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The association between cultural and linguistic maintenance and mental health in migrant adolescents: A scoping review

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Abstract

Background: Although previous reviews have examined the relationship between heritage cultural maintenance and mental health outcomes among migrants, none have focussed specifically on migrant adolescents (i.e. those aged 10–24 years).
Aims: To examine (1) the focus, scope and nature of quantitative empirical research investigating heritage cultural maintenance – including linguistic maintenance – and mental health outcomes among migrant adolescents globally and (2) the association between cultural and linguistic maintenance and migrant adolescents' mental health outcomes.
Method: Following the Arksey and O'Malley methodological framework for scoping reviews, we searched 11 electronic health, medical, social science and language databases from database inception until the search date (6 June 2023), using English search terms. We extracted data from included empirical studies using a template with pre-defined data items, which we present in comprehensive overviews and narrative summaries.
Results: Thirty-four studies met our inclusion criteria. We identified considerable heterogeneity between studies regarding their research foci, methodologies, terminologies, outcomes and findings regarding the association between cultural maintenance and mental health outcomes. We specifically identified mixed findings regarding the latter, which cannot be transferred or generalised.
Conclusions: The heterogenous nature of methodologies and outcome measures in the published literature, in addition to a scarcity of research from low- and middle-income countries, have hindered meaningful progress in this field. Efforts to address these issues, and to take adolescent context into consideration, will facilitate a more accurate understanding of how cultural maintenance relates to migrant adolescent mental health, and inform future interventions to improve mental health outcomes.

Keywords

Adolescent, culture, child and adolescent mental health, immigrant, migrants

Introduction

In 2022, one in every 30 people worldwide was reported to be a migrant (also known as *international migrant*, or *immigrant*) (McAuliffe & Triandafyllidou, 2021), defined by the United Nations (2024) as people who live in a country different to the one in which they were born. This usually leads to differences between a person's heritage (also known as *native*) and host (also known as *dominant*, or *mainstream*) cultures (Berry, 2005).

Studies investigating mental health outcomes in migrants have produced inconsistent findings. For example, while some studies have identified an 'immigrant paradox', in which migrant groups show similar or lower levels of adverse mental health outcomes than non-migrants (e.g. Vazsonyi et al., 2017), most other studies have identified increased levels of adverse mental health

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outcomes – including depression and suicidal ideation – among first- and second-generation migrants (e.g. Hovey & King, 1996). This highlights the need to better understand migrant vulnerabilities, to improve mental health support.

Research on acculturation (defined as 'the dual process of cultural and psychological change that takes place as a result of contact between two or more cultural groups and their individual members' [Berry, 2005, p. 698]) has investigated the impact on migrants of interacting with other cultures, with a focus on two key elements: (a) *cultural maintenance* – the subjective importance someone places on their heritage cultural identity and the continuation of related practices; and (b) *contact and participation* – the degree to which individuals choose to interact with the host culture or to remain within their heritage cultural groups (Berry & Sam, 1997). Based on these two aspects, Berry and Sam (1997) identified four acculturation strategies: (1) *integration* (heritage culture is maintained while seeking interactions with other groups); (2) *assimilation* (heritage culture is not maintained while seeking interactions with other groups); (3) *separation* (heritage culture is maintained while avoiding interactions with other groups); and (4) *marginalisation* (heritage culture appears difficult to maintain, and there seems to be little interest in interacting with other groups).

Numerous reviews have examined the relationship between acculturation strategies and mental health (i.e. Balidemaj & Small, 2019; A.-M. D. Nguyen & Benet-Martínez, 2013; Wyatt et al., 2015; Yoon et al., 2013). However, even though age has been identified as a key component of the relationship between acculturation and mental health (Yoon et al., 2013), no review of the literature has yet examined how heritage cultural maintenance is related to the mental health specifically of migrant adolescents (i.e. those aged 10–24 years [Sawyer et al., 2018]).

In this scoping review we aimed to answer the following two research questions:

(1) What is the focus, scope and nature of quantitative empirical research investigating heritage cultural maintenance and/or language maintenance and mental health outcomes in adolescents with an international migrant background worldwide?
(2) To what degree is cultural and linguistic maintenance associated with migrant adolescents' mental health outcomes?

Methods

We followed the scoping review methodology outlined by the Joanna Briggs Institute (Peters et al., 2020), which is based on Levac et al.'s (2010) elaborations to the Arksey and O'Malley (2005) framework. Reporting adheres to relevant sections of the 'Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews' (PRISMA-ScR) (Tricco et al., 2018). The protocol outlining this scoping review's methodology was published in 2023 (Hasnain et al., 2023).

Eligibility criteria

Our inclusion and exclusion criteria are listed below.

Inclusion criteria

- Published, peer-reviewed empirical studies.
- Any language (however, the search was only conducted in English, which indirectly excluded all studies without an English title, abstract or keywords).
- Adolescent study participants between 10 and 24 years.
- Studies focussed on mental health outcomes, symptom severity and diagnosis.
- Studies measuring mental health outcomes, specifically depression, anxiety, self-harm, suicide, substance misuse and schizophrenia.
- Studies measuring any nondominant heritage culture or language.

Exclusion criteria

- Qualitative studies, literature reviews, book chapters, dissertations, conference papers, conference abstracts and editorials.
- Participants younger than 10 years, or those who are 25 years or older.
- Studies focussed on help-seeking, or interventions in mental health dimension.
- Studies measuring trauma, self-esteem, life satisfaction or well-being.
- Studies measuring the uptake of host language or culture without considering heritage language and cultural maintenance; studies measuring ethnic identity.

No restrictions were placed on publication date or study location. Despite including search terms relating to studies of Indigenous adolescents, the post-hoc decision was made to write a separate, stand-alone review focussing specifically on these studies. Literature reviews were also excluded. However, we screened relevant review reference lists to identify additional studies.

Information sources

We searched the following 11 electronic databases from database inception on 6 June 2023, with email alerts were set-up for each until 31 December 2023: APA PsycArticles Full Text (coverage from 1894); EMBASE Classic + Embase (from 1947); Ovid MEDLINE and Epub Ahead of Print, In-Process, In-Data-Review &

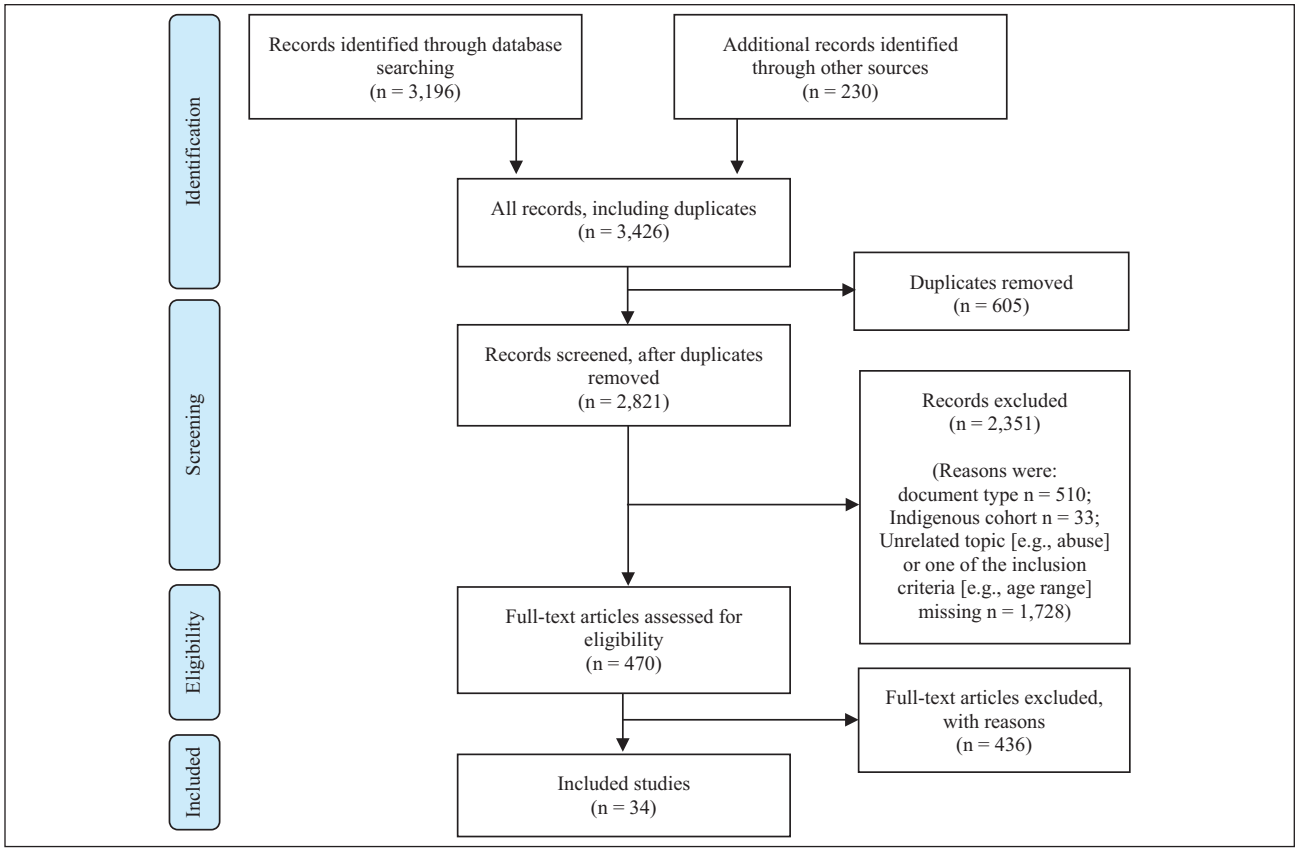

Figure 1. Study selection, following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) process (Moher et al., 2009).

Other Non-Indexed Citations and Daily (from 1946); Ovid MEDLINE all (from 1946); APA PsycInfo (from 1806); University of Melbourne full text journals; Science Citation Index Expanded (from 1900); Social Sciences Citation Index (from 1900); Arts & Humanities Citation Index (from 1975); Scopus (from 1970); and Linguistics and Language Behavior Abstracts (LLBA) (from 1973). Further, we screened relevant reference lists to locate studies that were not identified during the electronic search.

Search

The search strategy (see Appendix) was adapted to the specific requirements of each database (see an example in the Appendix [A1]).

Study selection and data charting

The first author (AH) conducted the search, and then exported, consolidated and screened study abstracts and titles, resulting from the searches, in a Microsoft Excel spreadsheet. The second author (JH) supported AH in applying the inclusion and exclusion criteria, as well as recording reasons for each outcome. AH then downloaded the full text of studies potentially meeting all inclusion criteria into the citation management software Zotero and read each study in full. JH and the third author (RB) reviewed at least 20% of excluded and included studies at each milestone – when two researchers did not agree, the third made the decision. AH extracted data from included studies using a predefined extraction template.

Results

Study selection

We identified 3,426 records, of which 34 met our inclusion criteria (see Figure 1).

Summary of results

The characteristics of included studies are listed in Table 1.

Scope, nature and focus

The 34 included studies had a combined total of 15,914 participants, with a mean sample size of 468 and a median sample size of 265. Across included studies which stated

Table 1. Characteristics of included studies.

Author(s), year	Location of research	Number of timepoints; time span if longitudinal	*n* (final sample) youth	Age range[a]	Mean age	*SD* age	Heritage culture other than host culture
Birman and Taylor-Ritzler(2007)	US	1	226	11.25–18.67	14.73	1.98	Russian
Birman et al.(2002)	US, North-East (Jewish suburban community)	1	162		16[b]		Soviet Jewish
Chang et al.(2015)	US	1	225	12–18	13.97	2.03	Korean
Choi et al.(2015)	US	2; 1 year	220	11–14	12.97	1.00	Korean
Choi et al.(2017)	US	2; 1 year	256	11–14	13	1.00	Korean
Crane et al.(2005)	US & Canada	1	41	12–19	15.36	1.75	Chinese
Cupito et al.(2015)	US, North Carolina ('emerging Latino community')	1	176	Grade 7–10	14.00		Latin American (Mexican, Latino mixed [parents from different countries of origin], Nicaraguan, Dominican, Salvadorian, Guatemalan, Colombian, Costa Rican, Cuban).
Guerrero et al.(2006)	US, Hawaii	1	216		15.86	1.22	Filipino
Guler and Berman(2019)	US	1	33	11–17	14.61	1.48	Cuban, Iraqi, Jordanian, Haitian, Columbian, Venezuelan refugees
Hwang et al.(2010)	US	1	105	14–18			Chinese
Kho et al.(2023)	US, Suburban Atlanta, Georgia ('emerging immigrant community')	6; 30 months	547	Grade 6–8 (at T1)	12.80	1.03	Latinx
Kim et al.(2009)	US	1	399	12–15	13	0.73	Chinese
Kim et al.(2013)	US	2; ~4 years	379	12–15	13.04	0.73	Chinese
Liu et al.(2009)	US	1	444		13	0.73	Chinese
Manzo et al.(2022)	US, Texas	1	273	18–25	19.33	1.54	Mexican
Miconi et al.(2019)	Italy	1	91	11–13	12.38	0.74	Chinese
H. H. Nguyen et al.(1999)	US, Michigan, Lansing	1	182	10–23	15	2.50	Vietnamese
Oppedal et al.(2004)	Norway	2; 1 year	160		~13[c]		Mixed
Oppedal et al.(2005)	Norway, Oslo	1	1,275	Grade 10	15.9[d]	0.41	Mixed
Rumbaut(1994)	US, San Diego & Miami (metropolitan areas)	1	5,127	12–17	14.2		Mexican, Filipino, Vietnamese, Cambodian, Laotian, Cuban, Haitian, Jamaican, Nicaraguan, Colombian and other Latin American and Asian students

(Continued)

Table 1. (Continued)

Author(s), year	Location of research	Number of timepoints; time span if longitudinal	*n* (final sample) youth	Age range[a]	Mean age	*SD* age	Heritage culture other than host culture
Safa et al.(2019)	US, Phoenix (metropolitan area)	1	749		15.84–17.38		Mexican
Sam (2000)	Norway	1	506		15.34	1.67	Vietnamese, Pakistani, Turkish and Chilean
Schwartz et al.(2015)	US, Los Angeles and Miami	5; 2.5 years	302	14–17	14.51	0.88	Hispanic
Shin et al.(2016)	US	1	166	18–25	21.76	2.20	Asian
Smokowski et al.(2009)	US, central North Carolina and around Phoenix, Arizona	3	288		15.00		Latino
Stein and Polo(2014)	US, Los Angeles County	1	159	Grade 6–8	~13.17		Mexican
Telzer et al.(2016)	US, Los Angeles (metropolitan area)	1	428	Grade 9–10	15.02	0.83	Mexican
Umaña-Taylor and Updegraff(2007)	US	1	274		16.3	0.78	Latin American
Weaver and Kim(2008)	US, Northern California	2; 4 years	451	12–15	13	0.73	Chinese
Y. J. Wong and Maffini(2011)	US	2; ~1 year	959		16.43[e]	1.52	Asian
S. L. Wong(2021)	US, San Francisco	1	144	14–19	15.7	1.35	Asian (Southeast Asian: Mien, Vietnamese, Cambodian, Laotian; Chinese)
Yeh(2003)	US	1	319	12–18	15.88	1.77	Chinese, Japanese, Korean
Zayas et al. (2009)	US, New York City	1	140	11–19	15.21	1.93	Latin American
Zeiders et al.(2013)	US, Southwest (metropolitan area)	4; 8 years	492	Grade 7	13.02	0.49	Mexican

[a]Where no age range was provided, the mean age and *SD* value were reviewed to determine if the age-range criteria were met.
[b]High school (Grades 9–12).
[c]At wave one, study participants had just started 'junior high school'; at wave two (a year later), participants were in eighth and ninth grade – 'The students were around 13 years old at the first screening and 14 years at the second' (Oppedal et al., 2004, p. 485).
[d]These data are for a wider cohort (all 10th graders), age information for the final included study sample was not provided.
[e]For longitudinal studies, the baseline value was used where provided, as not all studies provided data on follow-up data collection points. However, one study (Y. J. Wong & Maffini, 2011) only provided age data for the second wave, which was included in the mean age calculation.

the samples' mean age, the average mean age was 14.8 years. Thirty studies (88%) were conducted in the United States (US) (with one of these also including Canada), three studies (9%) were conducted in Norway, and one study (3%) was conducted in Italy. The 30 studies conducted in the US predominantly examined outcomes in adolescents with Asian (44.1%), and Latin American (32.4%) backgrounds.

Though all included studies measured cultural, or linguistic and mental health outcomes, they were heterogeneous in their research focus. Of those studies which included additional research foci, most (n = 20; 59%) looked at family functioning, specifically at how conflict or support relate to adolescent outcomes and how parent-adolescent relationships mediate the association between acculturation and adolescent mental health outcomes (e.g. Birman & Taylor-Ritzler, 2007; Choi et al., 2015, 2017; Crane et al., 2005; Guerrero et al., 2006; Kim et al., 2009, 2013; Miconi et al., 2019; Rumbaut, 1994; Schwartz et al., 2015; Shin et al., 2016; Weaver & Kim, 2008; Zeiders et al., 2013). Four studies (12%) focussed on mother-adolescent relationships (Liu et al., 2009; Manzo et al., 2022; Zayas et al., 2009), with one specifically focussing on acculturative family distancing (Hwang et al., 2010). Two studies investigated the 'acculturation gap distress model' with primary caregivers (Stein & Polo, 2014; Telzer et al., 2016), which suggests that children acculturate faster than caregivers, leading to the potential maladjustment of both. Beyond issues of family functioning, studies also tested theoretical concept validity (Sam, 2000), looked at social support (Oppedal et al., 2004), life domains (Birman et al., 2002) and interpersonal relationships in inner-city cohorts (S. L. Wong, 2021).

Mental health outcomes, scales and frameworks. The heterogeneity of included studies was also evident in the variety of mental health outcomes measured (see Table 2) and scales used to measure mental health outcomes. However, 14 studies (41%) assessed depressive symptoms employing the 'Center for Epidemiologic Studies Depression Scale' by Radloff (1977).

Cultural and linguistic terminology, outcomes and scales

Terminology. Studies used different terms to describe the maintenance of heritage culture: 23.5% used *enculturation* (to the heritage culture) to distinguish it from *acculturation* (to the host culture) (Choi et al., 2017; Hwang et al., 2010; Kho et al., 2023; Manzo et al., 2022; Miconi et al., 2019; Shin et al., 2016; Telzer et al., 2016; Umaña-Taylor & Updegraff, 2007). However, some studies used *acculturation* to refer to the acquisition of heritage and host cultures (e.g. Birman et al., 2002; Birman & Taylor-Ritzler, 2007; Crane et al., 2005; Guler & Berman, 2019; Kim et al., 2009; Liu et al., 2009; Miconi et al., 2019). Furthermore, some studies used the term *heritage culture* (e.g. Kim et al., 2009; Miconi et al., 2019), while others used *native culture* (Birman et al., 2002; Birman & Taylor-Ritzler, 2007), or other terminology to refer to related concepts (e.g. Chang et al., 2015; H. H. Nguyen et al., 1999; Rumbaut, 1994; Safa et al., 2019; Smokowski et al., 2009), or a mixture of the above terms (e.g. Manzo et al., 2022; Schwartz et al., 2015; Telzer et al., 2016; Umaña-Taylor & Updegraff, 2007; S. L. Wong, 2021).

Scales. Studies used different, often modified scales to measure cultural orientations. Four studies (Birman et al., 2002; Birman & Taylor-Ritzler, 2007; Choi et al., 2015, 2017) used Birman and Trickett's LIB scale (2001), measuring language, identity and behaviour; four (Hwang et al., 2010; Kim et al., 2009, 2013; Weaver & Kim, 2008) used the Vancouver Index of Acculturation (Ryder et al., 2000), measuring behaviour, participation, enjoyment and social affiliation; three (Kho et al., 2023; Manzo et al., 2022; Zeiders et al., 2013) used the Mexican American Values Scale (Knight et al., 2010).

Outcome measures. Studies derived adolescents' cultural orientation from measures displayed in Table 3. Included studies predominantly appeared to assess host and heritage cultural orientation independently (*bi-dimensional*) on two separate scales, while relying on several cultural domains, with language, for example, just used as one indicator amongst others in assessing cultural orientation.

The association of cultural maintenance and mental health outcomes

Findings in response to our second question are collated in the Appendix (A2), as well as contextualised and discussed in the following section.

Discussion

This is the first scoping review to investigate the association between heritage cultural and linguistic maintenance and mental health outcomes among migrant adolescents.

Focus, scope and nature

Locations outside of North America were under-researched, with 88% of included studies conducted in the US. This finding is perhaps to be expected when it is considered that the US has – for more than 50 years – been the top destination globally for recorded migration, with more than 51 million documented international migrants residing in the US in 2022 (more than three times as many as Germany in second place, with 16 million international migrants) (McAuliffe & Triandafyllidou, 2021). However, despite the considerable imbalance in the number of

Table 2. Mental health measures by study.

Author(s), year	Overall psychological symptom pattern	'Mental health'	Psychological distress	'Psychiatric problems'	Psychosomatic symptoms	Depressive symptoms	Anxiety	Identity distress	Internalising symptoms	Externalising symptoms	Suicide	Non-suicidal self-injury (NSSI)
Birman and Taylor-Ritzler(2007)						Y	Y					
Birman et al.(2002)						Y*	Y*					
Chang et al.(2015)						Y						
Choi et al.(2015)						Y						
Choi et al.(2017)						Y						
Crane et al.(2005)						Y						
Cupito et al.(2015)						Y						
Guerrero et al.(2006)						Y	Y					
Guler and Berman(2019)								Y	Y			
Hwang et al.(2010)						Y						
Kho et al.(2023)						Y	Y		Y	Y		
Kim et al.(2009)						Y						
Kim et al.(2013)						Y						
Liu et al.(2009)						Y						
Manzo et al.(2022)						Y					Y	Y
Miconi et al.(2019)										Y		
H. H. Nguyen et al.(1999)	Y					Y						
Oppedal et al.(2004)		Y										
Oppedal et al.(2005)				Y								
Rumbaut(1994)						Y						
Safa et al.(2019)		Y										
Sam(2000)		Y			Y	Y	Y					
Schwartz et al.(2015)						Y						
Shin et al.(2016)			Y									
Smokowski et al.(2009)						Y	Y		Y			
Stein and Polo(2014)						Y						
Telzer et al.(2016)									Y	Y		
Umaña-Taylor and Updegraff(2007)						Y						
Weaver and Kim(2008)						Y						
Y. J. Wong and Maffini(2011)						Y					Y	
S. L. Wong(2021)						Y						
Yeh(2003)			Y			Y	Y					
Zayas et al. (2009)											~Y	
Zeiders et al.(2013)						Y						
Totals (n = 34)	1	3	2	1	1	26	7	1	4	3	3	1
Percentage (based on total number of studies = 34)	2.9	8.8	5.9	2.9	2.9	76.5	20.6	2.9	11.8	8.8	8.8	2.9

*Birman et al. (2002) states that they used a modified version of 'The Hopkins Symptom Checklist (HSC)' to assess 'psychological adaptation', without further clarifying which mental health measures were assessed. Therefore, we derived 'depressive symptoms', and 'anxiety', which are measured in the HSC, were assessed.

Table 3. Heritage cultural and linguistic maintenance measures by study.

Author(s), year	Language, *language preference*	Identity, *(ethnic) identity crisis*	Behaviour or participation or practice	Cultural competence or acculturation/ enculturation measure or orientation	Bicultural involvement or competence	(family) values, *familism*, affiliative obedience	Social affiliation or including 'friendship choice'	Media use	Generational/ geographic history, e.g. place of birth	Parent ethnic identity and pride	Parent concerns about race-ethnic status	Parent and youth report cultural socialisation	Host culture preference scale	Ethnic identity pride or attitude about ethnic group
Birman and Taylor-Ritzler(2007)	Y	Y	Y											
Birman et al. (2002)	Y	Y	Y											
Chang et al. (2015)														Y
Choi et al. (2015)	Y	Y	Y							Y	Y	Y		
Choi et al. (2017)	Y	Y	Y											
Crane et al. (2005)	*Y*	Y	Y				Y		Y					Y
Cupito et al. (2015)						*Y*								
Guerrero et al. (2006)	~Y													
Guler and Berman2019)	Y	Y		Y										
Hwang et al. (2010)	Y			Y										
Kho et al. (2023)						*Y*								
Kim et al. (2009)				Y										
Kim et al. (2013)				Y										
Liu et al. (2009)	Y													
Manzo et al. (2022)						Y								
Miconi et al. (2019)	Y						Y	Y						
H. H. Nguyen et al. (1999)	Y			Y		Y								
Oppedal et al. (2004)		*Y*		Y										
Oppedal et al. (2005)		*Y*		Y		Y								
Rumbaut (1994)	Y												Y	
Safa et al. (2019)					Y									
Sam (2000)	Y	Y		Y		Y								
Schwartz et al. (2015)	Y	Y	Y		Y	Y								
Shin et al. (2016)				Y		Y								
Smokowski et al. (2009)					Y	Y							~Y*	
Stein and Polo (2014)						Y								
Telzer et al. (2016)	Y		Y			Y								
Umaña-Taylor and Updegraff (2007)	Y	Y		Y										
Weaver and Kim (2008)	Y			Y										
Y. J. Wong and Maffini (2011)	Y								Y					
S. L. Wong (2021)				Y										
Yeh (2003)	Y	Y	Y			Y	Y		Y					
Zayas et al. (2009)	Y					Y		Y						
Zeiders et al. (2013)						Y								
Totals (n = 34)	**20**	**12**	**8**	**12**	**3**	**14**	**3**	**2**	**3**	**1**	**1**	**1**	**2**	**2**
Percentage (based on total number of studies = 34)	**58.8**	**35.3**	**23.5**	**35.3**	**8.8**	**41.2**	**8.8**	**5.9**	**8.8**	**2.9**	**2.9**	**2.9**	**5.9**	**5.9**

*(via bicultural involvement questionnaire).

international migrants in the US when compared to other countries, it was surprising not to identify more studies from outside the US. This may reflect the relative availability of resources between countries, as well as differing research priorities in different regions.

Almost all included studies (94%) have been published since 2000. This may reflect an increase in the prevalence of mental illness since this time (Bor et al., 2014), as well as the changing public perception of mental illness in recent decades, in response to large-scale mental health stigma reduction campaigns (Evans-Lacko et al., 2014; Henderson & Thornicroft, 2009). A systematic review of longitudinal cohort studies examining adolescent mental health trends before and after the year 2000 reported that, whilst the burden of externalising problems appeared to be stable over this period, most studies reported an increase in internalising problems in adolescent girls (but not boys) (Bor et al., 2014). The temporal spread of included studies also coincides with Berry and colleagues' acculturation taxonomy, which was developed at the end of the 20th century. With an initial focus on adult migrants, this gave rise to studies looking at how cultural maintenance relates to adolescents' mental health outcomes.

We identified considerable heterogeneity between study designs, sample sizes, age ranges, research foci, mental health and cultural maintenance outcome measures, which hinders the synthesis of findings. Our findings confirm the inconsistent use of terminology when referring to 'cultural maintenance', which has been previously identified (Kirshner & Meng, 2012, p. 1149). Some studies also failed to provide sufficient detail on the age range investigated (e.g. Birman et al., 2002; Y. J. Wong & Maffini, 2011).

With regards to cultural scales, the few studies which assessed host and heritage cultural orientation as part of the same scale, or assigned cultural orientation to adolescents using one domain (see Table 3), appeared less robust than other included studies, which independently assessed host and heritage orientation on separate scales, and used multiple domains to assign cultural orientation, respectively.

Framework

A number of included studies (e.g. Weaver & Kim, 2008; Yeh, 2003) found no evidence of Berry and Sam's (1997) four acculturation strategies, and overall study findings did not support the claim that '*integration* usually leads to better outcomes' (Berry, 1997, p. 24; cf. Rudmin, 2003). Instead, the heterogeneity of findings regarding the relationship of cultural maintenance and mental health outcomes supports the applicability of a developmental, ecological framework in which context is a primary consideration of analysis.

Despite issues of validity and practicability requiring further review, Pérez et al.'s (2021) ecological framework may provide a useful starting point to interpret findings [with some additions]:

(1) Global context (acknowledging '*push-and-pull conditions*' affecting migration; 'resettlement stress'; the effect of the climate crisis; post-traumatic stress disorder; 'cultural stress' which is comprised of discrimination, the context of reception and bicultural stress; cultural globalisation and remote acculturation (e.g. via mobile phones); '*transnational ideologies'*.

(2) Macrosystem context (acknowledges national and immigration policies; resettlement programmes; attitudes towards migrants [e.g. mass media, social services]).

(3) Microsystem context (acknowledges the neighbourhood, schools, families [peers, religious communities and health services]).

(4) Community cultural wealth (acknowledges 'migration capital', aspirational, linguistic, social, resistant, familial and navigational dimensions).

(5) Cultural adaptation (acknowledges cultural preservation and cultural restoration).

(6) Individual context (acknowledges foreign status, migrant farmworker status, undocumented status – (which may be Mexican-adolescent focussed in Pérez' framework; but also sex, age, health, as well as existing protective factors and practices such as spirituality and religion [as identified by Wyatt et al., 2015]).

Heritage linguistic maintenance

Findings in relation to our second question about the association between cultural maintenance and mental health outcomes were highly heterogeneous and, at times, contradictory. A small number of studies report a direct association between heritage language maintenance and mental health outcomes (Guerrero et al., 2006; Liu et al., 2009). Other studies report an indirect relationship, specifically regarding heritage language proficiency being positively related to improved perceptions of the father (as part of the *microsystem context*), which in turn was associated with positive mental health outcomes amongst Asian-heritage cohorts in the US (Choi et al., 2017; Weaver & Kim, 2008). While some studies found bilingualism (i.e. proficiency in both heritage and host language) to be positively related to positive mental health outcomes (Choi et al., 2015, 2017; Liu et al., 2009), others only found this relationship for host – but not heritage – language proficiency (Rumbaut, 1994). In contrast, a number of studies, which all looked at cohorts with mixed heritage cultures, found no association between host or heritage language maintenance and mental health outcomes (Birman et al., 2002; i.e. Guler & Berman, 2019; Hwang et al., 2010).

Heritage cultural maintenance

Heritage cultural maintenance more broadly, was found to be protective for some adolescents (Smokowski et al., 2009; Telzer et al., 2016), especially refugees (Birman et al., 2002; Guler & Berman, 2019). Amongst Latin American cohorts, heritage cultural value maintenance, specifically, was found to be protective (Cupito et al., 2015; Kho et al., 2023; Zeiders et al., 2013). Amongst Asian cohorts, some studies found the association between heritage cultural maintenance and mental health to be mediated by improved adolescent-parent relationships (Chang et al., 2015; Shin et al., 2016), while others report it to be mediated through the association between discrimination and mental health outcomes (Umaña-Taylor & Updegraff, 2007). In contrast, other studies found host acculturation, but not heritage cultural maintenance, to be associated with reduced distress (e.g. Birman & Taylor-Ritzler, 2007; Oppedal et al., 2005; Sam, 2000; Yeh, 2003).

Biculturalism was associated with positive mental health outcomes in some studies. However, other studies did not find such a relationship, refuting the notion of there being an 'ideal acculturation strategy' for migrant adolescents, as these adolescents in the researched contexts were, for example, found to be pressured into exclusively orientating towards one culture in specific settings. Some studies report that when niches, such as school and community, do not appreciate an adolescent's heritage culture, bicultural or heritage encultured, adolescents can suffer from poor mental health outcomes (Sam, 2000; S. L. Wong, 2021). Other studies which similarly found adolescents experiencing acculturative stress noted more depressive symptoms and suicidal ideation, possibly as they were 'caught between cultures' (Hovey & King, 1996).

Contextualising our findings

The findings of this review diverge from those of reviews investigating the association between cultural maintenance and mental health outcomes conducted amongst adult migrant cohorts, which found biculturalism to be generally associated with better psychological outcomes (e.g. Balidemaj & Small, 2019; A.-M. D. Nguyen & Benet-Martínez, 2013). Our findings promote a more nuanced understanding of this association, which mirrors Titzmann and Lee's (2018) dynamic, development-focussed suggestions for acculturation research. It appears that adolescent's cultural orientation must be understood as a dynamic, context-dependent, two-way process, which some included studies have attempted to capture (Birman et al., 2002; Chang et al., 2015; Guler & Berman, 2019; Kho et al., 2023; Miconi et al., 2019; Oppedal et al., 2004, 2005; Safa et al., 2019; Smokowski et al., 2009; Umaña-Taylor & Updegraff, 2007; Yeh, 2003). This is also in accordance with Delaruelle et al.'s (2021) findings, which also highlight the need of interventions to be 'ecologically based'.

The central role family (*microsystem*) plays in adolescents' acculturation and mental health was considered and investigated by 59% of included studies, with some exploring the 'acculturation gap' between parents and adolescents. Most of these studies report a host acculturation gap with parents to be associated with depressive symptoms (Crane et al., 2005; Hwang et al., 2010; Shin et al., 2016; Weaver & Kim, 2008). Other studies found heritage enculturation only to be related to less distress if positive family relationships are in place (Birman & Taylor-Ritzler, 2007; Choi et al., 2017; Oppedal et al., 2004). Previously mentioned studies also identified heritage language proficiency to be indirectly related to improved mental health outcomes, through improved parental (especially paternal) relationships (Choi et al., 2017; Rumbaut, 1994; Weaver & Kim, 2008). To an extent, these studies confirm a qualitative review's finding that heritage cultural disruption and family conflict were linked to migrant adolescent depression (Rodriguez et al., 2024). A small number of included studies refuted the notion of a relationship between family and adolescent mental health outcomes (e.g. H. H. Nguyen et al., 1999, p. 25). Despite some contradictions, these findings highlight the important role family support as part of the *microsystem* appears to have on adolescent mental health (see also Berry, 2022; e.g. Chang et al., 2015; Guerrero et al., 2006; Rumbaut, 1994).

At the *macrosystem* level, the findings of the only study looking at Chinese-heritage adolescents outside of North America – in Italy (i.e. Miconi et al., 2019) – do not seem to align with those of a number of Chinese-heritage US studies. Miconi et al. (2019) found that adolescents who are more host acculturated than their parents are least likely to externalise problems, while US studies all found acculturation gaps with parents to be negatively related to adolescent mental health (Crane et al., 2005; Hwang et al., 2010; Kim et al., 2009, 2013; Weaver & Kim, 2008). This may exemplify how adolescents' *macrosystem*, and different patterns of heritage culture perception in the US and in Italy, may affect the usefulness of different cultural orientations. However, this hypothesis requires further investigation.

Implications and future directions

This review provides several important implications for future research.

Firstly, we identified a dearth of research conducted in locations outside of North America, in particular low- and middle-income countries. Further, there is a need to standardise terminology (e.g. to distinguish *enculturation* from *acculturation*), the definition of adolescence (Sawyer et al., 2018), as well as cultural scales and mental health measures used.

There appears to be value in assessing adolescents' cultural orientation and mental health outcomes dynamically,

using, for example, longitudinal study designs and considering developmental aspects (i.e. puberty) of adolescence (e.g. age of migration, outlined by Titzmann & Lee, 2018). To appropriately measure cultural orientation, heritage language should be measured in conjunction with other (multiple) cultural maintenance domains using two independent dimensions (Rudmin, 2003).

Furthermore, family, and other ecological factors, appear to play an important role, possibly providing an explanation for between-location, group and gender differences identified between study findings. For an improved interpretation of what may be related to adolescent mental health outcomes, we highlighted the value of utilising an ecological framework which takes the contexts adolescents navigate into consideration. This scoping review has shown that there could be value in approaching the association between cultural maintenance and mental health outcomes by first gaining a better understanding of the cultural expectations, attitudes and demands adolescent cohorts should adhere to, to succeed in specific ecological contexts. Accordingly, what may be a protective factor for one cohort may present as a risk factor for another, depending on their ecological environment and the specific demands adolescents believe these have.

Considering an adolescent's dynamic and context-dependent orientations and outcomes, culture should not be assumed to be homogeneous, but instead it could be idiosyncratic and could itself be affected by complex ecological processes, especially within multicultural societies (e.g. Usborne & de la Sablonnière, 2014). Further, none of the identified studies investigated how cultural values and beliefs relate to mental health outcomes (e.g. stigma) – a research gap also identified by others (Colucci et al., 2017). Accordingly, even though we only included quantitative studies, we suggest that future research takes an emic perspective, co-designing and testing its cultural measures' appropriateness with study participants prior to conducting new empirical studies to avoid simplifying cultural bias (cf. Rudmin, 2003). The existing ecological frameworks should also be further examined and evaluated to ensure they are practical and provide a comprehensive account of an adolescent's context.

None of the included studies examined 'remote enculturation', such as the role smartphones play in heritage cultural maintenance and mental health outcomes, which has for some time now been an important medium for adolescents' cultural exchange (Anderson et al., 2023). This gap illustrates how much remains unknown about adolescents' cultural maintenance and mental health outcomes.

Strengths and limitations

One limitation of our search was that we only used English search terms. However, relevant studies in other languages were reviewed by the second author who was proficient in them (French and Spanish), and none met our inclusion criteria. Another potential limitation was that we included broader search terms (e.g. 'resilience') than our inclusion criteria, to capture all eligible studies. This approach – going from broader to more specific – did not compromise the integrity of our approach. However, the identified heterogeneity of terminology this scoping review identified shows that there is value in adding terms (e.g. *enculturation, native acculturation*) in future systematic reviews.

Due to the highly varied nature of research results, which did not allow for a meta-analysis, we did not synthesise findings, and we cannot therefore generally summarise included studies. Our findings do, however, highlight the value of conducting scoping reviews to consolidate existing multidisciplinary research, gain clarity about approaches and future research needs, to enhance the understanding of migrant adolescent cohorts and develop more impactful intervention strategies in the future.

Conclusion

The evidence relating to the association between linguistic and cultural maintenance and adolescent mental health outcomes appears to be mixed in nature: some studies found a positive relationship, while others identified an indirect relationship, no relationship at all (highlighting the importance of host acculturation instead) or found adolescents to be 'caught between cultures'. Importantly, research would benefit from a more standardised approach, while taking an emic perspective on culture and considering an adolescent's complex and interrelated ecological and developmental factors. We encourage future research to be specific rather than generic, developing scales measuring levels of cultural maintenance that consider potentially global, as well as idiosyncratic concepts of culture, to better understand how cultural maintenance relates to migrant adolescent mental health outcomes.

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Appendix

Search query

1. *Cultural and linguistic component*: ('language maintenance' OR 'language knowledge' OR 'language transmission' OR 'cultural maintenance' OR 'cultural knowledge' OR 'cultural transmission').
2. *Mental health outcome*: ('mental health' OR suicid* OR depress* OR anxiet* OR anxious* OR self-injur* OR self-harm OR NSSI OR 'non-suicidal self-injury' OR 'substance abuse' OR 'drug abuse' OR 'substance use' OR 'substance misuse' OR 'substance-related disorder' OR 'substance use disorder' OR 'SUD' OR resilien* OR schiz* OR vulnerab*)
3. *Age group*: (adolescen* OR 'young person' OR teen*)
4. *Migrant and/or Indigenous*: (refugee* OR CALD OR 'culturally and linguistically diverse' OR immigrant OR migrant OR aborigin* OR Indigenous OR 'Torres Strait')

Table A1. Ovid MEDLINE® ALL search strategy.

Operators	Search field	Fields
-	'language maintenance' OR 'language knowledge' OR 'language transmission' OR 'cultural maintenance' OR 'cultural knowledge' OR 'cultural transmission'	All fields
AND	'mental health' OR suicid* OR depress* OR anxiet* OR anxious* OR self-injur* OR self-harm OR NSSI OR 'non-suicidal self-injury' OR 'substance abuse' OR 'drug abuse' OR 'substance use' OR 'substance misuse' OR 'substance-related disorder' OR 'substance use disorder' OR 'SUD' OR resilien* OR schiz* OR vulnerab*	All fields
AND	adolescen* OR 'young person' OR teen*	All fields
AND	refugee* or CALD or 'culturally and linguistically diverse' or immigrant or migrant or aborigin* or indigenous or 'Torres Strait'	All fields

Table A2. Findings regarding the relationship of cultural maintenance and mental health outcomes by study reference.

Author(s), year	Key findings regarding the association between language or cultural maintenance and mental health outcomes
Birman and Taylor-Ritzler (2007)	'The findings suggest that for this immigrant population native acculturation was related to less distress only when linked to positive familial relationships, whereas American acculturation was related to less distress directly, as well as through its positive impact on familial relationships' (2007, p. 337).
Birman et al. (2002)	'In general, results of the study support the proposition that there is no best overall acculturative style for these adolescents at this particular time in their lives. It appears that being American-oriented is advantageous in contexts that demand acculturation to the American culture, that is, school and American peers. In contrast, contexts that require familiarity with Russian culture, such as relationships with parents and Russian peers, are predicted by acculturation to Russian culture. Thus, overall, the findings support the notion that the demands of these varied cultural environments put pressure on these adolescents to adopt aspects of either one culture or the other' (2002, pp. 598–599). 'Language competence does not seem critical to the interpersonal spheres of adaptation. Because language use or preference is the most used proxy for acculturation level in existing research, this study offers considerable caution about its role in the acculturation process when used with adolescents' (2002, p. 601).
Chang et al. (2015)	'Results indicate a positive relationship between ethnic identity pride and self-esteem, but only in the context of strong parental support. No association between the same 2 factors was noted for the school support context. No variance was found for patterns involving ethnic-identity pride and depression for either family or school environment contexts' (2015, p. 190).
Choi et al. (2014)	'Korean proficiency of youth was most notably predictive of a decrease in the number of depressive symptoms concurrently and longitudinally and after controlling for the previous level of depressive symptoms' (2015, p. 12). 'English proficiency was associated with fewer depressive symptoms, whereas acculturation was associated with more symptoms. These results may suggest that English proficiency is necessary to defend against depressive symptoms because of the necessity of English language knowledge to navigate comfortably and successfully through daily life, whereas greater acculturation may create unease in individuals who are embracing a culture that carries negative perceptions of their race-ethnicity. However, mainstream orientation seemed to primarily influence depressive symptoms indirectly by reducing Korean language proficiency, which we found to be beneficial for youth' (2015, p. 13).
Choi et al. (2017)	'Results show that identity and behavioral enculturation in one's heritage culture are predictors of bonding with parents, which is notably protective for youth. The results highlight the critical effect of enculturation in enhancing youth perception of the parent-child relationship. Behavioral acculturation to mainstream culture, in contrast, predicts youth problems, although the effect may not necessarily always be via family processes. Similarly, Korean and English language proficiencies predict fewer youth problems, but not always by way of family processes. A few differences emerged across maternal and paternal variables, although there was much commonality in the hypothesized relationships' (2017, p. 1). 'Specifically, when Korean American youth report being able to speak Korean, they perceive their fathers as more loving and less restrictive' (2017, p. 14).
Crane et al. (2005)	'Results showed that differences in acculturation between parents and adolescents were related to adolescent depression and that family functioning was related to both depression and delinquency. Both parental and adolescent acculturation levels and their differences were important in predicting adolescent outcomes' (2005, p. 400).

(Continued)

Table A2. (Continued)

Author(s), year	Key findings regarding the association between language or cultural maintenance and mental health outcomes
Cupito et al. (2015)	'We also found greater familism to be associated with fewer depressive symptoms and greater sense of school belonging for both genders. Similarly, moderate levels of filial obligations were associated with better grades across genders. In contrast, filial obligation and affiliative obedience were associated with fewer depressive symptoms only for females. While these values serve an equally protective function in the academic adjustment of both females and males, familial cultural values may be uniquely protective for females against depressive symptoms'. (2015, p. 1638).
Guerrero et al. (2006)	'Learning genealogy was positively correlated with school performance, and speaking a language other than English was inversely correlated with substance use (in the whole sample) and depression (in the lower SES sub-sample)' (2006, p. 343).
Guler and Berman(2019)	'The study findings indicate that native acculturation, and more specifically native cultural identity, may serve as significant protective factors against identity distress among adolescent refugees post-resettlement, with native cultural identity additionally serving as a protective factor against internalizing symptoms. US acculturation was not found to be significantly associated with identity distress or internalizing symptoms, nor were the acculturative dimensions of language learning (i.e. English and native language competencies), cultural knowledge (i.e. US and native cultural knowledge competencies), or US cultural identity' (2019, p. 129) .
Hwang et al. (2010)	'Findings indicate that greater AFD was associated with higher depressive symptoms and risk for clinical depression. Family conflict partially mediated this relation for youth, whereas for mothers, AFD directly increased risk for depression. Greater mother-child heritage enculturation discrepancies were associated with greater mother and child AFD. Mainstream acculturation discrepancies and language gaps between mothers and youth were not significantly associated with any of the primary outcome variables' (2010, p. 1).
Kho et al.(2023)	'We found that both higher initial levels of familism values and slower declines in familism values across adolescence were associated with lower internalizing and externalizing behaviors two-and-a-half years later' (2023, p. 1321).
Kim et al.(2009)	'These results suggest that higher levels of father–adolescent American orientation discrepancy relate to more adolescent depressive symptoms because of lower levels of warmth (child report only), less monitoring (child report only) and less inductive reasoning (child and father report) from fathers' (2009, p. 11).
Kim et al.(2013)	'Structural equation models showed that, during early adolescence, parent-child American orientation discrepancy is related to parents' use of unsupportive parenting practices; parents' use of unsupportive parenting is related to increased sense of alienation between parents and children, which in turn is related to more depressive symptoms and lower academic performance in Chinese American adolescents. These patterns of negative adjustment established in early adolescence persist into middle adolescence. This mediating effect is more apparent among father-adolescent dyads than among mother-adolescent dyads. In contrast, parent-child Chinese orientation discrepancy does not demonstrate a significant direct or indirect effect on adolescent adjustment, either concurrently or longitudinally' (2013, p. 1).
Liu et al.(2009)	'Mothers who were English proficient tended to have children with higher academic achievement and fewer depressive symptoms. Results also indicated that adolescents' heritage language maintenance was associated with positive adjustment, particularly amongst foreign-born youth and for youth whose parents were highly proficient in the heritage language. Mother-adolescent match in heritage language proficiency was related to higher math achievement scores and overall GPA. Additionally, higher heritage language proficiency was associated with fewer depressive symptoms for foreign-born but not U.S.-born youth. Overall, the findings suggest that proficiency in both the English and heritage language may confer advantages to Chinese American youth' (2009, p. 572).
Manzo et al. (2022)	'The study found that increased mother–youth discrepancies on Mexican cultural values were associated with increased negative mental health outcomes. Our findings suggest that adopting or learning new mainstream American values does not substitute for the Mexican cultural values that protect against negative outcomes' (2022, p. 298).
Miconi et al. (2019)	'As regards the acculturation gap, youths who were more acculturated than their parents reported the lowest level of externalizing problems (. . .). However, this effect varied with levels of IC. Specifically, a lower IC was found to put early adolescents at risk for worse externalizing outcomes, but only when parents were more acculturated than their offspring. In other words, a better IC was found to be protective in the nonnormative situation in which parents reported to be more acculturated than their children. Given parental expectations that children achieve good host language proficiency and success in the mainstream society, early adolescents' low levels of acculturation may represent a risk factor in the family context and lead to more disruptive behaviors as reported by their parents' (2019, p. 2619).
H. H. Nguyen et al.(1999)	'Results indicated that, as expected, involvement in the U.S. culture predicted positive functioning across all three adjustment domains, and involvement in the Vietnamese culture predicted positive family relationships. Contrary to hypotheses, involvement in the Vietnamese culture related negatively to personal adjustment (i.e. distress)' (1999, p. 5).

(Continued)

Table A2. (Continued)

Author(s), year	Key findings regarding the association between language or cultural maintenance and mental health outcomes
Oppedal et al. (2004)	'Decreases in family or friend support, associated with reductions in host and ethnic competence, respectively, would yield strong negative effects on mental health. On the other hand, increased host competence would do away with the health hazards of diminishing family support. Furthermore, intensified discrimination and identity crisis had strong negative effects on changes in mental health when co-occurring with decreases in family and class support, respectively. However, there was no difference in the effect of increases or decreases in the risk factors under conditions of increased support from family members and classmates. The findings supported a perspective on acculturation implying that different cultural skills are adaptive under different sociocultural contexts and conditions and that individuals may acculturate simultaneously, but at different pace, to various cultural environments (. . .)' (2004, p. 490).
Oppedal et al. (2005)	'First-generation girls and second-generation boys were identified as particularly vulnerable to psychiatric problems. There was significant variation in psychiatric problems and acculturation between ethnic groups. There was substantial ethnic group-level correlation between emotional and conduct problems, and between discrimination and peer problems. Otherwise, a differentiated pattern of high-scoring ethnic groups emerged across the various symptom and acculturation indices' (2005, p. 646). 'There were ethnic groups with low problem scores among children of the labor migrants (Moroccans and Indians) and among the migrants from the conflict countries (Somalis, Sri Lankan, Yugoslavians). Likewise the groups that in general reported most problems were also found both in the labor and the refugee groups (Turks and Pakistanis in the former, Iraqis, Iranians and Vietnamese in the latter). Thus significant differences between ethnic groups existed both within and across these two categories of immigrants' (2005, p. 651). 'The cases of significant associations between psychiatric symptoms and family values, ethnic and host competence were in the negative direction, confirming a potential positive impact on mental health from these factors, in all but one case' (2005, p. 652). 'High level of host culture competence and family values predicted fewer overall problems and externalizing symptoms (conduct and hyperactivity problems). High level of both culture competencies predicted fewer peer problems while neither culture competence nor family values had significant effects on emotional problems' (2005, p. 653).
Rumbaut(1994)	'In both equations, by far the strongest predictor variable associated with lower self-esteem (beta = −0.267) and higher depression (beta = 0.281) was our measure of parent-child conflict. (. . .). Gender emerges here as the next strongest predictor of psychological well-being. Significantly lower self-esteem, and especially higher levels of depressive symptomatology, are found among females in this sample (. . .). More than the other objective measures of socioeconomic status, the respondents' perception that their family's economic situation compared to five years before had worsened was significantly associated with decreased self-esteem as well as increased depression and parent-child conflict (. . .). English language competence and educational achievement measures are significantly and positively related to self-esteem and psychological well-being. Specifically, the higher the English language proficiency index and the higher the academic GPA, the higher the self-esteem score and the lower the depression score. Knowledge of English in particular showed a very strong positive association with self-esteem, underscoring the psychological importance of linguistic acculturation for children of immigrants in American social contexts, especially in the schools. (. . .). By contrast, the foreign language proficiency index score was not significantly associated with either dependent variable. (. . .). Having been discriminated against elevates depressive symptoms significantly - although interestingly, it does not have a significant effect on self-esteem. (. . .). Specifically, a Black self-identity was positively associated with higher self-esteem, a result suggesting that such a mode of self-identification serves a psychologically protective function (. . .)' (1994, p. 782). 'Language and education are central issues in the relationship of immigrant parents and their children which may spark conflict and derogation between them. As Table 7 shows, conflict is significantly increased in cases where the child prefers English and also has a poor command of the parental native language - a recipe for communication problems, as well as posing problems of parental control and authority' (1994, p. 786).
Safa et al.(2019)	'Benefits of behavioral bicultural competence were found in consistently Latino developmental niches. Hence, in niches where both cultural systems are *relevant* but adolescents might not need to switch *as frequently* between cultural frames of reference, U.S. Mexican-origin adolescents with high bicultural facility experience lower externalizing symptoms' (2019, p. 307). 'The diversity found among U.S. Mexican-origin adolescents' niches underscores the need to assess context broadly by including a range of settings' (2019, p. 299).

(Continued)

Table A2. (Continued)

Author(s), year	Key findings regarding the association between language or cultural maintenance and mental health outcomes
Sam(2000)	'Of the three perspectives, group identity seemed to have the strongest predictive power, and family values the least, for self-esteem, mental health, and satisfaction with life' (2000, p. 21). 'Previous researchers (. . .) have found negative relationships between mental health and integration, whereas in the present study, I reported a positive relationship. (. . .) .One reason may be measurement error' (2000, p. 21). 'Although separation contributed significantly to life satisfaction, marginalization contributed significantly to self-esteem, and integration, to mental health. Separation, which is often viewed in a negative light in acculturation studies, seems to have had a positive effect on life satisfaction. The reason for this difference [Black school children in segregated settings having higher self-esteem than peers in integrated settings] is that minority group members have the tendency to compare themselves and their situation more with similar others (minority members) than with dissimilar and advantaged others (majority members), a mechanism that buffers self-esteem' (2000, p. 20). 'In all three ANOVAs, there were significant differences among the ethnic groups (. . .). I also found gender differences in the scores for mental health, (. . .) the girls reported higher scores for mental health than the boys did' (2000, pp. 13–14).
Schwartz et al. (2015)	'Adolescents who increased over time in practices and values reported the most adaptive mental health and family functioning. Adolescents who did not change in any acculturation domain reported the least favourable mental health and family functioning' (2015, p. 1). 'The convergence between Hispanic and U.S. components within the increasing practices and identifications classes suggests that a form of biculturalism may be developing in some recently immigrated adolescents. It appears, however, that increases in Hispanic and U.S. cultural practices, without corresponding increases in individualist and collectivist values, may present a risk for somewhat compromised mental health and family relationships. That is, changes in practices, without corresponding changes in values, may not be adaptive – at least within the bicultural and multicultural contexts in which our study was conducted' (2015, p. 21).
Shin et al.(2016)	'Perceived mother-child cultural gap in values enculturation was the most consistent predictor of negative outcomes. However, a combination of low levels of children's and perceived maternal values acculturation was also associated with greater psychological distress. In addition, the correlates of perceived parent-child cultural orientations differed depending on the parent's gender' (2016, p. 31).
Smokowski et al.(2009)	'Latino cultural involvement, or ethnic identity, anchors two protective pathways. In combination with high familism 6 months later (T2), Latino cultural involvement is related to higher T3 self-esteem. Further, Latino cultural involvement influenced T3 internalizing problems by decreasing T2 feelings of humiliation' (2009, p. 1040).
Stein and Polo(2014)	'Overall, our findings suggest that parent–child gaps in affiliative obedience can be associated with youth maladjustment. Specifically, adolescents are at increased risk for depression when they endorse lower levels of affiliative obedience than their parents, but this was only true for older early adolescents' (2014, p. 195).
Telzer et al. (2016)	'Contrary to the acculturation gap-distress model, acculturation gaps were not associated with poorer family or youth functioning. Rather, adolescents with higher levels of Mexican cultural orientations showed positive outcomes, regardless of their parents' orientations to either American or Mexican cultures. Findings suggest that youths' heritage cultural maintenance may be most important for their adjustment' (2016, p. 1412).
Umaña-Taylor and Updegraff(2007)	'We also found that when boys reported low levels of Latino cultural orientation, there was a significant positive association between their perceptions of discrimination and their depressive symptoms and a negative relation between perceived discrimination and self-esteem. In contrast, when boys reported high levels of Latino cultural orientation, there were no significant associations' (2007, p. 563).
Weaver and Kim(2008)	'Overall, results provided support, though qualified, for the notion that generational dissonance is linked to depressive symptoms through decreased supportive parenting. In general, having a parent with a bicultural profile seemed to be most advantageous if adolescents similarly had a bicultural profile, whereas more American oriented adolescents with more Chinese oriented parents reported the least supportive parenting and most depressive symptoms' (2008, p. 1). 'Specifically, fathers' supportive parenting was lower when adolescents were least oriented to Chinese culture (i.e. more American) if their fathers had a Chinese cultural affinity (i.e. bicultural or more Chinese). In contrast, mothers tended to be perceived as less supportive when they held a strong Chinese orientation, regardless of the child's orientation' (2008, p. 11).
Y. J. Wong and Maffini(2011)	'These findings dovetail with those of previous studies showing that family variables were less strongly associated with suicide-related outcomes among highly acculturated Asian Americans as compared to less acculturated Asian Americans (. . .)' (2011, p. 1461).

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Table A2. (Continued)

Author(s), year	Key findings regarding the association between language or cultural maintenance and mental health outcomes
S. L. Wong(2021)	'Cultural orientation and interpersonal relationships were significant predictors of depression. Individuals who were separated (had a high orientation towards ethnic culture and low orientation towards mainstream culture) experienced greater depression than those who were assimilated (had a high orientation towards American culture and low orientation towards ethnic culture). In addition, the presence of a more positive parent and peer relationship predicted lower depression levels. None of the demographic variables were significant predictors of depression in the overall model, although late immigrants (those who immigrated after the age of 12) were more depressed than American-born adolescents in the bivariate analysis' (2021, p. 49). '(. . .) However, contrary to the hypothesis, bicultural students (i.e. those with a high orientation towards both cultures) did not have the lowest depression level. (. . .). Current findings suggest that the environment of these adolescents (i.e. the school, community, and the larger society) may support students who have a greater mainstream European American orientation and discourage students who have an orientation towards the ethnic culture' (2021, p. 60).
Yeh(2003)	'The results also support the hypothesis that more American-identified Asian youths report fewer mental health symptoms than Asian immigrants who are more Asian identified' (2003, p. 42). 'From a counseling perspective, these results validate the importance of immigrant clients' native language and viewing bilingualism as an adaptive asset contributing to bicultural competence' (2003, p. 43).
Zayas et al. (2009)	'That acculturation disparities between the suicide attempters and non-attempters did not differ may indicate, as we stated earlier, that acculturation does not play as prime a role in adolescent problem behaviors as has been previously believed, but rather that it may gain its potency in interaction with or mediation by other factors, such as parent–adolescent relationship, parental monitoring and support, and family functioning' (2009, p. 364).
Zeiders et al. (2013)	'Mexican-origin males' depressive symptoms decreased across adolescence, whereas females' symptoms exhibited a cubic pattern of change. Results revealed that increases in supportive and referent familism values within individuals and across families were related to lower levels of depressive symptoms. Findings were most pronounced for referent familism values, as a between-sibling effect also emerged. Obligation familism values were not associated with depressive symptoms' (2013, p. 648).