



# Fostering intercultural interactions and outcomes for domestic graduate students through internationalization-at-home efforts

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## Abstract

This study examined the impacts of internationalization-at-home efforts on intercultural interactions and outcomes for domestic graduate students through a Cultural Partner Program. Ninety-seven participants were recruited from a public research university in the southeastern part of the U.S. Among them, 68 participated in an experimental group in which each of them was paired up with an incoming graduate-level international student to conduct intercultural activities over one semester. All participants took pre- and post-test surveys including psychosocial measures such as wellbeing, intercultural competency, stress, and perceived support. The regression analyses found a significant conditional difference between experimental and control groups in well-being but not other variables. Standardized mean difference analyses revealed improvements present between the experimental group and control group in perceived support and interaction attentiveness and stress. University campuses need to allocate greater lengths of time and resources for graduate students to be a part of intercultural interactions on campus throughout their study.

**Keywords** Internationalization-at-home · Domestic graduate students · Intercultural interaction · Intercultural interaction outcomes · Cultural partner program

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## 1 Introduction

Internationalization is becoming a critical component of higher education in many parts of the world such as Europe and United States (Almeida et al., 2019; Eurostat, 2023; Institute of International Education, 2020). This is especially true for the United States as it remains the top host country of international students globally (Israel & Batalova, 2021). The number of international students in the U.S. has increased steadily over the years and culminated to 914,095 students (Open Doors, 2022). The significance of the internationalization of higher education can't be overlooked (Institute of International Education, 2020; Open Doors, 2022). The rapid trend of internationalization in higher education warrants an urgent need for postsecondary educational programs in host countries to facilitate development of intercultural competency and professional success for domestic students.

The domestic students in the host countries who are coming from homogeneous communities may lack intercultural competency required to succeed in international and diverse work and educational environment (Campbell et al., 2018; Finkelshteyn, 2020; Ivers et al., 2016; Tarchi & Surian, 2022). Intercultural competency, defined as knowledge, skills, and behaviors imperative to intercultural communication, is essential in optimizing intercultural interactions for students at higher education institutions (Meade, 2010). An increasing number of careers have evolved to require collaboration across cultures, necessitating linguistic skills, cultural knowledge, and the ability to thrive from diverse perspectives (U.S. Department of Education, 2018). The process of intercultural competency is especially important for students in the helping related professions (Portera, 2014; Subramanian, n.d.). Interculturally competent individuals are better equipped to facilitate dialogues using multiple communication styles (Dimitrov et al., 2014) as well as making more culturally sensitive decisions (Finkelshteyn, 2020; Gregersen-Hermans, 2017; Tarchi & Surian, 2022).

### 1.1 Internationalization-at-home and intercultural interactions and outcomes

Internationalization-at-home is one of the popular strategies for fostering intercultural skills and social and academic success among domestic students (Guimarães et al., 2019; Sercu, 2023; Woicolesco et al., 2022). Beelen and Jones (2015) defined internationalization-at-home as “the purposeful integration of international and intercultural dimensions into the formal and informal curriculum for all students within domestic learning environments” (p.69).

Internationalization-at-home refers to a method in which domestic students engage with international students while still present at their home universities (Custer & Tuominen, 2017). This method, when compared with other internationalization efforts such as studying abroad, is unique in that it requires no additional travel or expenses to interact with other cultures and is consequently more attainable for many domestic students (Custer & Tuominen, 2017). Internationalization-at-home within the graduate curriculum and particularly participation in teaching development programs have resulted in an increased awareness of cultural differences as well as an enhanced ability to reflect on intercultural interactions (Dimitrov et al., 2014). Bhat and McMahon (2016) found international at home efforts offer participants to gain

insight into intercultural competence as well as gain awareness of commonalities and differences between themselves and their clients. Internationalization-at-home efforts broaden domestic students' own cultural mindsets and expose them to intercultural aspects of society that they would otherwise be unaware of (Custer & Tuominen, 2017; Finkelshteyn, 2020).

Despite the benefits of gaining intercultural competence and multiplying the opportunities in higher education and the future workforce, many universities lag in internationalization-at-home efforts. Nilsson (2003) highlighted tight scheduled professional graduate training programs that may serve as barriers to students to engage in intercultural interactions. Almeida et al. (2019) also pointed out that a lack of practical application and implications for internationalization-at-home. While universities do make copious attempts to raise intercultural competency for international students, intercultural competency training for domestic students is scarce, making the internationalization efforts less effective (Finkelshteyn, 2020; Griffith et al., 2016). For example, domestic students do not have established practice of intercultural training or orientation, and instead, it is assumed that students will acquire intercultural skills on their own (Dimitrov et al., 2014; Sakurauchi, 2014).

The inadequate efforts to develop intercultural competence among American students have led to their inability to overcome stereotypes and biases. These biases and perceptions have been found to be the biggest contributor to domestic students' hesitance to engage in intercultural interactions due to lack of established practices of intercultural training (Finkelshteyn, 2020). The lack of intercultural competency can be especially problematic for students in health and helping professions as several studies (e.g., Portera, 2014; Subramanian, n.d.) highlighted the significance of intercultural competency for these students.

Intercultural competency cannot result from simply inserting oneself into another culture or having cultural interactions in a surface-level manner (Ramirez, 2019). Domestic students' intercultural competency is most likely to increase when they engage in meaningful and well-structured intercultural interactions that challenge their cognitive and cultural worldviews (Otten, 2003). Thus, optimally structured programs are necessary to ensure meaningful connections that allow for the overcoming of biases and stereotypes in intercultural interactions (Bennett, 2008). Facilitated contact by a higher education institution is critical to enabling successful intercultural interactions through internationalization-at-home efforts (Jon, 2013; Ramirez, 2019). The purpose of this study is to examine impact of internationalization-at-home program on intercultural competency and related transition outcomes for domestic graduate level students within at a Southeastern public university in U.S.

## 1.2 Past Programs on fostering intercultural interactions and outcomes

Several studies have assessed internationalization-at-home efforts through buddy programs or intercultural pairing programs and how these efforts can affect the intercultural competency of domestic students. Some studies utilize qualitative research designs on examining intercultural pairings among undergraduate students (e.g., Campbell, 2012; Geelhoed et al., 2003) or a mix of undergraduate students with graduate students (e.g., Shigaki & Smith, 1997). Participants in these studies gained

intercultural skills and multicultural sensitivity to their own and different cultures, inciting motivation for further intercultural contacts following the completion of the programs. In addition, participants became aware of previously held biases and stereotypes toward international counterparts, thus reducing cultural misunderstandings (Campbell, 2012; Geelhoed et al., 2003; Shigaki & Smith, 1997).

Besides employing qualitative methods, quantitative or mixed methods have been used in examining the intercultural pairing programs. Some studies solely focused on undergraduate participants. Through a cross-sectional study, Jon (2013) examined the effects that institutional interventions in the form of buddy and cultural language programs had on intercultural interaction and competency among undergraduates at a university in South Korea. Institutional intervention had a positive and direct effect on intercultural interactions and that the interactions had an indirect and positive effect on the domestic students' intercultural competency (Jon, 2013). Likewise, Sandell and Tupy (2015) researched effects of participation in a cross-cultural course and subsequent cultural partnership (meeting partners from other cultures for 9 hours of interaction) for 163 elementary, special, and secondary education American undergraduate students. Domestic students resulted in significant positive post-test gains in orientation to cultures different than their pre-test scores. However, no control group was applied in the study (Sandell & Tupy, 2015). With a more distinct approach, Nesdale and Todd (2000) investigated contact between 147 first-year undergraduate international and domestic students within residence halls in an Australian university with the aim to assess intercultural contact with unfamiliar outgroups as well as acceptance of these outgroups. In comparison with the control group, the intercultural contact within the residence halls proved to impact directly on the extent of wider contact between undergraduate domestic and international students on campus and on the acceptance of cultural outgroups in the post-test scores. However, no pre-test scores were collected. (Nesdale & Todd, 2000). Meade's (2010)' mixed-method study, with 45 U.S. undergraduate students including 9 participants in the control group, analyzed intercultural competency development through intercultural dialogue, group work, and interviews. The intervention had a positive impact on domestic undergraduate students, resulting in increased intercultural sensitivity, appreciation, and ability to distinguish cultural differences (Meade, 2010). Additionally, buddy projects and cross-cultural pairings reduced intercultural contact anxieties, decreased cultural stereotypes held toward international students, and increased cultural awareness (Jon, 2013; Meade, 2010). Through a 5-week online interaction program between Australian and U.S. counseling students, Bhat and McMahon (2016) found international at home efforts offer participants to gain insight into intercultural competence as well as gain awareness of commonalities and differences between themselves and their clients.

Other quantitative studies used a mixed matching of undergraduates with graduate students. Matsuda and Miller (2007) conducted a university course in which 47 occupational therapy American undergraduates and 39 international graduate students were paired in a peer teaching program. Through a pre-and post-test intervention, domestic students increase their cultural awareness, raise their intercultural communication confidence, and better prepare themselves for future teaching and clinical experiences (Matsuda & Miller, 2007). However, no control group was applied

(Matsuda & Miller, 2007). Comparatively, Nilsson (2019) examined the impact of a buddy program on improving integration of international students with domestic college students through a social support program (e.g., institution clubs and societies) at a Sweden University. The program featured 16–18 buddy groups, with each group containing 30 international students and 6–8 domestic students (Nilsson, 2019). Although the focus of the study was on improvement of integration for international students, domestic students reported forming bicultural bonds and challenged previously held beliefs regarding different cultures (Nilsson, 2019).

Despite the significance of previous studies, limitations exist. First, no study, to the best of our knowledge, has specifically examined the impact of buddy programs for graduate domestic students. The primary focus has been on the undergraduates and/or international students in cross-cultural interaction efforts on campus. Furthermore, Weir (2020) pointed out that randomized buddy pairs without taking into consideration of the age and maturity gaps between cultural partners might result in a high level of discomfort, negatively impacting intercultural interactions. Thus, research on examining the buddy programs on graduate-level domestic with their international graduate counterparts is warranted. Second, the quantitative studies in the literature review seem to lack control groups, pre-test scores, and large sample sizes, indicating a need to establish a robust research design (e.g., adding control groups, pre- and post-test scores, and increasing participation size). Finally, previous research has focused efforts on few variables without examining comprehensive intercultural interaction outcomes shaping their educational and professional experiences (Smith & Khawaja, 2011), such as social and academic integration, self-esteem, perceived social support, and mindfulness.

### 1.3 Current study

The purpose of this study is to investigate the impact of the Cultural Partner Program on intercultural interaction outcomes for domestic graduate level students through an experimental design with a relatively large sample. The research question includes “What will be differences in intercultural interaction outcomes (i.e., wellbeing, intercultural sensitivity, perceived social support, self-esteem, mindfulness, social and academic integration, and stress) between those participated in the Cultural Partner Program vs. those did not participate among domestic graduate-level students?” We hypothesized that participants in the Cultural Partner Program would perform better in intercultural interaction outcomes than those who did not participate in the Cultural Partner Program.

## 2 Methods

### 2.1 Participants

We recruited 97 participants, among whom 19.6% were males. In terms of race, Whites accounted for the largest portion (52.6%), followed by multiracial (10.3%), Black/African American (5.2%), Latinx (5.2%), and Asian (4.1%). The remaining

22 participants did not provide race information. Among the participants, 71.1% reported that they had prior intercultural experiences. Participants came from 19 majors, with the largest proportion of participants being from the major of “Mental Health Counseling” (39.1%), the second largest being from “Counseling/School psychology” (18.5%), and the third largest being from “Career counseling” (14.3%) and remaining from music therapy, social work, sports management, speech-language pathology, special education, law, higher education, financing, etc. To maximize the potential benefits of the Cultural Partner Program, 80.4% and 19.6% of the participants were assigned to the experimental and control groups, respectively. Two groups were similar in terms of gender but somewhat different regarding education level, past intercultural experience, and race (see Table 1 for details).

## 2.2 Procedures

The study was approved by the Institutional Review Board at the authors’ university. The university is a public research university in the Southeastern United States with around 45,500 students from all 50 states of United States and 130 countries. The participants were recruited from different colleges from the authors’ university by contacting the deans of respective colleges. All participants met the following criteria (1) first-year graduate level students, (2) were born in U.S. They were informed about the potential risks and benefits participating in the study. We assigned those who agreed to participate to either a control or experimental group.

A participant in the experimental group was paired up with one international graduate-level student at the same university and engaged in a semester-long intercultural

**Table 1** Frequencies and relative frequencies of demographic variables

	Control group n(%)	Experimental group n(%)	Total n(%)
<b>Gender</b>			
Male	4 (21.1%)	15 (19.2%)	19 (19.6%)
Female	15 (78.9%)	63 (80.8%)	78 (80.4%)
<b>Education level</b>			
Master	16 (84.2%)	35 (44.9%)	51 (52.6%)
Doctoral	3 (15.8%)	14 (17.9%)	17 (17.5%)
Do not expect one	0	19 (24.4%)	19 (19.6%)
Missing cases	0	10 (12.8%)	10 (10.3%)
<b>Past intercultural experiences</b>			
No	1 (5.3%)	27 (34.6%)	28 (28.9%)
Yes	18 (94.7%)	51 (65.4%)	69 (71.1%)
<b>Race</b>			
White	9 (47.4%)	42 (53.8%)	51 (52.6%)
Black or African American	3 (15.8%)	2 (2.6%)	5 (5.2%)
Asian	0	4 (5.1%)	4 (4.1%)
Hispanic or Latino	0	5 (6.4%)	5 (5.2%)
Multiracial	0	10 (12.8%)	10 (10.3%)
Missing cases	7 (36.8%)	15 (19.2%)	22 (22.7%)

interaction. We asked participants' preference of gender for their cultural partner to accommodate their cultural and religious needs. At the beginning of the fall semesters, the participants attended an orientation in which they were introduced to their international cultural partners. The orientation also provided basic training on cross-cultural interaction and answered questions related to the program to reduce possible stereotypes and biases during intercultural interactions. Participants were informed to contact the principal investigator and the research team to solicit consultation and support if they encountered any problems during the cross-cultural interactions. The research team also provided tips on intercultural interactions during the process of the Cultural Partner Program. Participants agreed to meet their cultural partners four to six times throughout the semester. They were encouraged to engage in cross-cultural activities such as social or cultural activities, sport events, and academic events or activities on campus or in the community. Participants in the control group were provided material on cross-cultural interactions but did not participate in the Cultural Partner Program. All participants in the experimental and control groups completed two surveys: one at the beginning of the intervention and one at the end of the intervention.

### 2.3 Instruments

The surveys include demographics (e.g., gender, race, major) and the following measures.

#### 2.3.1 Well-being

Well-being was measured by the 5-item Satisfaction with Life Scale (Diener et al., 1985). The scale demonstrated an internal consistency with an alpha coefficient of 0.85 and test-retest reliability (0.84 at both a 2-week and a 1-month intervals) (Pavot et al., 1991). Higher scores on the scale indicate greater life satisfaction. A sample item includes "In most ways my life is close to my ideal." Internal consistency of the scale with alpha coefficients estimated as 0.73 and 0.68 for the pre- and post-tests, respectively in the current study.

#### 2.3.2 Intercultural sensitivity

Intercultural Sensitivity Scale (Chen & Starosta, 2000), a 24-item self-report measure of one's intercultural communication, consists of five subscales: Interaction Engagement, Respect for Cultural Differences, Interaction Confidence, Interaction Enjoyment, and Interaction Attentiveness. Internal consistency of the scale appeared good with an alpha coefficient of 0.86 as well as convergent validity (Chen & Starosta, 2000). Higher scores on this measurement suggest more cultural sensitivity. A sample item includes "I have a feeling of enjoyment towards differences between my culturally distinct counterpart and me." In the present study, the alpha coefficients were 0.87 and 0.89 for the total scale and ranged from 0.51 to 0.85 for subscales (Interaction Engagement: 0.79 and 0.78; Respect for Cultural Differences: 0.68 and

0.72; Interaction Confidence: 0.79 and 0.85; Interaction Enjoyment: 0.64 and 0.68; Interaction Attentiveness: 0.51 and 0.62) during pre- and post-tests.

### 2.3.3 Self-esteem

Self-esteem was assessed by the Rosenberg Self-Esteem Scale (Rosenberg, 1965). This scale was found to have strong internal consistency, with reliability coefficients ranging from 0.86 to 0.88 (Ciarrochi et al., 2007). A sample item includes “I take a positive attitude toward myself.” In the current study, alpha coefficients of this scale were estimated as 0.87 and 0.90 for pre- and post-tests, respectively.

### 2.3.4 Perceived social support

The Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988), a 12-item self-report instrument, measures one’s perception of social support on three subscales: friends, family, and a significant other. Higher scores on this scale indicate higher levels of perceived support. Internal consistency coefficients for the MSPSS ranged from 0.84 to 0.93 (Canty-Mitchell & Zimet, 2000; Zimet et al., 1988). The scale was reported to have a strong test-retest reliability and strong factorial validity (Zimet et al., 1988). A sample item includes “There is a special person who is around when I am in need.” The instrument demonstrated strong internal consistency in the current study, with alpha coefficients being 0.87 and 0.90 for pre- and post-tests, respectively.

### 2.3.5 Social and academic integration

Social and academic integration was measured using the scale developed by Williamson-Asche (2008). The original scale includes 30 items constructed in four subscales: academic and intellectual development, peer group interaction, interactions with faculty, and faculty interest in teaching and students. Internal consistency for each subscale appeared to be good, with alpha coefficients of 0.82, 0.59, 0.88, and 0.82, respectively (Williamson-Asche, 2008). Among 30 scale items, we removed 15 items that had factor loadings lower than 0.70 based upon the standards set by Shevlin and Miles (1998). A higher scale score indicates a higher level of social and academic integration. A sample item includes “I will be satisfied with my academic experience at my university.” In the current study, the measure showed good internal consistency, with alpha coefficients being 0.92 and 0.94 for pre- and post-tests, respectively.

### 2.3.6 Mindfulness

Mindfulness was measured by the 15-item Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), assessing the individual differences in the frequency of mindful states over time. Higher scores indicate higher levels of trait mindfulness. A sample item includes “I find myself doing things without paying attention.” The MAAS demonstrates strong psychometric properties with an internal consistency ranging from 0.80 to 0.90, a high test-retest reliability, and strong discriminant

and convergent validity (Brown, n.d.). In the current study, the scale demonstrated good internal consistency, with alpha coefficients of 0.83 and 0.88 during pre- and post-tests.

### 2.3.7 Stress

Stress was measured by 21-item Beck Anxiety Inventory (BAI; Beck et al., 1988), which assesses the severity of self-reported anxiety. Sample items include “Hands trembling” and “Dizzy or lightheaded”. Higher scores indicate a higher intensity level of anxiousness. Beck et al. (1988) reported test-retest reliability and internal consistency estimates of 0.75 and of 0.92, respectively. Alpha coefficients were estimated as 0.94 for both pre- and post-tests in the current study.

## 2.4 Statistical analysis

We computed means and standard deviations (SDs) for all interested measures. The distributions of most measures were approximately symmetric or mildly skewed, with skewness less than 0.70. Asymmetric distributions existed for the measures of Stress and the post-test measures of Well-being as well as Interaction Enjoyment. Additionally, we conducted correlational analyses to examine bivariate correlations among pre-test measures and among post-test measures. Afterwards, we ran regression analyses for the post-intervention outcome measures, separately. Specifically, we regressed each post-intervention measure on presence/absence of intervention (i.e., either experimental or control group), adding its corresponding pre-intervention measure as a covariate to control for pre-existing differences between intervention groups.

When conducting each regression analysis, we first examined the interaction effect between *group* and the covariate, that is, we first ran a regression model that included an interaction term between *group* and the covariate. Each model had the general form as follow:

$$X_{post} = b_0 + b_1 * group + b_2 * X_{pre} + b_3 * (group * X_{pre}) + e$$

where  $X_{pre}$  and  $X_{post}$  are the pre- and post-intervention measures, respectively; *group* is an indicator variable for whether the intervention was present, with 0=control group and 1=experimental group;  $group * X_{pre}$  represents the interaction term between *group* and pre-intervention measure;  $b_0$  is the intercept;  $b_1$ ,  $b_2$ , and  $b_3$  are the slopes;  $e$  indicates the error term. The statistically non-significant interaction terms were removed from the corresponding regression models.

For each conducted regression model, we checked ordinary least squares assumptions (e.g., independence of errors; linear relationship between covariate and outcome; homogeneity of error variances). Data from *Well-being*, *Interaction Enjoyment* and *Stress* violated the assumptions on errors (normality and/or homoscedasticity). Therefore, we used a robust estimation method for the regression analyses of these three measures, which is robust to the assumption violation and corrects for standard errors of parameter estimates.

There were missing values on the variables of interest, which were assumed to be missing at random. In regression analyses, we employed full information maximum likelihood estimation to handle missing data (Enders, 2010). Regression analyses were conducted in *R* version 4.0 (R Core Team, 2022) using the *lavaan* package (Rosseel, 2012), with robust maximum likelihood estimation method (i.e., MLR) utilized in the regression analyses for *Well-being*, *Interaction Enjoyment* and *Stress*, and the default maximum likelihood method (i.e., ML) specified for the other regression analyses. All other analyses were conducted in IBM SPSS 26.

## 3 Results

### 3.1 Descriptive analyses

Table 2 reports correlations among pre-intervention scores from different scales above the diagonal, correlations among post-intervention scores from different scales below the diagonal, and descriptive statistics at the bottom. Correlations among pre-intervention measures were from  $-0.43$  to  $0.83$ , and correlations among post-intervention measures were in the range of  $-0.53$  to  $0.84$ .

### 3.2 Regression analyses

#### 3.2.1 Checking interaction effects

We found one significant interaction term at  $\alpha=0.05$ , which is the one between *group* and pre-intervention scores of *Well-being* in the model for predicting post-intervention scores of *Well-being*. All the other interaction terms were non-significant ( $p>.05$ ), and thus were removed from the corresponding models. The regression models without interaction terms follow the following general form:

$$X_{post} = b_0 + b_1 * group + b_2 * X_{pre} + e$$

We reran the updated models, to examine the conditional differences between experimental and control groups.

### 3.3 Conditional differences between experimental and control groups

Table 3 reports results of the regression analyses for testing intervention effects. We found significant conditional group mean difference only in the model for predicting *Well-being*. Both main effect and interaction effect were significant ( $ps<0.05$ ). The significant interaction effect implied that the relationships between pre- and post-intervention measures were different across two groups, with the one for the control group being stronger. When looking at the 95% confidence intervals for parameter estimates, we found some relatively wide intervals for the conditional group mean difference estimates, such as the ones on *Well-being*, *Stress*, *Intercultural Sensitivity*, *Social and Academic Integration*, *Mindfulness*, and *Self-esteem*. They raised a con-

**Table 2** Correlations between pre-intervention measures and between post-intervention measures, plus descriptive statistics for each measure

	WB	MF	ISS	ISSIE	ISSRCD	ISSIC	ISSIEN	ISSIA	SE	PSS	SAI	Stress
WB		0.08	0.19	0.23	0.03	0.15	-0.05	0.27	0.34	0.32	0.21	-0.33
MF	0.25		0.08	0.09	0.09	0.21	0.12	-0.01	0.28	0.15	0.02	-0.43
ISS	-0.01	0.27		0.83	0.66	0.64	0.65	0.63	0.20	0.23	0.15	0.06
ISSIE	0.00	0.19	0.84		0.52	0.43	0.40	0.70	0.10	0.21	0.19	0.08
ISSRCD	0.09	0.14	0.70	0.53		0.23	0.58	0.24	0.16	0.26	0.16	0.10
ISSIC	-0.06	0.31	0.73	0.44	0.20		0.47	0.32	0.31	0.08	-0.05	-0.16
ISSIEN	0.02	0.32	0.73	0.46	0.58	0.52		0.19	0.30	0.29	0.15	-0.09
ISSIA	-0.11	0.01	0.65	0.53	0.30	0.43	0.29		0.12	0.16	0.18	0.23
CEI	0.07	0.02	0.30	0.13	0.13	0.37	0.09	0.37	0.24	0.26	0.17	-0.13
SE	0.25	0.31	0.43	0.29	0.35	0.32	0.44	0.19	0.19	0.29	0.20	-0.33
PSS	0.26	0.06	0.25	0.23	0.19	0.15	0.15	0.16	0.44	0.40	0.36	-0.19
SAI	0.01	0.06	0.37	0.32	0.20	0.33	0.19	0.31	0.39	0.40	0.06	0.09
Stress	-0.49	-0.53	0.09	0.11	0.12	-0.08	0.03	0.21	-0.24	-0.15	0.06	0.09
Mean <sup>a</sup>	20.06	50.71	93.86	28.67	29.23	16.57	12.83	11.38	38.89	33.46	64.33	32.45
SD <sup>a</sup>	3.58	8.02	9.56	3.38	2.39	3.13	1.42	1.73	5.52	4.84	7.15	11.28
Skewness <sup>a</sup>	-0.70	-0.41	-0.10	-0.29	-0.28	-0.53	-0.38	-0.16	-0.37	-0.65	-0.20	1.83
Kurtosis <sup>a</sup>	0.38	-0.01	-0.25	-0.20	-0.48	0.75	0.68	-0.13	-0.10	0.15	-0.64	3.52
n <sup>a</sup>	97	96	96	96	96	96	96	96	95	95	95	73
Mean <sup>b</sup>	20.55	47.43	95.18	28.16	25.82	16.84	12.81	11.55	39.35	33.37	61.49	32.52
SD <sup>b</sup>	3.17	9.23	9.65	3.50	2.78	3.37	1.62	1.72	5.94	5.47	8.43	12.20
Skewness <sup>b</sup>	-1.27	-0.16	0.02	-0.20	-0.59	-0.02	-0.95	-0.13	-0.03	-0.76	-0.28	1.58
Kurtosis <sup>b</sup>	2.57	-0.17	-0.25	0.14	0.52	0.15	2.65	-0.57	-0.80	0.27	-0.45	2.52
n <sup>b</sup>	83	84	83	83	83	83	83	83	82	82	81	60

Note Correlations among pre-intervention measures are present above the diagonal, and correlations among post-intervention measures are below the diagonal. <sup>a</sup>These are pre-intervention measures. <sup>b</sup>These are for post-intervention measures. WB: Well-being; MF: Mindfulness; ISS: Intercultural sensitivity; ISSIE: ISS Interaction Engagement; ISSRCD: ISS\_Respect for Cultural Differences); ISSIC: ISS\_Interaction Confidence; ISSIEN: ISS\_Interaction Enjoyment; ISSIA: ISS\_Interaction Attentiveness; CEI: Cultural Ethnic Identity; SE: Self-esteem; PSS: Perceived social supports; SAI: Social and academic integration

cern about the precision of the corresponding estimates, which rendered supplemental standardized group mean difference analyses.

### 3.4 Standardized group mean difference analyses

We examined the group means of both pre- and post-intervention measures and computed the standardized mean differences between groups (Cohen's  $d$ ) (see Table 4). We observed three types of patterns in the change of standardized group mean differences from pre-intervention measurement to post-intervention measurement. On *Well-being* and *Perceived Social Support*, standardized mean differences between groups increased after intervention; on *Respect for Cultural Differences*, *Interaction Confidence*, *Self-esteem*, and *Stress*, standardized group mean differences decreased after intervention; on the other variables, standardized group mean differences did not change much from pre-intervention to post-intervention.

## 4 Discussion

This study explored the impact that the Cultural Partner Program has on the intercultural interactions and outcomes for graduate-level domestic students at a public research university in the Southeastern United States. The regression analyses discovered non-significant conditional differences between experimental and control groups for all variables except well-being. The standardized group mean difference analyses revealed no substantial changes present between the pre-intervention and post-intervention in mindfulness, intercultural sensitivity, and social and academic integration. Furthermore, there were also measures in which the standardized group mean differences in the post-intervention were lower than those in the pre-intervention, including self-esteem, stress, and intercultural sensitivity subscales like respect for cultural differences and interaction confidence.

The non-significant outcomes could potentially be a result of the smaller sample size in this study, which could have increased sampling errors and lowered the power of significance testing. For example, the wide 95% confidence intervals for the conditional group mean difference estimates indicate the lack of precision in parameter estimation, which could result from large sampling errors. The time restraints within buddy or intercultural pairing projects might create difficulties in the fostering of intercultural relationships (Campbell, 2012; Geelhoed et al., 2003). The Cultural Partner Program was conducted within only one semester. The constructs being measured are complex, so there might have not been enough time to develop enough intercultural growth within such a time frame. Furthermore, many of the participants were first-year graduate students who had many other important and ongoing activities in their transition to postsecondary education. Consequently, their busy schedules might have negatively impacted the amount of change they underwent in the program due to a lack of achieving mutually available meetups with their international partners (Campbell, 2012; Shigaki & Smith, 1997). Similarly, the timing of the second survey in this research might also have influenced scores, as it was taken during the end of the semester, which is already a difficult and busy time for the participants

**Table 3** Results of regression analyses for testing conditional group mean differences

Model		b	t	95% C.I.
1	Group	9.531	2.381*	[1.685, 17.378]
	WB_pre	0.685	4.542*	[0.389, 0.981]
	Group*WB_pre	-0.410	-2.237*	[-0.769, -0.051]
2	Group	1.882	0.964	[-1.944, 5.708]
	ISS_pre	0.636	7.244*	[0.464, 0.808]
3	Group	0.493	0.645	[-1.007, 1.994]
	ISSIE_pre	0.569	5.832*	[0.377, 0.760]
4	Group	-0.749	-1.01	[-2.202, 0.704]
	ISSIC_pre	0.584	5.886*	[0.389, 0.778]
5	Group	0.284	0.575	[-0.684, 1.253]
	ISSIEN_pre	0.577	5.413*	[0.368, 0.786]
6	Group	0.369	0.971	[-0.376, 1.114]
	ISSIA_pre	0.497	5.511*	[0.320, 0.673]
7	Group	-0.029	-0.046	[-1.267, 1.209]
	ISSRCD_pre	0.584	5.239*	[0.365, 0.802]
8	Group	-0.479	-0.351	[-3.157, 2.199]
	SE_pre	0.588	5.569*	[0.381, 0.794]
9	Group	2.043	1.808	[-0.172, 4.257]
	PSS_pre	0.628	6.565*	[0.441, 0.816]
10	Group	0.675	0.358	[-3.024, 4.374]
	SAI_pre	0.603	5.365*	[0.383, 0.823]
11	Group	0.269	0.164	[-2.941, 3.480]
	MF_pre	0.822	9.795*	[0.657, 0.986]
12	Group	0.746	0.326	[-3.742, 5.234]
	Stress_pre	0.819	6.712*	[0.580, 1.058]

Note: \* $p < .05$

(Campbell, 2012). Moreover, an overwhelming percentage of participants in the control group self-reporting having prior intercultural interactions in comparison with their counterparts in the experiential group might dilute the impact of the intervention. Finally, insufficient training for participants in cross-cultural interactions might have led to insignificant results in the current study. Weir (2020) found that domestic students in some cultural pairing projects felt ill-equipped to interact with someone from a different culture in a comfortable and effective manner. Thus, future research may consider providing adequate training (such as training in language and cross-cultural etiquettes) to participants prior to the start of the cross-cultural interactions.

Despite the non-significant results mentioned above, both the regression and the comparison of standardized group mean differences between the pre- and post-intervention displayed considerable results of the Cultural Partner Program intervention in enhancing well-being of the participants. The results seem to be consistent with findings in past studies in which participants reported an enhanced level of satisfaction after the study aboard program (Nilsson & Stålnacke, 2019). Furthermore, the standardized group mean difference analysis revealed that, in comparison to the control group, participants in the experimental group demonstrated improvements in perceived social support and interaction attentiveness. While much research surrounding buddy programs focus on increased social support for international students, domestic students participating in Cultural Partner Program have also found

**Table 4** Group means (SDs) and standardized group mean differences

	WB	MF	ISS	ISSIE	ISSRCD	ISSIC	ISSIEN	ISSIA	SE	PSS	SAI	Stress
Pre-intervention												
Control	19.21 (4.39)	49.00 (7.47)	92.00 (6.25)	27.74 (2.60)	25.32 (2.26)	15.53 (2.95)	12.26 (1.59)	11.16 (1.46)	35.79 (5.07)	32.42 (4.66)	64.63 (5.11)	37.50 (10.55)
Experimental	20.27 (3.35)	51.13 (8.15)	94.32 (10.20)	28.90 (3.53)	26.45 (2.38)	16.83 (3.14)	12.97 (1.35)	11.43 (1.80)	39.67 (5.39)	33.72 (4.88)	64.25 (7.60)	31.46 (11.23)
<i>d</i>	0.30	0.27	0.24	0.34	0.48	0.42	0.51	0.16	0.73	0.27	-0.05	-0.54
Post-intervention												
Control	19.05 (4.05)	45.68 (8.29)	93.32 (10.98)	27.42 (4.00)	25.42 (2.97)	16.95 (3.70)	12.32 (2.19)	11.21 (1.78)	38.00 (6.39)	31.21 (5.89)	61.05 (8.15)	35.33 (12.84)
Experimental	21.00 (2.74)	47.94 (9.48)	95.73 (9.25)	28.38 (3.35)	25.94 (2.73)	16.81 (3.29)	12.95 (1.40)	11.66 (1.70)	39.76 (5.79)	34.02 (5.21)	61.63 (8.58)	31.81 (12.07)
<i>d</i>	0.63	0.24	0.25	0.27	0.19	-0.04	0.39	0.26	0.30	0.52	0.07	-0.29

*d* standardized group mean difference

increased behavioral and emotional support as a result of their interactions (Bennett et al., 2013; Nilsson, 2019). When engaging in intercultural interactions, domestic students not only could have experienced intercultural learning, but also developed friendships, leading to increased feelings of support in one's community (Bennett et al., 2013).

Moreover, engaging in the Cultural Partner Program led to greater interaction attentiveness for domestic students within their intercultural interactions. Other studies have also found interaction attentiveness to have increased for participants in buddy programs, particularly on the domestic side (Pritchard & Skinner, 2002). Continual cooperation within these cultural partner pairings has shown to instigate more effort from host students to be aware of the effects of their intercultural interactions, in turn attempting to ensure their focus and commitment to creating beneficial relationships (Pritchard & Skinner, 2002). Weir (2020) highlighted that contact between domestic and international students in some studies were not well-facilitated, thus inhibiting the possibility for beneficial relationships to grow. The current study utilized a buddy program in which participants engaged in one-on-one facilitated contact, potentially leading to greater perceived relational outcomes between the pairs and negating non-constructive interactions. Thus, the more in-depth focus of one-on-one relational building between domestic and international students might have increased domestic students' perceptions of acceptance and support, and in turn increased their overall sense of well-being.

#### **4.1 Limitations**

The study has several limitations. First, some scales (e.g., Interaction Enjoyment and Interaction Attentiveness) were of relatively low reliability in the current study. Results for the corresponding measures should be interpreted cautiously as the constructs of interest may not be approximated by the measures. Second, the sample size in our study is relatively small. This could lead to large sampling variation and thus imprecision of some parameter estimates, as shown by the width of the corresponding confidence intervals. Also, the statistical power of significance tests might be impacted by the small sample size. Third, the small number of participants in this study were recruited from one public university in the southeastern part of the U.S. The participants may not be representative of the target graduate-level students. Lastly, the research could have been strengthened if a follow-up study involving interviews with some of the participants to examine the impact of the Cultural Partner Program.

#### **4.2 Practical implications**

This study's findings provide several practical implications. First, the study displays promising outcomes that result from facilitated intercultural interactions for domestic graduate-level students whose focuses of study are health and helping related professions. As such, other programs may take measures to implement similar programs within their own programs to widen the cultural worldview of graduate students and increase their multicultural sensitivities. Implementing programs such as the Cultural

Partner Program will help better prepare graduate students' abilities to interact with individuals with diverse and international backgrounds in their future global education and work environments. However, it is imperative that domestic students as well as international students undergo cultural education or adequate training to fully benefit from the intercultural interaction interventions. The cultural training can encompass elements such as attending cultural presentations done by those with multicultural education, such as knowledgeable faculty, or from those with experience in similar programs. The training may increase participants' awareness of their own intercultural competency levels, which could highlight key aspects of their cultural worldviews that should be adjusted to fully benefit from the intercultural partnerships. Whereas misunderstandings on how to handle such interactions due to a lack of training could inhibit beneficial relationships and lead to little intercultural development or could even potentially harm future interactions.

Second, graduate programs may seek to allocate greater lengths of time for students to be a part of the Cultural Partner Program. This can mean extending the program by one or more semesters to allow for more flexibility and greater lengths of time to develop intercultural relationships. Or it could also mean creating malleable schedules to maximize time and help foster natural relations to form. These adjustments are worthwhile considering a huge number of domestic graduate-level students may not be able to afford a go-aboard program due to financial constraint and other life commitments during this phase of their lives. All these highlight the significance of staff development at various levels (i.e., program, department, college) as an important factor in facilitating a success of internationalization-at-home (Beelen & Jones, 2015). Staff development need to concentrate on internationalizing program and discipline specific learning outcomes within the curricula for all students' success.

Third, to become more efficient with time in the buddy programs, pairings for these projects should be intentional and thoughtful to maximize success. To go beyond surface level relationships between international and domestic students, pairings should be done in ways to ensure compatibility between partners to nurture trust and friendship. To create compatibility, a potential option would be to give personality and life surveys to the participants before the pairings are made and then pair students based on similar/supplemental traits, activities, and schedules. These measures may reduce inhibitors to developing intercultural relationships and foster attempts to remove communicative barriers. However, ethical issues should also be kept in mind while pairing based on personality, as assumptions on compatibility based on personality could lead to negative interactions and ill-mannered pairings.

### 4.3 Research implications

Considering the complexity and subtleties of the intercultural interactions, mixed method research design, especially the qualitative research is needed to examine intercultural experiences and outcomes for graduate-level domestic students through internationalization-at-home efforts. Qualitative research, via a longitudinal lens, may offer an insight into the intercultural interactions and personal and contextual factors that may contribute to positive or negative intercultural outcomes. Focus-

groups or interviews may assist to capture themes for students coming from different colleges and departmental programs as well as serving as a venue to increase participants' awareness and knowledge of intercultural interactions and build a sense of community. Furthermore, future research needs to examine dynamic and interactive processes of the cultural partnership. Inputs and perspectives from both sides (i.e., domestic and international students) will assist future institutional and structural efforts in fostering intercultural interactions on campus and assisting international students to make a smooth transition into a new cultural and educational environment through internationalization-at-home efforts. Future research can test the effectiveness of internationalization-at-home efforts through programs such as the cultural partner program or cultural programs outside of campuses that can strengthen intercultural competency by using a relatively larger sample and employing a longer duration of the intervention. Follow-up studies involving participants would be helpful to further investigate the impact of the intervention programs. Finally, future studies should develop and validate outcome measures with strong psychometrics that could be readily used for cross-cultural research studies.

## 5 Conclusion

The findings of this study reveal promising outcomes for internationalization-at-home efforts for graduate-level domestic students. Future research is needed to investigate the effectiveness of cultural partner programs in fostering intercultural interactions and outcomes by employing a larger sample size and utilizing an extended timeframe of the intercultural intervention. Future research will also be beneficial in identifying contributing factors to the success of the internationalization-at-home efforts for graduate-level domestic students.

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## Declarations

**Ethical approval** This manuscript follows the standards on ethical consideration, informed consent and reporting guidelines.

**Conflict of interest** The authors declare no conflict of interest.

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