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Review

The relationship between acculturation and relevant correlates for Sub-Saharan and North African-born migrants: A meta-analytic review

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ABSTRACT

Acculturation is a complex and multidimensional process that refers to the psychological process whereby individuals' behaviours, values, and cultural attitudes change as a result of contact between two or more distinct cultures. While there is a large amount of literature focused on linking acculturation to various adaptation-relevant outcome domains for other migrant groups, there has been little synthesis of literature focusing on African-born migrants. The present paper examined the relationship between acculturation (both host culture adoption and home culture maintenance) and the adaptation-relevant outcome domains that exist in the literature for African-born migrants (i.e., acculturative stress, discrimination, economic outcomes, healthcare utilisation, mental health, parenting, physical health, sexual health, social support and contact, and transnationalism). One hundred and eight records (113 studies; N_{total} = 48,952 participants) were meta-analysed and revealed that host culture adoption was significantly related to better economic outcomes, greater healthcare utilisation, better sexual health, and greater social support and more social contact. Meta-analyses also revealed home culture maintenance was significantly related to greater discrimination, poor economic outcomes, and less social support and contact. Migrant status, acculturation measure, acculturation conceptualisation, and proxy acculturation measure moderated some of these relationships. The findings are discussed in terms of implications for future research and migration policies, namely indicating the importance of examining acculturation using bidimensional measures and the importance of migration policies supporting both host culture adoption and home culture maintenance.

Currently, over 19.5 million African migrants reside outside of Africa (International Organization for Migration, 2021). Additionally, the UN Refugee Agency (UNHCR) has identified 38.26 million people of concern within Sub-Saharan Africa (UNHCR, 2022a).

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The largest contributing area to the refugee population in Africa is South Sudan, contributing 2.4 million refugees, the fifth-largest contribution of refugees globally (UNHCR, 2022b). These figures are the result of political and ethnic conflicts, food insecurity, poverty, and climate change. Despite the large number of displaced individuals within Africa, conflicts are not a driver of majority of the international migration out of Africa (Flahaux & De Haas, 2016). Moreover, while migration to Europe and the U.S. has increased (Flahaux & De Haas, 2016), the majority of Africans prefer to migrate within their region or elsewhere in Africa (Sanny et al., 2019).

Due to the extensive histories of colonisation and its legacies throughout the African continent, and the vast cultural diversity within African countries, African migrants are undoubtedly a unique group of migrants whose migration experiences are shaped by and reflective of their unique histories and diversity. Despite the documented extensive African migration, and the identified upward trend in acculturation research focused on African immigrants (Ahn & Lee, 2023), there has been limited synthesis of the literature on African-born migrants or on African-born migrants' acculturation. We aim to fill this gap in the literature by conducting a meta-analysis that examines the acculturation processes experienced by African-born migrants.

Acculturation

Acculturation has been defined as a process resulting in changes to behaviours, values, and cultural attitudes that occurs when two or more distinct cultures are in contact with each other (Acevedo-Garcia, 2004). Research has indicated that among immigrant groups, acculturation has been linked to various adaptation-relevant outcomes including but not limited to depression (Gupta et al., 2013), psychological help-seeking attitudes (Sun et al., 2016), alcohol use (Lui & Zamboanga, 2018a, 2018b), high systolic and diastolic blood pressure (Steffen et al., 2006), and intimate partner violence (Alvarez et al., 2020). While there is no one theory of acculturation, it is typically conceptualised as a unidimensional (i.e., adoption of host culture; e.g., Gordon, 1964) or bidimensional process (i.e., adoption of host culture, maintenance of home or original culture; e.g., Berry, 1997). The older, unidimensional conceptualisation of acculturation considers migrant changes in terms of a single linear dimension with individuals moving from aligning with their culture of origin towards aligning with the host culture (Organista et al., 2010). In this process, individuals incrementally give up their culture as they become immersed in the host (Gordon, 1964). Criticism of this perspective stems from the assumption that individuals cannot equally be immersed or retain both their culture of origin and the host culture simultaneously (Cabassa, 2003; Jackson, 2006; Sam, 2015).

Despite well-founded criticism of unidimensional acculturation, it is still featured heavily in the literature, in part due to the simplicity of measurement and ability to be assessed by proxy measures through demographic questions. Proxy measures of acculturation include language proficiency, length of residence, generational status/nativity, and age at immigration (Cabassa, 2003; Doucerain et al., 2016). While proxy measures can be useful due to their limited burden on participants, they are imprecise and limited in their ability to measure the full concept of acculturation, especially maintenance of the home culture (Abraído-Lanza et al., 2006; Alegria, 2009). One consequence of the over-reliance on proxy measures, particularly in the public health literature, is that there is no real understanding of what effect acculturation has had on, for example, health outcomes (Alegria, 2009; Cabassa, 2003).

In direct response to the flaws of the unidimensional conceptualisation of acculturation, bidimensional conceptualisations were developed (Cabassa, 2003). Bidimensional conceptualisations of acculturation have been made famous by John Berry and his colleagues who proposed the two-dimensional model of acculturation (e.g., Abu-Rayya et al., 2023; Berry, 1970; Berry, 1997), arguably the most cited model of acculturation, and the basis of many further acculturation models (e.g., Interactive Acculturation Model Bourhis et al., 1997; Relative Acculturation Extended Model Navas et al., 2005; Concordance Model of Acculturation Piontkowski et al., 2002). The bidimensional approach posits that the adoption of host culture and the maintenance of home culture are independent of each other, allowing individuals to flexibly combine and embrace both, one, or neither cultures (Kang, 2006). For this reason, bidimensional measures assess an individual's level of home culture maintenance, as well as their levels of host culture adoption (and the relationship between the two). This allows for clarity between individuals who do not strongly identify with either culture and individuals who strongly identify with both cultures which is an improvement on the unidimensional conceptualisation (Ryder et al., 2000).

While bidimensional conceptualisations are good, acculturation measures utilising these conceptualisations aren't without their flaws. These flaws include their length, limited incorporation of theoretical frameworks (Cabassa, 2003), and scale intercorrelation (Ryder et al., 2000). Furthermore, a shared flaw of the unidimensional and bidimensional acculturation concepts is the unintended connotation associated with the reference terms, host and home culture. The use of home in reference to non-host/non-dominant members' culture and host in reference to the new culture/dominant culture implies migrants are perpetual visitors who are only temporary and are 'other' (Matsudaira, 2006; Rudmin & Ahmadzadeh, 2001). Such practices are potentially reflective of the continued impacts of acculturation theory's colonial and Western-centric origins, a concern raised by other researchers (e.g., Rudmin et al., 2017). This practice is of particular relevance to this review and other acculturation research focused on African migrants, as African migrants are subaltern migrants, viewed as perpetual foreigners or strangers (De Clerck, 2013; Gatwiri & Anderson, 2021), homogenous (Bentahar, 2011; De Clerck, 2013; Ndhlovu, 2009), and 'other' (Baak, 2019; Liang & Le Billon, 2020) - factors that likely influence their acculturation.

Currently, there is limited understanding of how different conceptualisations of acculturation (and methods of measurement) impact the relationship between acculturation and adaptation-relevant outcomes. Meta-analyses conducted with other migrant groups have returned mixed results about the effects of both proxy acculturation measurement and acculturation conceptualisation (unidimensional vs bidimensional) on adaptation-relevant outcomes (Alvarez et al., 2017; Alvarez et al., 2020; Kondo et al., 2016; Lui & Zamboanga, 2018a, 2018b; Yoon et al., 2013). Thus, one of the major aims of this review is to examine the impact that these factors have on the relationship between acculturation and adaptation-relevant outcomes.

Factors influencing acculturation

A common critique of acculturation models, measures, and research is that they often fail to consider factors influencing acculturation, failing to recognise that acculturation does not occur in isolation, as if individuals were able to freely choose how or when they acculturate (e.g., Alegria, 2009; Nayar, 2015; Rudmin et al., 2017; Ward & Geeraert, 2016). Instead, an individual's acculturation is shaped by a unique combination of time, context, and place (Agbemenu, 2016). The host members' attitudes and host country policies towards migration and migrants are major factors impacting how migrants acculturate.[4] While definitions and conceptualisations of acculturation present the relationship between migrants and the host culture majority group as being equal in power and resources, this is simply untrue in reality (van de Vijver & Phalet, 2004). Instead, host members can restrict and enforce how they desire migrants to acculturate (Berry, 1997). Acculturation strategies such as integration (adoption of host culture and maintenance of home culture) cannot be attained by migrants without the acceptance and approval of the host members (Berry, 1997). Further, other strategies such as separation (maintenance of home culture only), assimilation (adoption of host culture only), and marginalisation (neither adoption of host culture nor maintenance of home culture) can be forced on migrants by the host members (Berry, 1997). Moreover, host members' attitudes towards migrants' acculturation appear to be compounded by additional factors such as migrant generation and prejudice towards migrants (e.g., Kunst & Sam, 2014).

The current investigation

This review aims to conduct a quantitative meta-analysis of studies examining the acculturation and adaptation-relevant outcomes of African-born migrants and to examine the impact of acculturation measurement and conceptualisation on this relationship. As noted above, acculturation is a complex process that is shaped by many factors including context and host member attitudes. Due to the vast history of colonisation and colonial activities (e.g., forced labour and migration) throughout Africa perpetrated by an extensive list of countries, African migrant acculturation is shaped by a unique combination of intersecting factors. As a result of the extensive range of countries that participated in the colonisation of Africa, when individuals migrate outside of Africa, they often migrate to and settle in countries with a history of colonial occupation within Africa, a factor that has been identified as impacting the acculturation of African migrants (see Figueiredo et al., 2018). Furthermore, a study conducted in France, a country with a history of African colonisation, classed North African migrants as a group devalued by host members and identified differences in host members' acculturative preferences for North African migrants compared to other valued migrant groups (Barrette et al., 2004). Similarly, in Spain, another country with a history of African colonisation, intergroup stereotypes have been found to shape both the host members' acculturative preferences for Moroccan adolescents and Moroccan adolescents' own acculturative preferences (Urbiola et al., 2021). Finally, African migrants must contend with and balance multiple new identities (e.g., Black/White/African/specific country/specific ethnic group) assigned to them within their host country as they adjust. Conversely, African migrants' experiences within their host country shape and are shaped by how they navigate their new multiple identities (Asante et al., 2016). As such, in light of the unique experience of African migrants within their chosen host country, and the expansive and growing literature focused on African-born migrants' acculturation and adaptation-relevant outcomes, it is timely that a meta-analysis is conducted to examine and summarise the relationship between acculturation and all possible adaptation-relevant outcomes for African-born migrants. A meta-analytic synthesis of all possible adaptation-relevant outcomes for African-born migrants is vital to further acculturation theory through the formation of an understanding of how African-born migrants' acculturation relates to their adaptation-relevant outcomes, including an understanding of what factors influence these relationships and allows for a comparison of how these differ to other migrant groups. Furthermore, this knowledge and expansion of theory will be of critical use in creating and adapting supports to ensure positive adaptation-relevant outcomes for this group.

As this is the first meta-analysis, to our knowledge, to examine the relationship between acculturation and adaptation-relevant outcomes for African-born migrants only, we aim to include as much literature as possible. Therefore, decisions were made *a priori* to include both validated scales that measure acculturation (e.g., unidimensional and bidimensional acculturation) and proxy measures of acculturation (e.g., language proficiency, duration of residence in host country). Because of the documented differences between first- and second-generation migrants in terms of acculturation (e.g., Christmas & Barker, 2014; Kwak & Berry, 2001) and adaptation-relevant outcomes (e.g., Abouguendia & Noels, 2001; Gordon-Larsen et al., 2003; Rosenthal & Feldman, 1990; Sam et al., 2008), we have chosen to include only results for first-generation African-born migrants in this meta-analysis (i.e., individuals who reside in a different country than their country of birth). Furthermore, we will explore migrant status, acculturation measure, acculturation conceptualisation, and proxy acculturation measure as potential moderators of the relationships between acculturation and adaptation-relevant outcomes for African-born migrants. Finally, given recommendations for research to move beyond focus on the relationship or interaction of host culture adoption and home culture maintenance (e.g., Demes & Geeraert, 2014; Ward, 2008; Ward & Geeraert, 2016), and concerns raised regarding the validity of some of these interactions (e.g., marginalisation; see Schwartz et al., 2010), this review has opted to examine African-born migrants' acculturation in terms of host culture adoption and home culture maintenance as independent dimensions.

[4] Recently, researchers have shown increased interest in examining host member acculturation and migrants/minority group expectations regarding their acculturation - a topic beyond the scope and aims of this review. For further reading on this topic, see Kunst et al. (2023) for a non-African migration perspective and R'boul et al. (2023) for an intra-African migration perspective.

Method

Search strategy

To identify records on acculturation outcomes for African-born migrants, we conducted a literature search of Web of Science, ProQuest,[5] Medline, PsycINFO, SCOPUS, ERIC, and Psychology and Behavioral Sciences Collection. The first literature search was conducted on September 5th, 2019, with a second search conducted on June 2nd, 2022, to update the search results.

Specific search strategies were developed for each search engine to minimise the likelihood of excluding relevant records and to maximise the number of records retrieved. Title and abstract searches consisted of three key concepts 1) African, 2) migrants, and 3) acculturation. When applicable to the database, each key concept was searched for in the database subject headings, with relevant search subject headings selected and included in each key concept search. The search strategy is provided in Table 1 and database-specific search strategies can be found in the online supplementary materials at https://tinyurl.com/nm7wfss2. We did not include a fourth key concept for "acculturation outcome" in our search as this bottom-up approach allowed us to examine all African migrant acculturation literature without limiting the potential outcomes. Additionally, we placed a call for published, unpublished, or nearly published data, including published data sets that measured (but did not report the relationships between acculturation and adaptation-relevant outcomes) on Twitter and through the European Association for Social Psychologists, the Society for Australasian Social Psychology, and the Society for Personality and Social Psychology mailing lists.

Eligibility criteria

Records were retained if they met the following inclusion criteria: 1) use a quantitative study design; 2) include either a proxy measure of acculturation (e.g., duration of residence in host country or language proficiency) or a validated measure of acculturation; 3) examined the acculturation of African-born migrants[6]; 4) able to be obtained in English; 5) report the effect of acculturation. Records were excluded if they 1) examined internal migration (e.g., rural to city migration); 2) combined African migrants and other groups' results (e.g., results for both Middle Eastern and African migrants); 3) were not first-generation migrants or reported results for combined migrant generations (e.g., results of both first- and second-generation migrants); 4) did not report the effect of acculturation on adaptation-relevant outcomes.

No year limitation was applied to the first search. A criterion for the percent or number of African-born migrants in included records samples was not set, however, records were excluded if they reported the combined results of African-born migrants and other migrant or sample groups.

Screening and data extraction

Records identified in the literature search were exported from each database and duplicates were removed. After removing duplicate records for each database, records were combined into a single file and received a second round of duplicate screening. Records were then imported to screening software Rayyan QCRI (Ouzzani et al., 2016) for the first search and Covidence (Covidence systematic review software, 2023) for the second search. Records titles and abstracts were screened to determine if they met the inclusion criteria. Records that met the criteria were examined in full text to confirm their appropriateness. In the case of an eligible record having both a published and dissertation version or sharing a sample with another eligible record, the earliest version was chosen for inclusion. However, if eligible records sharing a sample examined different adaptation-relevant outcomes or measures of acculturation both records were included and the sample and records were counted once. Additionally, if records featured an analysis type not suitable for inclusion (e.g., adjusted analysis) or combined their results for multiple migrant generations (e.g., reporting results for second-generation migrants with first-generation migrants), corresponding authors were contacted, and a request was made for the provision of appropriate analysis results or results for only first-generation African-born migrants.

A data extraction table was developed to collate data for this meta-analysis. Study characteristics and publication details, and effect size information were extracted for all included records. Extracted information included 1) authors and article name; 2) year of article publication, where the article was conducted (e.g., country), and study design; 3) if the article is a journal article or thesis and if it uses a mass data set, is part of a larger project, analyses secondary data, or shares a sample with another included article; 4) sample size, gender, age, age at migration, birth country/region, migrant status, acculturation conceptualisation; 5) effect size information such as acculturation and outcome measures, correlations, etc.[7] Additionally, outcomes were coded into domains (e.g., mental health). In the case that records included non-first-generation or non-African samples, only information regarding first-generation African-born migrants was extracted.

[5] Limited to Public Health Database, PTSDpubs, Psychology Database, ProQuest Dissertations & Theses Global, Education Collection, and Consumer Health Database.

[6] Within this review, African-born migrants were classified as individuals from Sub-Saharan and Northern Africa. This decision reflects literature highlighting the colonial causes for the distinction between Sub-Saharan and North Africa, and the identified continued deep-rooted cultural connection and exchanges of these regions despite the often exclusion of North Africa from the African context (e.g., Bentahar, 2011).

[7] It should be noted that not all included records presented sample sizes regarding their analysis, impacting our ability to accurately calculate effect sizes. In cases that did not clearly specify n for the analysis, we assumed that n was equal to the overall sample size.

Table 1
Concepts Used in Search Strategy.

	Concepts
Acculturation	Acculturat* OR Assimilat* OR Bicultural* OR "Cultural Adaption" OR "Culture Change" OR "Cultural Maintenance" OR Enculturat* OR Inculturat* OR Integrat* OR "Intercultural Engagement" OR Isolat* OR Marginaliz* OR Marginalis* OR Separation OR Socializ* OR Socialis*
African	Africa* OR Algeria* OR Angola* OR Benin* OR Botswana* OR Batswana OR "Burkina Faso" OR Burkinabé OR Burundi* OR Cameroon*, "Cape Verde* " OR "Cabo Verdean* " OR "Central African Republic" OR "Central African* " OR Chad* OR Comor* OR "Côte d'Ivoire" OR "Democratic Republic of the Congo" OR "Republic of the Congo" OR Congolese OR Djibouti* OR Egypt* OR "Equatorial Guinea* " OR Equatoguinean OR Eritrea* OR Ethiopia* OR Gabon* OR Gambia* OR Ghana* OR Guinea* OR Guinea-Bissau* OR "Ivory Coast" OR Ivorian OR Kenya* OR Lesotho Or Mosotho OR Basotho OR Liberia* OR Libya* OR Madagascar OR Malagasy OR Malawi* OR Mali* OR Mauritania* OR Mauriti* OR Morocc* OR Mozambi* OR Namibia* OR Niger* OR Nigeria* OR Rwanda* OR "Sao Tome* " OR Sahara OR Senegal* OR Seychell* OR "Sierra Leone* " OR Somali* OR "South* Africa* " OR "South Sudan* " OR Sudan* OR Swazi* OR Tanzania* OR Togo* OR Tunisia* OR Uganda* OR Zambia* OR Zimbabwe*
Migrant	Aliens OR Asylum* OR "Boat People" OR Emigrant* OR Expatriate* OR Immigr* OR Migrant* OR Noncitizens OR "Political Asylum* " OR "Political Refuge" OR Refugee* OR Transients

Some records included multiple outcome measures for a single domain (e.g., multiple measures of mental health). When appropriate effect sizes were averaged for all variables for the main analysis and followed up with subgroup moderation analysis. However, when this was not appropriate due to the size of the analysis or there not being enough effect sizes for moderation analysis, if a clear outcome of focus was identified in the original record, we calculated the effect size for this variable only. If there was no clear singular outcome of focus, and outcomes were not appropriate for aggregation, the outcome with the most effects (i.e., the most represented) was chosen for inclusion. These decisions were made in an attempt to maximise the amount of included literature. Furthermore, some records included multiple measures of acculturation (e.g., a scale and proxy measure of acculturation), in these cases, the effect size was calculated for the scale acculturation measure for the main analysis and followed up with subgroup moderation analysis. When studies included two proxy measures of acculturation these were aggregated, when possible, to create a single effect size for the main analysis and followed up with subgroup moderation analysis. The full extraction table is available online in the supplementary materials at https://tinyurl.com/nm7wfss2.

Quality assessment of studies

Due to the inappropriateness of existing quality assessment tools, for this review, we have edited a quality assessment tool developed by Hawker et al. (2002). We have tailored the existing tool to better suit our review and supplemented criteria with APA Journal Article Reporting Standards for Quantitative Research recommendations (Appelbaum et al., 2018). Our tool evaluated studies on 8 criteria, with a response scale ranging from 0 (indicating very poor) to 3 (indicating good), resulting in each study receiving a score out of 24. We decided to not include a cut-off score point for studies to be classified as being of good or poor quality due to the arbitrary and subjective nature of quality cut-off scores. Additionally, studies were not excluded based on their methodological quality. The quality assessment for the included studies were considered in the synthesis and interpretation of the findings and are available online in the supplementary materials at https://tinyurl.com/nm7wfss2.

Data synthesis

Meta-analyses were conducted using the Comprehensive Meta-Analysis, Version 3 (Borenstein et al., 2014). Seventeen meta-analyses were conducted. First, individual meta-analyses were conducted examining the relationship between each adaptation-relevant outcome domain and adoption of host culture. Second, when able to, individual meta-analyses were conducted examining the relationship between each adaptation-relevant outcome domain and maintenance of home culture. Furthermore, subgroup moderation analyses were run to examine if migrant status, acculturation measure, acculturation conceptualisation or proxy acculturation measure had a moderating effect on the results.[8] Effect sizes were standardised - extracted mean-differences (odds ratio, *t*-test, chi-square, and ANOVA) and correlations and standardised betas were converted into Fisher's *Z*. We interpreted these effect sizes based on guidelines presented by Cohen (1992) in which a Fisher's *Z* of 0.1 is deemed to be a small effect, 0.3 a medium effect, and 0.5 a large effect. In the case of records using a bidimensional acculturation measure or separate scales/subscales to measure acculturation, for host culture adoption analysis, the variable indicative of the most host culture adoption was included (usually assimilation), and for home culture maintenance analysis, the variable indicative of the most home culture maintenance was included (usually separation). In the rare case that a record had two variables indicative of the same level of host culture adoption or home culture maintenance, results were aggregated to create a single effect size. All included records for the host culture adoption analyses measured host culture adoption so that high scores indicated greater adoption of host culture. Conversely, all included records for the home culture

[8] Subgroup moderation analysis was only conducted when there were three or more effects for each moderating subgroup. Additional subgroup moderation analysis was run for economic outcomes examining type of economic outcome (e.g., income, SES, etc.), healthcare utilisation examining type of healthcare utilisation (e.g., attitudes, knowledge, etc.), mental health examining type of mental health outcome (e.g., anxiety, depression, etc.), physical health examining type of physical health outcome (e.g., BMI, diabetes, etc.), and social support and contact examining type of social support and contact (e.g., friendship, support, etc.) and group (e.g., in-group or outgroup).

maintenance analyses measured home culture maintenance so that high scores indicated greater maintenance of home culture. Effects were coded so that in all analyses high scores indicated positive adaptation-relevant outcomes.

Heterogeneity

The presence of heterogeneity was assessed using I^2 values and Cochran's Q. Cochran's Q was used to examine if the effect sizes were greater than what would be expected due to sampling error (Cochran, 1954). A significant Cochran's Q p-value indicates the presence of heterogeneity. Additionally, I^2 was used to assess the portion of variability in effects caused by heterogeneity and not sampling errors (Deeks et al., 2019). I^2 values can range between 0% and 100%, and values of 25%, 50%, and 75% respectively indicate low, moderate, and high levels of heterogeneity (Higgins et al., 2003). All main and subgroup analyses were conducted as random effects models to conservatively account for heterogeneity (Kisamore & Brannick, 2007).

Publication bias

Publication bias was examined using various methods. First, we visually examined the symmetry of funnel plots. Asymmetry of funnel plot distribution indicates the possibility of true heterogeneity, poor methodological quality, and/or publication bias (Egger et al., 1997). Additionally, asymmetry of funnel plot distribution can occur due to chance (Higgins & Thompson, 2004) or occur falsely due to effect estimates and standard errors naturally correlating (Sterne & Egger, 2001). Second, funnel plots were examined with the fill-and-trim method which indicates the presence of publication bias by estimating the effect size if there were no missing studies from the funnel plot due to underreporting (Duval & Tweedie, 2000). Finally, funnel plots were examined using Egger's regression test. Egger's regression test statistically analyses the asymmetry of funnel plots and when statistically significant indicates the possibility of publication bias (Egger et al., 1997).

Results

In total, 117 records ($N_{total} = 65{,}187$ participants) with 123 studies were eligible for inclusion in this meta-analysis. We made the *a priori* decision that at least 3 effects would be needed for each outcome to warrant meta-analysis. As such, nine records (with 10 studies) were not meta-analysed because there were too few studies measuring the same correlate (e.g., only two studies featured education outcomes), therefore 108 records (113 studies; $N_{total} = 48{,}952$ participants) were meta-analysed (see Fig. 1). Of the studies meta-analysed, 70 were published journals, 42 were theses, and one was received as part of a call for published, unpublished, or nearly published data. The majority of studies used voluntary samples $n = 53$ (involuntary $n = 30$; both involuntary and voluntary $n = 13$; unclear due to sample label $n = 17$) and were conducted in the U.S. $n = 50$. Seventy-one studies measured acculturation as a unidimensional concept, 23 studies measured acculturation as a bidimensional concept and 19 studies measured acculturation as both a unidimensional and bidimensional concept (e.g., used both bidimensional scale and proxy acculturation measurement).[9] In total, 74 studies examined host culture adoption, 37 studies examined both host culture adoption and home culture maintenance, and 2 studies examined home culture maintenance.

Fifty-three studies were included in the mental health analyses, 28 studies were included in the economic analyses, 27 studies were included in the physical health analyses, 20 studies were included in the discrimination analyses, 17 studies were included in the social support and contact analyses, 16 studies were included in the healthcare analyses, 13 studies were included in the acculturative stress analyses, five studies were included in the parenting analysis, four studies were included in the sexual health analysis, and four studies were included in the transnationalism analysis. Overall effect sizes, 95% confidence intervals (CI), sample size (N), Q statistics, and I^2 values for analyses are presented in Table 2 (tables for each adaptation-relevant outcome domain are available in the online supplementary materials at https://tinyurl.com/nm7wfss2).

Acculturative stress

Analysis of acculturative stress effects included 13 studies ($n = 1937$). Of these 13 studies, eight were included only in the analysis with host culture adoption, one in the analysis with home culture maintenance, and four were included in both analyses. Adoption of host culture was not significantly related to acculturative stress ($p = .478$, $Z = 0.038$). Subgroup analyses found no significant differences for any of the subgroups (see Table 3). Maintenance of home culture was not significantly related to acculturative stress ($p = .977$, $Z = -0.019$). Subgroup analyses were not conducted to examine moderators for home culture maintenance due to a limited number of effect sizes.

[9] Three of these studies measured acculturation using the host culture subscale from a bidimensional acculturation measure only.

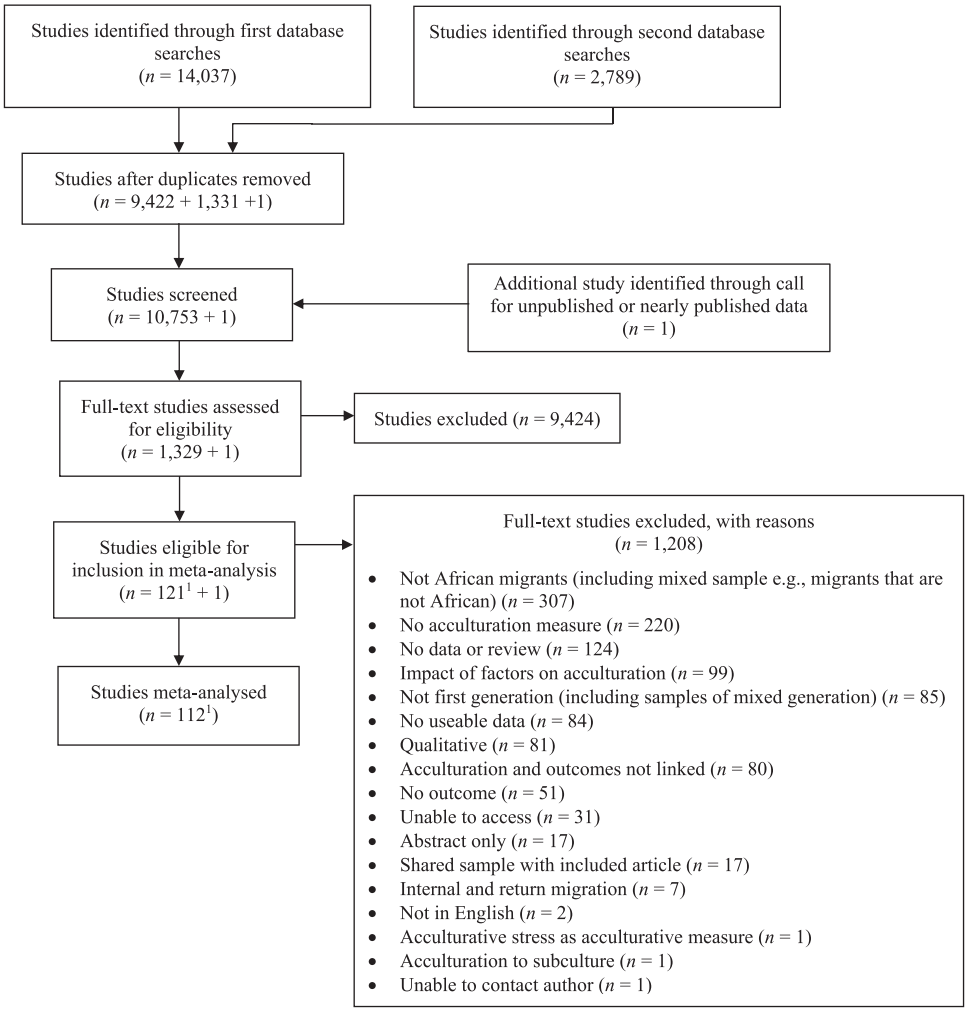

Fig. 1. *Study Selection Flowchart.* [1]Due to an included study containing an eligible pilot and main study, this figure differs from the text by one (i.e., 113 studies were meta-analysed).

Discrimination

Analysis of discrimination effects included 20 studies ($n = 3941$). Of these 20 studies, seven were included only in the analysis with host culture adoption, one in the analysis with home culture maintenance, and 12 were included in both analyses. Adoption of host culture was not significantly related to discrimination ($p = .706$, $Z = 0.016$). Subgroup analysis examining the moderating effects of acculturation measure found a significant difference between proxy measures ($Z = -0.045$) and scale measures ($Z = 0.064$; $p = .032$). Subgroup analysis examining the moderating effects of acculturation conceptualisation found a significant difference between bidimensional acculturation conceptualisation ($Z = 0.064$) and unidimensional acculturation conceptualisation ($Z = -0.045$, $p = .032$). No significant differences were found for any other subgroups (see Table 4). Maintenance of home culture was significantly related to discrimination ($p = .007$, $Z = -0.150$). Subgroup analyses were not conducted to examine moderators for home culture maintenance due to a limited number of effect sizes.

Economic outcomes

Analysis of economic outcomes effects included 28 studies ($n = 6674$). Of these 28 studies, 19 were included only in the analysis with host culture adoption, two in the analysis of home culture maintenance, and seven were included in both analyses. Adoption of host culture was significantly related to economic outcomes ($p = .001$, $Z = 0.143$). Subgroup analysis examining the moderating effects of migrant status found a significant difference between involuntary migrants ($Z = 0.295$) and voluntary migrants ($Z = 0.076$; $p = .039$).

Table 2
Combined Effect Size Estimates Examining the Relationships Between Acculturation and All Adaptation-Relevant Outcome Domains.

Analysis	*N*	*Z*	95% CI	*z*	*p*	*Q*	I^2
Acculturative stress							
Host culture adoption	1780	0.038	[− 0.068, 0.144]	0.709	.478	50.286	78.125
Home culture maintenance	681	-0.019	[− 0.257, 0.219]	-0.155	.877	37.898	89.445
Discrimination							
Host culture adoption	3735	0.016	[− 0.067, 0.099]	0.377	.706	135.542	86.720
Home culture maintenance	2363	-0.150	[− 0.259, − 0.041]	-2.691	.007	91.877	86.939
Economic outcomes							
Host culture adoption	6213	0.143	[0.061, 0.226]	3.403	.001	329.557	92.414
Home culture maintenance	1369	-0.147	[− 0.212, − 0.083]	-4.491	<.001	10.535	24.063
Healthcare utilisation							
Host culture adoption	3611	0.072	[0.010, 0.134]	2.277	.023	95.836	84.348
Home culture maintenance	1568	-0.020	[− 0.083, 0.043]	-0.615	.538	14.292	65.017
Mental health							
Host culture adoption	8403	0.014	[−0.047, 0.075]	0.457	.648	746.645	93.303
Home culture maintenance	3556	0.015	[−0.050, 0.080]	0.458	.647	214.455	88.343
Parenting							
Host culture adoption	20,908	-0.112	[− 0.332, 0.107]	-1.003	.316	108.172	96.302
Physical health							
Host culture adoption	9781	-0.014	[− 0.037, 0.009]	-1.193	.233	148.221	82.459
Home culture maintenance	1214	-0.008	[− 0.117, 0.101]	-0.147	.883	27.525	78.202
Sexual health							
Host culture adoption	1294	0.160	[0.001, 0.319]	1.971	.049	40.131	92.524
Social support and contact							
Host culture adoption	5273	0.102	[0.020, 0.183]	2.450	.014	133.794	88.0431
Home culture maintenance	1231	-0.068	[− 0.133, − 0.002]	-2.018	.044	11.666	31.425
Transnationalism							
Host culture adoption	921	0.105	[− 0.058, 0.267]	1.261	.207	20.756	85.546

Table 3
Effect Size Estimates for Moderation Subgroup Host Culture Adoption - Acculturative Stress.

Analysis	Moderator group	*k*	*Z*	95% CI	*Q*	*p*
Acculturative stress	Involuntary	5	0.059	[− 0.132, 0.249]	0.075	.784
	Voluntary	6	0.024	[− 0.136, 0.184]		
Acculturative stress	Proxy	11	0.039	[− 0.058, 0.137]	0.009	.923
	Scale	4	0.026	[− 0.222, 0.274]		
Acculturative stress	Bidimensional	4	0.026	[− 0.222, 0.274]	0.009	.923
	Unidimensional	11	0.039	[− 0.058, 0.137]		
Acculturative stress	Language proficiency	3	0.011	[− 0.086, 0.109]	0.040	.841
	Duration of residence	10	0.028	[− 0.100, 0.156]		

* $p < .05$
** $p < .01$
*** $p < .001$.

Table 4
Effect Size Estimates for Moderation Subgroup Host Culture Adoption - Discrimination.

Analysis	Moderator group	*k*	*Z*	95% CI	*Q*	*p*
Discrimination	Involuntary	5	-0.010	[− 0.211, 0.191]	0.101	.751
	Voluntary	10	0.027	[− 0.084, 0.139]		
Discrimination	Proxy	11	-0.045	[− 0.160, 0.071]	4.586	.032*
	Scale	12	0.094***	[0.042, 0.146]		
Discrimination	Bidimensional	12	0.094***	[0.042, 0.146]	4.586	.032*
	Unidimensional	11	-0.045	[− 0.160, 0.071]		
Discrimination	Language proficiency	5	-0.047	[− 0.200, 0.106]	0.000	.984
	Duration of residence	9	-0.045	[− 0.181, 0.090]		

* $p < .05$
** $p < .01$
*** $p < .001$.

Table 5
Effect Size Estimates for Moderation Subgroup Host Culture Adoption - Economic.

Analysis	Moderator group	*k*	*Z*	95% CI	*Q*	*p*
Economic	Involuntary	9	0.295**	[0.126, 0.464]	4.273	.039*
	Voluntary	13	0.076	[− 0.044, 0.196]		
Economic	Proxy	21	0.154**	[0.064, 0.244]	0.800	.371
	Scale	14	0.088	[− 0.024, 0.201]		
Economic	Bidimensional	8	0.115	[− 0.079, 0.309]	0.106	.744
	Unidimensional	22	0.150**	[0.065, 0.236]		
Economic	Language proficiency	8	0.075	[− 0.068, 0.218]	1.347	.246
	Duration of residence	20	0.180**	[0.075, 0.284]		
Economic	Employment status	6	0.268**	[0.108, 0.429]	2.129	.345
	Income/Wage	12	0.161*	[0.034, 0.287]		
	SES	4	0.111	[− 0.030, 0.252]		

* $p < .05$
** $p < .01$
*** $p < .001$.

No significant differences were found for any other subgroups (see Table 5). Maintenance of home culture was significantly related to economic outcomes ($p < .001$, $Z = -0.147$). Subgroup analyses were not conducted to examine moderators for home culture maintenance due to a limited number of effect sizes.

Healthcare utilisation

Analysis of healthcare utilisation effects included 16 studies ($n = 3612$). Of these 16 studies, 10 were included only in the analysis with host culture adoption, and six were included in both analyses with host culture adoption and home culture maintenance. Adoption of host culture was significantly related to healthcare utilisation ($p = .023$, $Z = 0.072$). Subgroup analysis examining the moderating effects of healthcare utilisation type found a significant difference between healthcare attitudes ($Z = 0.054$), healthcare knowledge ($Z = 0.200$), and healthcare utilisation ($Z = 0.028$; $p = .007$). No significant differences were found for any other subgroups (see Table 6). Maintenance of home culture was not significantly related to healthcare utilisation ($p = .538$, $Z = -0.020$). Subgroup analysis examining the moderating effects of healthcare utilisation type found no significant difference between healthcare attitudes ($Z = -0.021$, 95% CI [−0.101, 0.059], $p = .614$, $k = 4$) and healthcare utilisation ($Z = -0.093$; 95% CI [−0.171, −0.014], $p = .020$, $k = 4$; $Q = 1.594$, $p = .207$).

Mental health

Analysis of mental health effects included 53 studies ($n = 8774$). Of these 53 studies, 27 were included only in the analysis with host culture adoption, two in the analysis with home culture maintenance, and 24 were included in both analyses. Adoption of host culture was not significantly related to mental health ($p = .648$, $Z = 0.014$). Subgroup analyses found no significant differences for any of the subgroups (see Table 7). Maintenance of home culture was not significantly related to mental health ($p = .647$, $Z = 0.015$). Subgroup analysis examining the moderating effects of mental health type found a significant difference between anxiety ($Z = 0.010$), depression ($Z = -0.009$), distress ($Z = 0.167$), negative coping ($Z = -0.137$), positive coping ($Z = 0.126$), quality of life ($Z = 0.191$), and self-esteem ($Z = -0.092$; $p < .001$). No significant differences were found for any other subgroups (see Table 8).

Table 6
Effect Size Estimates for Moderation Subgroup Host Culture Adoption - Healthcare Utilisation.

Analysis	Moderator group	*k*	*Z*	95% CI	*Q*	*p*
Healthcare utilisation	Proxy	10	0.123*	[0.009, 0.237]	1.082	.298
	Scale	10	0.059**	[0.018, 0.099]		
Healthcare utilisation	Bidimensional	6	0.042	[− 0.017, 0.101]	1.552	.213
	Unidimensional	13	0.111*	[0.072, 0.203]		
Healthcare utilisation	Attitudes	8	0.054	[− 0.003, 0.111]	10.018	.007**
	Knowledge	4	0.200***	[0.117, 0.283]		
	Utilisation	8	0.028	[− 0.063, 0.120]		

* $p < .05$
** $p < .01$
*** $p < .001$.

Table 7
Effect Size Estimates for Moderation Subgroup Host Culture Adoption - Mental Health.

Analysis	Moderator group	*k*	*Z*	95% CI	*Q*	*p*
Mental health	Involuntary	16	-0.020	[− 0.078, 0.039]	0.875	.350
	Voluntary	24	0.020	[− 0.039, 0.079]		
Mental health	Proxy	32	0.060*	[0.011, 0.109]	1.642	.200
	Scale	31	-0.008	[− 0.101, 0.084]		
Mental health	Bidimensional	24	-0.019	[− 0.078, 0.040]	3.584	.058
	Unidimensional	35	0.052*	[0.007, 0.097]		
Mental health	Language proficiency	11	0.043	[− 0.025, 0.11]	0.127	.721
	Duration of residence	29	0.059*	[0.003, 0.116]		
Mental health	Anxiety	9	-0.003	[− 0.097, 0.090]	8.176	.517
	Depression	14	0.055	[− 0.023, 0.134]		
	Distress	17	0.014	[− 0.056, 0.083]		
	Negative coping	5	-0.149*	[− 0.286, − 0.012]		
	Positive coping	4	0.029	[− 0.013, 0.071]		
	PTSD	7	0.015	[− 0.065, 0.094]		
	QOL	15	0.043	[− 0.035, 0.120]		
	Self-esteem	8	0.020	[− 0.061, 0.101]		
	Somatic	3	0.040	[− 0.135, 0.216]		
	Suicide	3	0.056	[− 0.024, 0.137]		

* $p < .05$
** $p < .01$
*** $p < .001$.

Table 8
Effect Size Estimates for Moderation Subgroup Home Culture Maintenance - Mental Health.

Analysis	Moderator group	*k*	*Z*	95% CI	*Q*	*p*
Mental health	Involuntary	7	-0.042	[− 0.123, 0.039]	0.858	.354
	Voluntary	13	0.013	[− 0.071, 0.098]		
Mental health	Anxiety	3	0.010	[− 0.175, 0.194]	42.254	<.001***
	Depression	6	-0.009	[− 0.120, 0.102]		
	Distress	6	0.167	[− 0.004, 0.337]		
	Negative coping	4	-0.137***	[− 0.179, − 0.094]		
	Positive coping	5	0.126*	[0.021, 0.232]		
	QOL	6	0.191*	[0.033, 0.350]		
	Self-esteem	5	-0.092	[− 0.298, 0.114]		

* $p < .05$
** $p < .01$
*** $p < .001$.

Parenting

Analysis of parenting effects included five studies ($n = 20{,}908$). Due to a limited number of effects examining the relationship between acculturation and parenting, analysis was only conducted with host culture adoption. Adoption of host culture was not significantly related to parenting ($p = .171$, $Z = -0.130$). Subgroup analyses were not conducted to examine moderators due to a limited number of effect sizes.

Physical health

Analysis of physical health effects included 27 studies ($n = 9782$). Of these 27 studies, 20 were included only in the analysis with host culture adoption, and seven were included in both analyses with host culture adoption and home culture maintenance. Adoption of host culture was not significantly related to physical health ($p = .233$, $Z = -0.014$). Subgroup analysis examining the moderating effects of proxy acculturation measure found a significant difference between language proficiency measures ($Z = 0.099$) and duration of residence in host country measures ($Z = -0.032$; $p = .032$). No significant differences were found for any other subgroups (see Table 9). Maintenance of home culture was not significantly related to physical health ($p = .883$, $Z = -0.008$). Subgroup analyses were not conducted to examine moderators for home culture maintenance due to a limited number of effect sizes.

Table 9
Effect Size Estimates for Moderation Subgroup Host Culture Adoption - Physical Health.

Analysis	Moderator group	*k*	*Z*	95% CI	*Q*	*p*
Physical health	Involuntary	3	0.024	[− 0.054, 0.103]	0.516	.472
	Voluntary	11	-0.007	[− 0.037, 0.024]		
Physical health	Proxy	23	-0.027*	[− 0.052, − 0.003]	3.645	.056
	Scale	10	0.078	[− 0.028, 0.184]		
Physical health	Bidimensional	6	0.008	[− 0.076, 0.093]	0.474	.491
	Unidimensional	24	-0.022	[− 0.046, 0.001]		
Physical health	Language proficiency	4	0.099	[− 0.018, 0.215]	4.616	.032*
	Duration of residence	21	-0.032*	[− 0.058, − 0.006]		
Physical health	BMI	11	-0.048	[− 0.119, 0.024]	5.827	.212
	Diabetes	4	-0.132**	[− 0.230, − 0.034]		
	Food/Diet	5	-0.012	[− 0.086, 0.062]		
	General health	8	-0.049	[− 0.160, 0.062]		
	Poor health behaviours	4	0.101	[− 0.102, 0.305]		

* $p < .05$
** $p < .01$
*** $p < .001$.

Sexual health

Analysis of sexual health effects included four studies ($n = 1294$). Due to a limited number of effects examining the relationship between acculturation and sexual health, analysis was only conducted with host culture adoption. Adoption of host culture was significantly related to sexual health ($p = .049$, $Z = 0.160$). Subgroup analyses were not conducted to examine moderators due to a limited number of effect sizes.

Social support and contact

Analysis of social support and contact effects included 17 studies ($n = 5273$). Of these 17 studies, eight were included only in the analysis with host culture adoption, and nine were included in both analyses with host culture adoption and home culture maintenance. Adoption of host culture was significantly related to social support and contact ($p = .014$, $Z = 0.102$). Subgroup analysis examining the moderating effects of social support and contact type found a significant difference between contact ($Z = 0.063$), friendship ($Z = 0.237$), and support ($Z = -0.064$; $p = .016$). No significant differences were found for any other subgroups (see Table 10). Maintenance of home culture was significantly related to social support and contact ($p = .044$, $Z = -0.068$). Subgroup analyses found no significant differences for any of the subgroups (see Table 11).

Table 10
Effect Size Estimates for Moderation Subgroup Host Culture Adoption - Social Support and Contact.

Analysis	Moderator group	*k*	*Z*	95% CI	*Q*	*p*
Social support and contact	Involuntary	6	0.199**	[0.078, 0.364]	0.329	.566
	Voluntary	6	0.143	[− 0.007, 0.294]		
Social support and contact	Proxy	11	0.054	[− 0.041, 0.148]	0.205	.651
	Scale	10	0.092	[− 0.046, 0.231]		
Social support and contact	Bidimensional	10	0.092	[− 0.046, 0.231]	0.205	.651
	Unidimensional	11	0.054	[− 0.041, 0.148]		
Social support and contact	Language proficiency	3	0.189	[− 0.129, 0.507]	0.667	.414
	Duration of residence	10	0.053	[− 0.029, 0.134]		
Social support and contact	Contact	8	0.063	[− 0.077, 0.203]	8.299	.016*
	Friendship	4	0.237**	[0.071, 0.403]		
	Support	5	-0.064	[− 0.186, 0.058]		
Social support and contact	In-group	4	0.031	[− 0.118, 0.181]	1.487	.223
	Out-group	8	0.153*	[0.028, 0.277]		

* $p < .05$
** $p < .01$
*** $p < .001$.

Table 11
Effect Size Estimates for Moderation Subgroup Home Culture Maintenance - Social Support and Contact.

Analysis	Moderator group	*k*	*Z*	95% CI	*Q*	*p*
Social support and contact	Involuntary	3	-0.019	[− 0.224, 0.186]	0.086	.769
	Voluntary	4	-0.054	[− 0.161, 0.054]		
Social support and contact	Contact	4	-0.058	[− 0.158, 0.042]	0.307	.580
	Support	5	-0.096*	[− 0.186, − 0.006]		

* $p < .05$
** $p < .01$
*** $p < .001$.

Transnationalism

Analysis of transnationalism effects included four studies ($n = 2235$). Due to a limited number of effects examining the relationship between acculturation and transnationalism, analysis was only conducted with host culture adoption. Adoption of host culture was not significantly related to transnationalism ($p = .207$, $Z = 0.105$). Subgroup analysis examining the moderating effects of acculturation measure found no significant difference between proxy measures ($Z = 0.112$, 95% CI [−0.133, 0.356], $p = .371$, $k = 3$) and scale measures ($Z = 0.168$, 95% CI [0.060, 0.277], $p = .002$, $k = 3$; $Q = 0.172$, $p = .679$).

Heterogeneity

Heterogeneity was examined using I^2 values and Cochran's *Q*. Cochran's *Q* indicated the presence of heterogeneity in all meta-analyses bar the analysis of home culture maintenance and economic outcomes, and home culture maintenance and social support and contact (see Table 2). I^2 values were above 75% for all meta-analyses except home culture maintenance and economic outcomes ($I^2 = 24.063$), home culture maintenance and healthcare utilisation ($I^2 = 65.017$), and home culture maintenance and social support and contact ($I^2 = 31.425$). I^2 values above 75% suggest the presence of considerable variability in effect sizes due to heterogeneity (Deeks et al., 2019). The high statistically significant levels of heterogeneity in current analyses indicate significant between-study variability suggesting the presence of moderating factors in each meta-analysis.

Publication bias

Three methods were employed to examine the possibility of publication bias. First, visual inspection of funnel plots indicated asymmetry in the relationship between host culture adoption and discrimination, host culture adoption and sexual health, host culture adoption and social support and contact, host culture adoption and transnationalism, home culture maintenance and economic outcomes, and home culture maintenance and social support and contact (Figures available in online supplementary materials: https://tinyurl.com/nm7wfss2). Second, trim and fill estimates indicated studies were missing from the left of the mean for the relationship between host culture adoption and sexual health (two studies), host culture adoption and social support and contact (one study), and home culture maintenance and economic outcomes (three studies). Applying the trim and fill method (Duval & Tweedie, 2000) to correct the asymmetry, indicated a corrected Fischer's *Z* of $Z = 0.089$, 95% CI [− 0.024, 0.199] for host culture adoption and sexual health, a Fischer's *Z* of $Z = 0.095$, 95% CI [0.015, 0.176] for host culture adoption and social support and contact, and a Fischer's *Z* of $Z = -0.193$, 95% CI [− 0.266, − 0.120] for home culture maintenance and economic outcomes. Finally, Egger's regression test (Egger et al., 1997) indicated asymmetry possibly indicative of publication bias for the relationship between host culture adoption and transnationalism (intercept $B_0 = 4.491$, 95% CI [0.394, 8.587], $p = .042$), and home culture maintenance and social support and contact (intercept $B_0 = 2.070$, 95% CI [0.015, 4.124], $p = .049$).

Based on all three analyses, it is likely that publication bias impacts the analysis of host culture adoption and sexual health, host culture adoption and social support and contact, host culture adoption and transnationalism, home culture maintenance and economic outcomes, and home culture maintenance and social support and contact. For these meta-analyses, the reported estimated effects are likely to be over-estimated, as such we recommend caution when interpreting their findings.

Discussion

The aim of this review was to meta-analyse the quantitative research examining the acculturation and adaptation-relevant outcomes of African-born migrants. Additionally, this review aimed to examine the impact that migrant status, acculturation measure, acculturation conceptualisation, and proxy acculturation measure had on these relationships. In total, 123 studies met the inclusion criteria, with 113 studies included in one or more of the 17 meta-analyses that examined acculturative stress, discrimination, economic outcomes, healthcare utilisation, mental health, parenting, physical health, sexual health, social support and contact, and transnational adaptation-relevant outcome domains.

We found that acculturation as host culture adoption has a significant small relationship with better economic outcomes, greater healthcare utilisation, better sexual health, and greater social support and more social contact for African-born migrants. In addition, host culture adoption was found to have no relationship with acculturative stress, discrimination, mental health, parenting, physical

health, and transnationalism. Conversely, home culture maintenance was found to have a significant but small relationship with greater experiences of discrimination, poor economic outcomes, and less social support and contact for African-born migrants. Additionally, home culture maintenance was found to have no relationship with acculturative stress, healthcare utilisation, mental health, and physical health.

The current review synthesised research on the impact of acculturation on adaptation-relevant outcomes, including many that have not been the focus of previous review papers (e.g., acculturative stress) or previous review papers have focused only on one outcome for a specific adaptation-relevant outcome domain (e.g., focused on obesity rather than physical health more broadly). Two adaptation-relevant outcome domains that have been examined by previous meta-analyses that were included were the relationship between host culture adoption and sexual health (Du & Li, 2015), and the relationships between host culture adoption and mental health, and home culture maintenance and mental health (Yoon et al., 2013). Our results were inconsistent with both prior reviews. First, unlike Du and Li (2015), we found host culture adoption to be associated with positive sexual health behaviours. Second, unlike Yoon et al. (2013), we found host culture adoption and home culture maintenance to not be significantly related to mental health. Inconsistencies between the current review and previous reviews may be accounted for by sample differences. For example, both Du and Li (2015) and Yoon et al. (2013) included general migrant samples that were not restricted by country of birth/generation status, while our review focused specifically on African-born migrant samples. However, Du and Li (2015) did identify moderation effects for sample ethnicity, something which has also been found in other meta-analyses (e.g., Lin, 2014).

A point of consistency between our review and previous reviews was the focus on differences in adaptation-relevant outcomes for host culture adoption and home culture maintenance (Lin, 2014; Lui & Zamboanga, 2018a; Sun et al., 2016; Yoon et al., 2013). Like these previous reviews, we identified differences in the relationships between host culture adoption and home culture maintenance with adaptation-relevant outcomes for African-born migrants in terms of direction and significance of relationships. It is important to note that, in this review, meta-analysis of host culture adoption and adaptation-relevant outcomes were conducted for a greater number of domains than could be conducted in relation to home culture maintenance (e.g., inability to examine the relationship between home culture maintenance and sexual health), due to limited use of bidimensional acculturation measures and conceptualisation within the literature. Our inability to examine the same adaptation-relevant outcome domains for home culture maintenance is reflective of the prevalent use of proxy acculturation measures within the literature, as proxy acculturation measures examine acculturation only in terms of host culture adoption by default. Our inability to examine the same adaptation-relevant outcome domains for host culture adoption and home culture maintenance for African-born migrants limits our ability to fully understand the relationships of and differences in adaptation-relevant outcomes in relation to host culture adoption and home culture maintenance.

Consistent with previous meta-analyses, we found few significant moderation effects for migrant status (Yoon et al., 2013), acculturation measure (Kondo et al., 2016; Yoon et al., 2013), acculturation conceptualisation (Kondo et al., 2016; Lui & Zamboanga, 2018b), or proxy acculturation measure suggesting that study effect sizes were similar for involuntary and voluntary migrant samples, proxy and scale acculturation measures, bidimensional and unidimensional acculturation conceptualisations, and language proficiency and duration of residence in host country proxy acculturation measures. Exceptions to this were found for the relationship between host culture adoption and discrimination which was moderated by both acculturation measure and acculturation conceptualisation, the relationship between host culture adoption and economic outcomes which was moderated by migrant status, the relationship between host culture adoption and healthcare utilisation which was moderated by type of healthcare utilised, the relationship between host culture adoption and physical health which was moderated by proxy acculturation measure, the relationship between host culture adoption and social support and contact which was moderated by type of social support and contact, and the relationship between home culture maintenance and mental health which was moderated by type of mental health outcome. While few moderation effects were found, we strongly encourage that future research examines acculturation and adaptation-relevant outcomes separately for involuntary and voluntary migrants when possible and that all future research utilise validated bidimensional acculturation measures instead of inferior proxy measures.

Finally, given the colonial histories of acculturation theory and African migration, the findings of the current review must be considered in light of the continued influence of colonialism within the postcolonial acculturation and migration landscape, including how African migrants are grouped and discussed. African migrants are often viewed by host populations as homogenous groups and are often researched in the same way, including within this review (an issue discussed further below). This practice is rooted within the history of African colonisation during which ethnic and linguistic communities were divided and grouped under arbitrary country boundaries developed without their interests or input (Ndhlovu, 2009), and impacts our ability to accurately examine and capture the diverse cultures and adaptation-relevant outcomes of African migrants. Furthermore, as previously noted, Figueiredo et al. (2018) found that African migrants' acculturation is impacted by their host countries prior colonisation of their home country. As such, this review and its findings are likely influenced by African migrants' subaltern position as there was a propensity for the included studies to examine migration to former colonisers, including colonial settlements (e.g., the U.S. and Australia), highlighting the asymmetry of power between African migrants and the host populations. Moreover, the findings of this review, particularly the identified pattern of home culture maintenance association with negative outcome only, arguably reflect historical and continued attitudes that African migrants do not 'belong' and are perpetually foreign or strangers (De Clerck, 2013; Gatwiri & Anderson, 2021), denying them their right to maintain their home culture and access to a host identity without total assimilation. As such, the contexts of colonialism must be moved to the foreground when considering the acculturation of African migrants.

Limitations and strengths

To our knowledge, this is the first meta-analysis to examine the relationship between acculturation and adaptation-relevant outcomes for African-born migrants only and while this is a strength of this review, some limitations need to be considered when generalising the results.

First, when interpreting and generalising the results of this review, it is critical to note that we identified a risk of publication bias for the analysis of host culture adoption and sexual health, host culture adoption and social support and contact, host culture adoption and transnationalism, home culture maintenance and economic outcomes, and home culture maintenance and social support and contact. While the risk of publication bias must be noted for these analyses, we endeavoured to include all relevant literature both published and unpublished within each analysis, and the methods used to examine publication bias are not without limitations themselves (Rothstein, 2008). As such, these factors must also be considered when interpreting the results.

Second, an English language requirement was utilised when screening record eligibility. Due to author language proficiency, records were required to be available in English to be eligible for inclusion in this review. Within Africa, English is the official language of many countries, reflective of the region's colonial past, however, the use of French is also prevalent within the region due to colonialism, suggesting that our English eligibility requirement may have added unintentional limitations when screening, particularly in terms of limiting intra-African migration (discussed further below). While our language-based eligibility was based on practicality and supported by the use of English as the lingua franca of journal articles (van Weijen, 2012), consideration of the limiting effects this may have had on this review must be acknowledged.

Third, this review focused on the quantitative literature exploring African-born migrants' acculturation and adaptation-relevant outcomes, potentially limiting this review. Qualitative research methods foster nuanced understandings of complex experiences and have been highlighted for their appropriateness when conducting cross-cultural research due to quantitative research methods often reflecting Western-centric ideas, resulting in research that benefits the researcher but not the research participants (Liamputtong, 2010). The benefits of qualitative research methods are of particular relevance to research focused on African-born migrants whose acculturation and adaptation-relevant outcomes are shaped by many contextual factors, including the colonial histories of their host and home countries. As such, we add our voices to the call for more qualitative acculturation research (e.g., Deslandes et al., 2022; Rudmin et al., 2017), strongly encouraging future research and reviews to explore African-born migrants' acculturation and adaptation-relevant outcomes utilising qualitative methods, particularly for areas identified to be of lesser focus within the quantitative literature (e.g., education outcomes, home culture maintenance, etc.).

Fourth, the groupings used for the adaptation-relevant outcomes domains were purposefully generous in order to retain as much data as possible, and as such are a limitation of note. Whilst the generous groupings were beneficial due to the increased literature inclusion, it resulted in the inclusion of a range of different outcomes in the same adaptation-relevant outcome domain (e.g., smoking during pregnancy and maternal attachment were both included in the parenting analysis). Such diversity of outcomes within each domain may offer a possible explanation for the considerable heterogeneity found in the majority of analyses. Our approach, when possible, was to explore the observed heterogeneity by conducting moderation analyses for outcome type which addressed the limitation in some outcome domains. A further limitation regarding outcomes was that these were based on source author categorisations. This was done to preserve the source author's intent, however, some of the studies may have been more accurately placed in different domains (e.g., Liebkind & Jasinskaja-Lahti, 2000a and Segel, 1995 were both included in the acculturative stress domain due to containing measures labelled as acculturative stress but measures more accurately reflected mental health outcomes). The consequence of this approach is likely to have increased heterogeneity but does not straightforwardly undermine and would not change any conclusions we have drawn.

Fifth, the outcome direction coding used within this review followed largely Western-centric ideals of positive outcomes. This coding is most notably present within the physical health adaptation-relevant outcome domain, in which outcomes such as increased BMI were coded negatively reflecting Western body size ideals. In some of the included studies, the source authors indicated that increases in BMI were representative of participants becoming overweight or obese, however, not all source authors provided this information when discussing BMI. As such, it is possible that in some studies, increases in BMI may have erroneously been coded negatively when the increase represented a positive outcome due to participants previously being underweight. Our use of Western-centric ideals when coding outcome directions thus may have impacted the results of this review and must be considered when interpreting the review results.

Finally, this review utilised a continent-wide sample focus on African-born migrants. While the approach of researching African-born migrants as a homogenous ethnic group is common within the literature, such aggregation ignores and minimises the vast cultural diversity within the African continent and individual countries on the African continent. Moderation analysis was planned to examine the moderating effects of the home country/region, however, due to included study samples often consisting of participants from different countries and regions within Africa, the moderation was unable to be conducted. Relatedly, the host country/region was not examined as a moderator. As with home country/regions, the host country/region was intended to be examined through moderation, however, this was unable to be conducted due to a limited range of study countries/regions in each analysis. Previous reviews have identified moderating effects of study region on the relationship between acculturation and adaptation-relevant outcomes (Lui & Zamboanga, 2018a; Steffen et al., 2006; Yoon et al., 2013), suggesting that study country/region may play an important moderating role in the relationship between acculturation and adaptation-relevant outcomes. Given the colonial relationships between many of the included studies' host and home countries, this relationship may play an even more crucial role in understanding African-born migrants' acculturation and adaptation-relevant outcomes. As such host and home country/region may impact the current review results, and we recommend that future research, when possible, examine the acculturation of African-born migrants' using samples from

specific countries or regions rather than continent-wide samples, as well as future meta-analyses, when possible, examine host country moderation.

Implications

This review has implications for acculturation theory and migration policy. First, the identification of differences in adaptation-relevant outcomes for African-born migrants when acculturation was conceptualised as host culture adoption and home culture maintenance serves to highlight the importance of examining acculturation using bidimensional measures. While the review identified few moderating effects when comparing proxy and scale acculturation measures, some caution should be used when interpreting this due to the use of non-validate scale measures created specifically for some included studies, and the overlap between some proxy and scale measures (e.g., language proficiency is a proxy acculturation measure, and the Stephenson Multigroup Acculturation Scale by Stephenson, 2000] includes items assessing language proficiency). Furthermore, a number of adaptation-relevant outcome domains were unable to be examined in relation to home culture maintenance due to limited effects, and even when analyses were conducted, they contained fewer studies than those for host culture adoption. The limited use of bidimensional acculturation measures within the literature focused on African-born migrants limits our understanding of the relationship between acculturation and adaptation-relevant outcomes for African-born migrants, and how these differ as a function of host culture adoption and home culture maintenance. We strongly encourage the use of bidimensional acculturation measures in all further acculturation research.

Second, we identified that within the African-born migrant acculturation literature adaptation-relevant outcomes were not always well measured. As we have already mentioned some measures were not clearly defined by source authors with confusion around outcomes measured due to scale items not matching measure names provided by source authors or source authors inconsistently labelling measure outcomes. Relatedly, measures often examined Western-centric constructs rather than utilising measures specifically designed for use with African-born migrants, potentially failing to meaningfully measure intended constructs within their African-born migrant samples. Analysis within the mental health adaptation-relevant outcome domain highlighted the limited use of culturally specific and appropriate outcome measures, as only one study, Nsamenang (2014), utilised a culturally specific measure of mental health. It is vital that researchers clearly define and label the measures they use, and that future research utilises more nuanced and culturally meaningful conceptualisations and measures designed for or modified for use with African-born migrants.

Third, there is a dearth of literature focused on African-born migrants' acculturation in countries other than the U.S. In 2019, 53% of African-born migrants globally resided in Africa compared to only 26% in Europe and 8% in North America (Hovy et al., 2020). Despite the high level of intra-Africa migration, only one study included in this review, Woldeghebriel (2015), examined acculturation within an African host country. Our finding regarding the overrepresentation of U.S.-based research is reflective of recent review findings which identified that over half of all acculturation publications since 1987 have been conducted by authors based within the U.S. (Ahn & Lee, 2023). Furthermore, no African countries were identified within the top 19 acculturation publication generating countries within the same period, despite increased research focus on African immigrants (Ahn & Lee, 2023). As such, it is imperative that further research is undertaken within the African region examining the acculturation and adaptation-relevant outcomes of African-born migrants, in addition to greater research undertakings in regions other than the U.S. Further research will enable a greater understanding of the relationship between acculturation and adaptation-relevant outcomes for African-born migrants, and the potential impact factors such as host country, host and home cultural similarity, and proximity of host and home country have on this relationship. This information will be beneficial when supporting and developing policies focused on supporting African-born migrants' adjustment within their host country.

Finally, the results of this review may be useful for shaping and supporting migration policies. Overall, home culture maintenance was found to be significantly associated with greater experiences of discrimination, poor economic outcomes, and less social support and contact, and whilst the results could be perceived as support for assimilationist migration policies, we would caution against such beliefs. Instead, these findings serve to highlight the importance of creating environments and policies within the host country that are conducive to both host culture adoption and home cultural maintenance rather than forcing migrants to adopt the host culture (e.g., greater experiences of discrimination and less social support and contact may have been experienced due to host country migration policies creating an environment that is intolerant of home culture maintenance). Furthermore, this stance is supported by meta-analyses which have identified that for various migrant groups, the adoption of host culture and maintenance of home culture, also known as integration or biculturalism, is associated with better mental health outcomes (Yoon et al., 2013), and better psychological and sociocultural adjustment (Nguyen & Benet-Martínez, 2012). Subsequently, we encourage the use of migration policies that focus on creating an environment that supports the agency of migrants in determining how they acculturate in the host country in terms of both their host culture adoption and home culture maintenance to ensure they have the best adjustment outcomes possible.

Conclusion

In conclusion, the current review provides a meta-analysis of the acculturation and adaptation-relevant literature focused on African-born migrants. We identified differences in the relationships of acculturation and adaptation-relevant outcomes when acculturation was conceptualised as host culture adoption and when acculturation was conceptualised as home culture maintenance. We found adoption of host culture to be associated with better economic outcomes, greater healthcare utilisation, better sexual health, and greater social support and contact. Conversely, we found maintenance of home culture to be associated with greater experiences of discrimination, poor economic outcomes, and less social support and contact. However, we caution against interpreting these findings as a message that African-born migrants should be encouraged not to maintain their home culture. Indeed, these findings are more

likely to be reflective of additional host country-based moderating factors and unfair biases, shaped by colonialism, that exist in the host culture. Furthermore, largely no moderating effects were found for migrant status, acculturation measure, acculturation conceptualisation, or proxy acculturation measure.

The findings of this review help to further our understanding of the relationship between acculturation and adaptation-relevant outcomes among African-born migrants within a variety of adaptation-relevant outcome domains. Implications have been identified for further research examining acculturation with African-born migrant samples, such as the need for more research to be conducted outside of the U.S. and the need for more qualitative research focused on lesser researched adaptation-relevant outcome domains (e.g., education), as well as acculturation research more broadly (e.g., need for more research to utilise bidimensional acculturation measures). Additionally, the results serve to highlight the importance of migration policies allowing migrant populations freedom in how they acculturate in terms of both host culture adoption and home culture maintenance to ensure the best adaptation outcomes possible. We hope the results of the review will be used to better inform migrant policy and develop appropriate supports for African-born migrants during their settlement and adjustment within their host country.

Declaration of Competing Interest

The authors declare no known conflicting or competing interests.

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*indicates studies were included in the meta-analysis.

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