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The relationship between social capital, acculturative stress and depressive symptoms in multicultural adolescents: Verification using multivariate latent growth modeling

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ABSTRACT

The purpose of this study was to verify the relationship between social capital, acculturation stress, and depressive symptoms in multicultural adolescents. The data from the Multicultural Adolescents Panel Survey (MAPS) study conducted by the National Youth Policy Institute (NYPI) was used for analysis. Participants were 1635 multicultural adolescents (male 805, female 830; Mean age = 10.98 years [SD = .37]) who were followed over five years. We utilized a Multivariate Latent Growth Modeling to test the relationship between the variables and a Bias-corrected bootstrap test was conducted to verify the indirect effects. Findings showed that increases in social capital were related to decreases in depressive symptoms in multicultural adolescents and increases in social capital were associated with decreases in acculturative stress. In addition, increases in acculturative stress were related to increases in depressive symptoms. Finally, social capital indirectly affected depressive symptoms by mediating acculturative stress. The present results suggest that policies for increasing the social capital of multicultural adolescents at the national and community levels are needed to alleviate acculturative stress in multicultural adolescents, which can help decrease their depressive symptoms.

Introduction

Multicultural families, a global phenomenon, are those composed of people born from different nationalities or cultures (Chung & Jung, 2012). According to the Multicultural Families Support Act in South Korea, multicultural families include immigrants by marriage, naturalized Korean citizens, North Korean refugees, and their children aged 9–24 years (Ministry of Gender Equality & Family, 2014). In 2017, the number of multicultural children aged 9–24 years were 109,387, which is five times more than the figure (20,180) in 2008 (National statistical Office & Ministry of Gender Equality Family, 2018).

Multicultural adolescents are more likely to experience mental health problems owing to acculturative stress, defined as strain or pressure that occurs in the process adaptation to a new cultures (Bahk, Kim, & Khang, 2017; Gilliver, Sundquist, Li, & Sundquist, 2014; Lueck & Wilson, 2010; Stevens & Vollebergh, 2008). In particular, adolescents in multicultural families have reported more depressive symptoms compared with youths in general households (Joo, Kim, Cho, & Kwon, 2015). Recently, Park, Lee, Park, and Lee (2018) identified the risky health behaviors and psychological problems among South Korean, North Koran, and other multicultural family adolescents. Their results indicated that multicultural teenagers tend to be more depressive compared with South Korean family youths.

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According to Putnam's theory of bonding capital (Putnam, 2000), bonding capital refers to social ties or connectedness with family, peers, and community. Specifically, support from family, bonding relationships with friends, and social cohesion with ethnic or regional communities may provide a sense of belonging to multicultural adolescents. Further, bonding relationships can serve as a buffer against pressure and stress that occur in the assimilation to a new culture in multicultural youths (Ager & Strang, 2004), which in turn, may have a positive impact on mental health and psychological well-being (Putnam, 2000).

The relationship between acculturative stress and depression

One of the major risk factors for depression in multicultural adolescents is acculturative stress, which refers to distress that occurs in the process of adapting to a new culture (Berry & Annis, 1974; Joo & Shin, 2013). In the unfamiliar culture, the loss of supporting system may be a main cause of acculturative stress (Berry, Kim, Minde, & Mok, 1987). Multicultural adolescents may experience acculturative stress because of conflicts between the cultural values of their foreign parents and mainstream society's values (Ward & Kennedy, 1993).

In particular, the Korean society has a homogeneous ethnic makeup, and Koreans tends to discriminate against immigrants (especially immigrants from Southeast Asian countries) who are different in appearance and culture (Seol, 2011). This phenomenon also appears in immigrants' children, and Korea's multicultural adolescents are often bullied by their peers. Therefore, many multicultural families have learned the Korean culture from the moment of their birth. Therefore, the concept of acculturation stress experienced by multicultural adolescents in Korea needs to include the variable of psychological distress caused due to conflicts between parents' cultural backgrounds and values with social prejudice and bullying (Han & Kahng, 2019; Mo, 2018; Seol, 2011).

Zhang (2016) assumed four types of strain that induce depression and suicide: differential values, reality versus aspiration, relative deprivation, and deficient coping. In particular, differential values comprise the strain or pressure that arise when two conflicting social values or beliefs are considered important in an individual's life, and which is related to acculturative stress (Zhang, 2005).

Berry (2005) classified acculturation strategies into four types: integration, assimilation, separation, and marginalization. Some individuals become absorbed in the mainstream culture without adhering to their cultural heritage; this strategy is called assimilation. In contrast, some individuals insist on the values of their original culture and do not interact with others; this strategy is called separation. Those who use the strategy of integration interact with people in the mainstream culture, while also maintaining the value of their cultural heritage. Finally, marginalization is a strategy used by individuals who are neither interested in the mainstream nor the ethnic culture, and who do not interact with people. Acculturative stress is lowest in the integration type and highest in the separation type.

A number of studies have verified that greater acculturative stress is associated with more depressive symptoms in immigrants (Gonzalez, Haan, & Hinton, 2001; Hovey, 2000; Mui & Kang, 2006). Relatively few studies have identified the impact of acculturative stress on depression in multicultural adolescents (Joo et al., 2015; Sumer, Poyrazli, & Grahame, 2008). However, the causal relationship between the two variables is not clear in the longitudinal view. A longitudinal study of Chinese immigrants indicated the causal relationship between acculturative stress (including cultural differences, loneliness, financial difficulties, interpersonal tensions, dissatisfaction with close relationships) and depression (Du, Li, Lin, & Tam, 2015). However, because this study was conducted for young adult immigrants, there is a limit to generalizing the results to multicultural teenagers.

The relationship between social capital and acculturative stress

To improve the mental health and psychological well-being of multicultural adolescents, more light needs to be shed on the antecedent variables mitigating acculturative stress. Social capital may contribute to decreasing acculturative stress in multicultural youths. Social capital refers to the bonding relationships (with family, friends, and neighbors) and social networks available in social situations (Joyce & Liamputtong, 2017; Putnam, 2000), and which includes interpersonal trust, social ties, social involvement, and a sense of belonging (Fujiwara & Kawachi, 2008). Putnam (2000) classified social capital as bonding and bridging capital: bonding social capital refers to the interaction and connectedness with close acquaintances, such as family and friends, whereas bridging social capital means interaction and cohesion to the community and the public. In addition, social capital could be divided into cognitive factors, such as trust and reciprocity, and structural factors, such as social participation (Kawachi, 2006).

Acculturative stress in multicultural adolescents is a common phenomenon. However, excessive acculturative stress may lead to a separate or marginalization relationship (Berry, 2005). Meanwhile, the interactions and ties with family, friends and the ethnic or regional community may reduce acculturative stress by providing a sense of belonging to the children in multicultural families (Putnam, 2000). Previous studies have indicated that greater social capital is related to lower acculturative stress (Bhattacharya, 2011; Lueck & Wilson, 2010). However, the causal relationship between the two variables is unclear in the longitudinal view.

The relationship between social capital and depression

Weak social bonding, lack of social support, and lack of sense of belonging are closely linked to depression in adolescents and adults (Lau & Li, 2011). Indeed, social capital is negatively associated with depression (Cao, Li, Zhou, & Zhou, 2015; Gilliver et al., 2014; Li, Liang, Yin, & Zhang, 2018). Few cross-sectional studies have tested the effect of social capital on depression in multicultural adolescents and immigrants (Daoud et al., 2016; Valencia-Garcia, Simoni, Alegria, & Takeuchi, 2012). As in the previous two variables, the causal association between social capital and depression is unclear in multicultural adolescents in the longitudinal

view.

The mediating effect of acculturative stress in the relationship between social capital and depression in multicultural adolescents

Social capital may affect depression among teenagers in multicultural families by mediating acculturative stress. Family support, bonding relationships with friends, and social connectedness with the ethnic and regional community may alleviate acculturative stress experienced by multicultural youths, which in turn, may decrease their depressive symptoms (Joyce & Liamputtong, 2017). However, to the best of our knowledge, no empirical longitudinal study has verified the mediating effect of acculturative stress in the relationship between social capital and depression in multicultural teenagers.

The present study aimed to verify the relationship between social capital and depression in multicultural adolescents, and the mediating effect of acculturative stress in the relationship between the two variables. The hypotheses of this study are as follows. 1) Changes in social capital would have a negative impact on the changes in depression in multicultural teenagers. 2) Changes in social capital would have a negative influence on the changes in acculturative stress in multicultural adolescents. 3) Changes in acculturative stress would have a positive effect on the changes in depression in multicultural youths. 4) Acculturative stress would have a mediating effect in the relationship between social capital and depression in multicultural adolescents.

Methods

Participants and survey

We utilized data from the Multicultural Adolescents Panel Survey (MAPS) study conducted by the National Youth Policy Institute (NYPI) in South Korea. Participants included children in international marriage families, immigrated children of multicultural families, and foreign children. Sampling was conducted in two stages. First, sample schools were extracted through randomized stratified sampling based on the distribution of the schools in 16 cities and provinces across South Korea attended by multicultural students in the fourth grade of elementary school. Second, probability proportional extraction, which increases the extraction rate of schools with many multicultural students, was applied. A total of 1,635 adolescents were sampled among 4,452 multicultural students attending 2,537 elementary schools nationwide.

The survey was conducted through household visits by trained interviewers. First, the interviewer explained the purpose of the survey to the parents, and after the parents completed the survey consent, the survey was conducted in the mother and the student by face-to-face interviews. The parents' questionnaire was translated into Korean and nine foreign languages, whereas the students' questionnaire was composed only in Korean. Beginning in 2011, MAPS conducted a follow up of students in the fourth year of elementary school for six years. This study analyzed the data from 2012 to 2016. In 2012, the total sample size was 1,635 (female: 830) and the mean age was 10.98 years (SD = . 365). The response rate, respondents, mean age, and sex ratio are described in Table 1. Mean and standard deviation of each variable at the time of measurement are described in Table 2.

Measures

Social capital

The measure of social capital consists of three constructs: family support, friendship, and community capital. Family support was measured by the questionnaire developed by Han and Yoo (1996), and friendship was measured by the questionnaire developed by Kim, Paik, Im, and Lee (2010), which revised by Jeong (2009). Community capital was measured by the questionnaire used in ADD health (The national longitudinal study of adolescent to adult health, 2009), which revised by Kim et al. (2010). In order to measure social capital, 18 items (family support = 7 items, friendship = 5 items, community capital = 6 items) with a 4-point scale (rarely agree = 1 to strongly agree = 4) were used and higher total scores are associated with greater social capital. Exploratory factor analysis was conducted to identify the factor structure. Based on the Kaiser-Meyer-Olkin value (.907) and Bartlett's test ($p < .001$), the data were deemed appropriate for factor analysis. Applying maximum likelihood estimation and direct oblique rotation showed that three factor structure was appropriate, and which accounted for 52.10 % of the total variance: a first factor (family support) = 34.41 %; a second factor (community capital) = 11.85 %; a third factor (friendships) = 5.84 %. The Cronbach's alphas for two items was low ($r < .20$), thus, a total of 16 items were used for the analysis. The Cronbach's alphas in the current research were .90 in 2012,

Table 1
Response rate, Respondents, Mean age, and sex ratio N = 1635.

Year	Response rate	Respondents	Age		Gender	
			Mean	SD	Male	Female
2012(grades 5)	91.7	1500	10.98	.365	49.3%	50.7%
2013(grades 6)	88.3	1443	11.97	.368	48.9%	51.1%
2014(grades 7)	84.4	1380	12.97	.365	48.8%	51.2%
2015(grades 8)	82.4	1347	13.97	.367	49.1%	50.9%
2016(grades 9)	81.3	1329	14.97	.362	49.2%	50.8%

Table 2
Descriptive statistics of the variables in the model.

	Min	Max	Mean	S.D	N
SC1(grades 5)	19.0	64.0	49.49	6.69	1500
SC2(grades 6)	23.0	64.0	50.09	6.22	1443
SC3(grades 7)	18.0	64.0	49.78	6.22	1380
SC4(grades 8)	24.0	64.0	49.65	5.99	1347
SC5(grades 9)	16.0	64.0	49.06	5.77	1329
AS1(grade 5)	9.0	33.0	11.98	3.43	1500
AS2(grades 6)	9.0	33.0	11.93	3.33	1443
AS3(grades 7)	9.0	28.0	11.42	2.76	1380
AS4(grades 8)	9.0	31.0	11.82	2.97	1347
AS5(grades 9)	9.0	36.0	11.59	2.74	1329
DS1(grades 5)	10.0	40.0	16.05	5.06	1500
DS2(grades 6)	10.0	40.0	16.08	4.94	1443
DS3(grades 7)	10.0	37.0	16.44	4.92	1380
DS4(grades 8)	10.0	40.0	16.96	4.86	1347
DS5(grades 9)	10.0	40.0	17.16	4.83	1329

SC = social capital, DS = depressive symptoms, AS = acculturative stress.

.89 in 2013, .90 in 2014, .89 in 2015, and .89 in 2016. The specific content of the questions are as follows. “Members of my family seem to be helping one another a lot, and my family seems to be interested in me (family support). I do well with my classmates. I apologize first when in a quarrel with my friend (friendships). I know most of my neighbors. I like to get along with people in my neighborhood (community capital).”

Acculturative stress

The SAFE (Social, Attitudinal, Familial, and Environmental Acculturative Stress) developed by Hovey and King (1996), which translated and revised by Nho and Hong (2006), was used to measure acculturative stress. The measure consists of ten items with a 4-point scale (rarely agree = 1 to strongly agree = 4) and the higher the total score, the greater the acculturative stress. We conducted an exploratory factor analysis to identify the factor structure. Based on the Kaiser-Meyer-Olkin value (.854) and Bartlett’s test ($p < .001$), the data were deemed appropriate for factor analysis. Applying maximum likelihood estimation and direct oblique rotation showed that a single factor structure was appropriate, and which accounted for 45.83 % of the total variance. The Cronbach’s alphas of one item was low ($r < .20$), and a total of nine items were used for the analysis. The Cronbach’s alphas in the current research were .85 in 2012, .86 in 2013, .83 in 2014, .85 in 2015, and .85 in 2016. The specific content of the questions are as follows. “I am stressed to live in South Korea. I am stressed because I am not good at Korean. Koreans discriminate against our family.”

Depressive symptoms

The questionnaire developed by Kim, Kim, and Won (1992) to measure depressive symptoms. This measure consists of ten items with a 4-point scale (rarely agree = 1 to strongly agree = 4) and higher total scores are related to more depressive symptoms. We performed an exploratory factor analysis to identify the factor structure. Based on the Kaiser-Meyer-Olkin value (.926) and Bartlett’s test ($p < .001$), the data were judged appropriate for factor analysis. Applying maximum likelihood estimation and direct oblique rotation showed that a single factor structure was appropriate, and which accounted for 50.33 % of the total variance. The Cronbach’s alphas in the current research were .91 in 2012, .92 in 2013, .92 in 2014, .91 in 2015, and .91 in 2016. The specific content of the questions are as follows. “I feel unhappy or sad and depressed. I am not interested in anything. I have a hard time with everything.”

Analysis

We performed a Latent Growth Modeling (LGM) by the AMOS 20.0 program to test the relationships between the growth parameters of variables. Parameter of a LGM is composed of an intercept and a slope. The Intercept is defined as the mean value of variables in the first wave, while the slope is defined as the mean change trend of variables over time. In LGM, researcher can set up three pathways in the relationships between variables: 1) the effect of intercept in predictor on the intercept in dependent variable 2) the effect of intercept in predictor on the slope of dependent variable 3) the effect of slope in predictor on the slope of dependent variable. In the first step, univariate LGM was conducted to verify the developmental changes in social capital, acculturative stress and depressive symptoms. In the second step, multivariate LGM was conducted to test the associations between latent factors. We considered chi-square, TLI (Tucker-Lewis index), CFI (Comparative fit index), and RMSEA (Root mean square error of approximation) indices to verify the fit of the research model. Chi-square is likely to accept the null hypothesis because it is sensitive to sample size. Thus, researchers should consider TLI, CFI, RMSEA indices together. TLI and CFI are judged as acceptable if they are higher than .90 and good if they are higher than .95. RMSEA is judged as acceptable if it is lower than .80 and good if it is lower than .05 (Hong, 2000). A Bias-corrected bootstrap test was conducted to verify the indirect effects.

Table 3
Bivariate correlations of the variables in the model.

	SC1	SC2	SC3	SC4	SC5	AS1	AS2	AS3	AS4	AS5	DS1	DS2	DS3	DS4	DS5
SC1															
SC2	.50***														
SC3	.42***	.53***													
SC4	.38***	.50***	.59***												
SC5	.33***	.42***	.51***	.64***											
AS1	-.28***	-.18***	-.15***	-.15***	-.14***										
AS2	-.19***	-.30***	-.18***	-.17***	-.21***	.34***									
AS3	-.15***	-.24***	-.29***	-.19***	-.20***	.23***	.32***								
AS4	-.11***	-.16***	-.18***	-.27***	-.21***	.24***	.25***	.31***							
AS5	-.10***	-.18***	-.19***	-.22***	-.29***	.22***	.28***	.32***	.33***						
DS1	-.45***	-.26***	-.20***	-.21***	-.18***	.32***	.19***	.16***	.10***	.10***					
DS2	-.35***	-.54***	-.33***	-.30***	-.27***	.23***	.40***	.26***	.16***	.18***	.38***				
DS3	-.27***	-.36***	-.51***	-.38***	-.33***	.18***	.24***	.36***	.20***	.21***	.30***	.45***			
DS4	-.24***	-.30***	-.35***	-.51***	-.36***	.18***	.23***	.25***	.36***	.24***	.27***	.40***	.51***		
DS5	-.19***	-.29***	-.31***	-.39***	-.48***	.12***	.20***	.20***	.18***	.31***	.24***	.33***	.44***	.53***	

SC = social capital, DS = depressive symptoms, AS = acculturative stress.
*** $p < .001$.

Results

Descriptive statistics and correlation analysis

Descriptive statistics of the variables are presented in Table 2. The mean value of social capital and acculturative stress showed a tendency to decrease from grades 5 to 9. In contrast, the mean value of depressive symptoms increased from grades 5 to 9. Correlation analysis (Table 3) showed that social capital was negatively correlated to acculturative stress and depressive symptoms. Acculturative stress was shown to be positively correlated to depressive symptoms.

The changing patterns of each variable using univariate LGM

The trajectory of change for each variable was examined prior to the multivariate LGM (Table 4). Findings of univariate LGM for social capital showed that the fit of the linear growth model was better than no growth model. In other words, social capital tended to decrease linearly over time. As a result of univariate LGM for acculturative stress, the fit of the linear growth model was better than no growth model. That is, acculturative stress tended to decrease linearly over time. The results of univariate LGM for depressive symptoms indicated that the fit of the linear growth model was better than no growth model. That is, depressive symptoms increased linearly over time.

The initial value and the rate of change for each variable are presented in Table 5. The parameter estimates for social capital in the LGM indicated that the estimated mean value of social capital was 49.614 at grade 5, decreasing at a rate of .330 per year. That is, social capital decreased as early adolescents grew older. The correlation between initial value and the rate of change for social capital was -.460 ($p < .001$). The parameter estimates for acculturative stress in the LGM showed that the estimated mean value of acculturative stress was 11.747 at grade 5, decreasing at a rate of .347 per year. This means that acculturative stress gradually decreased as they grew older. The correlation between initial value and the rate of change for acculturative stress was -.546 ($p < .001$). The parameter estimates for depressive symptoms in the LGM indicated that the estimated mean value of depressive symptoms was 16.538 at grade 5, increasing at a rate of .338 per year. This means that depressive symptoms increased as early adolescents grew older. The correlation between initial value and the rate of change for depressive symptoms was -.358 ($p < .001$).

Table 4
Comparisons of fitted growth curve models for the variables.

Variable	Model	χ^2(df)	df	TLI	CFI	RMSEA
Social capital	No growth	51.949	6	.973	.984	.068(.052, .086)
	Linear growth	2.407	5	.999	.999	.001(.402, .428)
Acculturative stress	No growth	48.672	9	.954	.959	.052(.038, .067)
	Linear growth	23.528	7	.976	.983	.038(.230, .256)
Depressive symptoms	No growth	58.727	6	.953	.972	.073(.057, .091)
	Linear growth	13.646	5	.991	.995	.033(.326, .352)

Table 5
Estimates of univariate LGM.

	Intercept		Slope		Correlations
	Mean	Variances	Mean	Variances	
Social capital	49.614***	16.450***	-.330***	.655***	-.460***
Acculturative stress	11.747***	3.691***	-.347***	.158***	-.546***
Depressive symptoms	16.538***	8.010***	.338***	.443***	-.358***

*** $p < .001$.

Verification of the mediation effects using a Multivariate LGM

Fit of the mediation model

The fit of the Research model (Fig. 1) was acceptable (Chi-square = 242.989, $p < .001$, $df = 76$, TLI = .972, CFI = .980, RMSEA = .037). The specific results of multivariate LGM are as follows (Table 6).

Direct effect between variables

The direct effects between the variables namely social capital, acculturative stress, and depressive symptoms are shown in Table 6. First, the intercept of social capital had a negative effect on the intercept of depressive symptoms (β = -.342, t = -11.924, $p < .001$) and the rate of change of social capital had a significant negative impact on the rate of change of depressive symptoms (β = -.363, t = -8.072, $p < .001$). The results mean that students with a greater growth rate of social capital showed a greater decrease in depressive symptoms.

Second, the intercept of social capital had a negative influence on the intercept of acculturative stress (β = -.218, t = -13.111, $p < .001$), and the rate of change of social capital had a negative impact on the rate of change of acculturative stress (β = -.181, t = -10.549 $p < .001$). These findings mean that students with a greater growth rate of social capital showed a greater decrease in acculturative stress.

Third, the intercept of acculturative stress had a positive effect on the intercept of depressive symptoms (β = .621, t = 8.757,

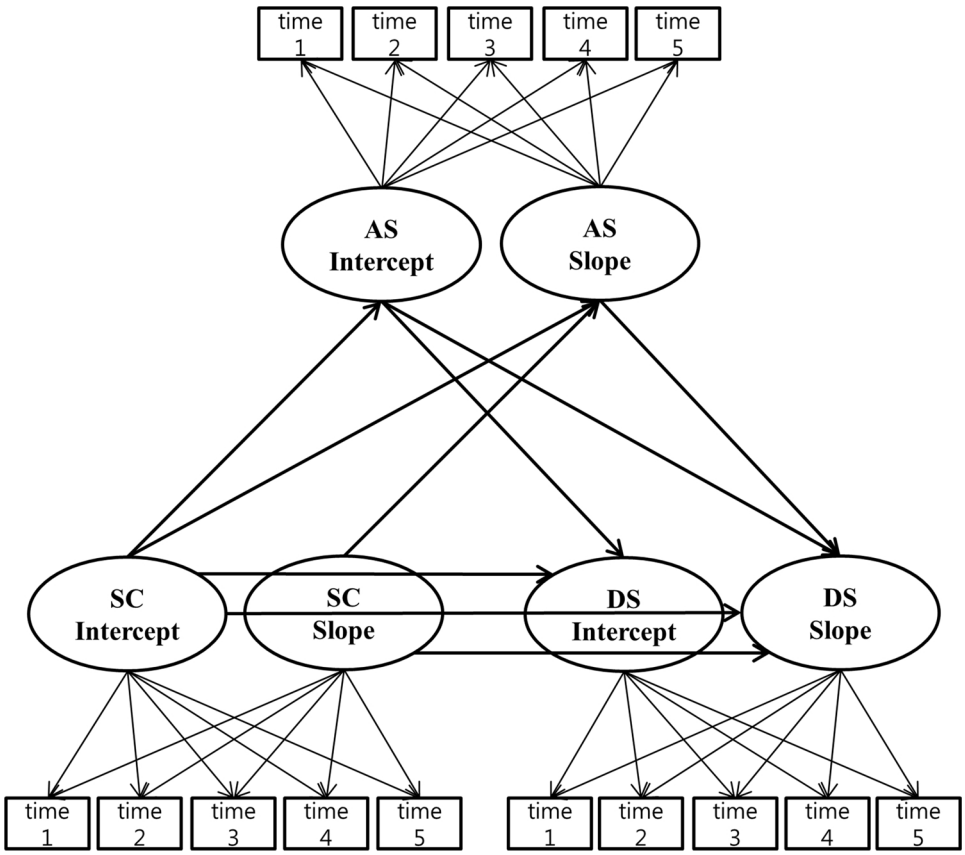

Fig. 1. Research model.

Table 6
Path coefficients of Multivariate Latent Growth Modeling.

Path	β	B	S.E.	C.R.
SC intercept → DS intercept	-.342	-.505	.029	−11.924***
SC intercept → DS slope	-.023	-.124	.011	−2.164*
SC slope → DS slope	-.363	-.503	.045	−8.072***
SC intercept → AS intercept	-.218	-.507	.017	−13.111***
SC intercept → AS slope	.014	.139	.006	2.492*
SC slope → AS slope	-.181	-.466	.017	−10.549***
AS intercept → DS intercept	.621	.395	.071	8.757***
AS intercept → DS slope	.010	.024	.030	.353
AS slope → DS slope	.759	.408	.173	4.385***

SC = social capital, DS = depressive symptoms, AS = acculturative stress.
* $p < .05$.
*** $p < .001$.

$p < .001$), and the rate of change of acculturative stress had a positive impact on the rate of change of depressive symptoms ($\beta = .759$, $t = 4.385$, $p < .001$). These findings mean that students with a greater growth rate of acculturative stress showed a greater increase of depressive symptoms.

The mediating effect of social capital

We conducted a Bias-corrected bootstrap test to verify the mediating effect of acculturative stress in the relationship between social capital and depressive symptoms (Table 7). The indirect effect of initial value of social capital on the initial value of depressive symptoms, mediated by the initial value of acculturative stress, was significant ($t = -.135$, $p < .01$). The direct effect of the initial value of social capital on the initial value of depressive symptoms was significant ($\beta = .342$, $t = -11.924$, $p < .001$). That is, the initial value of acculturative stress had a partial mediating effect between initial value of social capital and depressive symptoms (Table 7).

In addition, the indirect effect of the rate of change of social capital on the rate of change of depressive symptoms, mediated by the rate of change of acculturative stress, was significant ($t = -.138$, $p < .05$). The direct effect of the rate of change of social capital on the rate of depressive symptoms was significant ($\beta = -.363$, $t = -8.072$, $p < .001$). That is, the rate of change of acculturative stress had a partial mediating effect between the rate of change of social capital and depressive symptoms. In summary, the mediating effects between the initial values and between the rates of change were all statistically significant for acculturative stress, and a longitudinal effect existed.

Discussion

The purpose of this study was to verify the relationship between social capital, acculturative stress, and depressive symptoms in multicultural adolescents using a multivariate latent growth modeling. Additionally, we tested the mediating effect of acculturative stress in the relationship between social capital and depressive symptoms.

A few cross-sectional studies have verified the association between the social capital and depression in multicultural teenagers. The present work clarified the relationship between the two variables in multicultural adolescents. Social capital refers not only to social support but also to quantitative and qualitative social networks that individuals can mobilize in addressing problematic situations (Bae, 2019; Cao et al., 2015; Shepley, 2007). Family support, trust with friends, social participation, and a sense of belonging may alleviate depressive symptoms in multicultural adolescents (Rothon, Goodwin, & Stansfeld, 2012). Specifically, the current study more accurately measured the concept of social capital, including community social capital (Tomita & Burns, 2013), compared with past research on bonding relationships with family and friends (e.g., Wu et al., 2010).

Our study likewise indicated that increases in acculturative stress were related to increases in depressive symptoms in multicultural youths. Acculturative stress from language problems, appearance, and discrimination is likely to cause helplessness and a depressed mood (Bahk et al., 2017). Studies have tested the effect of acculturative stress on the depressive symptoms in immigrant children and multicultural adolescents (e.g., Joo et al., 2015) using a cross-sectional design, but the causal relationship between two

Table 7
Bootstrap test of indirect effects.

Path	Indirect effect	Significance interval Lower Upper
SC intercept → AS intercept → DS intercept	-.135(.019)**	-.166 -.104
SC slope → AS slope → DS slope	-.138(.045)*	-.225 -.079

SC = social capital, DS = depressive symptoms, AS = acculturative stress.
** $p < .01$.
* $p < .05$.

variables had been unclear. Our research clearly showed the relationship between the two variables in multicultural teenagers through a longitudinal design using a nationwide sample.

The key finding of this study is that increases in social capital were associated with decreases in acculturative stress among multicultural adolescents. Acculturative stress has been reported to be a main variable that causes depression in multicultural adolescents, and efforts to reduce it are crucial to enhance the mental health and psychological well-being of multicultural adolescents (Bhattacharya, 2011; Kawachi, Subramanian, & Kim, 2008). The results of our study suggested that increasing social capital is an effective strategy to reducing acculturative stress in multicultural teenagers. Multicultural youths are likely to experience the lack of feeling a sense of belonging when integrating two cultural value systems, and family support and social ties with friends and community people help in experiencing a sense of belonging. In other words, social capital may provide social networks for addressing the sources of acculturative stress.

Another important finding is that social capital indirectly affected depression by partially mediating acculturative stress. This result sheds light on how social capital decreases depressive symptoms in multicultural adolescents. Increasing social capital and decreasing acculturative stress are important factors for reducing depressive symptoms in multicultural adolescents, and the two variables are closely related.

The contribution of this study is that it verified the relationships between social capital, acculturative stress, and depression in multicultural adolescents using a longitudinal design. The results of this study provide clinical and policy implications for reducing the level of acculturative stress and depressive symptoms in multicultural adolescents. First, nation and community need to provide the appropriate support system to decrease acculturative stress caused by such problems as language barriers, confusion of values in cultural integration, and discrimination. Actually, universities in Korea have provided a Korean language and culture program, but education costs are high. Therefore, the nation needs to provide low cost educational programs. It is also important that these educational programs are expanded nationwide. Second, the multicultural society is a global trend, and Korean society should proactively cope to these changes. To prepare for this change, the Korean government established the Multicultural Policy Committee in December 2009 and the Multicultural Family Policy Master Plan in 2010. However, despite these national efforts, the attitude that Koreans hold toward immigrants has not changed much. Koreans still tend to discriminate against immigrants and their children who are different in appearance and culture. Therefore, continuous education should be provided to improve the close-minded attitudes of Koreans toward immigrants by public institutions, universities, and civic organizations.

A limitation of this study is its focus on perceived social capital in measuring social capital. Therefore, future research should include objective social capital indicators (e.g., number of close friends and neighbors). In addition, future studies need to make an effort to compare alternative models. For example, social capital may play a role as a moderator variable in the relationship between acculturative stress and depression in multicultural adolescents.

Declaration of Competing Interest

There are no conflicts of interest.

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