

RESEARCH ARTICLE

Measuring Perception of College Welcome Provided to Foreign-Born Students: Validation with Pilot Data

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Abstract: Immigrant and foreign-born students are one of the fastest-growing populations in higher education across the US, and yet there is a dearth of research around their sense of belonging on campus and in the classroom. Therefore, this paper will cover the development and evaluation process for a scale designed to evaluate the perception of college welcome provided to immigrant students. Data from 94 college students were used to conduct a series of factor analyses to assess the survey questions and their utility for measuring college welcome. The scale is made up of four factors. The Cognitive awareness of college welcome factor showed a Cronbach's alpha of 0.72, the Emotional college welcome factor showed a Cronbach's alpha of 0.732, Behaviors of college welcome showed a Cronbach's alpha of 0.75, and the Relational college welcome showed a Cronbach's alpha 0.767. Overall, Cronbach's alpha is 0.864 for the perception of college welcome which is excellent. While the results are promising that this scale could indeed be measuring college welcome, it is important that more data be collected, reflect a higher percentage of immigrant students, and that future research be done to continue to assess the reliability and validity of this scale. This scale is the first step in better understanding the perception of welcome provided to foreign-born students, which is critical so that social workers can intervene and help improve the social and emotional well-being of students.

Keywords: foreign-born students, college welcome, school welcome, social and emotional well-being, college

1. Introduction

While data on immigrants and refugees are not standardly tracked across the US, the best estimates show that about 28% (19 million college students) of those enrolled in college were either immigrants or children of immigrants [1]. Despite the barriers that they face in accessing higher education [2, 3], research shows that this is one of the fastest-growing populations in higher education in the US [4, 5]. While this is progress on getting more foreign-born students in US institutions of higher education, there is inequity in their ability to reach degree completion. In the US, the drop-out rates for immigrant and refugee students are about three times higher for foreign-born students than for other students [6]. More research is needed to understand why this might be. Some possible links could include a lack of sense of belonging, engagement on campus, and inclusive efforts by the university all of which could make it harder for students to reach degree completion. For example, Froehlich et al. [7] see that immigrants lack a sense of belonging and a lack of engagement on campus. At the request of the Obama Administration, many US universities have improved Diversity, Equity, and Inclusion efforts, but media and policy have also started to scrutinize this effort and cut positions [8]. Yet, Saroughi and Kitsantas [5] note a dearth of research on the sense of belonging and academic satisfaction of immigrant language-minority students in higher education.

Therefore, this paper will cover the development and evaluation process for a scale designed to evaluate the perception of college

welcome provided to foreign-born students (e.g., immigrant, refugee, and college students on temporary visas), with the goal of using it as a tool to understand welcome on college campuses moving forward.

Social workers and counselors are often responsible for the social-emotional well-being of foreign-born students including building resilience [9], understanding trauma due to marginalizing experiences in school [10], and supporting trauma-informed pedagogies [11]. The literature review contains information on the latent construct of interest: welcoming schools, as well as the constructs used for validation: a sense of belonging, and loneliness. The paper will provide detail about the instrument design process, data collection, and statistical analyses. The paper ends with recommendations for next steps in continuing to improve this scale of perceptions of college welcome provided to immigrant/foreign-born¹ students.

2. Literature Review

The literature review below focuses on three main concepts. Welcoming schools and campuses is the latent construct of interest in this study, and while there is little literature using this term specifically around institutions of higher education, what was found is shared and amplified by the literature around the construct in K-12 settings. Next, there are sections on sense of

¹The terms immigrant and foreign-born are used interchangeably in this manuscript and include people with varying immigration documents/statuses including but not limited to refugees, undocumented immigrants, international students on F-1 visas, asylum seekers, and children of people on employment-based visas.

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belonging and loneliness which are being used in the survey design phase as validation constructs. McCoach et al. [12] and Boateng et al. [13] describe that in the survey development process, it is important to carefully consider the construct you hope the measure and how it relates to other very similar constructs (in this case sense of belonging) as well as constructs that are opposite or very different (in this case loneliness). Therefore, a brief (not exhaustive) overview of these constructs and their relevance to the study is shared below.

2.1. Diversity, equity, and inclusion

Most college campuses in the US have a formal and outward facing Diversity, Equity, and Inclusion (DEI) statement [14]. These statements are designed to help hold the institutions accountable and often include values such as anti-oppressive and social justice practices at their center [14]. Many institutions of higher education even require potential faculty and staff to think about their own stance on DEI and submit a written statement as part of their job application that shows how they have engaged in DEI practices and how it is woven throughout their teaching, research, and service. Yet, in the last year we have seen opposition to this practice and many people who work in DEI offices targeted for upholding these practices such as through SB17 in Texas. Ely [14] notes that many DEI statements are not explicit about who or what they mean by diversity. Hilton et al. [15] mention that diversity and DEI language often include “embrace diversity within, but not limited to, gender identity, sexuality, disability, socioeconomic status, ethnicity, race, nationality, and religion”. As it relates to this study, nationality would encompass most immigrant groups (i.e., anyone born outside of the US and coming here with citizenship in other countries) but this gets murky for immigrants who are stateless and have no nationality, US-born children of immigrant parents who experience many of the same challenges as immigrant students in college, etc. This context and background on DEI are helpful as a way to situate and understand policies and practices around welcoming immigrant students into the college campus as this is a small piece of DEI efforts at large.

2.2. Welcoming schools and campuses

The literature provided in this section about Welcoming Schools is largely focused on ideology and implementation (largely at the high school level) as the author was not able to find much research on the measurement or outcomes of this concept or context on how institutions of higher education are addressing the issue. Casellas Connors et al. [16] point out that some of the reasons that institutions of higher education are not doing more to welcome immigrant students is because of the lack of policies saying that this is mandatory or even discussing how to go about doing so. The term welcoming schools is most often used to describe welcome for children being raised by lesbian, gay, bisexual, or transgender (LGBTQ+) parents by the Human Rights Campaign Foundation, and LGBTQ+ students [17], but it has also been used concerning immigrant and refugee students by the U.S. Department of Education under the Obama Administration in 2015 (as described below).

The Human Rights Campaign Foundation created a campaign for welcoming schools for students raised by lesbian, gay, bisexual, or transgender (LGBTQ+) parents to improve student outcomes. Research shows a link between academic achievement, social-emotional well-being, and positive school climates [18, 19]. The goals of the program are to create a school climate where all students and families feel welcome and safe and increase the

involvement of diverse families by enabling administrators, educators, and parents/guardians to work together to strengthen how the school approaches family diversity, gender stereotyping, name-calling, and bullying, as these are known to be common experiences for immigrant students [20].

Under the Obama Administration, the White House Task Force on New Americans Educational and Linguistic Integration conducted web-based training on the concept of welcoming schools specific to the inclusion of refugee students. The presenters shared that to properly support new immigrant students in their transition, a welcoming environment was needed. Specifically, they mentioned the role that diverse decorations (i.e., flags representing students' countries, signs in other languages, holidays celebrated around the world, etc.,) can assist a child in feeling at home, especially when combined with bilingual staff in the main office and/or guidance office. They also discussed student-oriented strategies which include a proper assessment of both academics and language upon arrival, orientation to the school, extended learning time, extracurricular activities, and peer support. Evans and Reynolds [2] have explicitly outlined the steps that schools can take to orient students such as educating staff and students on various cultures and immigrant experiences, adapting the curriculum and due dates as needed, and making introductions to key staff. The Harvard Graduate School of Education has listed some best practices on their website that encourage educators to be cognizant of the trauma histories and ongoing adjustment challenges that immigrant students carry, to work together as a community, and to regularly pay attention to the school climate and how it is impacting immigrant students. In addition to student-oriented strategies, community connections with the school help students and families with health, mental health, housing, employment, and other basic needs, as well as social/cultural partnerships.

When looking at college campuses, the literature agrees that we need to do more to welcome immigrant students [3, 5]. Some challenges in accessing college include the ability to re-credential immigrants who have attended higher education in their country of origin and lack of knowledge about the college process [3, 21]. Li et al. [22] discuss how the career counselor plays a pivotal role for international students in understanding and engaging with career pathways throughout the university experience. College campuses, faculty, and staff have an opportunity to help refugees rebuild their lives and unlock their individual potential so that they can contribute meaningfully to the local community. In recent years, programs such as Every Campus a Refugee, the RESPONSE Campaign, and others like those that helped Afghan women to continue their education in the US have been instrumental in creating campus environments that are welcoming to immigrants and refugees.

Interestingly, the author could not find an explicit definition of what “welcome” is or how it can manifest within the university setting. The welcoming school framework has been used with LGBTQ+ students and students with disabilities, and this study will aim to expand the use and research around the concept of a welcoming school for immigrant students. The author posits that a sense of welcome must consist of two aspects – a sense of belonging (or the feeling of being included within the campus community) that the immigrant student feels and the sense of openness and willingness to include immigrant students presented by all others (including fellow immigrant students). This second component includes dimensions related to policies and programs at the university that provide opportunity for the inclusion to happen.

2.3. Sense of belonging

The need for safety, belonging, love, and respect is established in the literature [23]. However, a person's sense of belonging can vary in different facets of life. School belonging is a concept that includes elements at the individual level, classroom level, and interpersonal level. In K-12 schooling, the individual level sense of belonging includes feeling valued, being involved in the classroom and in extracurricular activities [24]. At the interpersonal level, a sense of belonging includes being encouraged by others in the school, receiving support from the teacher and from peers [24]. At the university level, we see that a sense of belonging contains similar dimensions including relationships with faculty [25] and peer relationships [26]. Dias [26] also notes that it should include institutional attributes, cultural dimensions, psychological and social synergies, and organizational and political dimensions. The study found that students had a higher sense of integration when they had strong peer relationships and that self-concept increased as they had more cultural and social cohesion with other students [26]. Saroughi and Kitsantas [5] find that the benefits of a higher sense of belonging among immigrant language-minority college students led to many positive outcomes such as increased self-regulation, increased academic satisfaction, increased positive affect, and increased self-efficacy, showing that establishing a sense of belonging has far and wide reaches in terms of overall well-being. On the other hand, Froehlich et al. [7] find that immigrant students are fearful of being stereotyped and that this led to lower sense of belonging and lower motivation to engage in activities on campus.

2.4. Loneliness

Weiss finds that only one or two percent of people have never experienced loneliness. Loneliness is the overall result of actual and desired levels of satisfaction developed from relationships across all relational needs. The sense of another human not being present can lead to unhappiness and loneliness, especially when this creates a change in roles and the ability to share daily chores [27].

Hurtado-de-Mendoza et al. [28] find that Latinx immigrants in the US struggled to make social relationships even years after arrival. However, resiliency among Latinx immigrants increases with social support and fewer feelings of loneliness [29]. While social networks are critical in decreasing loneliness, researchers discuss how this is a complicated circle because loneliness can result in maladaptive behaviors that hinder social engagement [29, 30]. Similarly, Koo et al. [31] find that social connections increase over time as an international student attends the university.

Loneliness is closely associated with mental health challenges. Loneliness is a predictor of suicide risk in a study of Latino college students [32], and this is critical because young adult immigrants are often at risk of higher levels of depression [33] or posttraumatic stress

disorder [34]. Moreno et al. [35] found that immigrant college students who struggled with mental health were less likely to reach degree completion. Therefore, understanding college welcome and when foreign-born students are at risk is important to both the research base and so that mental health providers can help.

2.5. Theoretical framework

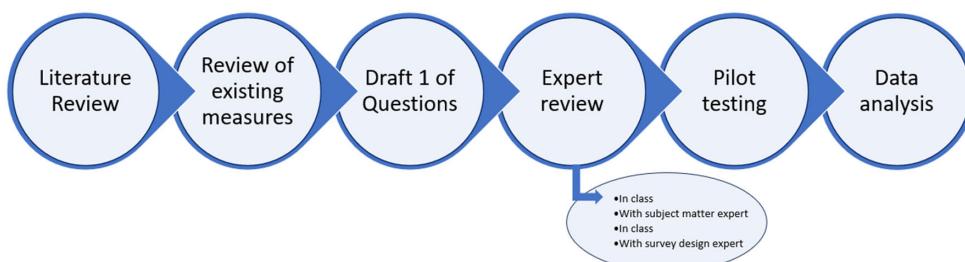
This study has been guided by “welcoming-unwelcoming” conceptual framework [36]. In a school that intentionally provides the same resources and attention to both native-born and foreign-born students, Gitlin et al. [36] find that immigrants were largely welcomed within the school district while simultaneously experiencing moments of unwelcome. The English as a Second Language (ESL) program was a positive environment for immigrant students, but they were not valued as a cultural resource at the school or in the district. While the school's policies supported full inclusion, the daily practices led to students being separated for their language abilities, and this led to separation in social spaces and placed them in the margins, creating a sense of “othering.” If students feel pushed to the margins, it can have an impact on how they interact and feel about interacting with mainstream populations in the school setting. In a qualitative study, Barillas-Chón [37] uses the same welcoming-unwelcoming framework to differentiate welcoming and unwelcoming practices. They found that welcoming practices include Spanish-speaking faculty and staff, a safe space such as a Newcomer's classroom, a sense of safety within the school, and the ability to communicate with peers – both Latinx students and mainstream students. “They established a sense of being welcomed not only in but also into the school” [37].

This theoretical idea of “welcoming-unwelcoming” is paralleled in many higher education settings as well. For example, in higher education, men are the minority in some disciplines, and Grimshaw et al. [38] find that they faced difficulty in establishing these peer relationships and faced discrimination in their practicum placements as part of their education which led to feelings of being singled out, which is exemplary of an unwelcoming program. Similarly, Chang et al. [32] find that Latino students who were unwelcomed experienced loneliness and risk for suicide. On the other hand, there are intrapersonal benefits to students who have positive university experiences such as self-efficacy [25] and increased positive affect [5]. In terms of the current study, this framework and the literature review conducted above helped to inform the design of questions used in the scale.

3. Methodology

The methodology used to design the survey in this study involved many steps as depicted in Figure 1 below.

Figure 1
Methodological process



3.1. Instrument design

To guide the scale development process, the researcher conducted a literature search on welcoming schools and reviewed many existing measures on a sense of belonging in schools and on other content areas related to school climate or immigrant students in order to determine if a new scale that addressed college welcome was truly needed, or if these would be sufficient. To do this, the author conducted a thorough review of the PsycTESTS database (a platform available through many university libraries to find publicly available and standardized measures) and found a lack of available measurements to help understand the perception of welcome that foreign-born students feel on college campuses. Notably, the researcher did find a few related measures which are briefly described here. The Diverse Students' School Beliefs Survey assessed the experiences of Latino students in secondary school in 2008 [39]. The School Climate Measure-Revised examined relationships, academic support, school connectedness, social environment, perceived exclusion, and academic satisfaction of a diverse sample of adolescents [40]. The School Connectedness Scale looked at a group of adolescents and considered their feelings of being accepted, included, cared for, close to, and supported by others at school [41]. The Language Efficacy and Acceptance Dimension Scale assesses linguistic self-esteem among Latino students [42] which could be an aspect of belonging or welcome. While each of these scales was interesting and included good questions, the author felt that none represented the concept of welcome in schools and therefore proceeded with the development and pilot testing of this scale.

As seen above, much of the measurement around welcome in schools relates to a sense of belonging, and therefore, the author includes a brief literature review on belonging and a validation scale of belonging in the administration of this survey. The other validation scale is on loneliness, a concept that is hypothesized to be the opposite of a sense of belonging. However, the current study is not about a sense of belonging for immigrant students. Rather, it is about a sense of welcome of which belonging is only one component, as described above. Yet, the ideas gained from the literature review provided context and frame for questions, but no questions came directly from existing scales.

The researcher aimed to create a scale that could be completed by a college student in 15 min. Most questions contain a Likert scale – intentionally without a middle option – so that participants can demonstrate the degree to which each statement is true. The complexity of items was intentionally simple to decrease time spent answering questions and to increase the ability of English language learners to participate.

3.2. College welcome

A “perception of college welcome” is the latent construct evaluated by this scale. Based on a review of the literature, and for this study, the working definition of a welcoming school includes two major components: a sense of belonging for the immigrant student and a sense of openness and acceptance from others on campus. The author hypothesized that the construct would have domains including a cognitive, emotional, behavioral, and relational dimension of feeling welcome. The cognitive dimension contains items to assess the participant’s knowledge of the school’s efforts, programs, policies, and practices, to welcome students. The behavioral dimension assesses whether the marginalized group engages in activities at school that indicate they feel welcome and comfortable, at the school. The emotional dimension is around the student’s experiences of emotions

associated with being welcomed. Lastly, the relational dimension assesses the participant’s openness to developing relationships (or the presence of existing relationships) with immigrant students.

3.3. Expert review

In order to refine the survey, a number of steps were taken to consult experts and hone the language and purpose of the scale. Expert review is a common methodological process used in survey development to ensure that the construct is well defined and measured [43]. The initial scale consisted of 47 items around the construct of a welcoming campus and an additional seven questions for demographics. In its initial draft, the cognitive dimension consisted of 15 items, the behavioral of 9 items, the emotional dimension had 17 items, and the relational dimension had six items. These items were brought to a Survey Development Class of master’s and PhD level students for a peer review session where three colleagues reviewed the scale in-depth and provided comments for improvement. This was done with paper copies of the survey where comments were made line-by-line and concepts were discussed as a group with the researcher.

After the initial peer review session, a series of edits were made to the survey items based on the feedback gathered. The researcher deleted four items because they included vague concepts or wording. For example, I feel welcome on campus and I feel like I belong on campus were deleted as “welcome” and “belong” are constructs and should be better assessed through direct questions. Three items were moved from the relational dimension to the behavioral dimension because they were more about actions that students take (i.e., I have helped someone who speaks a different language than me). However, the researcher added twenty new items based on peer feedback and the desire to more accurately assess some of the constructs and behaviors mentioned above.

A scholar who researches immigrant children then provided an in-depth review of the scale items by reviewing the items and providing digital feedback line by line and then meeting with the researcher to discuss overarching thoughts and feedback. From this conversation, the researcher deleted four items and edited fifteen items to be more specific and/or clarify the wording. For example, to the item “My college recognizes a diverse set of holidays” a descriptor was added to include examples “Rosh Hashana, Ramadan, Diwali, Kwanzaa, World Refugee Day, etc.” An additional 34 items were added to the scale for college welcome.

Next, a second round of peer review was conducted in the Survey Development Class, again in small groups with paper copies of the survey where they provided line-by-line feedback. This time, three students and the professor (who is a career expert on survey development) all reviewed the scale. From this session, more edits were made including deleting 16 items and editing 11 items (i.e., changing “I feel excluded on campus” to “I feel lonely on campus” as this is a more common feeling that people will be familiar with), moving five items from one hypothesized subscale to another and the addition of five items. Productive conversations took place as part of the peer review session. For example, there was a question about speaking up in class and we discussed whether this assessed welcome or general anxiety. At this point, the questions on the survey were well developed; however, there were too many in order to keep the survey to 15–20 min.

Therefore, the author worked within each domain to identify what aspect of college we were referring to (i.e., resources, classes, campus, extracurricular activities, social situations, etc.). From this delineation, the author tried to have only one question representing a certain content area under each domain to avoid

overrepresentation. Through this process, the researcher deleted 15 items for redundancy. The researcher then refined the language on seven items and one item was moved to another subscale, no new items were added. At this point, the researcher sent the scale to multiple faculty members across the university who do research with immigrants, and feedback was received from only two. Both said the scale looked good overall and provided minimal tweaks to language but no addition or deletion of items. In the final version of the scale, there were 10 items in the cognitive dimension, seven in the behavioral dimension, 10 in the emotional subscale, 10 in the relational subscale, and seven demographic/background questions. These are all included in Appendix A.

3.4. Validation scales

To effectively assess the validity of the scale, and to assess the concept of college welcome, the researcher used validation scales [13] at the construct level. These include a common scale of loneliness (The Revised-UCLA Loneliness Scale) with the hypothesis that it would negatively correlate with college welcome and a scale of belonging (The School Belonging Scale) with the hypothesis that it would positively correlate with college welcome. Below is a more detailed description of each of the validation scales.

3.4.1. Loneliness

The Revised-UCLA Loneliness Scale measures feelings of loneliness among participants. The original scale was developed by Sisenwein in 1964 and consisted of 75 items, so the shorter, 20-item version was used in this study [44]. The shortened scale has been used widely around the world and exists in Turkish [45], Taiwanese [46], Danish [47] Farsi [48], and English [44, 49]. The questions are on a four-point Likert scale [44].

3.4.2. School belonging

A scale of school belonging [18] consists of eight items on a 1 to 4 scale. The scale yielded an internal consistency of $\alpha = 0.80$ when used with students in Chile. An adapted version of the scale was used by Maurizi et al. [24] with Latino youth and yielded an internal consistency of $\alpha = 0.80$.

3.5. Participant recruitment

The university IRB approved both scale development procedure and wide recruitment and snowball sampling of students at colleges across the US. The researcher sent emails to university faculty and staff members with whom she had a personal relationship, asking them to share a Qualtrics survey link with their students. Personal relationships at universities were used with the hopes of increasing the likelihood that faculty and staff would open the email and share it out as requested. This also allowed the researcher to intentionally target faculty who teach in (1) Global Programs, the international social work courses and (3) who mentor immigrant students. The researcher also posted the survey on Facebook in a variety of groups related to different colleges and universities across the US. This included both student and alumni groups at universities that the researcher has attended and also social work groups where current students network to find internships as part of their education. The researcher asked family members who are current college students if they could distribute to their social networks at their schools – this included hanging of flyers, emails/texts to their friends, and sharing with student groups that are more likely to include immigrant students (i.e., Spanish club at one university). In each email or post,

there was a request for people to please share the survey with others in hopes of reaching the greatest number of participants.

3.6. Sample

The sample for this study included 94 respondents; however, not all responses were complete across all questions. Participant demographics are all self-report as part of the survey and shown in Table 1 below. Due to IRB concerns, we did not ask about immigration status or type of immigrant student and therefore cannot provide detailed information on perception of welcome by type of immigrants/foreign-born student.

Table 1
Sample demographics

Demographics	N (%)
Gender	
Male	11 (11.7%)
Female	51 (54.3%)
Other	1 (1.1%)
Missing	31 (33%)
Type of school	
4-year college	45 (47.8%)
Graduate school	18 (19.1%)
Missing	31 (33%)
Years attended that school	
1	16 (17%)
2	17 (18.1%)
3	16 (17%)
4	11 (11.7%)
5+	3 (3.2%)
Missing	31 (33%)
Nativity	
United States	60 (63.8%)
Outside the US	24 (25.5%)
Missing	10 (10.6%)

3.7. Item analysis

Statistical analyses were performed in Stata. To assess each subscale, the researcher first assessed the descriptive statistics and checked the mean, skewness, kurtosis, and item discrimination of each item, as well as the inter-item correlations for items that could potentially be problematic, but nothing out of the norm was found. This allowed for the second level of analysis. The researcher then ran a variety of scale statistics such as Cronbach's Alpha, KMO, Bartlett's Test of Sphericity, screeplot, and the determinant. Lastly, a series of factor analyses were run using the principal axis factoring methods and rotations as needed. Once the researcher identified the best factor arrangement, she again checked the scale statistics.

To assess the scale of college welcome as a whole, the scale scores from each of the subscales were calculated by adding up the responses from each item within the subscale identified from the factor analyses above. These scale scores were used for a new factor analysis that would assess the validity of the entire scale "Perception of College Welcome Provided to Foreign-Born Students" and the same process as above was followed. Similarly, the researcher assessed the validation scales using factor analyses to compare the scale of college welcome using Pearson's correlations.

4. Results

4.1. Subscale analysis

4.1.1. Cognitive awareness of college welcome

In its original form, the cognitive subscale appears to be adequate. The inter-item correlation, Cronbach's alpha, for the ten-item scale is 0.79, which is good. The determinant is 0.46 which is good, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) is 0.674 which is adequate, and the Bartlett's test is $X^2(1,45) = 178.33, p < 0.01$ which is statistically significant. However, when we look at the factor analysis, there are three factors with an eigenvalue over 1. The first factor explains the greatest (30.05%) of the variance in the scale, whereas the others are both less than 10% each. Only one item (C8) loads highest on factor 2, and only one item (C7) loads highest on factor 3. With an oblimin rotation, the majority of the items still load on factor one. However, now more items (C5 and C8) load on factor 2, and (C4 and C7) load highest on factor 3.

Based on the initial screening procedure and the two-factor analyses, the researcher reviewed the questions and chose to eliminate items C7, C8, C9, and C10 which talk about the presence of bilingual and diverse faculty and students on campus, and re-run the factor analysis. The idea behind including these items was that seeing diverse people and hearing various languages may increase a sense of welcome; however, these are quite passive as we are not asking about the actions of these people and therefore they may not be strong questions. This yielded only one factor which explains 31.58% of the variance in the scale. The determinant is 0.312, KMO is 0.714, and Bartlett's

Test is $X^2(1,15) = 70.01, p < 0.01$ all of which are good statistics. However, Cronbach's alpha decreased to 0.72 which is still ok. The final factor loadings, communalities, and item discriminations are shown below in Table 2.

4.1.2. Emotional college welcome

Overall, the initial emotional subscale is adequate. Cronbach's alpha is 0.725 which is good. The determinant is 0.068, the KMO is 0.635, and the Bartlett's of sphericity is significant at $X^2(1, 45) = 139.20, p < 0.01$. When running a principal axis factor analysis, three factors were generated with an eigenvalue over 1. The first factor explains 28.23% of the variance, the second 7.8% of the variance, and the third 6.22%. In its un-rotated form, seven of the items load on the first factor, one load on the second factor (E5_R), one does not load anywhere (E7_R; above the 0.25 level), and the last loads equally on the first and third factor (E1). With the oblimin rotation, five items load on the first factor, three loads on the second factor (E5_R, E4, and E10), one load on the third actor, and again one item (E7_R) does not load anywhere (above 0.25). Conceptually speaking, the rotation makes more sense because the 5 that load on factor one are more about how the individual feels and factor 2 is more about how others treat you. Item E1 is about how you feel in class and loads on all 3 factors.

Therefore, the researcher ran a factor analysis with the items that are about how you feel you fit in (E1, E2, E3, E6, E8, and E9). This yielded one factor which explains 34.33% of the variance and has Cronbach's alpha of 0.732 which is slightly improved. The determinant is 0.252, the KMO is 0.702, and the Bartlett's test is significant.

Table 2
Construct subscales

	Factor loading		Extraction communality	Item discrimination
Cognitive dimension subscale				
C1	0.730		0.443	0.593
C6	0.637		0.428	0.523
C4	0.580		0.513	0.485
C5	0.524		0.334	0.414
C2	0.441		0.189	0.374
C3	0.387		0.280	0.324
Emotional dimension subscale				
E9	0.819		0.670	0.658
E8	0.581		0.337	0.496
E6	0.562		0.315	0.485
E3	0.551		0.304	0.462
E2	0.468		0.219	0.387
E1	0.452		0.214	0.402
Behavioral dimension subscale				
B4	0.851		0.724	0.682
B3	0.755		0.570	0.631
B7	0.580		0.336	0.504
B2_R	0.459		0.211	0.396
Relational dimension subscale				
R7	0.762	Factor 1	0.672	0.597
R5	0.672		0.482	0.583
R6	0.661	Factor 2	0.535	0.515
R10	0.649		0.436	0.578
R4	0.608		0.404	0.551
R2_R	0.293	0.431	0.272	0.250

4.1.3. Behaviors of college welcome

Overall, the behavioral subscale is not as strong as the others. Cronbach's alpha is 0.556 which is ok, but the determinant is 0.267, KMO is 0.668 which is less than ideal. The Bartlett's test is significant $\chi^2(1, 21) = 73.688, (p < 0.05)$. The factor analysis yielded two factors with an eigenvalue greater than one. The first factor explains 29.08% of the variance in the scale and the second factor on 6.42%. Interestingly, the PAF un-rotated and PAF with oblimin rotation both showed that four items loaded on the first factor, 2 items on the second factor (B1 and B5), and one item (B6) did not load at all. Additionally, the PCA with and without oblimin rotation shows similar results. A PCA and PAF factor analysis was run un-rotated and oblimin rotation with a reduced number of items (B2_R, B3, B4, and B7). These items all speak to the inclusion of diverse students in mainstream campus activities and therefore seem to be a good fit together. This shows that all items load on one factor and explain 46.05% of the variance in the scale. While four items are a small scale, this seems to be the best possibility. The determinant is 0.352, the KMO is 0.730, Cronbach's alpha is 0.75, and the Bartlett's test of sphericity is significant $\chi^2(1,6) = 63.51 (p < 0.01)$ all of which are good indicators of the scale.

4.1.4. Relational college welcome

The subscale reliability for relational welcome is ok (Cronbach's alpha = 0.554), with all the original questions included. The determinant is 0.04 and the Bartlett's test of sphericity is significant $\chi^2(1,45) = 183.23, (p < 0.01)$ which are good. The KMO is adequate at 0.70. The PAF factor analysis yields three factors with an eigenvalue over one. The first factor explains 27.26% of the variance in the scale, the second explains 15.34%, and the third 8.3%. All items except for one (R1_1) load on the first factor, just some of the items load on multiple, and more highly on the second or third factor than the first. In the oblimin rotation, the items no longer load on multiple factors, and therefore, the three factors are more distinct. Five items (R4, R5, R6, R7, and R10) load on factor one and seem to be looking specifically at opinions about immigrant students on campus. Three items (R1_R, R2_R, and R3) load on factor 2 and are about social relationships with immigrants. R8 and R9 load on factor three and are both about support systems that the participant has on campus. R10 asked about people on campus being willing to help others which is similar, and so R8 and R9 were deleted.

Next, the researcher ran a factor analysis with R2_R, R3, R4, R5, R6, R7, and R10. While two factors are still present, all items load on factor one with greater than 0.58 factor loading which seems adequate to call this one dimension. Cronbach's alpha is ok at 0.586, and the analyses show that if item R3 is deleted it would increase to 0.767. Since R2 and R3 are very similar questions, R3 was deleted.

4.2. Validation scales and items

4.2.1. School belonging

The school belonging scale showed a scale reliability of 0.88, where the determinant is 0.122, the KMO is 0.824, and the Bartlett's test is significant $\chi^2(1,6) = 123.741 (p < 0.01)$. The PAF factor analysis shows only one factor that explains 64.79% of the variance in the scale which is excellent.

4.2.2. Loneliness

The overall reliability of the loneliness measure was 0.89 which is excellent, the KMO is 0.865, the Bartlett's test is significant

$\chi^2(1, 190) = 826.48 (p < 0.01)$, and all the item discriminations are all above 0.4 which are good. However, the determinant is quite close to 0 and the factor analyses yielded four factors with an eigenvalue greater than one showing that there may be more than one dimension captured under the measure. However, loneliness is a measure that is designed to be opposite of the construct of interest, and therefore, these statistics are adequate to move forward with the scale analysis.

Table 3
Perception of college welcome

	Factor loadings	Extraction communality	Item discrimination
Relational subscale	0.898	0.648	0.823
Cognitive subscale	0.882	0.778	0.802
Behavioral subscale	0.805	0.324	0.713
Emotional subscale	0.569	0.806	0.533

4.2.3. Creating scale scores

Based on the analyses above, the final scale of college welcome would differ from that sent to participants. The cognitive and emotional dimensions both now consist of six items (C1, C2, C3, C4, C5, and C6) and (E1, E2, E3, E6, E8, and E9). The final scale for the behaviors of college welcome is four items (B2_R, B3, B4, and B7), and the relational subscale is six items (R2_R, R4, R5, R6, R7, and R10) with two factors. For each of these scales, a scale score was created using the factor loadings rather than adding or averaging the scores on individual items in order to most accurately honor the items that load more heavily. After all scale scores were created, a PAF factor analysis was conducted with the four scales and they loaded on one factor, showing that college welcome is one concept. This factor explains 63.89% of the variance in the scale, the determinant is 0.90, the KMO is 0.706, and the Bartlett's test of sphericity is significant at $\chi^2(1,6) = 132.06, (p < 0.05)$. Cronbach's alpha is 0.864 which is excellent, and the inter-item correlations are all adequate (the lowest is 0.338, and highest is 0.771 with most above 0.5). Table 3 above shows the final factor loadings, extraction communality, and item discrimination for the subscales after these changes were made- proposing the new validated scale of college welcome.

4.2.4. Validation scales

The scale for the perception of college welcome was compared to the validation scales as the last step of this process. When looking at the school belonging scale, there was a positive and strong correlation (0.428, $p < 0.01$), as hypothesized. When using the loneliness victimization scale, the correlation was negative as expected; however, it was very small and was not statistically significant. It is possible that with more participants next time this would be statically significant.

5. Discussion

5.1. Reliability and validity

The scale for the Perception of College Welcome Provided to Immigrant Students was assessed throughout this manuscript. Overall, the reliability and validity are acceptable but could be improved with future analyses. The inter-item reliability for the scale is 0.864. The construct validity was tested through the correlation between the scale of college welcome and the validation scales.

5.1.1. Perception of college welcome provided to immigrant students

The content of the survey developed in this paper, campus welcome, is one of importance given that more than one-quarter of college students are part of immigrant families [1]. Prior research has focused on a sense of belonging on college campuses [5, 25, 26] and has noted the importance that this sense of belonging has on long-term outcomes such as self-efficacy, positive relationships with colleagues, and a positive affect. Yet, with the growing need for DEI practices on college campuses [14] this study speaks to the aspect of policy and climate and these aspects aid belonging to create the construct of campus welcome.

As noted in the instrument design section, the thorough review of existing measures done prior to development of this scale showed that the construct of interest is not already being captured and justifies the need for this particular scale to exist and be used across college campuses for them to better understand their climate and where improvements may be possible. The conceptual framework of “welcoming–unwelcoming” [36] is particularly relevant for us to understand the ways in which immigrant student experience equity and inclusion on campus.

5.2. Limitations

There are a few limitations to this study. First, the study groups together all types of foreign-born students. While some experiences are shared, there are also distinct differences across immigration types and future studies should account for this. Coupled with this, the sample size is small, yet, this was designed as a pilot study and so the size is appropriate as experts recommend 30 to 100 participants for pilot studies [50, 51]. Secondly, a snowball sample was used, which began with personal contacts and a small set of universities (where participants often know each other there is a greater likelihood that they represent similar backgrounds or ideologies) which may limit the generalizability of the results. However, because the goal of this study is to statistically analyze the scale, and not produce findings about the welcome that these participants see at their campus, this is less of a concern.

In terms of data analysis, there were additional limitations. First, the scale intentionally only allowed for four different points on each item to force participants to choose a positive or negative response and to note the degree of that choice; however, it is hard to have normally distributed data with so few options. The number of survey participants was enough to complete these analyses but could have been higher to improve their accuracy. Second, the researcher identifies as a white woman who was born in the US and does not bring a personal immigrant experience and so there is potential for bias in survey questions (which is why the aforementioned expert review process is in-depth) and/or bias in analysis. *While not the same experience*, it should be noted that the researcher has taken courses in working with immigrants and refugees as well as international social work, has studied and volunteered abroad in multiple countries, and has worked extensively as both a social worker and a researcher with immigrant communities in the US and she uses this knowledge to inform her perspectives in conducting research in this area.

5.3. Future directions

5.3.1. Implications for research

Publishing this study on the validation of this scale is just the first step in using this scale to assess college welcome on college campuses. Once this is done, the researcher can engage in a larger-scale study so

that more research can come on the topic. Based on these preliminary analyses, the survey should undergo additional validation processes to ensure it is measuring the concepts well with a larger number of students, specifically at a university where more immigrant students can participate and express their opinions of welcome. Strategic recruitment needs to be done to increase the number of immigrant, refugee, and international students that participate in the study to ensure its effectiveness. In order to do this, funding is needed to pay incentives. Many immigrant students have competing priorities on their plates [16], and so the current study may have experienced less engagement from this group as no financial incentive was offered.

The results and meaning behind the scale would be better understood if used alongside other data collection methods. For example, it could be used by researchers in conjunction with other scales on related topics such as social support, financial well-being, academic grades, and more. At the same time, the use of qualitative questions is critical to ensure that we understand some of the context behind different ratings in the scale and why immigrant students score the way they do. Additionally, it could be used by school administrators to assess the level of welcome in their school and improvements that could be made to assist immigrant students.

5.3.2. Future directions for dissemination

As college campuses begin to see more immigrant students, and students born into immigrant families, these findings and the continued use of this survey is important. Using the scale from this study within a single campus environment will allow colleges to understand the ways in their campus is responsive to the needs of immigrant students and where there is room for improvement. Colleges need to be ready to serve immigrant, refugee, undocumented, and DACA students, especially if they want to commit to having diverse campus communities. College campuses routinely have counseling services on campus, and many have offices/groups that work exclusively with international or immigrant students. Encouraging more training for counseling staff could really benefit the foreign-born students in institutions of higher education.

5.3.3. Implications for practice

As noted above, university administrators could use this scale in conjunction with qualitative methods to better understand the campus welcome for immigrant students and influence DEI policies on campus. Once this is done, the information would provide administrators with information that can be used to address policy and promote equal opportunities for immigrant students. For example, Brandeis University hired a staff member about a year ago to specifically look at issues of antisemitism and to increase the sense of welcome for Jewish students. This scale could help justify staff or programming to meet the needs of foreign-born students.

At the same time, the US has had anti-immigrant sentiments in recent years, including on college campuses [52–54], and these may again rise with the 2024 presidential elections upon us. Therefore, understanding the ways in which US-born students are willing to open-up and allow immigrant students into campus culture is critical. Bystander trainings are needed to help increase empathy and knowledge of working with immigrant students on college campuses, and once a larger study is done using this measure, it can help justify the need for training.

6. Conclusion

With the rising number of foreign-born students attending college in the United States, we need to be intrinsically aware of

their perceptions of welcome. Villarreal Sosa and Nuckolls [55] call for school social workers to incorporate a human rights perspective into their classrooms and schools, and better evaluating the perception of welcome for foreign-born students is one step towards understanding how we can better advocate for and meet the needs of these students. This scale assesses both the sense of belonging of the students, but also the receptiveness and roles of the host university to underscore that making foreign-born students feel welcome is something that can be addressed from both sides.

Ethical Statement

This study involving human participants was reviewed and approved by the Institutional Review Board (IRB) of University of Maryland Baltimore County. All participants of the study provided their written consent before participating in the study.

Conflicts of Interest

The author declares that she has no conflicts of interest to this work.

Data Availability Statement

The data that support the findings of this study were collected as part of a class in a PhD program and remain with the former institution, so there is no ability to share them at this time.

Author Contribution Statement

Kerri Evans: Conceptualization, Methodology, Software, Formal analysis, Data curation, Writing – original draft, Writing – review & editing, Project administration.

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How to Cite: Evans, K. (2024). Measuring Perception of College Welcome Provided to Foreign-Born Students: Validation with Pilot Data. *International Journal of Changes in Education*. <https://doi.org/10.47852/bonviewIJCE42022498>

Appendix A

Questions from Survey Protocol and their designated Dimensions

Cognitive Dimension

C1 Participation in extracurricular activities is encouraged for everyone, regardless of race, ethnicity, country of origin, or language capabilities. (Strongly Disagree, Disagree, Agree, Strongly Agree)

C2 The resources are plentiful for students who speak languages other than English. (Strongly Disagree, Disagree, Agree, Strongly Agree)

C3 My college recognizes a diverse set of holidays (Rosh Hashana, Ramadan, Diwali, Kwanzaa, World Refugee Day, etc.,.). (Strongly Disagree, Disagree, Agree, Strongly Agree)

C4 My college offers multiple dining options that support a wide variety of student dietary needs (e.g., kosher, halal, vegetarian, etc.,.). (Strongly Disagree, Disagree, Agree, Strongly Agree)

C5 Students are able to seek help on campus easily. (Strongly Disagree, Disagree, Agree, Strongly Agree)

C6 The school offers a variety of academic accommodations to students who need it. (Strongly Disagree, Disagree, Agree, Strongly Agree)

C7 There are bilingual faculty and staff on campus. (Strongly Disagree, Disagree, Agree, Strongly Agree)

C8 There are bilingual students on campus. (Strongly Disagree, Disagree, Agree, Strongly Agree)

Diversity includes differences based upon racial/ethnic, sexual orientation, gender, country of origin, religious beliefs, culture, socioeconomic status, persons with disabilities and more.

C9 There are diverse faculty on campus. (Strongly Disagree, Disagree, Agree, Strongly Agree)

C10 Our student body is diverse. (Strongly Disagree, Disagree, Agree, Strongly Agree)

Behavioral Dimension

B1 I frequently ask questions or participate in class. (Strongly Disagree, Disagree, Agree, Strongly Agree)

B2 When students who don't speak English very well make mistakes in class, other students laugh, mock, roll their eyes, etc., * (Strongly Disagree, Disagree, Agree, Strongly Agree)

B3 People of all backgrounds speak up and share their ideas in classes. (Strongly Disagree, Disagree, Agree, Strongly Agree)

B4 People of all backgrounds join on-campus activities (e.g., clubs, sports, events). (Strongly Disagree, Disagree, Agree, Strongly Agree)

B5 In the cafeteria most students sit with people who were born in the same country as them. (Strongly Disagree, Disagree, Agree, Strongly Agree)

B6 I have friends on campus who are from a different culture than my own. (Strongly Disagree, Disagree, Agree, Strongly Agree)

B7 There are many decorations and art on campus that represent countries from around the world. (Strongly Disagree, Disagree, Agree, Strongly Agree)

Emotional Dimension

E1 I feel like I play an important part in my classes. (Strongly Disagree, Disagree, Agree, Strongly Agree)

E2 It's good to have classmates who are from different cultures. (Strongly Disagree, Disagree, Agree, Strongly Agree)

E3 I feel comfortable joining on-campus activities (e.g., clubs, sports, events). (Strongly Disagree, Disagree, Agree, Strongly Agree)

E4 Students are accepting of everyone on campus, regardless of their culture. (Strongly Disagree, Disagree, Agree, Strongly Agree)

E5 I have seen students discriminate against immigrant and international students on campus*. (Strongly Disagree, Disagree, Agree, Strongly Agree)

E6 I feel comfortable sharing my opinion in social situations. (Strongly Disagree, Disagree, Agree, Strongly Agree)

E7 I wish I had more friends on campus. * (Strongly Disagree, Disagree, Agree, Strongly Agree)

E8 I feel like campus is my home. (Strongly Disagree, Disagree, Agree, Strongly Agree)

E9 Students feel a sense of pride for our college. (Strongly Disagree, Disagree, Agree, Strongly Agree)

E10 Other students leave me out of social events. * (Strongly Disagree, Disagree, Agree, Strongly Agree)

Relational Dimension

R1 All of my friends are racially/ethnically similar to me. * (Strongly Disagree, Disagree, Agree, Strongly Agree)

R2 I am nervous to be friends with someone who is from another country. * (Strongly Disagree, Disagree, Agree, Strongly Agree)

R3 I am nervous to be friends with someone who is from a different culture than my own. (Strongly Disagree, Disagree, Agree, Strongly Agree)

R4 Faculty see students from outside the US and native-born students as equals. (Strongly Disagree, Disagree, Agree, Strongly Agree)

R5 Students view students from outside the US and native-born students as equals. (Strongly Disagree, Disagree, Agree, Strongly Agree)

R6 Immigrants are included in our campus culture. (Strongly Disagree, Disagree, Agree, Strongly Agree)

R7 When immigrant and international students share information in class about their culture/country, everyone values the information. (Strongly Disagree, Disagree, Agree, Strongly Agree)

R8 There is a faculty or staff member on campus I can turn to in a time of need. (Strongly Disagree, Disagree, Agree, Strongly Agree)

R9 I have a friend on campus that I can turn to in a time of need. (Strongly Disagree, Disagree, Agree, Strongly Agree)

R10 People on campus are willing to help others. (Strongly Disagree, Disagree, Agree, Strongly Agree)

Subscale Specific to Immigrant Students

1. The school has helped to connect me to cultural resources off campus (i.e., church of my religion, cultural center, events and celebrations, other people of my culture)
2. I wish my school recognized more of the holidays I celebrate *
3. I wish there were more faculty/staff from my country
4. I feel different in the classroom because I'm an immigrant
5. My school offers adequate resources to meet my language needs
6. The office for international/immigrant students is helpful to me
7. Campus orientation contained relevant information to immigrant students
8. I made friends at the orientation for international students (SA, A, D, SD, Did not attend)
9. At the orientation for international students, I learned about special resources for immigrant and international students (SA, A, D, SD, Did not attend)

Loneliness Validation Scale

Please rate each statement with (1) Never; (2) Rarely; (3) Sometimes; (4) Often

V_L1 I feel in tune with the people around me*

V_L2 I lack companionship

V_L3 There is no one I can turn to

V_L4 I do not feel alone*

V_L5 I feel part of a group of friends*

V_L6 I have a lot in common with the people around me*

V_L7 I am no longer close to anyone*

V_L8 My interests and ideas are not shared by those around me

V_L9 I am an outgoing persona

V_L10 There are people I feel close to*

V_L11 I feel left out

V_L12 My social relationships are superficial

V_L13 No one really knows me well

V_L14 I feel isolated from others

V_L15 I can find companionship when I want it*

V_L16 There are people who really understand me*

V_L17 I am unhappy being so withdrawn

V_L18 People are around me but not with me

V_L19 There are people I can talk to*

V_L20 There are people I can turn to*

School Belonging Scale-Validation Scale

V_S1 I am happy to be at my school.

V_S2 I feel close to others at my school.

V_S3 I feel safe at my school.

V_S4 I feel like I am a part of my school.