Exploring Global Korea Scholarship as a Public Diplomacy Tool

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Abstract
Through international student mobility programs, such as Global Korea Scholarship (GKS), countries aim to influence international students' beliefs about and attitudes toward the host country. In this article, we explore GKS's role in bringing international students to the country and analyze changes in GKS students' and alumni's affective and cognitive evaluation of Korea after coming to the country. We compare results based on students' and alumni's length of stay, gender, and economic development level of their home country. Our findings suggest that after coming to Korea, GKS recipients evaluate Korea more positively in both affective and cognitive dimensions.

Keywords
International student mobility, public diplomacy, Korea, Global Korea Scholarship, country image

Introduction[1]

Most countries run sponsored international student mobility programs to encourage interactions between their citizens and foreign country nationals. While these are educational student mobility programs in essence, most have implicit or explicit public diplomacy goals embedded in them. World-renowned scholarship program Fulbright takes pride in nurturing 37 heads of state or government, 60 Nobel Prize laureates, and 86 Pulitzer Prize recipients among others (Bureau of Educational and Cultural Affairs, nd). In a similar vein, the United Kingdom's Chevening program "aim[s] at developing global leaders" (Chevening, 2019). Australia runs the New Colombo Plan to

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strengthen its influence in the Indo-Pacific region by engaging the publics there (Byrne, 2016). One way or another, the main idea behind these sponsored scholarship programs is "to win friends and influence people abroad" (American Institutes for Research, 1976: 113).

South Korea (hereafter Korea) is a country that runs an international scholarship program with explicit public diplomacy objectives, having benchmarked Fulbright (Chǒngwadae, 2009b: 14; NIIED, 2016: 14). In this paper, we analyze the outcomes of Global Korea Scholarship (GKS) from a public diplomacy perspective. More specifically, we explore how GKS students' and alumni's affective and cognitive evaluation of Korea have shifted following their stay in the country. In order to examine a more direct link between international student mobility and public diplomacy outcomes, we decided to focus primarily on the population of GKS recipients rather than self-funded students.

Using a rich and unique dataset on GKS recipients, we conduct an exploratory study to uncover hypotheses for testing in follow-up studies. We first explore GKS's role in bringing the students to the country before any outcome is produced. After this stage, we analyze changes in students' and alumni's affective and cognitive evaluation of Korea after coming to the country. Next, we focus on three demographic cross-sectional comparisons among GKS respondent groups. We look at differences among respondents based on their length of stay (leaving or staying in the country after graduation for alumni), gender, and economic development level of their home country. These cross-sectional comparisons are for exploration purposes to help build hypotheses for future studies.

The paper is structured as follows. In the section "Global Korea Scholarship," we give background information about GKS and establish it as a public diplomacy tool. In the section "Scholarship as Public Diplomacy," we build our analytical framework. In the next section, we introduce our methodology, followed by a section in which we share our findings. In the final section we discuss our findings and conclude the paper.

Global Korea Scholarship

Since the end of the Korean War in 1953, Korea has progressed from one of the poorest countries in the world into one that is a rich and developed country, becoming a member of the G20 and the Organisation for Economic Co-operation and Development's (OECD) Development Assistance Committee (DAC). As Korea bound up its wounds following the Korean War, it aspired to integrate more with the rest of the world. In 1967, when Korea was the 39th biggest economy in the world in terms of GDP (World Bank, 2017), the government initiated the Korean Government Scholarship Program, a small-scale program at the time, to bring in outstanding international students. The program was limited in scope between 1967 and 2005. Within those 39 years, only 971 students in total were given scholarships.

In the early 21st century, Korea's economic development had reached a certain level that enabled the country to become more self-confident and assertive in its foreign affairs (Ayhan, 2019b). In line with the country's increasing efforts to globalize and improve its standing in the world, the government commenced the Study Korea Project in 2004, the restructuring of the Korean Government Scholarship Program as GKS in 2009, and the Study Korea 2020 Project in 2012 to boost internationalization of education in Korea and expand the scope of the governmental scholarship program for international students. As a result, the number of international students receiving Korean Government Scholarship[2] significantly increased from 133 in 2007 to 745 in 2008 and remained around 800 for the last decade. As of 2018, there are currently 2475 students from 147 countries. The largest group of students is from Indonesia (3.3%), Vietnam (3.1%), Mongolia (2.7%), and China (2.7%) (NIIED, 2018), all of which are East Asian countries with which Korea has close trade ties.

GKS students are selected based on academic merit. While no prior knowledge of Korea or the Korean language is required, in some countries Korean embassies allocate certain quota for students in Korean language or Korean studies programs to continue their graduate studies in Korea with this scholarship. GKS recipients study Korean language for one year upon coming to the country; if they can demonstrate advanced level of Korean language (TOPIK Level 5), they can begin their degree program earlier.

Constructing a "Korean premium" brand around the theme of "Global Korea" has become a whole-government endeavor and is reflected in Korea's international educational policies (Chŏngwadae, 2009a). The ratio of international students to all students at Korean higher education institutions was found to be very low, 2.4% in 2011, compared with the OECD average of 8.7% (MOEST, 2012). Furthermore, by 2012, Korea received only 1.2% of all international students, falling behind many OECD countries (MOE, 2012: 1). As this situation was not congruent with the Global Korea vision, the government set a goal of increasing the number of international students in Korea to 200,000 by 2023 (MOE, 2012: 3). Following the initiation of recent international education and scholarship projects, the number of international students in Korea, including non-scholarship students, increased from 16,832 in 2004 to 22,546 in 2005, and to 104,262 in 2016 (e-NaraJipyo, 2018). GKS has been an integral part of this plan to boost international education.

GKS aims "to build a Korea-friendly network of young talents and to improve Korea's nation brand value" (Chŏngwadae, 2009b: 14–15). This is in line with Korea's ultimate public diplomacy, which is to promote "foreign nationals' understanding of [Korea] and enhance confidence in" the country, thereby improving Korea's "image and prestige in the international community" (MOFA, 2016; see also MOFA, 2017: 3) and making Korea "attractive" (MOFA, 2017: 21) in the eyes of foreigners. In order to achieve these goals, facilitating foreigners' better understanding of Korea's history, traditions, and development is seen as vital (MOFA, 2017: 30–33). GKS is also seen as an integral part of this renewed public diplomacy strategy, albeit a detailed plan on incorporating GKS to public diplomacy is yet to be drawn up (e.g. see MOFA, 2017: 32).

Scholarships as public diplomacy

Student mobility programs have been a fundamental element of public diplomacy in most countries, in some cases, particularly empires, even before the phrase was even coined. Governments employ public diplomacy "to understand, inform, influence and build relationships with foreign publics" (Leonard and Small, 2003: 13) to achieve their foreign policy goals (Ayhan, 2019a; Sevin, 2017). The most basic premise of inbound student mobility programs is to familiarize international students with the host country's culture, values, lifestyle, political system, economy, and people among others. It is expected that through their direct experiences, including studying, students will learn more about the country and are expected to generate favorable beliefs about and attitudes toward the host country. These generic expectations of sponsored inbound student mobility programs are reflected in GKS's and Korean public diplomacy objectives as mentioned previously.

While public diplomacy literature overemphasizes the positive aspects of international exchanges, sometimes direct experiences while studying in the host country may create more negative sentiments (Yun and Vibber, 2012). Studies on U-curve theory use cross-sectional comparisons based on length of stay. U-curve theory predicts that sojourners have an initial honeymoon period, followed by negative attitudes due to cultural maladjustment, and in the next stage a gradual adaptation and acculturation that would help them recover their initial favorable attitudes toward the host country (Black and O'Bright, 2016; Chien, 2016; Oberg, 1960; Stangor et al., 1996). In addition, previous literature finds that cultural dissimilarity (Alemu and Cordier, 2017; Jiang et al., 2020), perceived discrimination (Gesing and Glass, 2019; Jon, 2012; Sam, 2001; Tam

and Ayhan, 2021; Yun and Vibber, 2012), discrepancy between expectations and experiences (Yun, 2015), lack of social interactions with host country nationals (Istad et al., 2021; Pedersen et al., 2011), and perceived academic satisfaction (Istad et al., 2021; Shafaei and Razak, 2016) may potentially lead to international students' negative attitudes and/or behavior toward the host country.

While studying in the host country, students' cognitive and affective evaluations of the country evolve through their direct experiences with the public. Students' cognitive evaluations refer to their beliefs about the country, while affective evaluations refer to their emotional attitudes toward the country (Buhmann, 2016). The evolution of students' cognitive evaluations about the host country are important because people tend to act based on "cognitive structures of beliefs," recall things from selective memory through shortcuts, have selective and incomplete attention and perception, make causal inferences based on their cognitive processes, and once formed, cognition is quite stable over the long-run (Rosati, 2000: 53; see also Castells, 2008).

Government-sponsored student mobility programs aim to create positive outcomes for the host nations. The main expectation is to "complexify" the thinking, that is beliefs, of foreign participants in these programs with a more "sophisticated idea" of the host country's ideas, values, discourses, and culture (Joseph Nye quoted in Leonard et al., 2002: 19; see also Snow, 2009: 236). These exchange programs provide students with first-hand experiences and exposure in the host country, which in turn can provide students with more accurate perceptions and a more complex and deeper understanding of the realities in the host country, including its culture, values, political system, and economy among others (Scott-Smith, 2008: 175).

Changes in students' affective evaluation of the host country are important because emotions are intervening variables in individuals' calculations of their utility functions (Graham, 2014: 529; see also Buhmann, 2016). Public diplomacy programs aim to change people's preferences through an affective appeal (Lukes, 2005). The assumption here is that direct exposure, and the totality of the experiences, of international students with the host country and its people, particularly through their bodily presence there, can lead to enmity and liking of the host country (Pacher, 2018; Snow, 2020).

Studies on attitude–behavior models suggest that international students' cognitive and affective evaluations of the host country in turn influence their behavioral intentions and/or behaviors related to the country such as maintaining relationships with host country individuals and recommending it to others for tourism or study (Ayhan and Gouda, 2021; Varpahovskis and Ayhan, 2020; Yun, 2014, 2015; see also Ajzen and Fishbein, 1980; Buhmann, 2016).

Despite a growing body of literature on student mobility programs as public diplomacy tools (Byrne, 2016; Metzgar, 2012, 2016; Scott-Smith, 2009; Snow, 2008; Trilokekar, 2010; Yun, 2014, 2015) and their role in international relations theory (Scott-Smith, 2008; Tournès and Scott-Smith, 2018), attempts to evaluate these programs from a public diplomacy perspective are rare (Ailes et al., 2005; Ailes and Russell, 2002; Mawer, 2014a; Wilson, 2014). Indeed, anecdotal evidence dominates public diplomacy practice in general, whereas academic literature is skewed toward normative prescriptions, and calls for evaluation are often left hanging (Banks, 2011; Hayden, 2017; Pahlavi, 2007; Pamment, 2014; Sommerfeldt and Buhmann, 2019).

Against this background, in this paper, we focus on the changes in GKS recipients' cognitive and affective evaluation of Korea. Before moving to this analysis, we first explore the scholarship's role in students' decision to come to Korea. This is because the scholarship is the main intervention by the Korean government in potentially contributing to changes in GKS recipients' cognitive and affective evaluation of the country.[3] We asked students two questions to clarify the scholarship's role. First, we asked them a counterfactual question of whether they would have come to the country if they had not received the scholarship. Second, we asked recipients to rank their reasons for coming to the host country to study, including scholarship opportunity as one of the options.

RQ1: What is the role of government scholarship in GKS recipients' decision to come to Korea?

RQ2a: How does the GKS recipients' cognitive evaluation of Korea change after their stay in the country?

RQ2b: How does the GKS recipients' affective evaluation of Korea change after their stay in the country?

Furthermore, to explore differences between different groups of respondents, we conduct cross-sectional comparisons. First, we examine differences based on the length of stay in Korea for students and compare them with alumni who stayed after their graduation and those who left the country. These comparisons help us evaluate if U-curve theory applies in the case of GKS recipients. Second, we examine differences between respondents based on their gender. Previous research indicates differences between men and women's evaluation of country image (Juric and Worsley, 1998). Lee and Snow (2021) recently found that female and male international students studying in Korea show different patterns in country evaluations. In this study, they found that female students' affective evaluation about Korea after their study in the country were more strongly influenced by how frequently they acknowledged gender-based discrimination than male students. Third, we analyze the difference between respondents based on their home country's level of economic development. This cross-sectional comparison is important because student flows tend to show differences based on the direction of the flow (Jon et al., 2014; Wall et al., 1988). International student flow trends are found to reflect world-system theory, typically one-way from peripheral countries to core countries (Barnett and Wu, 1995; Barnett et al., 2016), which has been traditionally from (former) colonies to empires (Barnett and Wu, 1995), as the international students' personal interests such as the desire for upward mobility coincided with the national interests of core countries such as continuing to maintain influence in other countries (Barnett and Wu, 1995; Caruso and de Wit, 2014; Eldridge, 1984; Gesing and Glass, 2019; Levatino, 2017; Wilson, 2014). However, to our best of knowledge, no study compared international students' cognitive and/or affective evaluation of the host country based on their home countries' level of development.

RQ3a: Are there differences in GKS' recipients' cognitive and affective evaluation of Korea based on length of stay?

RQ3b: Are there differences in GKS' recipients' cognitive and affective evaluation of Korea based on gender?

RQ3c: Are there differences in GKS' recipients' cognitive and affective evaluation of Korea based on development level of home country?

Methodology

Survey procedures

We surveyed the GKS students and alumni for their cognitive (beliefs) and affective evaluations (emotions) about Korea. We conducted two surveys separately, one for students and one for the alumni, using Surveymonkey's online survey tool.[4] Most of the questions were the same, with a few exceptions. The survey for students was sent out to a total of 2662 students on June 1, 2018, with the help of the Korean National Institute for International Education (NIIED), and received responses from 1561 students, of which 1107 were complete. The alumni survey was sent out to

3831 alumni on the same day and received 741 responses, of which 584 were complete. All respondents gave consent to participate in the survey.

Respondents

Around 25% of the students who responded were enrolled in a Korean language school, 19% were in an undergraduate program, 43% were in a master's program and 13% were in a PhD program; 61% of the respondents were women. No nationality dominated the survey: 4.7% were from Indonesia, 3% from Vietnam, 2.6% from Russia, 2.6% from Brazil, and 2.5% from Bangladesh, while the remainder accounted for less than 2.3% each.

The alumni respondents break down as follows: 16% had graduated from an undergraduate program, 67% from a master's program, and 16% from a PhD program; 55% were women and 45% men; 4.8% of the alumni were from Indonesia, 4.3% from Vietnam, 3.6% from Philippines, 3.1% from India, and 3.1% from Malaysia, the remainder accounted for less than 3% each.

Because we have conducted two almost identical surveys on two populations with similar demographics (GKS students and alumni), we are able to see whether the findings from both surveys are consistent with each other. Consistency across both surveys increases the reliability of our study (Creswell, 2014: 160).

Instrumentation

The questions on cognitive and affective evaluations were adapted from Alexander Buhmann's (2016) 4D Model of the Country Image. Cognitive dimension measures respondents' beliefs regarding Korea's political and economic competences, integrity, norms and values, and beauty of the country's culture and nature (Buhmann, 2016: 44). The affective dimension measures respondents' affection toward and fascination about Korea (Buhmann, 2016: 44). The question items for each dimension are listed in Appendix 1.

Survey design and cross-sectional comparisons

Longitudinal tracking studies, especially those that begin from prior to arrival, on long-term scholarship programs are significantly rare to find due to certain obstacles such as lack of budget for these long-term studies and change of assessment focus over time (Banks, 2011: 12; Chesterfield and Dant, 2013: 99; Mawer, 2017: 236; Raetzell, 2012: 5). This study was able to conduct full-scale surveys of GKS students and alumni only once each due to budget and time constraints. Therefore, to make up for the lack of actual baseline data with which to compare the differences in GKS recipients' evaluation of Korea, this study, in line with some previous works, follows two strategies.

First, the survey asked respondents retrospective questions on their beliefs about and emotions toward Korea in addition to questions on their present beliefs and emotions. Students were asked how much they agree with statements about their beliefs and emotions toward Korea such as "South Korea provides great educational opportunities." After each of these questions, we asked them about their pre-arrival opinions as well as their present ones. This gave them a chance to recall what they thought or felt about that statement before coming to the country.[5] These questions had 7-point Likert-scale options and each response was weighted accordingly (i.e. score of seven for strongly agree, and score of one for strongly disagree). This method is not ideal due to problems with accuracy of recall (Garcia, 2011: 47), but it is commonly used to create a baseline to substitute for an actual pre-arrival test in post-hoc surveys (Hadis, 2005: 16; Mawer, 2017: 235–236; Raetzell, 2012: 72–76). Furthermore, in addition to being a proxy measure for baseline data, there is another

significant aspect of this design. It measures respondents' own perception of changes in their cognitive and affective evaluation of Korea. When interpreted this way, the findings provide us with an extra layer of information.

Second, the rich data from two surveys allowed the authors to do cross-sectional comparisons. First, we compared GKS students' affective evaluation of Korea based on time spent in Korea (continuous variable). Second, we compared GKS alumni's affective evaluation based on whether they left Korea or not. Third, we compared students' results with that of alumni. Fourth, we made use of retrospective questions to create a baseline with which to compare the differences for all these sections.

These measures provided us with some ability to predict the changes in studying in Korea based on GKS's contribution to recipients' evaluation of Korea (Ward et al., 1998: 279). When used together, these proxy measures strengthen the validity of our methodology.

Factor analysis

Pre/post indices for cognitive (i.e. Cognitive Index) and affective (i.e. Affective Index) dimensions of students and alumni were created using exploratory factor analysis. The extraction method used was the principal components analysis with Varimax rotation. Principal component analysis (PCA) is defined as an orthogonal linear transformation that transforms the data to a new coordinate system such that the greatest variance by some scalar projection of the data comes to lie on the first coordinate (called the first principal component), the second greatest variance on the second coordinate, and so on (Jolliffe, 2002). Through transforming the data into fewer dimensions, which act as summaries of features, PCA simplifies the complexity in high-dimensional data while retaining relevant and significant trends and patterns. This is a widely used and powerful tool to reduce data dimensionality (Jolliffe and Cadima, 2016; Lever et al., 2017). Varimax rotation is an important second step in the PCA method. The initial factor analysis step has an infinite number of initial factors. Consequently, factor rotation, including Varimax rotation, transforms the initial factors into new ones that are easier to interpret. Factor rotations can be orthogonal, such as Varimax rotation, or oblique. With oblique factor rotations, the new factors are correlated; with orthogonal rotation, the factors are not correlated. Of the two types, orthogonal rotations have the "greatest scientific utility, consistency, and meaning" (Gannon-Cook, 2010: 82). Varimax rotation is the most common type of orthogonal rotations (Merenda, 1997).

As PCA aims to replicate the correlation matrix using a set of components that are fewer in number and with linear combinations of the original set of items, we first produce a component matrix for each item in a given dimension, which can be interpreted as the correlation of each item with the principal component. We add the squared component loadings across the components (columns) in order to find the communality estimates for each item. We then add each squared loading down the items (rows) to find the eigenvalue for each component, which represents the amount of variance in each item that can be explained by the principal component. Using the tables containing the factors representing each dimension (i.e. Table A1), we can calculate the total variance explained by each component. For example, Component 1 (q27_functional1_bf in table A1) equals to 43.72% of the total variance. We also show the communalities, which are the sums of the squared component loadings up to the number of components we have extracted. Scree plots showing the eigenvalue of each component for any given dimension are presented (Figures A1–A8 in Supplemental material). We generate our factor scores using Bartlett's method. This method assures that the factor scores provide an unbiased estimate of the true factor score (Hershberger, 2005).[6]

In total, eight indices were created, as cognitive and affective dimensions are measured twice for pre/post arrival in Korea for both students and alumni. The criterion used for factor extraction

was that of eigenvalues > 1.[7] With this criterion, four factors were obtained for both students and alumni's pre-arrival cognitive indices, which jointly explain 60% and 64.7% of the total variance of the elements, respectively (Tables A1 and A7). Values for Kaiser-Meyer-Olkin (KMO) were respectively equal to 0.962 and 0.957, greater than 0.8 indicating the presence of sufficient inter-correlations in our data matrix and appropriateness of factor analysis (Hair, 2017; Mohd Yasin et al., 2007; Malhotra and Birks, 2007).

For the students' and alumni's post-arrival cognitive indices, five factors were obtained, explaining 59.7% and 62.2% of the total variance, respectively (Tables A3 and A9 in Supplemental material). Values for KMO were 0.957 and 0.953, respectively. Regarding the affective dimension, the pre-arrival indices for students and alumni consist of one factor, explaining around 70.8% and 73.7% of total variance respectively (Tables A5 and A11 in Supplemental material). KMO values were 0.8 in both cases. The post-arrival affective indices for students and alumni also consist of one factor, explaining 72.6% and 71.2% respectively (Tables A6 and A12 in Supplemental material). KMO values were 0.816 and 0.810, respectively. Results of Bartlett's tests of sphericity for all indices are highly significant. The rotated component matrices for all indices are presented (Tables A2, A4, A8, and A10 in Supplemental material). These matrices show what the factor loadings look like after varimax rotation. Following Field (2000: 462), values above 0.4 are shown in bold. We apply Kaiser normalization with varimax rotation. This means that equal weight is given to all items when performing the rotation. The advantage of this technique is that it obtains stability of solutions across samples.

The averages of factor scores were calculated and rescaled from 0 to 1 for normalization. Following the creation of these indices, the results for "before arrival" and "now" were compared using *t*-test to analyze the differences between evaluations of Korea before coming to the country and present time evaluations.

Findings

GKS's role in bringing students to Korea

The survey respondents, GKS recipients, are foreigners who have experienced living in Korea learning about the country and building (or losing) affection toward it through their direct experiences. The same would hold true for other international students who are not scholarship recipients in Korea. The main difference between other international students and GKS recipients is that the scholarship plays a crucial role in bringing students to the country who otherwise might not have come. In other words, the scholarship program facilitates and contributes to changes in cognitive and affective evaluations of students about the country.

We asked respondents a counterfactual question to gain an understanding of GKS's contribution in this regard: "if you didn't receive the Korean government scholarship would you have come to study in Korea?" The response to this question by 30% of the students was likely or somewhat likely, whereas 57% responded unlikely or somewhat unlikely. The response to the same question was likely or somewhat likely by 26% of the alumni, whereas 60% responded unlikely or somewhat unlikely. These results show that GKS afforded an opportunity to many students who otherwise would have not chosen to come to Korea. Furthermore, 75.11% of students and 73.62% of alumni came from developing countries with relatively low per-capita income. These GKS recipients may not have had the means to study in Korea without a scholarship from the Korean government. Considering that a majority of GKS recipients came from these countries strengthen the case that GKS played a significant role in facilitating these people's coming to and studying in Korea.

Table 1. Changes in students' cognitive and affective evaluation of Korea.

Cognitive index	Obs	Mean	Std.	Affective index	Obs	Mean	Std.
Student (now)	558	.751	.006	Student (now)	953	.798	.006
Student (before)	558	.609	.009	Student (before)	953	.801	.005
Δ now-before		.142		Δ now-before		−.003	
t-value	17.352	p < .01		t-value	−0.535	Not significant	

Table 2. Changes in alumni's cognitive and affective evaluation of Korea.

Cognitive index	Obs	Mean	Std.	Affective index	Obs	Mean	Std.
Alumni (now)	342	.660	.012	Alumni (now)	473	.831	.008
Alumni (before)	342	.547	.011	Alumni (before)	473	.705	.009
Δ now-before		.113		Δ now-before		.126	
t-value	9.564	p < .01.		t-value	12.321	p < .01	

A related question enabled respondents to rank their reasons to come to Korea to study. Among students, 78% ranked the availability of the Korean government scholarship either as their primary or secondary reason out of seven options, making it the most popular answer. The second most popular answer was "quality of higher education in Korea," which was ranked first or second by 68%. In the alumni survey, 82% of the respondents ranked the availability of the Korean government scholarship as their top or second reason to come to Korea, while 57% answered "quality of higher education" in Korea as their primary or secondary reason. An interesting finding is that although Korean popular culture was the main source of information about Korea before coming to the country for both students and alumni, it was not an important reason in GKS recipients' decision to study in the country.

Changes in cognitive and affective evaluation of Korea

In this part of the paper, we look at the changes in GKS recipients' cognitive and affective evaluation of Korea at the time of the surveys compared with their evaluation before arriving in the country.

Both students' and alumni's cognitive evaluation of Korea improved significantly. The mean for students' cognitive evaluation improved from 0.609 to 0.751, indicating that students appreciated Korea more, in terms of cognitive dimension, when they actually lived in it (Table 1). The t-test shows that this change was significant at $p < .01$ (t-value = 17.352). In the case of the alumni, the mean cognitive evaluation of Korea improved from 0.547 to 0.660 (Table 2). This change was significant at $p < .01$ (t-value = 9.564).

In the case of affective evaluation, there is a difference between students and alumni. For students, the mean for affective evaluation of the country showed a small and non-significant change (t-value = −0.535). On the other hand, the mean for alumni's affective evaluation of Korea considerably increased from 0.705 to 0.831. This change was quite significant at $p < .01$ (t-value = 12.321). This shows that alumni's appreciated Korea, in terms of the affective dimension, more after living in it.

In the next subsections, we explore cross-sectional differences for different groups of respondents. The differences between student and alumni results are dealt with in more detail in the next subsection where we look at length of stay in Korea and whether alumni have stayed in Korea or left the country after graduation.

Table 3. Cognitive index score difference between student and alumni.

Cognitive index	Obs	Mean	Std.	Cognitive index	Obs	Mean	Std.
Student (before)	567	.610	.009	Student (now)	702	.745	.006
Alumni (before)	344	.547	.011	Alumni (now)	451	.653	.010
Δ Student–alumni		.063		Δ Student - alumni		.092	
t-value	4.294	p < .01		t-value	8.289	p < .01	

Table 4. Affective index score difference between student and alumni.

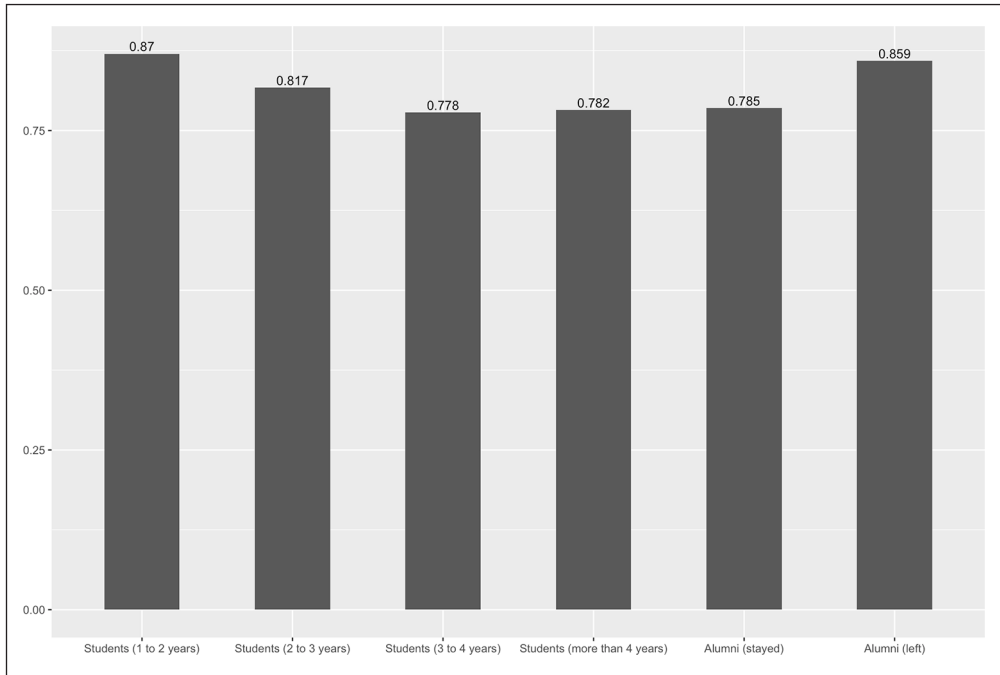| Affective index	Obs	Mean	Std.	Affective index	Obs	Mean	Std.
Student (before)	956	.801	.005	Student (now)	1081	.795	.005
Alumni (before)	475	.706	.009	Alumni (now)	575	.826	.007
Δ Student–alumni		.095		Δ Student–alumni		−.030	
t-value	10.145	p < .01		t-value	−3.375	p < .01	

Length of stay, graduation, and leaving Korea

There are stark differences between results for students' and alumni's perception of change in their cognitive and affective evaluation of Korea. Whereas both alumni and students evaluate Korea significantly more positively compared with before in the cognitive dimension, alumni's perception of change in their evaluation is more conservative compared with that of students. As shown in Table 3, the t-test results suggest significant difference at $p < .01$ between students (mean=0.610) and alumni (mean=0.547) for their cognitive evaluation before arrival in the country (t-value=4.294); for their present time evaluation, students (mean=0.745) reported more positive evaluation this time compared with the alumni (mean=0.653) and the difference is significant again at $p < .01$ (t-value=8.289).

Although students reported their perception of changes in their cognitive evaluation of Korea to be much more significant than that of alumni, they were more reserved in their reporting of changes in affective evaluation, which is about their feelings of affection toward the country. The t-test results suggest significant difference at $p < .01$ (t-value=10.145) between students (mean=0.801) and alumni (mean=0.706) for their affective evaluation before arrival in the country (Table 4). As for their present time evaluation, alumni (mean=0.826) reported more positive evaluation this time compared to the students (mean=0.795) and the difference is significant again at $p < 0.01$ (t-value=−3.375).

In order to better understand the cross-sectional differences, we compared students' affective evaluations based on the time that they spent in Korea. As for alumni, we compared alumni who have left the country with those who are still in Korea. Using visualizations to complement text can help us make sense of our findings (Siricharoen, 2005). Since U-curve theory is mostly about emotions, attitudes, and favorability (Oberg, 1960), we only use the data in the affective dimension for comparisons.

We divided respondents into six groups: students who have stayed in Korea for less than one year, students who have stayed between one and two years, students who have stayed between two and three years, students who have stayed more than three years, alumni who are still in Korea, and alumni who have left Korea. The first group is at the initial stage of adaptation to Korea and the last group comprises those who have finalized their cultural adaptation to Korean society. The pattern as visualized in Figure 1 looks in line with the predictions of the U-curve theory. The mean value for students who have stayed in Korea for less than one year is 0.870, and the mean value drops to

Figure 1. Students' and alumni's current affective index mean score by the length of stay.

0.817 for students who have stayed between one and two years, to 0.778 for students who have stayed between two and three years and begins to recover for the groups that follow. The mean value for students who have stayed more than three years is 0.782, which is almost the same as the alumni who stayed in the country (0.785). For alumni who left the country, the mean for feeling of affection jumps to 0.859. In short, students who are in their honeymoon period show high affection toward Korea and lose that affection partially in the next two years. Their affective evaluation stays stable until they leave the country after graduation. Leaving the country seems to bring their affection back to the high point they experienced when they first came to the country.

Gender

Demographic backgrounds of the GKS recipients can affect their beliefs and attitudes toward Korea. Here, we look at gender as one of the key demographic variables showing an apparent pattern of changes in the cognitive and affective evaluation of Korea. For both students and alumni, there are stark differences between female and male GKS recipients' cognitive and affective evaluation of the country. The findings suggest significant improvement for men's evaluation, while there is relatively less change in women's evaluation of Korea.

As shown in Table 5, the female and male students had almost the same mean value for cognitive evaluation, 0.611 and 0.608, respectively, before coming to Korea. The results for present time cognitive evaluations show that male students (mean=0.763) evaluate Korea more positively than female students (mean=0.731) in this domain that is significant at $p < .01$ (t-value=−2.719). The alumni findings also show the same pattern. Whereas the female alumni evaluated Korea higher in cognitive dimension before arriving in Korea (mean=0.556) than the male alumni (mean=0.538), at the present time the male alumni (mean=0.681) evaluate Korea higher than the female alumni

Table 5. Cognitive index score difference by gender.

Students				Alumni			
Cognitive index	Obs	Mean	Std.	Cognitive index	Obs	Mean	Std.
Female (before)	340	.611	.012	Female (before)	175	.556	.014
Male (before)	227	.608	.015	Male (before)	169	.538	.017
Δ Female–male		.003		Δ Female–male		.019	
t-value	.158	Not significant		t-value	0.844	Not significant	
Female (now)	410	.731	.008	Female (now)	230	.626	.014
Male (now)	292	.763	.009	Male (now)	221	.681	.015
Δ Female–male		−.032		Δ Female–male		−.055	
t-value	−2.719	$p < .01$		t-value	−2.668	$p < .01$.	

Table 6. Affective index score difference by gender.

Students				Alumni			
Affective index	Obs	Mean	Std.	Affective index	Obs	Mean	Std.
Female (before)	600	.818	.006	Female (before)	260	.736	.011
Male (before)	356	.771	.008	Male (before)	215	.669	.014
Δ Female–male		.047		Δ Female–male		.067	
t-value	4.804	$p < .01$		t-value	3.735	$p < .01$	
Female (now)	662	.781	.007	Female (now)	318	.812	.009
Male (now)	419	.817	.008	Male (now)	257	.843	.011
Δ Female–male		−.036		Δ Female–male		−.031	
t-value	−3.296	$p < .01$		t-value	−2.202	$p < .05$	

(mean = 0.626). The differences between male and female recipients in present time cognitive evaluation are significant at p < .01 (t-value = −2.668).

The gendered pattern of the GKS recipients' evaluation in the affective dimension is more evident. The mean value for female students' affective evaluation before coming to Korea is 0.818, which was higher than that of male students' mean value of 0.771. However, in the present time the male students' affective evaluation (mean = 0.817) became significantly higher than that of female students (mean = 0.781). There is a significant increase in male students' affective evaluation, while there is a significant decrease in female students' affective evaluation.

Although the trend is similar for alumni, the male alumni's present time affective evaluation (mean = 0.843) is significantly higher than female alumni's (mean = 0.812), whereas it was the other way around before arrival in Korea (female alumni mean = 0.736; male alumni mean = 0.669) (Table 6). All these differences for students and alumni are significant at $p < .01$. Alumni results are similar to student results in that women had significantly higher affective evaluation before arriving to the country, whereas men have significantly higher affective evaluation in the present time. The main difference is that female students report decreasing affective evaluation whereas female alumni still report an increase in their affective evaluation, but still more conservatively than male alumni's increase. This discrepancy may have something to do with length of stay and leaving the country after graduation, which we analyze further in the discussion section.

Table 7. Cognitive index score difference by the development level of the country.

Students				Alumni			
Cognitive index	Obs	Mean	Std.	Cognitive index	Obs	Mean	Std.
Developed (before)	52	.495	.030	Developed (before)	45	.431	.028
Developing (before)	515	.622	.010	Developing (before)	299	.565	.012
Δ Developed–developing		−.127		Δ Developed–developing		−.133	
t-value	−3.989	p < .01		t-value	−4.152	p < .01	
Developed (now)	67	.574	.021	Developed (now)	62	.471	.024
Developing (now)	635	.763	.006	Developing (now)	389	.682	.011
Δ Developed–developing		−.188		Δ Developed–developing		−.211	
t-value	−1.026	p < .01		t-value	−7.392	p < .01	

Table 8. Affective index score difference by the development level of the country.

Students				Alumni			
Affective index	Obs	Mean	Std.	Affective index	Obs	Mean	Std.
Developed (before)	120	.820	.012	Developed (before)	69	.723	.026
Developing (before)	836	.798	.005	Developing (before)	406	.703	.010
Δ Developed–developing		.022		Δ Developed–developing		.020	
t-value	1.537	n.s.		t-value	0.762	Not significant	
Developed (now)	132	.752	.015	Developed (now)	86	.779	.019
Developing (now)	949	.801	.006	Developing (now)	489	.834	.008
Δ Developed–developing		−.049		Δ Developed–developing		−.055	
t-value	−3.007	p < .01		t-value	−2.789	p < .01	

Development level of home country

A macro-level factor we are concerned with in this paper is respondents' home country's economic development level.[8] For both students and alumni, we see significant differences between students from developed and developing countries in their cognitive and affective evaluation of Korea. As shown in Table 7, students from developing countries evaluated Korea much more positively in cognitive dimension (mean (before)=0.622; mean (now)=0.763) than students from developed countries (mean (before)=0.495; mean (now)=0.574) before coming to the country and in present time. Furthermore, the increase in cognitive evaluation of students from developing countries in present time is much higher than students from developed countries. In the same regard, the alumni from developing countries had a much higher cognitive score (mean (before)=0.565; mean (now)=0.682) than the alumni from developed countries (mean (before)=0.431; mean (now)=0.471) before coming to the country and in present time. All results were significant at $p < .01$.

The differences in affective evaluations are more noteworthy. Before coming to Korea, both students and alumni from developed countries (students' mean=0.82; alumni's mean=0.723) evaluated Korea more positively in affective dimension than recipients from developing countries (students' mean=0.798; alumni's mean=0.703) (Table 8). However, in present time, developing country recipients (students' mean=0.801; alumni's mean=0.834) evaluated Korea much more positively in affective dimension compared with the developed country recipients (students' mean=0.752; alumni's
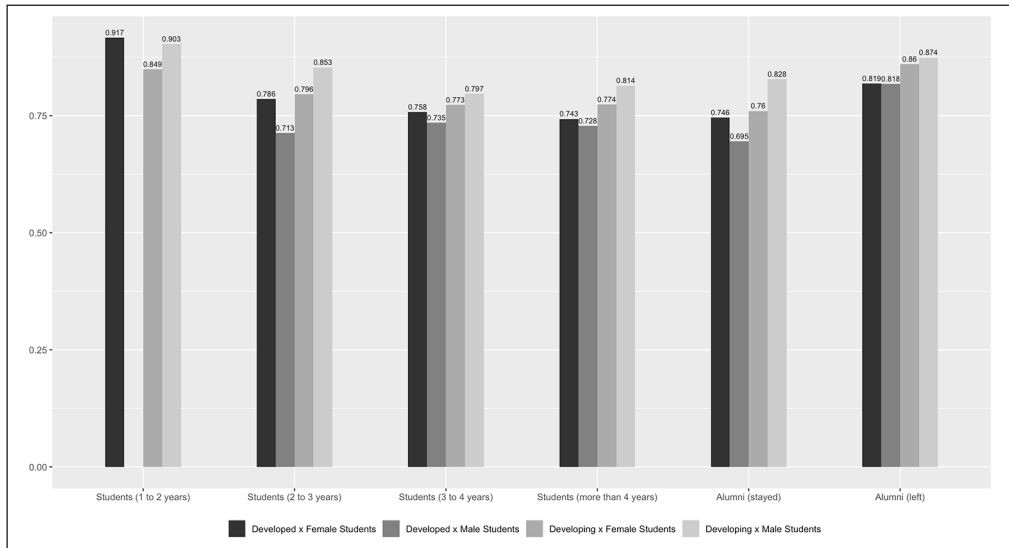
Figure 2. Students' and alumni's current affective index mean score by the length of stay, developmental level, and gender.

mean = 0.779). The differences are significant at $p < .01$. The affective evaluation of students coming from developed countries decreased significantly in present time compared with before arrival in Korea, while it stayed the same for students from developing countries.

We plotted the affective evaluations based on the length of stay again, this time differentiating between the development level of students' home countries and their gender. In other words, we created four groups combining the developmental level of recipients' home country and their gender (Figure 2). The U-curved shape is almost the same for all groups. Whereas for developed countries, female students always evaluated Korea more positively than male students, the opposite is the case for developing country students. Furthermore, for the alumni who leave the country, developed country students' affective evaluation reflects a bigger positive jump compared with developing country students for both male and female students. Nevertheless, in developing countries, both men and women evaluate Korea more positively in all length-of-stay groups except the newcomer category, which hints at a stronger acculturation problem for developed country students.

Discussion and conclusion

What distinguishes this study from other studies on international students in Korea is the fact that our survey respondents are current or former GKS recipients. Living and having first-hand experiences in Korea by itself could lead a person to change their beliefs about and attitudes toward the country. Our study finds that this was the case for GKS recipients, and most importantly, the direction of the changes varied based on the demographic groups, especially in the case of affective evaluation of the country.

The major function of the GKS program is to bring international students to the country who might otherwise not have come. Our findings suggest that this was the case for the majority of GKS recipients, many of whom come from developing countries with lower per-capita income. This function distinguishes GKS from privately funded international students, making the former an intentional policy tool for public diplomacy in line with the country's foreign policy interests (Ayhan, 2019a).

Overall, our findings suggest that after coming to study and live in Korea, GKS recipients evaluate Korea more positively in both affective and cognitive dimensions. The changes are more significant and clearer in the positive direction for cognitive dimension for both alumni and students and for all demographic groups. Students reported significantly more positive evaluation of Korea in cognitive dimension than the alumni.

Taking into account the fact that we asked them retrospective questions regarding their evaluation of Korea before coming, one of the reasons for differences between students and alumni might be that it is more difficult for alumni to recall their beliefs about Korea before their arrival. That is because the timespan is relatively longer for them in comparison with the students. It could be argued that it is challenging for them to disregard what they know or feel today about Korea. Students who are relatively new to the country are more generous in reporting positive changes in their cognitive evaluation of the country than alumni.

Another factor that might have influenced this divergence is that Korea has been more developed in areas covered by these cognitive evaluation questions compared with the timespan when alumni studied in Korea. On average, alumni respondents arrived in the country in the year 2011, whereas, on average, the student respondents arrived in the country in the year 2016. When we look at differences in individual cognitive questions, there is support for this latter explanation. The questions that resulted in the most significant difference between students' and alumni's answers for the retrospective questions are culture-related questions, which gave students statements such as "South Korea is home to beautiful cultural assets," "South Korea has delicious foods and wonderful cuisine," and "South Korea has rich traditions." The students who came to the country more recently are more likely to have known about Korean culture before their arrival compared with the alumni due to the increasing popularity of Korean popular culture globally. In our survey, 66.9% of students compared with 58.7% of alumni reported watching Korean movies and dramas at least once a month before coming to Korea; and 69.4% of students compared with 58.2% of alumni reported listening to Korean music at least once a month before coming to Korea.

Considering that the cognitive dimension is mainly about students' beliefs about Korea, it would be safe to suggest that GKS recipients now know more about Korea and evaluate it more positively compared with before coming to the country. Facilitating foreigners' understanding of Korean history and traditions is one of the most significant goals of Korean public diplomacy according to the country's First Basic Plan on Public Diplomacy (2017–2021) (MOFA, 2017: 30–33). The findings suggest that this goal was achieved for GKS recipients.

In the case of affective dimension, the findings are more dispersed. Whereas the GKS students report no significant change in their affective evaluation of the country, alumni evaluate the country more positively in the present time compared with before coming to the country. This might be due to most of the alumni having left the country, which means they would have been less likely to have negative experiences in Korea. Alumni's Korean connection remains a somewhat positive memory and a source of nostalgia for them. Social psychologists suggest that people tend to look at past negative experiences as something from which they have learned (Moutsiana et al., 2013). With this possibility in mind and informed by previous literature on U-curve theory, we looked at differences in affective evaluation based on length of stay in the country for students and staying versus leaving the country for alumni. The findings show a U-curve shape. Although our findings support the U-curve theory, our analysis is exploratory rather than conclusive. Testing the U-curve phenomenon of GKS recipients require a more rigorous methodology in a study dedicated only to this phenomenon.

Furthermore, the findings for the differences between male and female recipients are noteworthy. The most interesting finding is that female students evaluate Korea more positively than male students before coming to the country, but their evaluations become more negative whereas male

students' evaluations become more positive in the present time. In other words, female students like Korea and are fascinated about the country more before coming, but they like Korea slightly less and they are slightly less fascinated about the country in the present time. However, the findings are not the same for alumni population. Both female and male alumni report more positive affective evaluation of the country in the present time compared with before. Taken together with the findings in length of stay and remaining versus leaving the country, it may be suggested that the U-curve phenomenon also has a gender factor. That is, female students might experience more disappointment while staying in the country. This finding justifies a more in-depth study of gendered dynamics of GKS in future studies. The preliminary findings in Lee and Snow's (2021) study suggest that female students' negative experiences are due to their perceived negative treatment by Korean people because of their gender.

The differences between students from developing and developed countries are also interesting. GKS recipients from developing countries are more appreciative of Korea than recipients from developed countries in both cognitive and affective dimensions. The most significant finding is that students from developed countries evaluate Korea less positively in affective dimension in present time compared with before coming to the country. This is not the case for alumni from developed countries. In a similar vein to female students, students from developed countries seem to experience disappointment more while staying in the country, reflecting U-curve more seriously than their counterparts from developing countries.

Other studies' findings related to Korea-based international students' home country's level of development suggest contradicting results. On the one hand, Jon (2012) finds that Korea-based international students from non-Western countries (mainly developing countries) are more discriminated against. Hong et al. (2021) also find similar findings in the case of GKS students. On the other hand, Istad et al.'s (2021) study show that GKS students' home country's level of development is not a significant determinant of their intention to stay in the country after graduation.

Based on our results, we can probably speculate that recipients from developing countries evaluate Korea more positively, comparing it with their home countries, particularly in the cognitive dimension. It can be also suggested that coming to study in Korea provides students from developing countries with enhanced opportunities for upward mobility in their career trajectories compared with studying at home institutions, though this may be less of the case for recipients from developed countries. In a similar vein, opportunity costs of choosing to study in Korea as opposed to home institutions would be less for students from developing countries, which may be another reason for their higher evaluation of Korea. With these being noted, our findings encourage in-depth studies on differences between students from developed and developing countries, or other development-related dynamics of GKS.

Through this study, we explore avenues for future research and help build hypotheses that can be tested in them. As mentioned previously, our findings reveal important implications for the U-curve theory, gendered dynamics of GKS and development-related questions that can be analyzed more in-depth in future research. Furthermore, the relationship between students' beliefs, attitudes, and Korea-related behavior can be tested to see if, indeed, students' evaluation of the country determines their behavior. Our findings clearly show that international student mobility programs do not necessarily produce positive outcomes for public diplomacy of a country as often implied in most works on the topic (see Yun's work for some exceptions, Yun, 2015; Yun and Vibber, 2012).

Our findings have significance for policies as well. GKS aims to contribute to Korean public diplomacy by bringing in international students to the country and expecting that they would grow positive opinions about and affection toward the country. Nevertheless, as our findings show, this

assumption may not always hold. The most important lesson is that policymakers should not take GKS recipients' positive evaluation of Korea for granted. Our cross-sectional comparisons show that some GKS recipients, that is, women and/or developed country recipients, are more likely to grow negative attitudes toward the country than others during their stay. For GKS to fulfill its public diplomacy function, it is necessary to ensure that students are satisfied with their experiences in the country, which is an important determinant of their affective and cognitive evaluation of the country (Tam and Ayhan, 2021). More focused evaluation studies can enlighten policymakers as to what causes the negative shift in affective evaluation for certain groups of recipients.[9] In turn, these studies can inform policies to improve the environment of GKS students and increase the chances of their more positive evaluation of the country. While Korean government must address the causes for worsening country image of these groups, an emphasis on developing country students, which also counts toward the country's official development assistance contributions, seems to be more rewarding.

Our study is not without limitation, mainly due to our dependence on survey method for data collection. While there are many advantages of this method, there are several disadvantages associated with it, including the high rate of non-responses, probability of receiving dishonest answers, differences in understanding and interpretation among those surveyed, and the inability to fully capture individual contextual circumstances of the respondents at the time of the survey. Owing to time and resources constraints, as well as the lack of geographical proximity to the large number of survey respondents, it was impossible to use qualitative methods, such as in-depth focus groups or detailed case studies, to complement our quantitative findings. While we acknowledge these limitations, our sample remains representative of the population of GKS scholarship holders. Further studies can build on our findings and design qualitative or mixed studies for more in-depth understanding of GKS recipients' cognitive and affective evaluation of Korea.

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Supplemental material

Supplemental material for this article is available online.

Notes

1. All replication files for the data used in this article can be found online at https://doi.org/10.17605/OSF. IO/75VRU.
2. Until 2019, GKS was used as an umbrella for various scholarship programs with the Korean Government Scholarship Program (KGSP) being the major program, which is for tertiary education in Korea. The brand KGSP was discontinued in 2019, continuing only with GKS thereafter.
3. In recipients' overall cognitive and affective evaluation of the country, the scholarship programs only play a contributory role and all causation in the changes cannot be readily attributed to it (Mawer, 2014a, 2014b; Mayne, 2008, 2012).
4. Two pilot surveys and one focus group interview were conducted to improve the validity of the survey instruments in February and March 2018.
5. Throughout the manuscript, "pre-arrival" or "before arrival" refer to the participants' evaluation of the country before their arrival as far as they recall it at the time of the survey (hence not actual pre-arrival data); while "now" or "post-arrival" refer to students' evaluation of the country in the present time of the survey.
6. Unbiased scores mean that with repeated sampling of the factor scores, the average of the predicted scores is equal to the true factor score.
7. In general, factor analysts should retain factors until additional factors account for an insignificant amount of variance (Hayton et al., 2004). According to Kaiser's method, only constructs that have eigenvalues greater than one should be retained for interpretation (Kaiser, 1960). This approach may be the best known and most used in practice (Fabrigar et al., 1999) because of its theoretical basis and ease of use (Gorsuch, 1983). According to Taherdoost et al. (2014), a survey in PsycINFO yielded over 1700 studies that used some form of factor analysis, with more than 50% using the varimax rotation for principal components analysis as the approach used for data analysis. In addition, the majority of studies used the Kaiser criterion (all factors with eigenvalues greater than one) as a method for deciding the number of constructs to be retained for rotation (Osborne et al., 2008).
8. To identify the economic development level of the home country, we used the country classification from the World Economic Situation and Prospects (WESP) report, which is updated by the UN on an annual basis. According to the UN classification, the countries may belong to one of three broad categories: developed economies, economies in transition, and developing economies (United Nations, 2018). In this analysis, we combined the latter two groups since economies in transition are also developing economies. Therefore, our cross-sectional comparison looks at the differences between students from countries with developed economies and those from countries with developing economies.
9. Our dataset has both quantitative and qualitative data regarding students' satisfaction with their universities, language schools, financial conditions of the scholarship, and life in Korea in general.

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