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Leveraging Psychometric Properties of Ubuntu Measures to Reveal Its Structural Components

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Abstract: Ubuntu is an African worldview that often shapes policy and social ethos; however, its distinct meaning remains unclear due to primarily philosophical discussions. This study seeks to define and measure Ubuntu's dimensions operationally and quantitatively using psychometric literature. Limited conceptual clarity has hampered research on Ubuntu thus far. This study aims to define Ubuntu, considering the materialisation of the concept and its components when measured, and to provide a usable measurement tool to advance research. A comprehensive review of Ubuntu measurement tools was conducted, focusing on research that included discussions of exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and measurement invariance (MI). Five Ubuntu measures were identified, revealing similar constructs but inconsistent terminology. EFA helped refine constructs, while CFA validated frameworks. MI was applied once, demonstrating cross-context adaptability. This study reveals that Ubuntu is frequently described as having more structural components than those that emerge from psychometric scrutiny and calls for a standardised framework and an agreed-upon, consistent measure of Ubuntu to advance empirical research. It provides a foundational list of items for a comprehensive measure, bridging the gap between philosophical and empirical approaches to Ubuntu.

Keywords: Ubuntu, conceptualisation, scale, measurement, validity.

1. Introduction

Ubuntu is important because "it is seen as the authentic African ethical concept, a way of life, an authentic mode of being African" (Matolino & Kwindingwi, 2013, p. 197). Thus, it is perceived as a practical guide to action and policy, an emic approach to living in Africa that could create value and boost efficiency (Broodryk, 2002). Ubuntu is also viewed as an ethic indispensable to the reconstruction of post-colonial African societies (Murove, 2012). There is a lively debate on the value of Ubuntu as an ethic (Enslin & Horsthemke, 2004; Molefe & Muade, 2024), with Louw (1998) and Matolino and Kwindingwi (2013) suggesting its irrelevance, while Chimakonam (2016), Cordeiro-Rodrigues and Molefe (2024), as well as Letseka (2012), remain committed to the utility of the concept. "The Ubuntu concept, like many other concepts, is not easily defined. Defining an African notion in a foreign language and from an abstract rather than a concrete approach defies the very essence of the African worldview and may also be particularly elusive" (Mokgoro, 1998, p. 1). Many scholars echo the sentiment that language differences complicate the conceptualisation of Ubuntu. For example, Tutu (1999, p. 31) explains it as follows: "Ubuntu is very difficult to render into a Western language".

Many definitions of Ubuntu are presented. Mboti (2015, pp. 126-127) states that, following a review of 23 definitions of Ubuntu, "the settled definition of choice seems to always return, again and again, to the saying 'umuntu ngumuntu ngabantu' (in Nguni languages), 'motho ke motho ka batho' (in Sotho languages), 'a person is a person through other persons' (in English), and so on. Other variations such as 'I am because we are' are also advanced." John Mbiti (1990 [1969]) explains "the African view of man" as follows: "Whatever happens to the individual happens to the whole group,

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and whatever happens to the whole group happens to the individual. The individual can only say: 'I am, because we are; and since we are, therefore I am'" (p. 106).

Such definitions are problematic as they tell us little about the concept itself. The literature provides more detailed information on Ubuntu. The definitions by Thaddeus Metz (2007; 2021) and Mogobe Ramose (2002; 2015), identified as the main proponents of the concept (Taylor, 2023), will be presented here. Metz (2021) defines Ubuntu in the Encyclopedia of Quality of Life and Well-Being Research as a word from the African Nguni linguistic group that literally means humanness. "To have Ubuntu is to be a person who is living a genuinely human way of life, whereas to lack Ubuntu is to be missing human excellence or to live like an animal. It is common for Black people indigenous to the African continent to believe that one's basic aim in life should be to exhibit Ubuntu, … which one can do by prizing communal relationships with other people" (no page). Ramose (2015) also presents botho/hunhu/Ubuntu as humanness, multi-layered, and the incessant interaction of humans, where "it means that to be human is to affirm one's humanity by recognising the humanity of others and, on that basis, establish humane relations with them" (p. 70). It is clear from these definitions that there are two clusters involved in defining Ubuntu. The first defines Ubuntu as the moral quality of a person (e.g. Metz), while the second cluster describes Ubuntu as a philosophy, an ethic, or a worldview (e.g. Gade, 2012; Ramose, 2002).

Many more descriptive definitions are found in the literature. Kamwangamalu (1999), for example, states that Ubuntu refers to respect for all humans, human dignity, sharing, obedience, humility, solidarity, caring, hospitality, interdependence, and communalism. Eliastam (2015, p. 4) refers to familiar terms like hospitality, compassion, humaneness, sharing, and respect when discussing Ubuntu. Additionally, "Ubuntu implies the capacity in African cultures to express compassion, reciprocity, dignity, harmony, and humanity" (Letseka, 2013, p. 339). Khomba and Kangaude-Ulaya (2013, p. 673) use similar terminology when defining Ubuntu "as the capacity in an African culture to express compassion, reciprocity, dignity, humanity, and mutuality in the interests of building and maintaining communities with justice and mutual caring." These definitions or descriptions have value as abstract constructs, but how could this materialise in practice? How can the agility of these constructs be verified?

Measurement instruments developed for assessing the presence of Ubuntu could help establish conceptual clarity. In test development, particularly through exploratory factor analysis, the underlying constructs can be identified. Confirmatory factor analysis can then be used to test the validity of the theorised concepts (Pett et al., 2003). This research aims to identify and evaluate measures of Ubuntu, and by considering the resulting outcomes of these psychometric analyses, contribute to a comprehensive and objective conceptualisation of Ubuntu.

2. Literature Review

No comprehensive definition of Ubuntu is provided here, as it was partially addressed in the introduction. However, further insights into the conceptualisation of Ubuntu are presented in the findings section, where its structural components are explored—an essential step in specifying the concept. This literature, however, emphasises the necessity of a structurally sound, operationalised definition for the advancement of science. This sound structure could be revealed through extensive psychometric analyses of existing measures of constructs. Consequently, the characteristics of a robust psychometric measure are also discussed. Thorough psychometric analyses can enhance our understanding of Ubuntu as a multidimensional construct, identifying a functional operationalisation structure grounded in empirical and statistical evidence.

2.1 Definitions in science

Science is inherently collaborative and results from rigorous, detailed, and systematic investigations (Babbie & Mouton, 2011). The scientific method is structured, with the foundational elements being

concepts, statements (such as definitions, hypotheses, and propositions), conceptual frameworks (including typologies, models, and theories), and paradigms (De Vos et al., 2013). This research focuses on the concepts and definitional statements related to Ubuntu, limiting the subsequent discussion of these aspects. Concepts, like Ubuntu in this context, are words or phrases that encapsulate abstract or broad ideas, conveying meaning through both their connotations – the subjective attitudes or emotions they evoke – and their denotations, as well as their objective descriptions (Mouton & Marais, 1996; Riahi-Belkaoui, 1995, p. 32). Concepts, therefore, form the fundamental components of knowledge. When a concept is systematically defined for use in developing scientific theories, it becomes a construct (Hox, 1997). This research aims to reach this point through empirical inquiry. It is essential to define concepts clearly to facilitate the collaborative essence of scientific work, as mentioned above, and to enable researchers to communicate effectively and build upon each other's contributions (Babbie & Mouton, 2011). Definition statements provide precise meanings for words such as Ubuntu in this context, ensuring a shared understanding among scholars. These definitions clarify the contextual use of words (Mouton, 1996), enhancing communication by specifying their meaning. Definitions can be categorised as either (1) constitutive, where a concept is defined using other concepts, terms, or words, or (2) operational, which outlines the procedures for measuring a concept (Ary et al., 2010). This research will concentrate on operational definitions.

Mouton (2013) states that "the search for 'truth' or 'truthful knowledge' is the overriding goal of science" (p. 138). What, then, constitutes an effective or truthful definition of Ubuntu? Three principal theories are considered: the correspondence, coherence, and deflationary theories (Badenas, 2012). Many definitions of Ubuntu appear aligned with the deflationary theory, which posits that affirming a statement's truth merely asserts the statement itself (Armour-Garb, 2023). Galinon (2015) elucidates that deflationism argues that the "truth predicate lacks explanatory power," essentially viewing truth as "a mere expressive tool" (p. 268). In contrast, the correspondence theory maintains that truth involves a "match between a statement and reality" (Badenas, 2012, p. 8), implying that a proposition is valid only if it accurately reflects an actual fact. Conversely, the coherence theory deems a proposition true if it harmonises with a specific set of propositions (Young, 2018). According to the correspondence theory, a definition of Ubuntu must factually resonate with aspects of the psyche, whereas the coherence theory might limit Ubuntu's association to, say, Africans. This study will primarily explore the correspondence theory to strive towards a "good approximation of reality" (Babbie & Mouton, 2011, p. 10).

2.2 Sound psychometric measures

There are several requirements for a good psychometric measurement. Rust and Golombok (2014) discuss four such principles, namely reliability, validity, standardisation, and equivalence. These are typical textbook headings (see Goldstein et al., 2019) and are often mentioned in standard guidelines (see the American Psychological Association (2020) and the British Psychological Society (2024).

Under reliability, Rust and Golombok (2014) discuss test-retest, parallel-form, half-split, interrater reliability, internal consistency, and the standard error of measurement. Internal consistency is commonly reported in research and may be regarded as the standard method for reporting – this will be discussed in more detail. Internal consistency is frequently expressed as Cronbach's alpha (Cronbach & Shavelson, 2004), which is commonly employed in test development, wherein items that reduce the coefficient alpha are typically removed (Taber, 2018). In general, when assessing the reliability of a full instrument, the recommendation is that the minimum acceptable Cronbach's alpha should align with the intended application of the instrument (Tavakol & Dennick, 2011). For instruments used in making substantial decisions, the alpha coefficient should exceed 0.90. When applying a previously validated measure in a new environment or research context, an alpha above

0.70 is advised. However, in exploratory research, an alpha coefficient as low as 0.60 is considered acceptable (Taber, 2018).

The second principle of psychometrics discussed by Rust and Golombok (2014) is validity, which refers to face, content, predictive, concurrent, construct, and differential validity. Relevant to this article is construct validity, which is concerned with how well a test or tool measures the construct that it was designed to measure. Factorial validity is a special case of construct validity (Nunnally & Bernstein, 1994), where the factorial structure extracted from the data set affirms or disproves the theorised structure. The focus of this research is the use of factor analysis in developing a measuring instrument that could contribute to conceptual clarity. Confirmatory Factor Analysis (CFA) and Exploratory Factor Analysis (EFA) are two standard techniques used in scale development and scale adaptation studies (Flora & Flake, 2017). If the relationship among the items is not known, EFA is recommended. However, if the relationship is tested and the factors and related items are known, CFA is recommended to be used. EFA is a statistical method commonly used in the social sciences to identify latent variables, or factors, underlying observed data. This technique is particularly valuable when there is no prior understanding of the relationships among the items within a scale, including the number of factors present and the specific items each factor influences. EFA serves to elucidate the inherent structure within the data, offering insights into how various items group together to form factors. Unlike EFA, CFA is used when there is a strong model assumption (Orçan, 2018). With CFA, the existence of a previously proven structure is investigated with a new data set. In scale development studies, CFA should be used to test the validity of the structure (Flora & Flake, 2017; Orçan, 2018). When a researcher anticipates that a set of items should correspond to a particular number of factors, they can employ either EFA or CFA to verify if empirical data align with their expectations. If the findings do not support the initial hypothesis, the researcher might reconsider the theoretical framework underlying the measurement of the proposed constructs or conclude that the questionnaire requires minor adjustments. These adjustments could include the elimination of certain items that demonstrate low factor loadings or poor communality estimates, aiming to refine the instrument's effectiveness (Flora, 2012; Flora & Flake, 2017).

The other form of validity relevant here is differential validity, which is about the extent to which a test is valid for different subgroups, often in terms of bias or fairness. A test of measurement invariance is relevant here. Measurement invariance (MI) assesses the psychometric equivalence of a construct across groups or across time. MI is used to test whether individuals respond in a similar manner and interpret a given measure in a conceptually similar manner (Vandenberg & Lance, 2000). MI is often used in cross-cultural research (Boer et al., 2018; Selig et al., 2008). Concerning Ubuntu measures, if the measure of Ubuntu is a uniquely African construct, non-invariance should be expected if MI is tested across African and non-African groups. Measurement non-invariance suggests that a construct has a different structure or meaning to different groups or on different measurement occasions in the same group. The construct cannot be meaningfully tested or construed across groups or time (Putnick & Bornstein, 2016). Non-invariance could be expected when using African and non-African groups, but not when comparing groups of men and women who belong to the African group. MI is a tested framework of multiple-group confirmatory factor analysis (CFA) (Dimitrov, 2010). Increasingly restrictive models are tested, and most tests of measurement invariance include configural, metric, and scalar steps (Dimitrov, 2010). Residual invariance is also reported in a few cases (Putnick & Bornstein, 2016). Berry et al. (2011) add conceptual equivalence as the first and most basic form of invariance, where the measured construct is specific to a particular group, which makes it impossible to find a comparable operational pattern of relationships across the groups (Fontaine, 2008). This cannot be statistically tested directly, but Berry et al. (2011) state that evidence of configural invariance supports claims regarding conceptual equivalence. Within the context of Ubuntu, the claims of uniqueness (Venter, 2004; Swanson, 2007) could result in conceptual inequivalence or uniqueness.

The third principle of psychometrics highlighted by Rust and Golombok (2014) is standardisation, which encompasses norm and criterion referencing. This principle is mentioned to ensure a comprehensive enumeration of principles, although it is not elaborated upon, as standardisation is typically employed in performance tests rather than personality assessments. The fourth and last principle of psychometrics discussed by Rust and Golombok (2014) is equivalence. They cover differential item functioning, measurement invariance, and adverse impact. Equivalence, as portrayed by Rust and Golombok (2014), relates more to the fair treatment of subgroups, which is important but does not constitute the focus of this research.

2.3 Research goals

The goals of this research are, first, to find instruments measuring the Ubuntu concept and report on the components measured. The idea is that these components will be representative of an "empirical" conceptualisation of Ubuntu, which could assist in understanding this ethos, which is dominated by subjective conceptualisations. It is also envisaged to identify the psychometric instrument with the best properties and to put this forward as an instrument to use. As an additional outcome of this research, a list of items will be created that future researchers may use to develop measuring instruments of Ubuntu.

3. Methodology

An extensive literature search was conducted to identify measures of Ubuntu and to determine whether the conceived instruments (reflecting subjective elements) aligned with the psychometric data obtained from the administration of these instruments (reflecting more empirical findings). This effort aimed to provide a more objective understanding of the underpinning structure of Ubuntu.

Though PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) provides a comprehensive checklist and a flow diagram to ensure clarity and transparency (Moher et al., 2023), as does the Cochrane Collaboration in their Handbook for Systematic Reviews (Higgins et al., 2023), this research followed a more open-ended approach, somewhat aligned with traditional narrative literature analyses (Cronin et al., 2008), where the researcher is less restricted by methodology and reporting processes and focuses on accumulating findings. This route was also taken for practical reasons, as systematic reviews are labour-intensive, complex (Stovold et al., 2014), time-consuming (Anderson et al., 2020) and, therefore, beyond the capabilities of an individual researcher.

The approach to the literature can best be described as a critical review, with the objective "to demonstrate [that the] writer has extensively researched [the] literature and critically evaluated its quality. [It] goes beyond mere description to include [a] degree of analysis and conceptual innovation" (Grant & Booth, 2009). The search focused on academic documents with the word Ubuntu in the title, employing descriptive keywords such as "scale," "test," "measurement," and "questionnaire," alongside terms associated with evaluating these measures, including "psychometric," "development," "validity," and "reliability." The Summon discovery tool was used to retrieve relevant academic sources, integrating a variety of databases, including ProQuest (e.g. ProQuest Central), commercial publishers (e.g. Elsevier and Springer), and open-access repositories (e.g. DOAJ and arXiv).

The searches were conducted for Ubuntu combined with each of the mentioned terms. The documents were screened to determine whether measures of Ubuntu were indeed developed or whether existing measures of Ubuntu were assessed. The aim was to find data on exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to evaluate the alignment between theory (the subjective) and data (the empirical). Additionally, the examination of measurement invariance (MI) results was considered, as it could illuminate the cross-cultural applicability of the construct.

3.1 Ethical consideration

This study focused on desktop research; no human or animal data were collected. The University of South Africa's Graduate School for Business Leadership granted permission for the research on 2 May 2024, with reference number 2024_SBL_AC_011_EX-3781.

4. Presentation of Findings

In total, five scales were identified after an extensive search, which met some of the requirements for using statistics to validate their conceptualisations. The number of scales was surprisingly low, given the substantial corpus of publications on this topic. One possible explanation is that publications on Ubuntu predominantly originate in the humanities, where the focus is on cultural and philosophical dimensions, rather than in the social sciences, where quantitative and empirical approaches—and an emphasis on measurement—are central. Five studies are listed below:

- Brubaker, T. A. (2013). Servant leadership, Ubuntu, and leader effectiveness in Rwanda. *Emerging Leadership Journeys, 6*(1), 114-147.
- Molose, T. (2019). The experience of Ubuntu to a hospitality organisation: Scale development and validation. *Journal of Advances in Humanities and Social Sciences, 5*(3), 113-128.
- Mutsonziwa, I. (2020). *Ubuntu: development and validation of a scale to measure African humanism* [Doctoral dissertation, University of Pretoria].
- Sigger, D. S., Polak, B., & Pennink, B. J. W. (2010). 'Ubuntu' or 'humanness' as a management concept. *CDS Research Journal, 29*(6), 1-46.
- Terblanché-Greeff, A. C., & Nel, P. (2023). Measuring context-specific collectivism: The Metzian Ubuntu Inventory. *South African Journal of Philosophy, 41*(4), 401-414. https://doi.org/10.1080/02580136.2023.2206343

The highlights from the five documents are presented below.

Table 1: *Overview of articles*

	Authors				
	Brubaker (2013)	Molose (2019)	Mutsonziwa (2020)	Sigger et al. (2010)	Terblanché-Greeff & Nel (2023)
Sample	102 (120)[1]	212 (336)	300 (9,523)	211	316
Items – pre-analysis	12	26	34 (87)[2]	44	14
Items – post-analysis	12	26	17	41	9
Constructs – pre-analysis	4	5	3	4	2
Factors – post-analysis	1	4	3	1	2
EFA performed	No -	Yes 54.45% TCV[3]	Yes 62.87% TCV	Yes 35.00% TCV	Yes No TCV data reported
CFA performed	No	No	Yes	No	Yes
- CFI	-	-	.957	-	.900
- RMSEA	-	-	.042	-	.083
- SRMR	-	-	.058	-	.060
MI tested	No	No	Yes	No	No

Reliability tested	.910	.880, .860, .730, .760[a]	.906, .831, .877[b]	.822	.851, .826[c]
Other validity tests	Discriminate	-	Construct	-	Construct
Full list of items available	Available Annexure 1	Available Annexure 2	Available Annexure 3	Available Annexure 4	Available Annexure 5

[1]In parenthesis is presented in the sample frame – the number of respondents targeted – if absent, the sample frame was not specified in the research. [2]In parenthesis is presented the number of items used in an earlier round of item elimination/selection. [3]TCV = Total Common Variance; the variance in the data that can be explained by the factors. [a]Compassion, collectivism, survival, respect and dignity; [b]Humanness, interconnectedness, compassion; [c] Identity, solidarity.

Brubaker (2013): This author developed a unidimensional scale primarily based on the work of Sigger et al. (2010) and Poouvan et al. (2006). He defined Ubuntu as four social values: survival, spirit of solidarity, compassion, and respect and dignity combined (see Brubaker, 2013, p. 120). He used three items per value and reported a total Cronbach's alpha of 0.91 for the full scale. He did not perform exploratory factor analysis (EFA) or confirmatory factor analysis (CFA). The study did not focus primarily on the development of the instrument but provided valuable information on validity. Brubaker (2013) found that Ubuntu and servant leadership were positively and significantly related to leader effectiveness, that the impact was similar, and that evidence for the discriminant validity of Ubuntu-related leadership was not distinct from servant leadership. Brubaker (2013) also contributed to the existing literature by providing a list of items that may measure Ubuntu (see Annexure 1).

Molose (2019): Molose and his colleagues (see Goldman et al., 2019) developed a 26-item measurement definition representing five Ubuntu-related constructs, namely survival (4 items), respect and dignity (4 items), compassion (6 items), group solidarity (6 items), and collectivism (6 items). Molose developed these items from his collaborative work (Goldman et al., 2019) and drew from Brubaker (2013) and Sigger et al. (2010). Following EFA, Molose concluded that the data represented four constructs, rather than five. Molose (2019, p. 113) concluded that Ubuntu comprises four key elements: "compassion (care, empathy, being there physically and emotionally), survival (the ability to survive in spite of difficulties, a shared will to survive and focus), group solidarity/collectivism (the idea of achieving collectively; organisation exists to benefit the employee community), and respect and dignity (valuing the worth of others)." Though Molose (2019) listed 26 items (four items for survival, four for respect and dignity, and six each for compassion, group solidarity, and collectivism, respectively), he did not specify which items belong to which construct and thus presented a unidimensional instrument (see Annexure 2).

Mutsonziwa (2020): This author identified 82 indicator values of Ubuntu through a literature review. Following focus groups and in-depth interviews, Mutsonziwa developed 87 items linked to three emerging components of Ubuntu: humanness, interconnectedness, and compassion. Using a three-wave study and relying on EFA and later CFA, he reduced the original 87 items to 17, demonstrating acceptable reliability and adequate factorial validity. Mutsonziwa (2020, pp. 158-9) reported "demonstrated evidence of construct validity (including one-dimensionality, reliability, convergent validity, discriminant validity, and nomological validity), model fit, and invariance of the Ubuntu instrument." The reported CFA fit was good: CFI = .957 (good), RMSEA = .042 (good), and SRMS = .058 (adequate). Measurement invariance was tested for online and telephonic versions, with evidence of configural and metric invariance found. The final questionnaire is attached in Annexure 3. In conclusion, Mutsonziwa (2020) defines the three constructs fundamental to Ubuntu. Humanness is defined as "the belief that all people possess the innate characteristic of being human, which is to say being aware of self and of other people" (Mutsonziwa, 2020, p. 159). Humanness accounts for

more variance than any other factor, suggesting that this dimension carries more weight than the others. Interconnectedness is defined as "the belief that all people are bound together by virtue of their shared humanity" (p. 160). Mutsonziwa (2020, p. 161) reports that "interconnectedness is more frequently mentioned than constructs such as interdependence and collectivism" in the literature consulted. Compassion, the third dimension, is defined as "the belief that other people should be treated with concern due to a common humanity. Compassion is the most frequently mentioned dimension as an indicator value of Ubuntu among the three dimensions" (Mutsonziwa, 2020, p. 162).

Sigger et al. (2010): Sigger et al. developed a measurement tool to confirm the existence of the philosophy of Ubuntu within the workplace. Their effort aimed to measure four constructs: survival, solidarity, compassion, and respect and dignity, as suggested by Mbigi (1997). Survival pertains to the dependence on one another for the "survival of each individual" and the "survival of the organisation" (Sigger et al., 2010, p. 48). Solidarity focuses on cohesion and a collective mindset, where personal interests are less important, while aspects such as team spirit and interconnectedness are emphasised. Compassion relates to a shared vision, particularly the aspect of sharing and caring, reaching out to others, and having co-workers understand the necessity of giving in order to receive. Respect and dignity involve respect for religion and beliefs, respect for each other's opinions, and equal treatment, enabling everyone to give their opinions and be heard. Using the Kaiser criterion, 14 components explained 64.58% of the variance. However, upon analysing Cattell's scree plot, eight components were identified, which did not align with the theoretical four factors. These four factors explained only 35% of the variance in the data. Individual Cronbach's alpha coefficients were .527 for survival, .543 for compassion, .549 for solidarity, and .690 for respect and dignity. Given these findings, it appears that Sigger et al. (2010) opted to present the Ubuntu measure as a unidimensional construct (see Annexure 4).

Terblanché-Greeff and Nel (2023): Terblanché-Greeff and Nel developed an instrument based on Thaddeus Metz's (2011, 2016, 2017, 2019) theorisation of Ubuntu, who also contributed to the item generation. Ubuntu is viewed as "a collectivistic cultural value based on two forms of harmonious interaction: 1) identity, which refers to a shared way of life achieved through coordination and a sense of belonging; and 2) solidarity, which refers to caring for others and their quality of life through the offering of aid and exhibiting sympathetic altruism" (Terblanché-Greeff & Nel, 2023, p. 7). After several rounds of EFA and CFA for which little evidence is provided in the article—they concluded with nine items, five focused on identity and four on solidarity. The CFA fit was deemed adequate: CFI = .900 (good), RMSEA = .083 (adequate), and SRMS = .060 (adequate). They found a weak correlation between the constructs ($r = .11$, $p = .031$) and stated that "high reciprocity is not required; nonetheless, relations must be based on both identity and solidarity" (p. 9), suggesting a unidimensional interpretation. More details of the study can be found in the thesis written by Terblanché-Greeff, which underpins this development process (see Botha, 2022). The questionnaire is presented in Annexure 5.

5. Discussion of Findings

An extensive search was conducted for measures related to Ubuntu, employing descriptive keywords such as "scale", "test", "measurement", and "questionnaire", alongside terms more closely associated with the evaluation of these measures, including "psychometric", "development", "validity", and "reliability". A systematic review was not undertaken due to the limited and dispersed nature of the relevant literature across the internet. Titles were screened to determine their direct relevance to instrument development. These documents examined the constructs underlying the measures and their operationalisation through statistical analysis. The focus was on analysing reported exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to evaluate the alignment between theory and data. Additionally, the examination of measurement invariance (MI) results was considered crucial, as it could illuminate the cross-cultural applicability of the construct.

A comprehensive search across multiple search engines and an examination of the reference lists of the identified documents yielded only five relevant sources. Other tools for measuring leadership in Southern Africa have been developed by researchers such as Brynard (2018), Buys (2019), and Enslin (2023), but their frameworks did not specifically aim to encapsulate the principles of Ubuntu. This stage addressed our first aim, which was to identify the relevant documents. Equipped with these instruments, the second objective was to present the constructs foundational to the measures (the theory) and how they are operationalised via statistical analysis. The insights gained are partially depicted in Table 1. For enhanced clarity, Table 2 showcases the theorised themes alongside their operationalised counterparts, illustrating the impact of empirical processes on the theoretical framework.

Table 2: *Theorised and materialised constructs*

	Authors				
	Brubaker (2013)	Molose (2019)	Mutsonziwa (2020)	Sigger et al. (2010)	Terblanché-Greeff & Nel (2023)
Constructs –pre-analysis	Survival, compassion, solidarity, respect and dignity (four constructs)	Survival, compassion, group solidarity, collectivism, respect and dignity (five constructs)	Humanness, inter-connectedness, compassion (three constructs)	Survival, solidarity, compassion, respect and dignity (four constructs)	Identity, solidarity (two constructs)
Factors – post-analysis	Ubuntu (uni-dimensional interpretation)	Survival, compassion, collectivism, respect and dignity (four factors)	Humanness, inter-connectedness, compassion (three factors)	Ubuntu (one factor)	Identity, solidarity (two factors)

Table 2 shows that the theoretical structure was more elaborate than the structure derived from post-analysis narratives. Despite the developers investing significant time in creating the instrument and ensuring content and face validity, empirical evidence from three cases necessitated a simplification of their initially complex concepts. However, in two instances, the originally conceptualised constructs were maintained after empirical refinement, even though some items were removed during the process. Notably, this preservation of constructs occurred only in scenarios where CFA was conducted after EFA. Table 2 also reflects a significant consensus regarding the theorised structure, with compassion and solidarity appearing in four of the five cases. Survival, along with respect and dignity, is mentioned in three cases. Other constructs mentioned once include collectivism and the closely related concept of interconnectedness, as well as identity. Terblanché-Greeff and Nel (2023) define identity as "a shared way of life achieved through coordination and a sense of belonging" (p. 7). Considering its recurrent inclusion across various scales and the conceptual overlap among the terms, Ubuntu can be understood as a composite construct encompassing compassion, solidarity, survival, and, lastly, respect and dignity.

Selecting a preferred measure of Ubuntu would be challenging. Based on the information above, Mutsonziwa's (2020) scale might be favoured for two reasons: its psychometric properties and alignment with the constructs developed by other test creators. Terblanché-Greeff and Nel's (2023) scale is shorter and thus more attractive for that reason. However, its psychometric properties are

weaker than those of Mutsonziwa's (2020) instrument, and it falls short in aligning with the mainstream conceptualisation of Ubuntu.

The final goal of this research was to source a list of items that researchers may use as a pool from which a new instrument can be developed. This information is presented in Annexures 1 to 5, each linked to a different developer.

6. Conclusions and Recommendations

The limited number of quantitative measures related to Ubuntu underscores the need for a measure that accurately reflects this complex and diverse construct. Only five quantitative measures of Ubuntu were identified. A relative consensus was found in their theoretical conceptualisation of Ubuntu. However, when testing the materialisation of these theoretical constructs, primarily through factor analyses, simplification emerged as a consequence of the empirical process, calling into question the construct's multidimensionality on an empirical level. This represents a significant step forward in operationalising the construct. The identification of Mutsonziwa's (2020) scale as a potentially preferred measure, owing to its psychometric robustness and alignment with mainstream conceptualisations of Ubuntu, is also an important outcome of this research. This effort not only illuminates the current state of Ubuntu measurement and how it can be operationalised, but also paves the way for future instrument development. Annexures 1 to 5 serve as a foundational resource pool for researchers aiming to refine and advance the measurement of Ubuntu.

7. Declarations

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Annexures

Annexure 1: Brubaker's (2013) list of items

Brubaker (2013) used a five-point Likert scale, where 1 = definitely no and 5 = definitely yes.
1 My leader provides me with counsel to succeed in my job.
2 My leader provides me with resources to fulfil my responsibilities.
3 My leader treats me as if I were a member of his/her family.
4 My leader is a meaningful part of our work community.
5 My leader sees him/herself as one of us.
6 My leader makes decisions based on the consensus of the group.
7 My leader is sensitive to employees' problems.
8 My leader shares in my suffering.
9 My leader is willing to reach out and help others.
10 My leader is concerned about fairness in our organisation.
11 My leader respects me and my contribution.
12 My leader shows respect for those with age and experience.

Annexure 2: Molose's (2019) list of items

Molose (2019) provided a list of 26 questions, to which the expected responses were 1 (strongly disagree); 2 (disagree); 3 (neutral); 4 (agree); and 5 (strongly agree).

1. My manager is usually present (emotionally) to share my pain during difficult times.
2. My manager is usually available (physically) to suffer with me during difficult times.
3. My manager encourages me to remain polite even when I disagree with what the guest says.
4. My manager responds selflessly to free me from suffering when I am under pressure (e.g., manager involvement during busy group guest check-in).
5. I feel happy when I see my manager notices that I have personal problems that may potentially affect my work performance.
6. I feel a genuine authenticity/realness/honesty about my manager and this is demonstrated in his/her empathetic interactions with me and guests alike.
7. I believe each employee should be willing to share (the little) they have with others as a way of brotherly care.
8. It is common practice for employees to sacrifice their time for the good of other team members.
9. I feel that sharing my difficulties (grief) with other colleagues makes me strong.
10. My manager shares his/her burden during hard times (e.g., budget cuts, salary pay cuts, restructuring or change of top management) as part of a team.
11. I feel that my manager treats me with utmost respect and dignity.
12. My manager greets me whenever he/she sees me.
13. My manager expects me to respect his/her decisions.
14. My manager treats each staff member as if he/she was a member of the family.
15. I have genuine backing (support) of my co-workers, such that they are willing to help me when I need it.
16. I actively contribute to work goals that benefit a wider group, particularly when they are worse off than me.
17. I generally trust my co-workers in matters of lending or extending a helping hand.
18. I have to be alert or else someone is likely to take advantage of me.
19. I do helpful things that will benefit me and the colleagues I know.
20. When something unfortunate happens to me (e.g., loss of a family member), my co-workers get together to help me out.
21. I see myself as part of a diverse work team rather than as an individual from a different cultural background or nationality.

22. I feel that all employees should stick together as a family no matter what sacrifices are required.
23. I feel it is my duty to take care of my co-workers, even if I have to sacrifice what I want.
24. Being a valuable team player is more important to me than my personal identity.
25. The well-being of my co-workers is important to me.
26. It is important to me that I respect the decisions (e.g., how to serve the customer) made by my co-workers.

Annexure 3: Mutsonziwa's (2020) list of items

Mutsonziwa (2020) listed three sets of questions to which the respondents needed to express the extent to which they agree with each statement. The scale was interpreted as follows: 1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree.

B1: Instructions: First, I am going to read out some statements about how you might view other people. To what extent do you agree that the following statements describe you on a five-point scale where 1 is strongly disagree and 5 is strongly agree?

1. You treat other people with dignity.
2. You recognise other people.
3. You treat other people the way that you want to be treated.
4. You value other people.
5. You believe in the humanity of other people.
6. You respect other people.

B2: Instructions: Next, I am going to read out some statements about what you might have in common with other people. To what extent do you agree that they describe you on a five-point scale where 1 is strongly disagree and 5 is strongly agree?

1. Your life is interconnected with the lives of other people.
2. You share possessions with other people.
3. You like living together with other people.
4. Your life is richer because you share it with other people.
5. When you are connected to other people, you feel a sense of harmony.

B3: Instructions: Now I am going to read out some statements about how you might behave towards other people. To what extent do you agree that the following statements describe you on a five-point scale where 1 is strongly disagree and 5 is strongly agree?

1. You have a caring attitude towards other people.
2. You are concerned about the well-being of other people.
3. You are thoughtful of other people.
4. You try to be a blessing to other people.
5. You exhibit good will towards other people.
6. You are helpful to other people.

Annexure 4: Sigger et al.'s (2010) list of items

Sigger et al. (2010) listed three groups of questions, to which the respondents needed to answer strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4) or strongly agree (5).

The co-worker

1. My co-workers are friendly and helpful.
2. I care about the well-being of my co-workers.
3. I respect the religion of my co-workers.
4. I respect the beliefs and customs of my co-workers.
5. I believe that older co-workers have more knowledge and skills than the younger co-workers.
6. When a co-worker gets a promotion and I don't, I am happy for him/her.
7. My co-worker is someone I inform about my personal life.
8. I rely on my co-workers for support when things at work or at home are not going well.

9. I see myself as an active listener towards my co-workers.
10. My co-workers and I get together outside of work time.
11. Relatives of my co-workers should have an advantage over outsiders in competing for job openings.
12. I take the time to greet my co-workers.

The team

13. The organisation encourages teamwork.
14. I have to work closely with others to do the job well.
15. I feel I am really part of the team.
16. I have confidence and trust in the team.
17. I enjoy, above all else, to work as part of a team.
18. I have the right to say "no" to the team.
19. I have the freedom to take my own approach.
20. I am willing to give up personal needs for the good of the team.
21. I always put the interest of the whole team before my own interest.
22. A crisis in the team will be solved in a harmonious way.
23. Long discussions take place in the team meetings.
24. All opinions receive a fair hearing and consideration.
25. I am proud to work for the organisation.
26. I value sharing what I have with my family.

The organisation

27. The organisation has different levels of authority.
28. In the organisation, all decisions are made by the leader.
29. The organisation prevents job loss, even in difficult times.
30. The organisation has the well-being of its employees as a major objective.
31. The organisation provides equal opportunities for all.
32. In the organisation, all the employees are equal.
33. Different ethnic groups work together in harmony.
34. In the organisation, ceremonies and personnel parties are organised.
35. The organisation and its employees are like a family and its members.
36. My family is always welcome to visit the organisation.
37. Many of my family members work in the organisation.
38. Dialogue is an important means in organisational life.
39. There is open communication in the organisation.
40. The organisation provides all employees open access to information.
41. The organisation encourages diversity of opinions.

Annexure 5: Terblanché-Greeff and Nel's (2023) list of items

Terblanché-Greeff and Nel (2023) solicited responses on a six-point Likert scale of agreement.

UI1 I prefer being part of an in-group.
UI2 My identity is linked to the identity of my in-group.
UI3 The people in my in-group help me to be the person that I am.
UI4 I work together with other people to reach the goals that we share in my in-group.
UI5 I like the feeling that I belong to my in-group.
US3 I engage in helpful behaviour.
US4 I care about the quality of life of others.
US5 I exhibit compassion out of concern for others.
US6 I exhibit generosity out of concern for others.

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