts to ensure that the tool accurately represents real-world cross-cultural challenges. Ascalon et al. (2008) reported a high degree of face validity for the instrument, although the lack of the criterion validity was noted as a limitation. The reliability of the instrument, measured as internal consistency was found to be 0.68 ($\alpha = .68$).

SJTs may be subject to bias on the part of test developers, particularly if they lack full awareness of their own cultural assumptions. Despite this, SJTs tend to be favoured by participants (Lievens et al., 2008). As SJTs primarily assess intentions, they are capable of demonstrating direct behaviours rather than merely attitudes (Griffith et al., 2016). However, both practice effects and participant deception can still compromise the validity of scores obtained through these instruments (Griffith et al., 2016). Although SJTs are rarely used to assess IC, as indicated in this study, the format of the critical incidents employed in SJTs is often observed in cross-cultural training courses, where participants are presented with cultural scenarios and a range of options for discussion (Bhawuk, 2001; Earley & Peterson, 2004).

Intercultural scenario-based items

Intercultural scenario-based (ISB) items are assessment tools designed to evaluate examinees' behavioural response cross-cultural situations (Griffith et al., 2016). These items can be used to assess a variety of skills relevant to IC. Typically, respondents are presented with a video to watch

or a situational passage to read, and are then required to provide short answers, either by selecting from Likert-type options (as in the Intercultural Sensitivity Inventory) or by choosing from multiple-choice items (as in the Global Awareness Profile, or by providing brief written responses.

Griffith et al. (2016) identified several limitations with these response formats. Firstly, multiple-choice items expose the participants to distractor items, which will heighten the challenge of choosing the correct answer. Secondly, Liker-type items are limited to measuring attitudinal constructs and respondents' self-perceptions of their abilities. Thirdly, short answer responses present marking challenges. To mitigate these shortcomings, Griffith et al. (2016) recommend employing a verity of item types to assess a single prompt. For example, after each passage or video, "different response formats could be used in conjunction with one another" (p. 33). Adhering to these guidelines can enhance the effectiveness and remedial potential of ISB assessments.

In their literature review analysis of the internal structure and dimensionality of 27 IC assessments, Griffith et al. (2016) found less than desirable evidence to support the multidimensionality of their structures. They recommended the inclusion of several types of items in multiple response formats to more effectively assess the multidimensional nature of IC. Among the instruments reviewed in this study, only one (2%), the Global Awareness Profile, (addressed this recommendation by incorporating a hybrid format of Likert-type and multiple-choice questions.

Deardorff, (2006, p. 241) asserts that IC assessments need to "be multidimensional as well as multi-perspective, ongoing, integrated, aligned, and intentional". Although Deardorff (2006), Fantini (2009) and Lantz-Deaton and Golubeva (2020) recommend that IC should be measured using multiple assessment methodologies such as combining self-assessment tools with objective assessment, and case study questions, this approach is rarely practical for higher education institutions. The primary reason is that universities require standardised benchmark information, necessitating a uniform format that enables

direct comparison of students' performance at both individual and group levels (Griffith et al., 2016).

As Deardorff (2006) and Fantini (2009) suggest, in such contexts, surveys are preferable to portfolios, as they allow tertiary education institutions to capture the IC knowledge of both individual respondents and group through standardization and norm-referencing. In contrast, portfolios are less suitable due to the challenges of standardising diverse student submissions and concerns about interrater reliability during the marking process. Nonetheless it should be noted that surveys cannot be implemented without first undergoing validation or revisions (Deardorff, 2017; Perry & Southwell, 2011).

Table 4 Quantitative IC assessment tools

No.	Instrument	Description	Components	Author
1	Adolescent Discrimination Distress Index (ADDI)	Self-report survey; 5-point Likert scale 15 items	Perceived discrimination, related distress/discrimination in institutional settings, educational settings, and peer contexts	Fisher, Wallace, and Fenton (2000)
2	Assessment of Intercultural Competence (AIC)	Self-report survey; 6-point Likert scale 54 items	Knowledge, attitudes, skills, and critical awareness.	Fantini and Tirmizi (2006)
3	Behavioural Assessment Scale for Intercultural Effectiveness (BASIC)	Self-report survey; 4-point Likert scale 9 items	Intercultural communication effectiveness	Koester and Olebe (1988)
4	Beliefs, Events, and Values Inventory (BEVI)	Self-report survey; 4-point Likert scale 185 items	Openness to transformational experiences such as international educational experiences	Shealy (2004)
5	California Brief Multicultural Competence Scale (CBMCS)	Self-report survey; 4-point Likert scale 21 items	Cultural knowledge sensitivity, Awareness and non-ethnic skills	Larson and Bradshaw (2017)

No.	Instrument	Description	Components	Author
6	Cross-Cultural Adaptability Inventory (CCAI)	Self-report survey; 5-point Likert scale 50 items	Motional resilience, flexibility/openness, perceptual acuity and personal autonomy	Kelley and Meyers (1995)
7	Cross-Cultural Sensitivity Scale (CCSS)	Self-report survey; 6-point Likert scale 24 items	Valuation and tolerance of different cultures.	Pruegger and Rogers (1993)
8	Cross-Cultural Social Intelligence	Situational Judgement Test (SJT) Multiple choice 4 response options 21 items	Knowledge, skills and other characteristics that promote successful social interaction in cross-cultural interaction	Ascalon, Schleicher, and Borwn (2008)
9	Cross-Cultural World-Mindedness Scale	Self-report survey; 6-point Likert scale 26 items	World mindedness	Der-Karabetian (1992)
10	Cultural Diversity Awareness Inventory (CDAI)	Self-report survey; 5-point Likert scale 28 items	Teacher/Staff's diversity awareness, classroom environment, family/school interaction, cross-cultural communication, and alternative assessment	Brown (2004)

No.	Instrument	Description	Components	Author
11	Cultural Intelligence Assessment	Self-report survey; 5-point Likert scale 10 items	Cultural knowledge, knowledge complexity, cultural metacognition, relational skills, perceptual acuity, empathy, adaptability, and tolerance for uncertainty.	Thomas et al. (2015)
12	Cultural Intelligence Scale (CQS)	Self-report survey; 7-point Likert scale 20 Items	Cognitive (knowledge of other cultures), metacognitive (awareness of how one thinks about other cultures), behavioural (behaving appropriately in cross-cultural interactions), and motivational (desire to interact with and learn more about other cultures).	Ang and Van Dyne (2007)
13	Cultural Orientations Indicator (COI)	Self-report survey; 5- point Liker-scale 84 items	Interaction style, thinking style and sense of self	Schmitz, Tarter, and Sine (2012)

No.	Instrument	Description	Components	Author
14	Culture in the Workplace Questionnaire	Self-report survey; 5- point Liker-scale 60 items	Individualism, power distance, certainty, achievement, and time orientation. Designed to serve as a cultural values-based self-awareness tool.	Hofstede (2010)
15	Expanded Cultural Intelligence Scale (E-CQS)	Self-report survey, 7-point Likert scale 20 items	Motivational Cognitive Metacognitive Behavioural cultural intelligence	Van Dyne et al., (2012)
16	Global Awareness Profile	Performance measure: Hybrid- 5-point Likert scale 40 items Multiple choice 80 items	Empathy, adaptability and world mindedness	Corbitt (1998)
17	Global Competence Aptitude Assessment	Self-report survey; 5-point Likert scale 75 Items	Internal readiness (Self-awareness, risk-taking, open-mindedness, attentiveness) External readiness (Global awareness history, intercultural capability, collaboration).	Hunter et al. (2006)

No.	Instrument	Description	Components	Author
18	Global Competencies Inventory (GCI)	Situational Judgement Test (SJT) Self-report survey; 5-point Likert scale 160 items	Knowledge, skills, and other characteristics that promote successful social interaction in cross-cultural interactions.	Stevens et al. (2014)
19	Global Competency and Intercultural Sensitivity Index (ISI)	Self-report survey; 5-point Likert scale 49 Items	Intercultural sensitivity Global competence	Lee Olson and Kroeger (2001);
20	Global Mindset Inventory	Self-report survey, 5-point Likert scale 76 Items	Intellectual capital Psychological capital Social capital	Javidan, M., & Walker, J. L. (2012).
21	Global Perspectives Inventory (GPI)	Self-report survey; 5-point Likert scale 35 Items	Measured through three dimensions and six global perspective scales: cognitive (with knowing and knowledge scales), intrapersonal (with identity and affect scales), and interpersonal (with social responsibility and social interactions scales).	Braskamp et al. (2014)

No.	Instrument	Description	Components	Author
22	Global Team Process Questionnaire (GTPQ)	Self-report survey; 5-point Likert scale 19 items	Clarity of objectives Equality of work distribution Group communication Trust Conflict resolution Leadership	Bing (2001)
23	Graduate Students' Experiences with Diversity Survey (GSEDS)	Self-report survey; 5-point Likert scale 30 items	Multicultural awareness, Knowledge and skills	Kocarek et al. (2001)
24	Intercultural Adjustment Potential Scale (ICAPS)	Self-report survey; 7-point Likert scale 55 Items	Emotional regulation, openness, flexibility, and critical thinking.	Matsumoto et al. (2001)
25	Intercultural Communication Competence (ICC)	Self-report survey; 7-point Likert scale 10 items	Cognitive, affective, and behavioural dimensions of intercultural communication competence	Arasaratnam (2009); Arasaratnam and Doerfel (2005)

No.	Instrument	Description	Components	Author
26	Intercultural Communicative Competence for English Language Teachers and English As a Foreign Language Teachers (ICC-ELT-EFL)	Self-report survey; 5-point Likert scale 24 items	Affective orientations to and capabilities for intercultural communication, perspectives on ELT Employment of intercultural strategies in ELT	Chao (2015)
27	Intercultural Competence Questionnaire	Self-report survey 7-point Likert scale 23 items	Interpersonal skills Team effectiveness Intercultural uncertainty Intercultural empathy	Matveet (2002)
28	Intercultural Competency Scale (ICS)	Self-report survey; 7-point Likert scale 21 Items	Openness, acceptance and trust	Elmer (1987)
29	Intercultural Development Inventory (IDI)	Self-report survey; 5-point Likert scale 50 items	Denial/defense, reversal, minimization, acceptance/adaptation, and encapsulated marginality	Hammer (2011); Hammer et al. (2003)

No.	Instrument	Description	Components	Author
30	Intercultural Effectiveness Scale	Self-report survey; 5-point Likert scale 20 Items	Message skills- Interaction management, behavioural flexibility, identity management, relationship cultivation and social relaxation	Portalla and Chen (2010)
31	Intercultural Readiness Check (IRC)	Self-report survey 5-point Likert scale 102 items	Intercultural sensitivity, intercultural communication, intercultural relationship building, conflict management leadership and tolerance of ambiguity	Van der Zeek & Brinkmann (2004)
32	Intercultural Sensitivity Inventory (ICSI)	Situational Judgement Test (Scenario-based) Self-report survey; 7-point Likert scale 46 items	Individualism versus collectivism and flexibility/open-mindedness.	Bhawuk and Brislin (1992)
33	Intercultural Sensitivity Inventory (ISI)	Self-report survey; 7-point Likert scale 49 items	Ethnocentric stages (Denial, defense and minimization) Ethnorelative stages (acceptance, adaptation and integration	Olson and Kroeger (2001)

No.	Instrument	Description	Components	Author
34	Intercultural Sensitivity Scale (ISS)	Self-report survey; 5-point Likert scale 24 items	Respect for cultural differences, interaction engagement, confidence, enjoyment, and attentiveness	Chen and Starosta (2000)
35	Inventory of Cross-Cultural Sensitivity (ICCS)	Self-report survey; 7-point Likert scale 35 items	Cultural integration, behavioural response, intellectual integration, attitudes toward others, and empathy.	Cushner (1989)
36	Miville-Guzman Universality Diversity Scale (MGUDS)	Self-report survey; 6-point Likert scale 15 items	Diversity of contact, relativism appreciation, and comfort with difference.	Fuertes (2000)
37	Multicultural Awareness– Knowledge Skills Survey (MAKSS)	Self-report survey; 4-point Likert scale; 60 items	Multicultural awareness, knowledge, and skills.	D'Andrea et al. (1991)
38	Multicultural Counselling Awareness Scale: Form B (MCAS)	Self-report survey; 7-point Likert scale 45 items	Multicultural awareness, Knowledge and skills	Ponterotto et al. (1996)

No.	Instrument	Description	Components	Author
39	Multicultural Counselling Inventory (MCI)	Self-report survey; 4-point Likert scale 40 items	Multicultural skills, multicultural awareness, multicultural relationship, multicultural knowledge	Sodowsky, et al. (1994)
40	Multicultural Counselling Self-Efficacy Scale-Racial Diversity Form (MCSE-RD)	Self-report survey; 10-point Likert scale 37 items	Self-efficacy, multicultural counselling competency, and social desirability	Sheu and Lent (2007)
41	Multicultural Personality Inventory	Self-report survey; 5-point Likert scale 42 items	Appreciation of cultural diversity, multicultural comfort, and commitment	Fietzer et al. (2020)
42	Multicultural Personality Questionnaire (MPQ)	Self-report survey; 5-point Likert scale 78 items	Cultural empathy, open-mindedness, emotional stability, flexibility and social initiative.	Van der Zee and Van Oudenhoven (2000)
43	Multicultural Teaching Competency Scale (MTCS)	Self-report survey 6-point Likert scale 16 items	Multicultural teaching skills and knowledge	Spanierman et al. (2011)

No.	Instrument	Description	Components	Author
44	Nonverbal Communication Competence Scale (NVCCS)	Self-report survey; 5-point Likert scale 8 items	Degree of knowledge essential to recognize nonverbal behaviours of foreign culture members Skills to show nonverbal behaviours Motivation to interpret and present them Appropriateness and effectiveness in nonverbal communication	Kupka et al. (2009)
45	Personal Beliefs About Diversity Scale	Self-report survey; 5-point Likert scale 15 items	Beliefs about race/ethnicity, gender, social class, sexual orientation, disabilities, language, and immigration	Pohan and Aguilar (2001)
46	Questionnaire for assessment of coexistence and shared experiences in intercultural secondary classrooms (QACISC)	Self-report survey; 4-point Likert scale 48 items	Cultural identity, teacher-student relationship, inclusive values, conflict management, peer relationships and classroom climate	Luna et al. (2014)

No.	Instrument	Description	Components	Author
47	Quick Discrimination Index (QDI)	Self-report survey; 5-point Likert scale 30 items	Racial and gender bias	Ponterotto at al. (1995)
48	Relationship between Personal Characteristics, Multicultural Attitudes and Self-Reported Multicultural Competence	Self-report survey; 5-point Likert scale 72 items	Personal characteristics, multicultural attitudes, multicultural competence and intercultural effectiveness	Reynolds and Rivera (2012)
49	Scale of Ethnocultural Empathy (SEE)	Self-report survey; 6-point Likert scale 31 Items	Empathic feeling and expression, empathic perspective taking, acceptance of cultural differences, and empathic awareness.	Wang et al. (2003)
50	School wide Cultural Competence Observation Checklist (SCCOC) survey competent	Self-report survey; 5-point Likert scale 33 items	School's cultural competency regarding policy and practice	Bustamante, et al. (2009)

No.	Instrument	Description	Components	Author
51	Social Connectedness in Mainstream Society (SCMN)	Self-report survey; 6-point Likert scale 10 items	Immigrant's acculturation, ease of fitting, social comfort, identity connection	Yoon, at al. (2012)
52	Social Connectedness in the Ethnic Community (SCETH)	Self-report survey; 6-point Likert scale 10 items	Immigrant's acculturation, subjective closeness, cultural ease and social support	Yoon et al. (2012)
53	Socio-cultural Adaptation Scale (SCAS)	Self-report survey; 5-point Likert scale 29 items	Domains of acculturation outcomes	Ward and Kennedy (1999)
54	Socio-cultural Adaptation Scale (SCAS)	Self-report survey, 5-point Likert scale 21 items	Interpersonal communication Academic/Work performance Personal interests and community Ecological adaptation Language proficiency	Chi and Suthers (2015)
55	Teacher Cultural Beliefs Scale (TCBS)	Self-report survey, 6-point Likert scale 15 items	Multicultural beliefs and Egalitarian beliefs	Hachfeld et al. (2011)

No.	Instrument	Description	Components	Author
56	Teacher Multicultural Attitudes Scale (TMAS)	Self-report survey; 5-point Likert scale 20 items	Multicultural attitudes	Arslan and Yigit (2016)
57	The Generalised ethnocentrism (GENE) Scale	Self-report survey; 5-point Likert scale 22 items	Intragroup ethnocentrism: Cohesion, loyalty and devotion Intergroup ethnocentrism: outgroup avoidance, rejection and scepticism	Neuliep and McCroskey (1997)

Conclusion

This critical review examined 57 existing quantitative IC assessment instruments published between 1980 and 2025. The most notable finding is the lack of methodological evolution over the past 45 years. To be more specific, 98% of the identified tools over the period were Likert-type self-report surveys. Although these tools are popular due to their ease of administration and standardisation, they show several significant limitations. Firstly, they are unsuitable for young respondents. Secondly, they are susceptible to 'faking', also known as 'social desirability bias'. Furthermore, they do not adequately capture the behavioural and cognitive skills which are essential to genuine IC.

Techniques such as the use of bogus items, and social desirability items, as well as alternative instruments like SJTs were discussed as the possible solutions to address the limitations of self report Likert-type surveys.

The analysis revealed that a small proportion of the tools employed more rigorous formats such as SJTs or hybrid tools incorporating multiple-choice elements. This paper proposes solutions to the shortcomings identified in quantitative assessment instruments and encourages future developers to adopt creative and innovative approaches in the development of quantitative assessment tools. Whether used as standalone quantitative IC assessment tools or in conjunction with qualitative assessment methods, future instruments must provide a more accurate and comprehensive representation of respondents' IC.

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Acknowledgment

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