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Bicultural Acceptance and Perceived Health Link Social Support to Later Life Satisfaction Among Multicultural Adolescents in South Korea

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Abstract

Multicultural adolescents in South Korea face discrimination and dual cultural demands. Drawing on the bioecological model, acculturation theory, and self-determination theory, this study tested whether support from friends, homeroom teachers, and parents predicts later life satisfaction through bicultural acceptance and perceived health. Data came from the second cohort of the Multicultural Adolescents Panel Study (2019–2021, Grades 4–6; *N* = 2,271). After establishing longitudinal measurement invariance, we estimated latent autoregressive cross-lagged models for each source of support separately and for all three sources jointly, testing indirect effects and their differences with Monte Carlo confidence intervals. All models fit the data well. No source of support was directly associated with later life satisfaction. Friend and parental support predicted later life satisfaction indirectly through bicultural acceptance, perceived health, and the serial pathway (total indirect β = .038 and .032); teacher support had a smaller total indirect effect (β = .018). In the integrated model, friend and parental support retained total indirect effects larger than that of teacher support, which was no longer significant. The pathways through bicultural acceptance and perceived health did not differ in size, and earlier bicultural acceptance and perceived health also predicted later support. Support from friends and parents is linked to multicultural adolescents' later life satisfaction through bicultural acceptance and favorable health appraisals, within a reciprocal process. Interventions may be most effective when they combine peer and family support with attention to cultural acceptance and perceived health.

Introduction

Over the past three decades, South Korea has changed from a society long characterized by ethnic and cultural homogeneity into an increasingly diverse one. Korean law defines a *multicultural family* as a family formed by a marriage immigrant or a naturalized citizen and a Korean national [1], and *multicultural adolescents* commonly refers to young people from such families and, more broadly, to children of immigrant families. The Ministry of Education distinguishes three groups of multicultural students: (a) children of international marriage families born in Korea, who have one Korean and one foreign-born parent; (b) mid-entry immigrant children, who were born and partly raised abroad and entered Korea during childhood; and (c) children of foreign-national families, both of whose parents are foreign nationals. The number of multicultural students in Korean schools rose from 67,806 in 2014 to 193,814 in 2024, and 39.0% of them were enrolled in middle or high school in 2024. The share of children of foreign-national families also grew, from 6.9% in 2014 to 24.3% in 2024 [2]. Multicultural adolescents are therefore a growing and internally diverse segment of the Korean youth population.

Despite this demographic change, receptivity to cultural diversity in Korean society remains limited. In the national multicultural acceptance survey conducted every 3 years by the Ministry of Gender Equality and Family, adults' scores have remained near the midpoint of the 100-point index (52.27 in 2021 and 53.38 in 2024). Adolescents' scores, although higher, fell from 71.39 in 2021 to 69.77 in 2024, the first decline since the current index was introduced in 2015 [3]. Multicultural adolescents therefore develop in a social environment that combines expanding diversity with persistent prejudice. Studies of Korean multicultural adolescents show that experiences of discrimination predict poorer peer relationship trajectories [4] and that chronic bullying victimization is associated with lower life satisfaction [5]. Acculturative stress, which arises from demands such as learning a second language and reconciling the cultural expectations of the family with those of the wider society [6], has likewise been associated with lower life satisfaction in this population [7]. Cultural orientations also continue to shift across childhood and adolescence [8], so that negotiating two cultural worlds is an ongoing developmental task rather than a one-time adjustment. Understanding which resources protect these adolescents' well-being, and how those resources operate over time, is therefore both a theoretical and a practical priority.

Life satisfaction, an individual's global cognitive appraisal of the quality of their life against self-defined standards, is the cognitive component of subjective well-being [9, 10]. In adolescence, life satisfaction is not merely an outcome but a developmental resource: higher life satisfaction buffers the effects of stressful life events on later internalizing and externalizing problems [11], and among Korean multicultural adolescents lower life satisfaction co-occurs with depressive symptoms [12]. For multicultural adolescents, life satisfaction is shaped not only by the normative tasks of early adolescence but also by the additional task of negotiating two cultures. This dual demand can strain well-being when the two cultures are experienced as being in conflict and can enrich it when adolescents come to accept and integrate both [13].

Research on the well-being of Korean multicultural adolescents has grown quickly, but two gaps remain. First, studies of how social support and bicultural acceptance relate to these adolescents' life satisfaction have relied mostly on cross-sectional data from a single wave of the Multicultural Adolescents Panel Study (MAPS) or from local samples (e.g., [12, 14, 15, 7]). Such designs cannot establish the temporal ordering that any claim of mediation requires [16]. Second, the longitudinal studies that do exist have typically examined a single predictor or a single source of support (e.g., [17, 18]). Cha and Kwon [19] found that family support predicted life satisfaction in every grade from Grade 4 to Grade 8, and Ling et al. [20] found that support from family, teachers, and friends was associated with life satisfaction at the between-person level but that only family support predicted within-person change. The present study therefore asks whether friends, homeroom teachers, and parents, the three principal sources of support in late childhood, predict later bicultural acceptance and perceived health, and through them life satisfaction, when the sources are examined both separately and simultaneously. Because bicultural acceptance has also been modeled as an antecedent of friend support [14], we estimated the cross-lagged paths from bicultural acceptance to later support, so that the direction of this association was tested rather than assumed.

Theoretical Framework

Three complementary perspectives frame the study. The bioecological model holds that development arises from proximal processes, that is, recurrent interactions with people in the immediate settings of family, peer group, and school [21, 22]. Acculturation theory proposes that an integration orientation, in which both the heritage and the receiving culture are valued, is generally associated with the most favorable psychological and sociocultural adaptation [23, 24]. Bicultural acceptance, the degree to which adolescents positively accept both Korean culture and the culture of their family background without privileging either, is the attitudinal expression of this orientation [25, 13]. Self-determination theory identifies relatedness, competence, and autonomy as basic psychological needs whose satisfaction fosters well-being [26]. Together, these perspectives suggest that support in the family, peer, and school settings satisfies basic needs and shapes how adolescents appraise their cultural background and their health, which in turn shapes their evaluations of life as a whole. We use *social support* to refer to adolescents' perceptions of being cared for, valued, and helped by friends, homeroom teachers, and parents.

Social Support and Bicultural Acceptance

Social support can enhance well-being directly, by meeting needs for belonging and esteem, and can buffer the effects of stress by changing how stressors are appraised and coped with [27]. Meta-analytic evidence shows that support is associated with children's and adolescents' well-being and that the strength of this association varies by source [28]. The sources also differ in function. Students tend to perceive parents as sources mainly of emotional and informational support, teachers mainly of informational support, and classmates and close friends mainly of emotional support [29], and parents, teachers, and peers make distinct contributions to young adolescents' school motivation [30]. Recent studies confirm that support from family, teachers, and classmates is uniquely related to adolescents' psychosocial well-being [31].

Each source of support may also foster bicultural acceptance, through partly different mechanisms. Parents are the primary agents of cultural socialization; warm and involved parents can transmit knowledge of and pride in the heritage culture while encouraging participation in the mainstream culture, and such practices are associated with a more positive ethnic identity in children [32]. Teachers shape the cultural diversity climate of the classroom; perceptions of a climate that emphasizes equality and inclusion are associated with a stronger sense of school belonging and better psychological adjustment among early adolescents of immigrant background [33]. A homeroom teacher who shows interest in and recognition of a multicultural student signals that the student's background is accepted within a mainstream institution. Friends provide the most direct experience of acceptance by peers from the receiving society; adolescents who feel accepted and understood by their friends have less reason to hide their heritage and more opportunities to take part comfortably in Korean youth culture. Consistent with this reasoning, bicultural acceptance and friend support are positively related among Korean multicultural adolescents [14]. Bicultural acceptance also changes developmentally, rising across the elementary school years before declining after the transition to middle school [17], which makes late elementary school a period in which relational influences on cultural attitudes may be particularly visible.

Bicultural Acceptance and Perceived Health

Perceived, or self-rated, health is an individual's global appraisal of their physical and mental condition and integrates emotional state, social functioning, and vitality [34, 35]. We position bicultural acceptance before perceived health for three reasons. First, acculturation theory treats psychological adaptation, including physical and mental well-being, as an outcome of acculturation strategies [23, 24]; immigrants who pursue integration report better self-rated mental health and life satisfaction [36], and biculturalism is positively associated with psychological adjustment across studies [13]. Second, a secure and integrated cultural identity reduces identity-related strain and acculturative stress, which can be experienced as physical and emotional distress [6, 37]. In MAPS data, bicultural acceptance predicted later decreases in acculturative stress, but not the reverse [18], and it mediated the association between depressive symptoms and life satisfaction [12]. Third, bicultural acceptance is an attitude toward a specific domain of the self, whereas perceived health is a summary appraisal of one's current condition, and bottom-up accounts of subjective well-being hold that domain-specific appraisals feed into more global ones [9]. Because identity and well-being can also influence each other [38], we additionally estimated a model in which perceived health preceded bicultural acceptance.

Perceived Health and Life Satisfaction

Adolescents who rate their health favorably also report higher life satisfaction, and self-rated health and life satisfaction are related but distinguishable constructs in adolescence [39, 35]. Social relationships are among the most consistent social determinants of health [34], so perceived health is a plausible conduit through which support and cultural security are translated into life satisfaction. Supportive relationships can foster a sense of security and vitality, and an accepting stance toward both cultures can reduce identity-related strain; adolescents who feel physically and mentally well may, in turn, evaluate their lives more favorably.

The Present Study

The present study used three waves of the second MAPS cohort, spanning Grades 4 to 6, to test a longitudinal serial mediation model in which Time 1 social support predicts Time 2 bicultural acceptance and perceived health, which in turn predict Time 3 life satisfaction (Fig. 1). Using latent autoregressive cross-lagged structural equation modeling, we controlled for the prior levels of the mediators and the outcome [16, 40]. We

estimated the model separately for each source of support, to obtain the total association of friend, teacher, and parental support, and in an integrated model containing all three sources, to obtain the unique association of each. We tested three hypotheses. Hypothesis 1: Friend, teacher, and parental support at Time 1 will each be positively associated with life satisfaction at Time 3. Hypothesis 2: Bicultural acceptance and perceived health at Time 2 will each mediate these associations. Hypothesis 3: Support will be associated with life satisfaction through a serial pathway from bicultural acceptance to perceived health. We also examined whether the indirect effects differ in magnitude across sources; given the foundational role of the family in late childhood [19, 20], we expected parental support to show the strongest indirect effects.

Method

Data and Participants

Data were drawn from the second cohort of MAPS, a national longitudinal panel study conducted by the National Youth Policy Institute (NYPI) to track the development and adaptation of multicultural adolescents and their families [41]. The second cohort was designed to represent all three groups of multicultural students described above. The sample was allocated across Korea's 17 provinces and metropolitan cities and stratified by family type so that parental countries of origin would reflect the population distribution; schools were sampled first, and eligible students in the selected schools were then surveyed. The first wave (2019) included 2,223 households, comprising 2,245 fourth-grade students and 2,223 parents. In 2020, NYPI added 26 households of mid-entry immigrant students to the panel, giving a panel base of 2,249 households and 2,271 adolescents [41]. Data were collected through tablet-assisted personal interviews, and translated questionnaires were provided for parents who needed them. The MAPS second-cohort data analysed here (Waves 1 to 3, 2019 to 2021) were obtained from the data archive of the National Youth Policy Institute, the Korean Children, Youth, and Young Adults Data Archive (https://www.nypi.re.kr/archive/mps), as detailed in the Data Availability statement.

The present study used the first three annual waves of the second MAPS cohort: 2019 (Time 1, Grade 4), 2020 (Time 2, Grade 5), and 2021 (Time 3, Grade 6). Late elementary school is a period in which the locus of social influence broadens from parents toward peers and teachers and in which cultural identity and self-evaluated health become increasingly salient [17], which makes this window well suited to testing the proposed model.

The analytic sample comprised all 2,271 adolescents in the panel base. Participants were linked across waves by the individual identifier that NYPI assigns to each panel member and keeps constant across waves. Of the 2,271 adolescents, 2,073 (91.3%) participated at Time 2 and 1,999 (88.0%) at Time 3; 1,965 (86.5%) participated at all three waves, 142 (6.3%) at two waves, and 164 (7.2%) at Time 1 only. Apart from the 26 households added in 2020, no new participants entered the panel during the study period. Adolescents who did and did not participate at Time 3 did not differ on any Time 1 study variable or covariate (all ps > .08, all $|d| \leq .11$), although attrition was higher among children of foreign-national families (16.6%) than among children of international marriage families (11.2%) and mid-entry immigrant children (10.2%), $\chi^2(2) = 8.92$, $p = .012$.

Participant characteristics at each wave are reported in Table 1. At Time 1, 50.9% of participants were boys, and 93.7% were 10 years old. Children of international marriage families born in Korea constituted the largest group (76.4%), followed by children of foreign-national families (15.9%) and mid-entry immigrant children (7.7%). In 81.5% of families only the mother was foreign-born, and in 15.9% both parents were foreign-born; the most common maternal countries of origin were Vietnam (33.6%) and China (Han Chinese and Korean-Chinese combined, 32.8%). Most participants lived in small or medium-sized cities (51.6%) or large cities (33.7%), and 61.2% described their family's economic situation as average.

Table 1

Participant Characteristics Across the Three Waves

Characteristic	Wave 1 (2019)[a]		Wave 2 (2020)		Wave 3 (2021)	
	n	%	n	%	n	%
Total N	2,271	100	2,073	91.3[b]	1,999	88.0[b]
Sex						
Boys	1,156	50.9	1,065	51.4	1,032	51.6
Girls	1,115	49.1	1,008	48.6	967	48.4
Family type						
International marriage (Korean-born)	1,734	76.4	1,597	77.0	1,547	77.4
Foreign-national family	361	15.9	312	15.1	296	14.8
Mid-entry immigrant	176	7.7	164	7.9	156	7.8
Residential area						
Large city	766	33.7	688	33.2	632	31.6
Small or medium city	1,172	51.6	1,074	51.8	1,051	52.6
Town or rural (eup/myeon)	333	14.7	311	15.0	316	15.8
Mother's education						
Middle school or lower	670	29.5	619	29.9	603	30.2
High school	1,011	44.5	920	44.4	882	44.1
2–3 year college	245	10.8	216	10.4	206	10.3
4 year university	296	13.0	271	13.1	265	13.3
Graduate school	49	2.2	47	2.3	43	2.2
Father's education						
Middle school or lower	267	11.8	254	12.3	250	12.5
High school	1,204	53.0	1,100	53.1	1,071	53.6
2–3 year college	170	7.5	157	7.6	147	7.4
4 year university	331	14.6	297	14.3	286	14.3
Graduate school	58	2.6	54	2.6	53	2.7
Mother's country of origin						
Korea	43	1.9	40	1.9	37	1.9
China (Han and other)	394	17.3	362	17.5	346	17.3
China (Korean-Chinese)	352	15.5	307	14.8	298	14.9
Vietnam	764	33.6	703	33.9	683	34.2
Philippines	213	9.4	200	9.6	193	9.7
Japan	123	5.4	117	5.6	114	5.7
Thailand	44	1.9	44	2.1	43	2.2
Other	338	14.9	300	14.5	285	14.3
Father's country of origin						

Note. Values are frequencies (*n*) and column percentages of the adolescents who participated at each wave. Wave 1 = Grade 4 (2019); Wave 2 = Grade 5 (2020); Wave 3 = Grade 6 (2021). Family type at Waves 2 and 3 is reported as classified in the data of that wave. Percentages may not sum to 100 because of missing responses and rounding. Dashes indicate categories not separately tabulated in that wave. [a]Includes the 26 mid-entry immigrant adolescents whose households were added to the panel in 2020 (panel base *N* = 2,271). [b]Percentage of the panel base that participated at the wave.

Characteristic	Wave 1 (2019)[a]		Wave 2 (2020)		Wave 3 (2021)	
	n	%	n	%	n	%
Korea	1,660	73.1	1,533	74.0	1,492	74.6
China (Han and other)	41	1.8	34	1.6	30	1.5
China (Korean-Chinese)	164	7.2	143	6.9	142	7.1
Vietnam	16	0.7	17	0.8	17	0.9
Other	156	6.9	135	6.5	–	–
Foreign-born parent						
Father only	58	2.6	52	2.5	49	2.5
Mother only	1,852	81.5	1,704	82.2	1,649	82.5
Both parents	361	15.9	317	15.3	301	15.1
Subjective economic status						
Very poor	112	4.9	105	5.1	86	4.3
Somewhat poor	559	24.6	529	25.5	515	25.8
Average	1,389	61.2	1,274	61.5	1,274	63.7
Somewhat well-off	203	8.9	157	7.6	118	5.9
Very well-off	8	0.4	7	0.3	5	0.3

Note. Values are frequencies (*n*) and column percentages of the adolescents who participated at each wave. Wave 1 = Grade 4 (2019); Wave 2 = Grade 5 (2020); Wave 3 = Grade 6 (2021). Family type at Waves 2 and 3 is reported as classified in the data of that wave. Percentages may not sum to 100 because of missing responses and rounding. Dashes indicate categories not separately tabulated in that wave. [a]Includes the 26 mid-entry immigrant adolescents whose households were added to the panel in 2020 (panel base N = 2,271). [b]Percentage of the panel base that participated at the wave.

Measures

All constructs were measured with items from the MAPS second-cohort student questionnaire, and the same items were administered at each wave [41], except that one parental support item referred to continuing to high school or college at Time 1 and to middle school, high school, or college at Times 2 and 3. Item content, response scales, and sources are summarized in Table 2, and the complete set of items, in the original Korean and in English translation, is provided in Online Resource 1. Higher scores indicate higher levels of each construct. Construct validity was examined with a confirmatory factor analysis (CFA) of all six constructs at each wave, estimated by robust maximum likelihood with full information maximum likelihood; bicultural acceptance was indicated by three item parcels (see Analytic Strategy). The CFA fit the data well at each wave (CFI = .977 to .978, TLI = .972 to .973, RMSEA = .037 to .038, SRMR = .025 to .027). For each measure, we report standardized factor loadings, composite reliability, and average variance extracted (AVE) as evidence of convergent validity, with AVE ≥ .50 indicating adequate convergent validity [42]; heterotrait-monotrait ratios (HTMT) below .85 as evidence of discriminant validity [43]; and longitudinal measurement invariance, with metric and scalar invariance across the three waves supported for every construct (Table 4). Reliability was assessed with Cronbach's alpha and, for the two-item perceived health measure, the Spearman-Brown coefficient [44]. These indices are summarized in Tables 2 and 5.

Table 2
Study Measures and Internal Consistency

Variable	Items	Scale	Source	Sample item	Internal consistency		
					T1	T2	T3
Life satisfaction	3	1–4	S. Y. Kim et al. [45]; J. K. Kim et al. [46]	"I think my life is happy."	.80	.80	.79
Bicultural acceptance	10	1–4	Nho and Hong [47], adapted by NYPI	"Learning Korean culture is important to me."	.76	.75	.77
Perceived health[a]	2	1–4	NYPI [41]	"I am physically healthy."	.81	.80	.79
Friend support	3	1–5	Han [48], as adapted in MAPS	"My friends seem to understand me well."	.85	.84	.86
Teacher support	3	1–5	NYPI [41]	"My homeroom teacher seems to recognize me as an important person."	.85	.85	.87
Parental support	6	1–4	NYPI [41]	"My parents (guardians) encourage me to study hard."	.89	.89	.88

Note. Items = number of items; Scale = response-scale range. Higher scores indicate higher levels of the construct. Internal consistency values are Cronbach's alphas. Except for one parental support item whose wording was updated after Time 1 (see Online Resource 1), the same items were administered at Times 1, 2, and 3. T1 = 2019; T2 = 2020; T3 = 2021. MAPS = Multicultural Adolescents Panel Study; NYPI = National Youth Policy Institute. [a]Spearman-Brown coefficients are reported for the two-item perceived health measure.

Table 4

Longitudinal Measurement Invariance Across the Three Waves

Model	χ^2	*df*	CFI	TLI	RMSEA [90% CI]	SRMR	ΔCFI	ΔRMSEA
Life satisfaction								
Configural	19.03	15	.999	.999	.012 [.000, .028]	.010		
Metric	25.09	19	.999	.998	.014 [.000, .027]	.012	.000	.001
Scalar	42.60	23	.997	.995	.022 [.011, .033]	.015	−.002	.008
Bicultural acceptance								
Configural	50.33	15	.993	.982	.035 [.025, .046]	.022		
Metric	50.31	19	.993	.987	.030 [.020, .040]	.023	.001	−.005
Scalar	60.71	23	.992	.987	.030 [.021, .039]	.024	−.001	.000
Perceived health								
Configural[a]	–	0	–	–	–	–		
Metric	2.71	2	1.000	.998	.019 [.000, .069]	.006	–	–
Scalar	8.64	4	.999	.997	.020 [.000, .046]	.007	−.001	.001
Friend support								
Configural	11.38	15	1.000	1.001	.000 [.000, .017]	.008		
Metric	11.78	19	1.000	1.002	.000 [.000, .010]	.008	.000	.000
Scalar	19.95	23	1.000	1.001	.000 [.000, .017]	.010	.000	.000
Teacher support								
Configural	13.89	15	1.000	1.000	.000 [.000, .021]	.009		
Metric	22.72	19	1.000	.999	.010 [.000, .024]	.013	.000	.010
Scalar	40.50	23	.998	.997	.020 [.008, .030]	.015	−.002	.010
Parental support								
Configural	499.50	114	.973	.963	.047 [.043, .051]	.025		
Metric	518.14	124	.972	.966	.045 [.041, .050]	.026	.000	−.002
Scalar	578.32	134	.969	.965	.046 [.042, .050]	.028	−.003	.001

Note. Each construct was modeled across Times 1, 2, and 3, with the residuals of the same indicator correlated across waves. Configural = loadings and intercepts free; metric = loadings constrained to equality across waves; scalar = loadings and intercepts constrained to equality across waves. Δ values compare each model with the preceding, less constrained model. χ^2 = Yuan-Bentler scaled chi-square; CFI, TLI, and RMSEA are robust versions. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual. [a]With two indicators per wave, the configural model for perceived health is just-identified (*df* = 0), so its fit indices and the changes for the metric model are not defined; the metric model was evaluated by its absolute fit.

Table 5

Convergent and Discriminant Validity of the Latent Constructs

Construct	Loadings	Composite reliability			AVE		
		T1	T2	T3	T1	T2	T3
Panel A: Convergent validity							
Life satisfaction	.60–.88	.80	.80	.80	.58	.57	.57
Bicultural acceptance	.58–.81	.74	.72	.76	.50	.48	.53
Perceived health	.75–.89	.81	.81	.80	.68	.68	.66
Friend support	.76–.87	.85	.84	.86	.66	.65	.68
Teacher support	.73–.89	.85	.86	.87	.66	.67	.70
Parental support	.65–.83	.88	.89	.88	.56	.57	.55
Panel B: Heterotrait-monotrait ratios at Time 1							
	1	2	3	4	5	6	
1. Life satisfaction	–						
2. Bicultural acceptance	.44	–					
3. Perceived health	.58	.39	–				
4. Friend support	.48	.36	.42	–			
5. Teacher support	.42	.38	.32	.51	–		
6. Parental support	.52	.56	.46	.40	.41	–	

Note. Loadings = range of standardized factor loadings across the three waves, estimated in a confirmatory factor analysis of all six constructs at each wave. Bicultural acceptance was indicated by three item parcels. AVE = average variance extracted. AVE ≥ .50 and heterotrait-monotrait ratios < .85 support convergent and discriminant validity, respectively. T1 = 2019; T2 = 2020; T3 = 2021.

Life satisfaction. Life satisfaction was measured with three items from the Korean Youth Development Index survey [45], as used in the Korean Children and Youth Panel Survey [46]: “I enjoy my life,” “I don't have many worries,” and “I think my life is happy.” Items were rated from 1 (*not at all true*) to 4 (*very true*). At Times 1, 2, and 3, the standardized loadings of the three items were .60 to .88, composite reliability was .80, .80, and .80, AVE was .58, .57, and .57, and Cronbach's alpha was .80, .80, and .79; the HTMT ratios with the other constructs at Time 1 were .42 to .58. These values support the convergent and discriminant validity and the reliability of the measure.

Bicultural acceptance. Bicultural acceptance was measured with 10 items that NYPI adapted from Nho and Hong [47], who developed them to assess the adaptation of migrant workers' children in Korea. The items assess attitudes toward Korean and heritage cultures, including enjoyment of each culture (e.g., “I enjoy Korean culture [music, movies, food, clothing, etc.]”), pride in having a foreign-born parent and in living in Korea, intended future residence and educational or occupational aspirations in each country, and the perceived importance of learning each culture. Items were rated on a 4-point scale from 1 (*not at all true*) to 4 (*very true*). At Times 1, 2, and 3, the standardized loadings of the three parcels were .58 to .81, composite reliability was .74, .72, and .76, AVE was .50, .48, and .53, and Cronbach's alpha was .76, .75, and .77; the HTMT ratios with the other constructs at Time 1 were .36 to .56. These values support discriminant validity and reliability; the AVE fell slightly below .50 at Time 2, but composite reliability exceeded .70 at every wave, so convergent validity was regarded as adequate.

Perceived health. Perceived health was measured with two items, “I am physically healthy” and “I am mentally healthy,” rated on a 4-point scale from 1 (*not at all true*) to 4 (*very true*). At Times 1, 2, and 3, the standardized loadings of the two items were .75 to .89, composite reliability was .81, .81, and .80, AVE was .68, .68, and .66, and the Spearman-Brown coefficient was .81, .80, and .79; the HTMT ratios with the other constructs at Time 1 were .32 to .58. These values support the convergent and discriminant validity and the reliability of the measure.

Friend support. Friend support was measured with three items that MAPS labels as perceived support from friends: “My friends seem to be very interested in me,” “My friends seem to like spending time with me,” and “My friends seem to understand me well.” The items derive from the friend-support subscale of Han's [48] perceived social support scale for children and were rated on a 5-point scale from 1 (*not at all true*) to 5 (*very true*). Because these items assess adolescents' perceptions of being cared for, enjoyed, and understood by friends, that is, perceived emotional and esteem support from friends, rather than the broader quality or structure of peer relationships, we refer to this construct as friend support. At Times 1, 2, and 3, the standardized loadings of the three items were .76 to .87, composite reliability was .85, .84, and .86, AVE was .66, .65, and .68, and Cronbach's alpha was .85, .84, and .86; the HTMT ratios with the other constructs at Time 1 were .36 to .51. These values support the convergent and discriminant validity and the reliability of the measure.

Teacher support. Teacher support was measured with three items on perceived support from the homeroom teacher, who in Korean elementary schools teaches most subjects and is responsible for students' daily school life: “My homeroom teacher seems to be very interested in me,” “My homeroom teacher seems to worry about me when I am sick or something happens to me,” and “My homeroom teacher seems to recognize me as an important person.” The items parallel the friend support items in wording and were rated on the same 5-point scale [41]. At Times 1, 2, and 3, the standardized loadings of the three items were .73 to .89, composite reliability was .85, .86, and .87, AVE was .66, .67, and .70, and Cronbach's alpha was .85, .85, and .87; the HTMT ratios with the other constructs at Time 1 were .32 to .51. These values support the convergent and discriminant validity and the reliability of the measure.

Parental support. Parental support was measured with six items on parents' (or guardians') educational support and expectations: encouragement to study hard, help when difficulties arise at school, encouragement to continue to high school or college, interest in the adolescent, advice on classes and school life, and provision of needed resources such as materials or a place to study [41]. Items were rated on a 4-point scale from 1 (*not at all true*) to 4 (*very true*). Because the items emphasize educational support, this measure captures the instrumental and informational aspects of parental support more fully than its emotional aspects. At Times 1, 2, and 3, the standardized loadings of the six items were .65 to .83, composite reliability was .88, .89, and .88, AVE was .56, .57, and .55, and Cronbach's alpha was .89, .89, and .88; the HTMT ratios with the other constructs at Time 1 were .40 to .56. These values support the convergent and discriminant validity and the reliability of the measure.

Covariates. Covariates were measured at Time 1: sex (0 = boy, 1 = girl), age in years, number of close friends, educational aspiration (1 = elementary school to 5 = graduate school), worry about studies, school, and grades, and worry about educational or career plans (each rated from 1 = *not at all worried* to 4 = *very worried*). Foreign-born adolescents reported their number of close friends separately by the friends' birthplace; these counts were summed, and values above the 99th percentile (42) were recoded to 42. These variables were included because they may influence both perceived support and life satisfaction.

Analytic Strategy

Analyses were conducted in R 4.3.3 [49] with lavaan 0.6–17 [50] and semTools 0.5-6 [51]. Item skewness (− 0.93 to 0.40) and kurtosis (− 0.66 to 1.04) were within conventional limits, but because the items were ordinal with four or five response categories, all models were estimated by robust maximum likelihood (MLR), which yields fit statistics and standard errors that are robust to nonnormality [52]. Missing data were handled with full information maximum likelihood (FIML), which uses all available observations under the missing-at-random assumption [53], so all 2,271 adolescents contributed to estimation.

Following the two-step approach [54, 55], we first estimated measurement models in which all latent constructs were allowed to covary freely and then estimated the structural models. Life satisfaction, perceived health, and friend, teacher, and parental support were indicated by their items. Because the 10 bicultural acceptance items cover heterogeneous content and include items oriented toward Korean culture and toward the heritage culture, they were combined into three domain-representative parcels, each containing items oriented to both cultures: enjoyment and pride (Items 1–4), future residence and educational or occupational plans (Items 5–8), and the importance of learning each culture (Items 9 and 10) [56]. The residuals of the same indicator were allowed to correlate across waves, because repeated measurement of the same item produces item-specific shared variance [57]; no other residual covariances were added. Model fit was evaluated with the robust χ^2 test, the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA) with its 90% confidence interval, and the standardized root mean square residual (SRMR); values of CFI and TLI ≥ .95, RMSEA ≤ .06, and SRMR ≤ .08 indicated good fit [58]. Because the χ^2 test is sensitive to sample size, it was not used as the sole criterion. Convergent and discriminant validity were evaluated as described under Measures.

We tested longitudinal measurement invariance separately for each construct across the three waves by comparing a configural model, a metric model with factor loadings constrained to be equal across waves, and a scalar model with intercepts additionally constrained to be equal. A decrease in CFI of no more than .010, accompanied by an increase in RMSEA of no more than .015, supported the more constrained model [59, 60]. In the measurement and structural models, the loadings of each construct were constrained to be equal across waves.

In the second step, we estimated the structural models. In each model, Time 1 support predicted Time 2 bicultural acceptance, Time 2 perceived health, and Time 3 life satisfaction; Time 2 bicultural acceptance predicted Time 2 perceived health and Time 3 life satisfaction; and Time 2 perceived health predicted Time 3 life satisfaction. Bicultural acceptance, perceived health, and life satisfaction were regressed on their own Time 1 levels (autoregressive paths). To test the direction of the association between support and the mediators, Time 2 support was regressed on Time 1 support, Time 1 bicultural acceptance, and Time 1 perceived health. The Time 1 constructs and the covariates were allowed to covary, the covariates predicted all Time 2 and Time 3 endogenous variables, and the residuals of the Time 2 endogenous variables were allowed to covary unless they were connected by a directed path. We estimated four structural models: three source-specific models (Model 1, friend support; Model 2, teacher support; Model 3, parental support), which estimate the total association of each source, and an integrated model (Model 4) in which all three sources were entered simultaneously, which estimates the unique association of each source while accounting for the correlations among them. To examine the ordering of the two mediators, we compared each hypothesized model with an alternative model in which Time 2 perceived health predicted Time 2 bicultural acceptance. Because these models have the same degrees of freedom, they were compared with the Akaike and Bayesian information criteria, with lower values indicating better fit [61].

Indirect effects were computed as products of standardized coefficients, and their 95% confidence intervals (CIs) were obtained with the Monte Carlo method (20,000 draws), which samples parameter values from their estimated sampling distribution and, like the bootstrap, does not assume that the indirect effect is normally distributed [62]. An indirect effect was considered significant when its 95% CI excluded zero. To evaluate whether indirect effects differed in magnitude, we defined the differences between specific indirect effects as additional parameters and obtained Monte Carlo CIs for them [63]. Within each model, this allowed the pathways through bicultural acceptance, through perceived health, and through the serial route to be compared; in the integrated model, it allowed the indirect effects of the three sources to be compared directly.

Results

Preliminary Analyses

Means, standard deviations, and correlations are presented in Table 3. Mean levels of friend support (M = 3.80 to 3.86) were stable across the three waves. Teacher support was slightly lower at Time 2 (M = 3.74) than at Time 1 (M = 3.79) and Time 3 (M = 3.83), and parental support declined from Time 1 (M = 3.34) to Time 3 (M = 3.24). Bicultural acceptance (M = 2.94 to 2.96) and perceived health (M = 3.45 to 3.49) were also stable, whereas life satisfaction declined from Time 1 (M = 3.35) to Time 3 (M = 3.21). All study variables were positively correlated within and across waves (r = .11 to .51, all ps < .001). Cronbach's alphas ranged from .75 to .89, and the Spearman-Brown coefficient for perceived health ranged from .79 to .81 (Table 2).

Table 3

Means, Standard Deviations, and Correlations Among Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Friend support (T1)	3.85	0.82	–																	
2. Teacher support (T1)	3.79	0.81	.43	–																
3. Parental support (T1)	3.34	0.54	.34	.36	–															
4. Bicultural acceptance (T1)	2.96	0.44	.30	.31	.47	–														
5. Perceived health (T1)	3.49	0.55	.34	.27	.38	.32	–													
6. Life satisfaction (T1)	3.35	0.56	.40	.35	.44	.35	.47	–												
7. Friend support (T2)	3.80	0.70	.41	.29	.24	.21	.25	.26	–											
8. Teacher support (T2)	3.74	0.72	.33	.36	.27	.19	.22	.26	.51	–										
9. Parental support (T2)	3.26	0.53	.25	.24	.41	.25	.27	.30	.37	.39	–									
10. Bicultural acceptance (T2)	2.94	0.41	.24	.18	.26	.35	.20	.24	.28	.33	.43	–								
11. Perceived health (T2)	3.48	0.53	.24	.18	.26	.16	.36	.29	.32	.30	.38	.26	–							
12. Life satisfaction (T2)	3.25	0.55	.22	.18	.27	.18	.26	.39	.32	.34	.42	.35	.41	–						
13. Friend support (T3)	3.86	0.68	.31	.24	.20	.20	.17	.24	.41	.33	.24	.23	.24	.26	–					
14. Teacher support (T3)	3.83	0.73	.20	.29	.22	.19	.11	.19	.25	.37	.23	.19	.18	.20	.51	–				
15. Parental support (T3)	3.24	0.50	.21	.22	.34	.23	.18	.24	.25	.24	.45	.24	.27	.28	.34	.38	–			
16. Bicultural acceptance (T3)	2.94	0.40	.17	.16	.20	.25	.14	.22	.18	.22	.24	.34	.14	.24	.33	.33	.46	–		
17. Perceived health (T3)	3.45	0.56	.20	.12	.20	.17	.25	.24	.23	.18	.24	.20	.40	.30	.30	.25	.38	.28	–	
18. Life satisfaction (T3)	3.21	0.54	.15	.11	.18	.16	.15	.28	.21	.17	.23	.15	.25	.37	.33	.32	.45	.33	.50	–

Note. *N*s = 2,271 (T1), 2,073 (T2), and 1,999 (T3); correlations are based on pairwise-available data. Values are means of item scores. Friend and teacher support were rated on 5-point scales and all other constructs on 4-point scales. T1 = 2019 (Grade 4); T2 = 2020 (Grade 5); T3 = 2021 (Grade 6). Column numbers correspond to the numbered rows. All correlations are significant at $p < .001$.

Measurement Model and Longitudinal Invariance

For every construct, both metric and scalar invariance across the three waves were supported (Table 4): the decreases in CFI and increases in RMSEA between successive models were within the criteria (all ΔCFI ≥ − .003, all ΔRMSEA ≤ .010). Because the configural model for perceived health, with two indicators per wave, was just-identified, its metric model was evaluated by its absolute fit, which was excellent ($\chi^2(2) = 2.71$, p = .258, CFI = 1.000, RMSEA = .019). These results indicate that the constructs were measured equivalently over time. The measurement models underlying the four structural analyses fit the data well (CFI = .977 to .993, TLI = .972 to .990, RMSEA = .019 to .031, SRMR = .021 to .025; Table 6), and standardized loadings ranged from .59 to .89. Composite reliability, AVE, and HTMT ratios for each construct are reported under Measures and in Table 5.

Table 6
Fit Indices for the Measurement, Structural, and Alternative Models

Model	χ^2	*df*	CFI	TLI	RMSEA [90% CI]	SRMR	AIC	BIC
Measurement models								
Model 1: Friend support	320.78	177	.991	.989	.021 [.017, .025]	.023	–	–
Model 2: Teacher support	299.32	177	.993	.990	.019 [.015, .023]	.021	–	–
Model 3: Parental support	840.07	318	.977	.972	.031 [.028, .033]	.025	–	–
Model 4: Integrated	1,419.24	668	.978	.975	.025 [.023, .027]	.023	–	–
Hypothesized structural models (bicultural acceptance → perceived health)								
Model 1: Friend support	492.54	268	.988	.983	.021 [.018, .024]	.022	109,843.3	110,794.2
Model 2: Teacher support	476.83	268	.989	.984	.020 [.017, .023]	.023	109,902.9	110,853.8
Model 3: Parental support	1,090.97	445	.974	.967	.028 [.026, .030]	.026	122,061.8	123,115.8
Model 4: Integrated	1,779.56	851	.975	.970	.025 [.023, .026]	.028	174,429.1	176,010.0
Alternative structural models (perceived health → bicultural acceptance)								
Model 1: Friend support	485.05	268	.988	.983	.021 [.018, .024]	.022	109,834.8	110,785.6
Model 2: Teacher support	464.36	268	.989	.985	.020 [.017, .023]	.022	109,888.8	110,839.7
Model 3: Parental support	1,076.66	445	.974	.968	.028 [.026, .030]	.025	122,044.9	123,098.8
Model 4: Integrated	1,767.46	851	.975	.970	.024 [.023, .026]	.028	174,414.7	175,995.7

Note. All models were estimated with robust maximum likelihood and full information maximum likelihood (N = 2,271). χ^2 = Yuan-Bentler scaled chi-square; CFI, TLI, and RMSEA are robust versions. The hypothesized and alternative models have the same degrees of freedom and differ only in the direction of the path between the two Time 2 mediators; lower AIC and BIC values indicate better fit. AIC and BIC are not reported for the measurement models, which are not compared with one another. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual; AIC = Akaike information criterion; BIC = Bayesian information criterion.

Structural Models

All four structural models fit the data well (Table 6). Model 1 (friend support): $\chi^2(268) = 492.54$, CFI = .988, TLI = .983, RMSEA = .021, 90% CI [.018, .024], SRMR = .022. Model 2 (teacher support): $\chi^2(268) = 476.83$, CFI = .989, TLI = .984, RMSEA = .020, 90% CI [.017, .023], SRMR = .023. Model 3 (parental support): $\chi^2(445) = 1{,}090.97$, CFI = .974, TLI = .967, RMSEA = .028, 90% CI [.026, .030], SRMR = .026. Model 4 (integrated): $\chi^2(851) = 1{,}779.56$, CFI = .975, TLI = .970, RMSEA = .025, 90% CI [.023, .026], SRMR = .028. The models explained .20 to .22 of the variance in Time 2 bicultural acceptance, .24 in Time 2 perceived health, and .16 to .17 in Time 3 life satisfaction. Standardized direct effects are reported in Table 7, indirect effects in Table 8, and the estimates of Models 1 to 3 in Fig. 2.

Table 7

Standardized Direct Effects in the Structural Models

Path	Model 1	Model 2	Model 3	Model 4 (integrated)		
	Friend	Teacher	Parental	Friend	Teacher	Parental
Hypothesized paths						
Support (T1) → BA (T2) [*a*]	.158***	.066*	.117**	.093**	−.025	.069
Support (T1) → PH (T2) [*b*]	.073*	.039	.072*	.032	−.013	.059
Support (T1) → LS (T3) [*c*]	−.005	−.038	−.002	.004	−.047	.006
BA (T2) → PH (T2) [*d*]	.240***	.249***	.240***	.238***		
BA (T2) → LS (T3) [*f*]	.105**	.111***	.109***	.111***		
PH (T2) → LS (T3) [*e*]	.193***	.195***	.194***	.194***		
Autoregressive paths						
Support (T1) → Support (T2)	.367***	.320***	.353***	.292***	.268***	.319***
BA (T1) → BA (T2)	.364***	.398***	.349***	.363***		
PH (T1) → PH (T2)	.310***	.327***	.306***	.305***		
LS (T1) → LS (T3)	.222***	.232***	.216***	.228***		
Reverse cross-lagged paths						
BA (T1) → Support (T2)	.095**	.086**	.083*	.129***	.117***	.104**
PH (T1) → Support (T2)	.078*	.075*	.093**	.099**	.094**	.108***
Explained variance (R^2)						
Support (T2)	.26	.21	.22	.23	.20	.22
BA (T2)	.22	.20	.20	.21		
PH (T2)	.24	.24	.24	.24		
LS (T3)	.16	.16	.16	.17		

Note. N = 2,271. Values are standardized coefficients. Support refers to the source examined in each model (friend, teacher, or parental support); in Model 4, the three sources were entered simultaneously, and values spanning the three Model 4 columns are single estimates. Letters in brackets correspond to the paths in Fig. 1. All paths were adjusted for the covariates (sex, age, number of close friends, educational aspiration, worry about studies, school, and grades, and worry about educational or career plans). BA = bicultural acceptance; PH = perceived health; LS = life satisfaction; T1 = 2019; T2 = 2020; T3 = 2021. *p < .05. **p < .01. ***p < .001.

Table 8

Standardized Indirect Effects on Life Satisfaction (T3) and Differences Between Them

Effect	Friend support	Teacher support	Parental support
Source-specific models (Models 1–3)			
Support → BA → LS	**.017 [.006, .030]**	**.007 [.0005, .016]**	**.013 [.003, .026]**
Support → PH → LS	**.014 [.003, .028]**	.008 [− .002, .019]	**.014 [.002, .028]**
Support → BA → PH → LS	**.007 [.004, .012]**	**.003 [.0003, .007]**	**.005 [.002, .010]**
Total indirect effect	**.038 [.021, .057]**	**.018 [.004, .033]**	**.032 [.015, .052]**
Total effect	.033 [− .030, .098]	−.020 [− .077, .038]	.030 [− .035, .095]
Difference: PH pathway − BA pathway	−.003 [− .021, .016]	.000 [− .014, .015]	.001 [− .017, .019]
Difference: PH pathway − serial pathway	.007 [− .006, .020]	.004 [− .006, .016]	.009 [− .004, .023]
Difference: BA pathway − serial pathway	.009 [− .002, .022]	.004 [− .001, .012]	.007 [− .001, .019]
Integrated model (Model 4)			
Support → BA → LS	**.010 [.002, .021]**	−.003 [− .010, .003]	.008 [− .001, .018]
Support → PH → LS	.006 [− .006, .019]	−.003 [− .014, .009]	.011 [− .001, .025]
Support → BA → PH → LS	**.004 [.001, .008]**	−.001 [− .004, .001]	.003 [− .0002, .007]
Total indirect effect	**.021 [.005, .038]**	−.007 [− .020, .007]	**.022 [.006, .040]**
Total effect	.025 [− .045, .095]	−.054 [− .117, .011]	.028 [− .037, .091]
Difference: PH pathway − BA pathway	−.004 [− .021, .012]	.000 [− .013, .014]	.004 [− .013, .021]
Difference: PH pathway − serial pathway	.002 [− .011, .015]	−.001 [− .013, .011]	.008 [− .005, .023]
Difference: BA pathway − serial pathway	.006 [− .001, .015]	−.002 [− .007, .002]	.004 [− .001, .013]
Integrated model (Model 4): differences between sources			
	Friend − teacher	*Parental − teacher*	*Parental − friend*
Support → BA → LS	**.013 [.002, .029]**	.010 [− .0002, .025]	−.003 [− .016, .009]
Support → PH → LS	.009 [− .011, .029]	.014 [− .004, .034]	.005 [− .012, .024]
Support → BA → PH → LS	**.005 [.001, .011]**	.004 [− .0001, .010]	−.001 [− .006, .004]
Total indirect effect	**.027 [.003, .054]**	**.029 [.005, .054]**	.001 [− .023, .025]
Alternative ordering (perceived health → bicultural acceptance), Models 1–3			
Support → PH → LS	**.024 [.012, .040]**	**.015 [.005, .028]**	**.026 [.013, .043]**
Support → BA → LS	**.011 [.003, .021]**	.003 [− .003, .011]	.005 [− .003, .015]
Support → PH → BA → LS	**.003 [.001, .006]**	**.002 [.001, .005]**	**.004 [.001, .007]**
Alternative ordering (perceived health → bicultural acceptance), Model 4			
Support → PH → LS	.011 [− .0003, .025]	−.002 [− .013, .010]	**.021 [.008, .036]**
Support → BA → LS	.007 [− .0001, .016]	−.003 [− .011, .003]	.002 [− .007, .011]
Support → PH → BA → LS	.002 [− .00004, .004]	.000 [− .002, .001]	**.003 [.001, .006]**

Note. N = 2,271. Values are standardized effects with Monte Carlo 95% confidence intervals (20,000 draws) in brackets; bold values indicate intervals that exclude zero. In Models 1–3, each column is a separate model; in Model 4, the three sources were entered simultaneously. The total effect is the sum of the direct and total indirect effects. Differences between indirect effects were defined as additional parameters. Support = social support at T1; BA = bicultural acceptance (T2); PH = perceived health (T2); LS = life satisfaction (T3); T1 = 2019; T2 = 2020; T3 = 2021.

Model 1: Friend Support

Time 1 friend support predicted Time 2 bicultural acceptance (β = .158, p < .001) and Time 2 perceived health (β = .073, p = .014), but it was not directly associated with Time 3 life satisfaction (β = −.005, p = .890). Bicultural acceptance predicted perceived health (β = .240, p < .001) and life satisfaction (β = .105, p = .002), and perceived health predicted life satisfaction (β = .193, p < .001). The indirect effect of friend support on life

satisfaction was significant through bicultural acceptance (β = .017, 95% CI [.006, .030]), through perceived health (β = .014, 95% CI [.003, .028]), and through the serial pathway (β = .007, 95% CI [.004, .012]). The total indirect effect was significant (β = .038, 95% CI [.021, .057]), whereas the total effect was not (β = .033, 95% CI [− .030, .098]).

Model 2: Teacher Support

Time 1 teacher support predicted Time 2 bicultural acceptance (β = .066, *p* = .030) but not Time 2 perceived health (β = .039, *p* = .140), and it was not directly associated with Time 3 life satisfaction (β = −.038, *p* = .195). Bicultural acceptance predicted perceived health (β = .249, *p* < .001) and life satisfaction (β = .111, *p* < .001), and perceived health predicted life satisfaction (β = .195, *p* < .001). The indirect effect of teacher support on life satisfaction was significant through bicultural acceptance (β = .007, 95% CI [.0005, .016]) and through the serial pathway (β = .003, 95% CI [.0003, .007]). The indirect effect through perceived health (β = .008, 95% CI [− .002, .019]) was not significant. The total indirect effect was significant (β = .018, 95% CI [.004, .033]), whereas the total effect was not (β = −.020, 95% CI [− .077, .038]).

Model 3: Parental Support

Time 1 parental support predicted Time 2 bicultural acceptance (β = .117, *p* = .003) and Time 2 perceived health (β = .072, *p* = .023), but it was not directly associated with Time 3 life satisfaction (β = −.002, *p* = .940). Bicultural acceptance predicted perceived health (β = .240, *p* < .001) and life satisfaction (β = .109, *p* < .001), and perceived health predicted life satisfaction (β = .194, *p* < .001). The indirect effect of parental support on life satisfaction was significant through bicultural acceptance (β = .013, 95% CI [.003, .026]), through perceived health (β = .014, 95% CI [.002, .028]), and through the serial pathway (β = .005, 95% CI [.002, .010]). The total indirect effect was significant (β = .032, 95% CI [.015, .052]), whereas the total effect was not (β = .030, 95% CI [− .035, .095]).

Model 4: Integrated Model

When the three sources were entered simultaneously (Model 4), friend support remained a unique predictor of later bicultural acceptance (β = .093, *p* = .002), whereas the unique associations of parental support (β = .069, *p* = .067) and teacher support (β = −.025, *p* = .383) with bicultural acceptance were not significant. None of the three sources uniquely predicted later perceived health (friend support, β = .032, *p* = .312; parental support, β = .059, *p* = .069; teacher support, β = −.013, *p* = .651), and none was directly associated with later life satisfaction. The associations of bicultural acceptance with perceived health (β = .238, *p* < .001) and life satisfaction (β = .111, *p* < .001) and of perceived health with life satisfaction (β = .194, *p* < .001) were virtually unchanged. Friend support retained a significant total indirect effect (β = .021, 95% CI [.005, .038]), carried by the pathway through bicultural acceptance (β = .010, 95% CI [.002, .021]) and the serial pathway (β = .004, 95% CI [.001, .008]). Parental support also retained a significant total indirect effect (β = .022, 95% CI [.006, .040]), although none of its specific indirect effects reached significance on its own. The total indirect effect of teacher support was not significant (β = −.007, 95% CI [− .020, .007]). These results are shown in Fig. 3 and Table 8.

Reverse Cross-Lagged Paths and Alternative Ordering of the Mediators

In all models, Time 1 bicultural acceptance (β = .083 to .129) and Time 1 perceived health (β = .075 to .108) predicted later support from each source, net of prior support (all *p*s < .05; Table 7), indicating that the associations between support and the mediators were reciprocal. In the alternative models in which Time 2 perceived health predicted Time 2 bicultural acceptance, the AIC and BIC were lower than in the hypothesized models by 8.5 to 16.9 points (Table 6), so the data favored the alternative ordering of the two mediators. In these alternative models, friend support (β = .024, 95% CI [.012, .040]), teacher support (β = .015, 95% CI [.005, .028]), and parental support (β = .026, 95% CI [.013, .043]) predicted life satisfaction through perceived health, and the serial pathway from support through perceived health and bicultural acceptance to life satisfaction was also significant for each source (friend, β = .003, 95% CI [.001, .006]; teacher, β = .002, 95% CI [.001, .005]; parental, β = .004, 95% CI [.001, .007]), whereas the pathway through bicultural acceptance remained significant only for friend support (β = .011, 95% CI [.003, .021]).

Differences Between Indirect Effects

Within each model, the indirect effects through bicultural acceptance and through perceived health did not differ significantly (friend support, Δβ = −.003, 95% CI [− .021, .016]; teacher support, Δβ = .000, 95% CI [− .014, .015]; parental support, Δβ = .001, 95% CI [− .017, .019]), and neither differed significantly from the serial pathway (Table 8). In the integrated model, the total indirect effects of friend support (Δβ = .027, 95% CI [.003, .054]) and parental support (Δβ = .029, 95% CI [.005, .054]) were significantly larger than that of teacher support, whereas friend and parental support did not differ from each other (Δβ = .001, 95% CI [− .023, .025]). Friend support also had larger indirect effects than teacher support through bicultural acceptance and through the serial pathway.

Covariates

Among the covariates (Table 9), being a girl was associated with higher later life satisfaction through bicultural acceptance and through the serial pathway in every model (Model 4: through bicultural acceptance, β = .009, 95% CI [.003, .018]; serial pathway, β = .004, 95% CI [.001, .007]), although the direct association between being a girl and Time 3 life satisfaction was negative (β = −.088, *p* < .001). Worry about educational or career plans showed a negative but nonsignificant indirect association through perceived health (β = −.011, 95% CI [− .025, .001]), and the indirect effects of age, number of close friends, educational aspiration, and worry about studies, school, and grades were not significant.

Table 9
Standardized Indirect Effects of the Covariates on Life Satisfaction (T3)

Covariate	Model 1	Model 2	Model 3	Model 4
Through bicultural acceptance (covariate → BA → LS)				
Girl (vs. boy)	**.008 [.002, .016]**	**.009 [.003, .018]**	**.010 [.003, .018]**	**.009 [.003, .018]**
Age	−.002 [− .007, .003]	−.002 [− .007, .003]	−.001 [− .007, .003]	−.002 [− .007, .003]
Number of close friends	−.001 [− .007, .005]	.002 [− .004, .008]	.002 [− .003, .008]	.000 [− .005, .006]
Educational aspiration	.002 [− .004, .008]	.002 [− .004, .009]	.002 [− .004, .008]	.002 [− .004, .008]
Worry about studies, school, and grades	−.001 [− .008, .006]	−.002 [− .009, .005]	−.002 [− .009, .005]	−.001 [− .009, .006]
Worry about educational or career plans	−.001 [− .009, .006]	−.002 [− .010, .006]	−.001 [− .009, .007]	−.001 [− .009, .006]
Through perceived health (covariate → PH → LS)				
Girl (vs. boy)	−.002 [− .011, .007]	−.001 [− .010, .008]	−.001 [− .010, .008]	−.001 [− .010, .008]
Age	−.003 [− .012, .005]	−.003 [− .012, .006]	−.003 [− .012, .006]	−.003 [− .012, .006]
Number of close friends	.002 [− .006, .010]	.003 [− .005, .012]	.004 [− .004, .012]	.003 [− .005, .011]
Educational aspiration	.003 [− .005, .012]	.003 [− .006, .012]	.002 [− .006, .012]	.003 [− .006, .012]
Worry about studies, school, and grades	−.002 [− .014, .010]	−.002 [− .015, .010]	−.002 [− .014, .010]	−.002 [− .014, .010]
Worry about educational or career plans	−.011 [− .025, .001]	−.011 [− .025, .001]	−.011 [− .024, .001]	−.011 [− .025, .001]
Serial pathway (covariate → BA → PH → LS)				
Girl (vs. boy)	**.003 [.001, .006]**	**.004 [.002, .007]**	**.004 [.002, .007]**	**.004 [.001, .007]**
Age	−.001 [− .003, .001]	−.001 [− .003, .001]	−.001 [− .003, .001]	−.001 [− .003, .001]
Number of close friends	.000 [− .003, .002]	.001 [− .002, .003]	.001 [− .001, .003]	.000 [− .002, .003]
Educational aspiration	.001 [− .002, .003]	.001 [− .002, .004]	.001 [− .002, .003]	.001 [− .002, .003]
Worry about studies, school, and grades	.000 [− .003, .003]	−.001 [− .004, .002]	−.001 [− .004, .002]	.000 [− .003, .002]
Worry about educational or career plans	−.001 [− .004, .002]	−.001 [− .004, .002]	.000 [− .003, .003]	.000 [− .004, .003]

Note. N = 2,271. Values are standardized indirect effects with Monte Carlo 95% confidence intervals (20,000 draws) in brackets; bold values indicate intervals that exclude zero. Covariates were measured at T1. Model 1 = friend support; Model 2 = teacher support; Model 3 = parental support; Model 4 = integrated model. Number of close friends was recoded so that values above the 99th percentile were set to 42. BA = bicultural acceptance (T2); PH = perceived health (T2); LS = life satisfaction (T3).

Discussion

This study examined whether social support from friends, homeroom teachers, and parents is associated with later life satisfaction among multicultural adolescents in South Korea through bicultural acceptance and perceived health. Friend and parental support predicted later bicultural acceptance and perceived health, teacher support predicted later bicultural acceptance only, and bicultural acceptance and perceived health in turn predicted later life satisfaction. No source of support was directly associated with life satisfaction once prior life satisfaction and the two mediators were taken into account, and the total effects of support were not significant, so Hypothesis 1 was supported only through indirect pathways. Hypotheses 2 and 3 were supported for friend and parental support and partly supported for teacher support, whose pathway through perceived health was not significant. When the three sources were considered together, friend and parental support retained significant total indirect effects that were larger than that of teacher support, which was no longer significant.

The two mediators carried indirect effects of similar size. Within each model, the pathways through bicultural acceptance and through perceived health did not differ significantly, so neither cultural acceptance nor perceived health can be regarded as the stronger conduit. These findings fit a resource-oriented account of acculturation in which an integrated cultural orientation supports psychological adjustment [23, 36, 13] and in which self-rated health functions as a summary appraisal of security, vitality, and social functioning that adolescents draw on when they evaluate their lives [39, 9, 35]. The ordering of the two mediators, however, was not resolved. Because both were measured at Time 2, their order could not be established by temporal precedence, and the information criteria favored the model in which perceived health preceded bicultural acceptance. In that model, the indirect pathways through perceived health were larger and the serial pathway remained significant, which suggests that cultural acceptance and perceived health are closely intertwined and may influence each other, in line with the reciprocal identity and well-being associations reported by De Lise et al. [38].

The reverse cross-lagged paths add a further qualification. Earlier bicultural acceptance and perceived health predicted later support from friends, teachers, and parents, so the associations between support and the mediators were reciprocal rather than one-directional. Adolescents who embrace both cultures and feel healthy may elicit and perceive more support, which in turn strengthens their cultural acceptance and health appraisals. This pattern is consistent with studies that have modeled bicultural acceptance as an antecedent of friend support [14] and suggests that support and cultural acceptance form a mutually reinforcing cycle rather than a simple causal chain. Among Biracial adolescents, having one's identity invalidated by others is related to depressive symptoms and life satisfaction [64], which likewise points to the interpersonal grounding of cultural identity.

The comparison of support sources is the study's most distinctive result. Friend and parental support contributed uniquely, although indirectly, to later life satisfaction, whereas teacher support did not once the other sources were controlled. Contrary to our expectation that parental support would show the strongest indirect effects, the total indirect effects of parental and friend support did not differ, and friend support was the only source that uniquely predicted later bicultural acceptance. One plausible explanation is structural: in Korean elementary schools, students usually have a different homeroom teacher each school year, so the teacher who provided support at Time 1 was generally not the teacher present at Time 2, which may limit the prospective influence of any single teacher relationship. Teacher support may therefore operate through the classroom climate in each year more than through a continuous relationship [33]. The findings also converge with those of Ling et al. [20], who found that only family support predicted within-person change in multicultural adolescents' life satisfaction. Because the autoregressive cross-lagged model does not separate stable between-person differences from within-person change [65], the associations reported here may partly reflect stable differences between adolescents. The parental support measure also emphasized educational support, so the parental pathways may reflect instrumental and informational more than emotional support.

Although our models specified support as a main-effect resource, recent studies caution that the benefits of support are neither uniform nor unconditional. Zhou et al. [66] found that resilience factors, including teacher support, intensified rather than buffered the association between childhood adversity and the frustration of adolescents' basic psychological needs, a reverse-buffering pattern first described in occupational research [67]. Lou et al. [68], by contrast, found that perceived social support buffered the association between adverse childhood experiences and adult family health. Together, these studies indicate that whether support protects depends on the stressor, the source, and the outcome. For multicultural adolescents, support that is experienced as pressure to assimilate, or help that signals that the adolescent is seen as deficient, could undermine rather than foster bicultural acceptance. The present study estimated main effects only; future studies should test whether the associations reported here are moderated by stressors such as discrimination and acculturative stress, and whether any source of support shows reverse-buffering effects.

The findings extend cross-sectional [12, 14, 7] and longitudinal [19, 20, 18] research on Korean multicultural adolescents. The present study adds that support from three sources, examined separately and jointly with invariant latent measures, relates to later life satisfaction only indirectly, and that these indirect associations are embedded in reciprocal relations between support and cultural acceptance. Finally, Time 2 coincided with the 2020 school year, when the start of the year was postponed and instruction was delivered online or in blended form for much of the year [69, 70]. The lower mean level of homeroom-teacher support at Time 2 is consistent with reduced in-person contact, but without a comparison cohort this interpretation is speculative.

Theoretical Contributions

The study makes three contributions. First, it supports a resource-oriented view of multicultural adolescents' development by showing that social support, bicultural acceptance, and perceived health are prospectively and reciprocally linked assets. Second, it integrates social support and acculturation perspectives that are often pursued separately, showing that support is related to well-being through cultural acceptance and health appraisals rather than directly. Third, by examining three sources of support separately and simultaneously with longitudinally invariant latent measures and formal tests of differences between indirect effects, it distinguishes the total from the unique contributions of each source and shows that friends and parents, rather than homeroom teachers, carry the unique prospective associations in late childhood.

Practical Implications

The findings suggest several concrete steps for schools, families, and youth policy. First, because friend support uniquely predicted later bicultural acceptance, schools can build peer inclusion into routine structures rather than relying on stand-alone multicultural events, for example through cooperative learning groups that mix multicultural and non-multicultural students and peer mentoring for newly arrived mid-entry immigrant students. Second, because parental support also carried a unique indirect effect, family programs offered through schools and community family centers can teach immigrant parents concrete cultural-socialization practices, such as talking with children about both cultures and helping with Korean-language schoolwork, and can provide interpretation so that parents can take part in school counseling. Third, because homeroom teachers usually change each year, efforts to strengthen teacher support may be more effective when they target school-wide climate and continuity, for example through handover meetings between outgoing and incoming homeroom teachers, than when they rely on a single teacher. Fourth, because perceived health linked support to life satisfaction as strongly as bicultural acceptance did, schools could add brief self-rated physical and mental health items to existing student emotional and behavioral screening and refer students who report poor health to school counselors (e.g., Wee

classes) or school nurses. Finally, because cultural acceptance and perceived health also predicted later support, interventions that strengthen adolescents' cultural confidence and well-being may in turn help them build and perceive supportive relationships. Because the model rests on general theories of development, acculturation, and well-being, similar processes may operate wherever immigrant-background youth negotiate two cultures, although cross-national comparisons are needed to establish this.

Limitations and Future Research

Several limitations should be noted. First, all constructs were assessed by adolescent self-report, raising the possibility of common-method bias; multi-informant designs incorporating parent and teacher reports would strengthen future work. Second, although the three-wave design strengthens temporal inference, the study is observational, and unmeasured confounding cannot be excluded. The autoregressive cross-lagged model also does not separate stable between-person differences from within-person processes [65]; studies with more waves should test the present pathways with random-intercept cross-lagged models, as Ling et al. [20] did for support and life satisfaction. Third, with three waves the two mediators had to be measured at the same wave, and the information criteria favored the reverse ordering of perceived health and bicultural acceptance, so the serial pathway should be interpreted as an association between two closely linked mediators rather than as an established sequence; four or more waves would allow a fully time-ordered test [16]. Fourth, the measures were brief: perceived health was measured with two items, friend and teacher support with three items each, and the parental support measure focused on educational support. The AVE of the bicultural acceptance factor was also at or slightly below .50, reflecting the heterogeneous content of the scale. Fifth, multicultural adolescents are heterogeneous, and the present models treated them as a single group; future research should examine whether the pathways vary by family type, parental country of origin, nativity, language background, socioeconomic status, and gender, particularly because attrition was higher among children of foreign-national families. Sixth, the observation period overlapped with the COVID-19 pandemic, which may limit the generalizability of the estimates to other periods.

Conclusions

This three-wave longitudinal study suggests that support from friends and parents is prospectively associated with multicultural adolescents' life satisfaction through bicultural acceptance and perceived health, whereas homeroom-teacher support plays a smaller and non-unique role. Support was related to life satisfaction only indirectly, and support, cultural acceptance, and perceived health were reciprocally related. Multicultural adolescents' well-being therefore appears to develop through interconnected relational, cultural, and health-related processes rather than through isolated influences, and interventions may be most effective when they combine peer inclusion, support for parents' cultural socialization, continuity in teacher support, and school-based health promotion.

Declarations

Ethics Review Exemption

The Institutional Review Board of Hanyang University determined that this secondary analysis of de-identified MAPS data was exempt from ethics review (exemption reference: HYUIRB-202606-001).

Consent to Participate

Additional informed consent was not required for this secondary analysis of de-identified MAPS data.

Consent to Publish

Not applicable. The manuscript contains no information that identifies individual participants.

Clinical Trial Registration

Not applicable. This study is not a clinical trial.

Code Availability

The R code used for the analyses is available from the corresponding author on reasonable request.

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Competing Interests

The authors have no relevant financial or non-financial interests to disclose.

Data Availability

This study analysed secondary data from the second cohort of the Multicultural Adolescents Panel Study (MAPS), Waves 1 to 3 (2019 to 2021), conducted by the National Youth Policy Institute (NYPI), Republic of Korea. The data are available from NYPI's data repository, the Korean Children, Youth, and Young Adults Data Archive, at https://www.nypi.re.kr/archive/mps, where registered users can download the MAPS data files after agreeing to the data provider's terms of use. No other datasets, including reference datasets, were analysed in this study. Restrictions apply to the availability of these data, which were used under the data provider's terms of use for the current study.

Author Contributions

SW (Shixuan Wei) conducted the statistical analyses and drafted the manuscript. SK (Sunjoo Kwon) supervised the study and critically revised the manuscript for important intellectual content. Both authors contributed to the conceptualization of the study and to the interpretation of the findings, and both authors read and approved the final manuscript.

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Figures

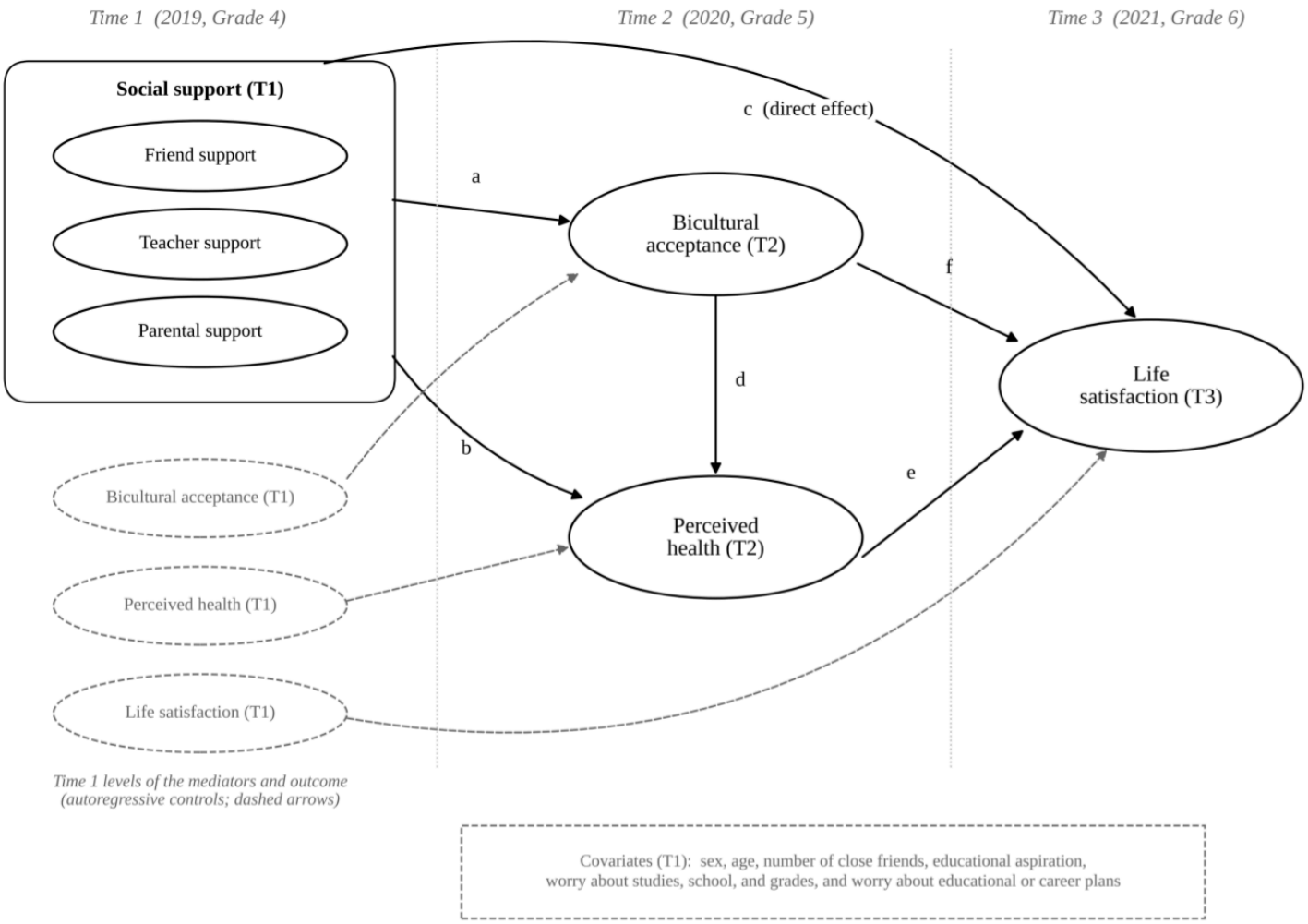
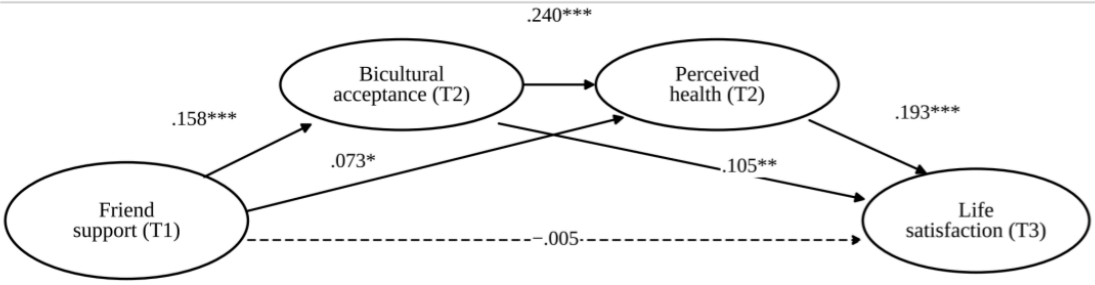


Figure 1

Conceptual Model of the Latent Autoregressive Cross-Lagged Serial Mediation Analysis

Note. T1 = 2019 (Grade 4); T2 = 2020 (Grade 5); T3 = 2021 (Grade 6). Ovals denote latent constructs, and the rectangle denotes observed covariates. Social support was represented by friend support (Model 1), teacher support (Model 2), or parental support (Model 3), or by all three sources entered simultaneously (Model 4). Solid arrows denote the hypothesized paths: *a*, support to bicultural acceptance; *b*, support to perceived health; *c*, support to life satisfaction (direct effect); *d*, bicultural acceptance to perceived health; *e*, perceived health to life satisfaction; *f*, bicultural acceptance to life satisfaction. The serial pathway is $a \rightarrow d \rightarrow e$. Dashed arrows denote autoregressive paths. Not shown for clarity: the indicators and residuals of the latent constructs; the autoregressive path of support from Time 1 to Time 2 and the reverse cross-lagged paths from Time 1 bicultural acceptance and perceived health to Time 2 support (reported in Table 7); covariances among the Time 1 constructs and covariates; residual covariances among the Time 2 variables; and paths from the covariates to all Time 2 and Time 3 variables.

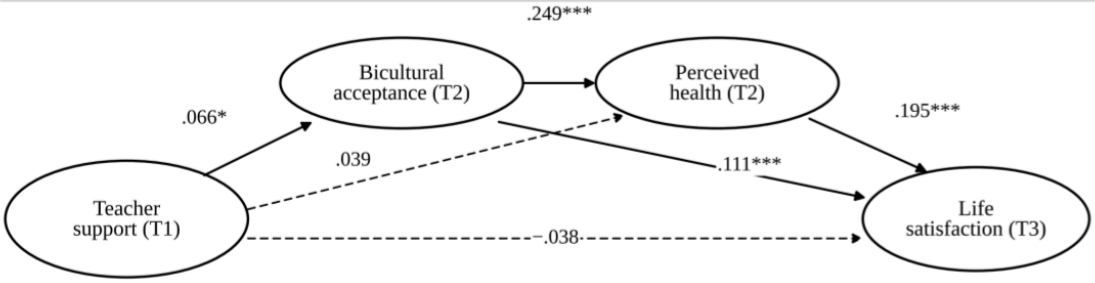
(A) Model 1: Friend support



Indirect effects on life satisfaction (T3), standardized, with Monte Carlo 95% CI

• via bicultural acceptance	β = .017	[.006, .030]
• via perceived health	β = .014	[.003, .028]
• serial: bicultural acceptance → perceived health	β = .007	[.004, .012]
• total indirect effect	β = .038	[.021, .057]

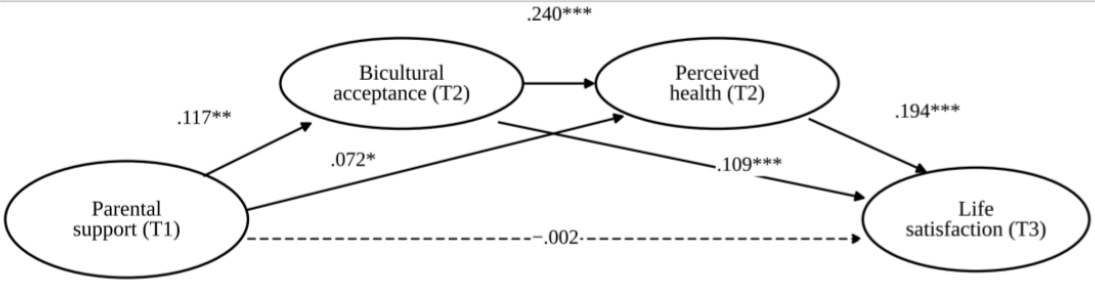
(B) Model 2: Teacher support



Indirect effects on life satisfaction (T3), standardized, with Monte Carlo 95% CI

• via bicultural acceptance	β = .007	[.0005, .016]
• via perceived health	β = .008	[−.002, .019] n.s.
• serial: bicultural acceptance → perceived health	β = .003	[.0003, .007]
• total indirect effect	β = .018	[.004, .033]

(C) Model 3: Parental support



Indirect effects on life satisfaction (T3), standardized, with Monte Carlo 95% CI

• via bicultural acceptance	β = .013	[.003, .026]
• via perceived health	β = .014	[.002, .028]
• serial: bicultural acceptance → perceived health	β = .005	[.002, .010]
• total indirect effect	β = .032	[.015, .052]

Figure 2

Standardized Estimates for the Source-Specific Models (Models 1 to 3)

Note. N = 2,271. Ovals denote latent constructs. Values are standardized path coefficients from three separately estimated models: (A) friend support, (B) teacher support, and (C) parental support. Solid arrows denote significant paths and dashed arrows nonsignificant paths. Autoregressive paths, reverse cross-lagged paths, and covariates were estimated but are omitted for clarity (see Table 7). Indirect effects are shown with Monte Carlo 95% confidence intervals (20,000 draws); n.s. = not significant (interval includes zero). T1 = 2019; T2 = 2020; T3 = 2021. *p < .05. **p < .01. ***p < .001.

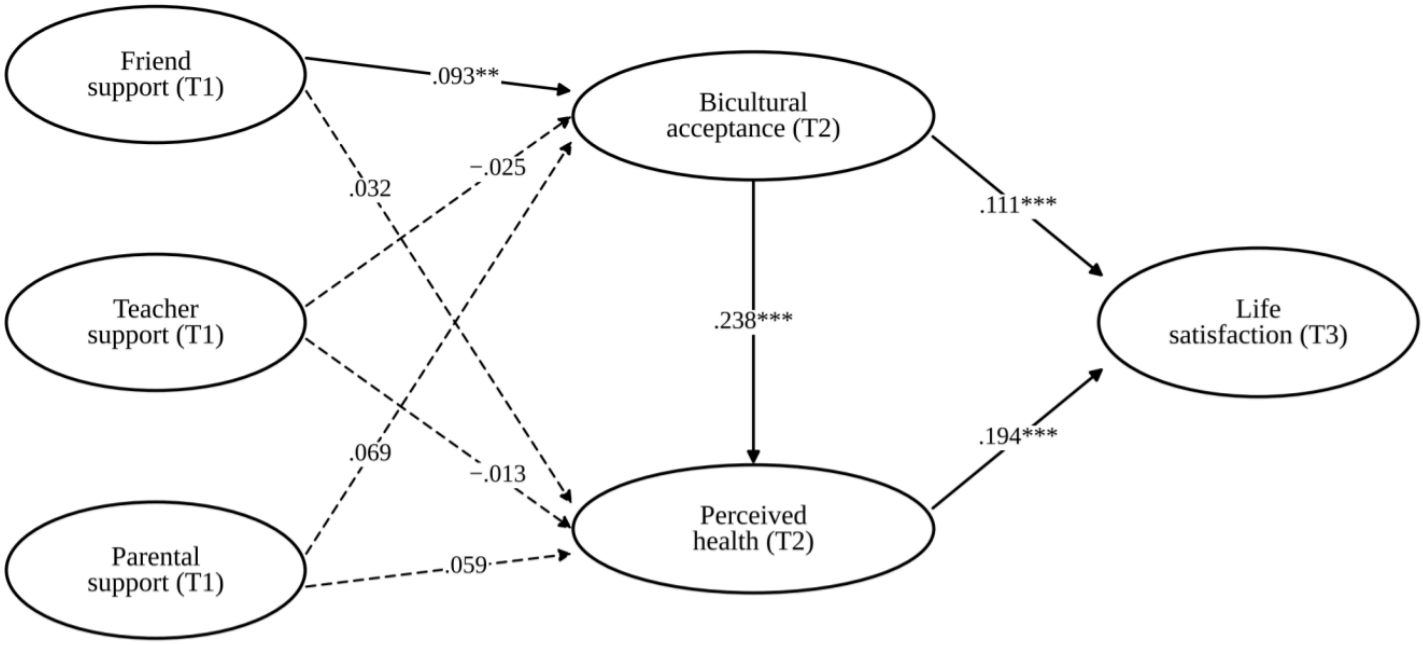


Figure 3

Standardized Estimates for the Integrated Model (Model 4)

Note. N = 2,271. Ovals denote latent constructs. Values are standardized path coefficients; solid arrows denote significant paths and dashed arrows nonsignificant paths. The direct paths from friend, teacher, and parental support to Time 3 life satisfaction (β = .004, −.047, and .006, respectively, all ps > .05), autoregressive paths, reverse cross-lagged paths, and covariates were estimated but are omitted for clarity (see Table 7). Total indirect effects are shown with Monte Carlo 95% confidence intervals (20,000 draws). T1 = 2019; T2 = 2020; T3 = 2021. **p < .01. ***p < .001.