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Academic Satisfaction Among East-Asian International Students in the United States: An Examination Based on the Social Cognitive Career Theory

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Abstract: With the Asian hate outbreak during the COVID-19 pandemic, East-Asian international students in the United States experienced more overt racial discrimination and attacks while seeking education far from home. This study used the well-being model of the social cognitive career theory to examine the factors contributing to academic satisfaction considering 325 East-Asian international students as the study subjects (*M*age = 22.30, *SD*age = 4.82; *n*male = 162, *nfe*male = 155). Perceived discrimination was used as an environmental barrier in the model. Multigroup measurement invariance and multigroup structural equation modeling were employed to examine the gender differences in measurement constructs and predicted pathways. The results revealed that the two gender groups were equivalent at the scalar level, and the proposed model presented a good fit with the data across both sample groups. Perceived discrimination contributed to academic satisfaction through academic self-efficacy and goal progress. In addition to the above findings, this paper discusses the study's implications, limitations, and future research directions.

Introduction

Despite the widespread impact of the COVID-19 pandemic on college students worldwide, East-Asian international students faced distinct challenges, including multiple incidents of racism and racial discrimination based on their specific race or ethnicity (Koo et al., 2023). While this has negatively affected the recent enrollment of East-Asian international students in the United States (U.S.) higher education system, many still opt to pursue higher studies in the U.S. due to its high educational standards.

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For instance, among all international students enrolled in the academic year 2021–2022, 69.4% self-identified as Asians, and 56.5% of these Asian students hailed from East Asia (i.e., 372,378 students). Therefore, understanding the impact of perceived discrimination on the academic experiences of East-Asian international students is imperative, particularly because their experiences differ from those of their American counterparts. This study explores this aspect using the social cognitive model of well-being (SCWB; Lent, 2004) as its guiding framework.

The SCWB is a recently developed model based on the broader social cognitive career theory (SCCT; Lent et al., 1994). The SCCT was developed by Lent et al. based on Bandura's (1986, 1997) general social cognitive theory of motivation and behavior and is considered a unifying framework for understanding career development (Sheu et al., 2020, p. 681). Similar to the SCCT, the SCWB incorporates three fundamental social cognitive mechanisms—self-efficacy, outcome expectations, and goal progress—to depict an individual's work or academic satisfaction. It posits that individuals with elevated levels of well-being are more likely to

possess high self-efficacy and outcome expectations, set and progress toward their goals, and reinforce their personality traits and emotional states (Lent & Brown, 2008). This study aimed to build on the foundation of the SCWB by incorporating perceived discrimination, which is pertinent to the experiences of East-Asian international students amid the COVID-19 pandemic.

Perceived discrimination, particularly concerning racial identity, is conceptualized as a common social stressor in the U.S., particularly for individuals identifying as people of color. International students native to non-predominantly white countries may grapple with mixed feelings when attempting to reconcile their pre-U.S. identities with their new racialized minority identities in the U.S. (Bardhan & Zhang, 2017). This could present additional challenges and hurdles related to the cross-cultural adjustment process while studying in a foreign country. Recent studies have indicated trends of growing awareness of racial and ethnic backgrounds among international students. However, the significance of their racial commitment remains inconsistent. (Kim et al., 2015; Park et al., 2017). Although most studies suggest developing a stronger racial identity commitment as a buffer against perceived discrimination, this effect has been discovered to be less prominent among Asian international individuals than other people of color (Yip et al., 2019). Throughout the COVID-19 pandemic, the heightened violence against people of Asian descent has intensified the spotlight on the discrimination against East-Asian individuals both on and off campus; despite this, limited studies have investigated the effect of perceived discrimination on students' academic experiences.

Self-efficacy pertains to an individual's beliefs about their capability to perform given actions or demonstrate certain behaviors (Bandura, 1977). Within the social cognitive framework, self-efficacy highlights the roles of individuals, as agents, in the interplay among environmental factors, goal-directed behaviors, and satisfaction (Lent & Brown, 2008). Previous studies have documented that self-efficacy is reliably related to outcome expectations, vocational interests, and goals in the SCCT choice model across genders and ethnicities (Lent et al., 2018). Moreover, it has been demonstrated to show robust connections with both academic and job satisfaction among participants across 21 countries (Sheu & Bordon, 2017). Similarly, among international students, self-efficacy has been found to positively correlate with English proficiency (Wang et al., 2018), academic achievement (Khan et al., 2016), and psychological well-being and life satisfaction (Bulgan & Çiftçi, 2017).

While substantial gender differences have been observed in the existing literature on academic experiences (NCSES, 2021), the specific gender disparities among East-Asian international students have remained largely elusive. For instance, Lee et al. (2009) discovered that female students demonstrated better academic adjustment than their male counterparts due to higher English proficiency. Conversely, others believed that all East-Asian international students encountered similar academic experiences, regardless of their gender (Gopalan et al., 2019; Perrucci & Hu, 1995). Such inconsistent findings necessitate additional studies examining the similarities and differences in the academic experiences of East-Asian international students across different gender groups.

Goals of the Present Study

Taking steps to broaden the scope of the multicultural vocational research based on the SCWB (Sheu et al., 2020), this study aims to explore the applicability of the SCWB model to East-Asian international students in the U.S. by incorporating a contextual barrier: perceived discrimination. Although the SCWB provides a solid framework for understanding the influence of cognitive and contextual variables on an individual's well-being, recognizing that the SCWB is primarily based on an individualistic social norm is crucial. Given that East-Asian international students are often exposed to both collectivistic and individualistic cultures, an additional purpose for selecting this theory is to examine its

applicability to an understudied group in well-being-based literature.

This study also intends to enhance our understanding of the similarities and differences in the academic experiences of East-Asian international students based on gender, particularly during the global pandemic. Therefore, the current study aims to (1) understand the applicability of the SCWB to East-Asian international students in the U.S. and (2) expand the scope of the SCWB by incorporating perceived discrimination.

The proposed model includes (a) academic satisfaction, (b) academic support, (c) academic self-efficacy, (d) coping self-efficacy, (e) academic goal progress, (f) academic outcome expectations, and (g) perceived discrimination. As theorized by the SCWB, academic support, self-efficacy, goal progress, and outcome expectations are hypothesized to positively influence academic satisfaction. By contrast, perceived discrimination (contextual barrier) is expected to negatively influence these variables, given its function as a social stressor (Pascoe & Richman, 2009).

In this study, we first evaluated the measurement invariance of the measurement model, which included only the items and latent factors without the regression paths between the latent factors. Notably, measurement invariance allows the exploration of latent means and structural differences or similarities across gender groups.

Method

Participants and Study Procedures

The eligibility criteria for the study required participants to identify their region of origin within East Asia (i.e., China, Japan, Hong Kong, Macau, South Korea, or Taiwan), as well as confirm their current full-time enrollment as a college student holding a student visa (i.e., F-1, M-1, or J-1 visa) and residing in the U.S. at the time of the survey. Two validity items were designed to detect any invalid responses in the survey. For instance, the instructions stated, "Please choose '1 = strongly disagree' for this item." Participants were included in the study sample if they appropriately completed these validity items.

The study participants were recruited from the top 25 U.S. institutions with the highest number of international students and were invited to complete a Qualtrics online research survey. The online questionnaire included a virtual informed consent form that summarized the study's introduction, goals, potential risks, and benefits and provided the contact information of the researcher and IRB office. Of the 1,364 participants who passed the initial screening and consented to the study, 986 were excluded because their responses had more than 20% missing data (Peng et al., 2006). These participants responded carelessly (e.g., uniformly answering all items) and were flagged as "speeders" by the survey program. In addition to these, 53 other individuals were excluded because (a) they failed to indicate agreement on the research contract (n = 24), (b) their responses to the validity items were incorrect (n = 25), or (c) they were not from East Asia (n = 4). After data screening, 325 cases were used for the study. Of these participants, 155 identified as females (47.7%), 162 identified as males (49.8%), seven identified as transgenders (2.2%), and one identified as nonbinary (0.3%).

Measures

Demographic Questions

The questionnaire included questions about the participants' gender, race, age, nationality, academic level, academic field, career aspiration, institution location, relationship status, previous visits to the U.S., and duration of stay in the country.

Academic Support

Academic support was assessed using a nine-item measure developed by Lent et al. (2006), which used a five-point scale to gauge the endorsement of statements related to available support in students' intended majors (e.g., "I received valuable assistance from my advisor"). Responses were recorded on a scale, ranging from strongly disagree (1) to strongly agree (5). Previous studies have demonstrated the correlation of academic support with academic self-efficacy and outcome expectations across several countries (Lent et

al., 2006; Sheu et al., 2014, 2017). The Cronbach's alpha coefficient obtained in this study was .86.

Self-Efficacy

The self-efficacy assessments employed two sub-scales: a five-item academic milestone self-efficacy scale and a seven-item academic coping efficacy scale (Lent et al., 2006). Participants responded to both scales using a 10-point Likert scale, ranging from zero (no confidence at all) to nine (complete confidence). While the two types of self-efficacy were tested separately, they were considered correlated constructs. Notably, the academic self-efficacy scale gauged students' confidence in their ability to perform well academically (e.g., "How confident are you about your ability to excel in your intended major over the next semester?"), whereas the academic coping efficacy scale tested their confidence in overcoming barriers in academic settings (e.g., "ability to cope with a lack of support from professors or advisors"). Studies have discovered that both academic self-efficacy and barrier-coping self-efficacy can predict academic outcome expectations and goal progress in college student samples across nations (Lent et al., 2006; Sheu et al., 2014, 2017). The Cronbach's alpha value for both scales was .90.

Academic Outcome Expectations

The 10-item academic outcome expectations scale, originally developed by Lent et al. (2004), was adopted to test participants' expectations regarding favorable outcomes after completing higher education in the U.S. Data were collected using a 10-point scale, ranging from zero (strongly disagree) to nine (strongly agree). Sample items in the questionnaire included "earning an attractive salary" and "securing a promising job (or graduate school) offer." Notably, the academic outcome expectations variable has been found to positively correlate with academic support and well-being outcomes in Taiwan and Singapore (Sheu et al., 2014). The Cronbach's alpha for this variable in the current study was .95.

Academic Goal Progress

A seven-item instrument, developed by Lent et al. (2006), was employed to test students' perceptions of their progress toward their academic goals (e.g., "effectively completing all course assignments"). Responses were collected using a five-point scale, ranging from one (no progress at all) to five (excellent progress). Previous studies have identified goal progress as a predictor of academic well-being across nations (Lent et al., 2006; Sheu et al., 2014, 2017). The Cronbach's alpha for this variable in the current study was .87.

Academic Satisfaction

An eight-item measure was adopted (Lent et al., 2005) to assess participants' level of satisfaction with different aspects of their academic experience, utilizing a five-point scale ranging from one (strongly disagree) to five (strongly agree). Sample items in the questionnaire included statements such as, "I am satisfied with the amount of knowledge I have acquired through my classes." Previous studies have demonstrated that academic satisfaction positively correlates with academic support, goal progress, and life satisfaction across nations (Sheu et al., 2014, 2017). The Cronbach's alpha for the scale scores was .87.

Perceived Discrimination

A nine-item measure from the everyday discrimination scale (EDS; Williams et al., 1997) was employed for this assessment. Notably, this subscale evaluates the level of perceived common discrimination in daily life (Barnes et al., 2004). Sample items in the questionnaire included, "You are treated less courteously than others," and "You are threatened or harassed." Each item was rated on a four-point scale, ranging from one (never) to four (often). According to previous studies, this scale significantly predicts self-reported ill health, psychological distress, and deterioration in well-being (Williams et al., 1997). The Cronbach's alpha in the current study was .89.

Data Analysis

The collected data were analyzed using both SPSS 23.0 and R 1.3.1 to test the research hypotheses. First, the amount of missing data

for each item was reported (percentage or range). Second, Cronbach's alpha and descriptive statistics such as mean, standard deviation, skewness, and kurtosis were calculated. Additionally, bivariate correlations among the variables were tested considering the entire sample, as well as the male and female samples separately. Subsequently, before testing the measurement model, item parcels were created following Rogers and Schmitt's (2004) factor algorithm.

For the model fit testing, this study followed Anderson and Gerbing's (1988) two-step modeling approach. First, the measurement model was assessed to determine if it presented an acceptable fit with the structural model, following which the model fit was assessed. The model fit was examined for the complete sample, as well as for the male and female samples separately; here, participants identifying with other genders were excluded owing to sample-size constraints. Particularly, the following fit indices were used to evaluate the model fit: root-mean-square error of approximation (RMSEA), comparative fit index (CFI), and the Tucker–Lewis index (TLI). Per Hu and Bentler's (1999) recommendations, RMSEA values below .08 were considered indicative of a fair fit, whereas values below .05 were considered indicative of an acceptable fit. Moreover, CFI and TLI values exceeding .90 were considered indicative of an acceptable fit, whereas those exceeding .95 were regarded to indicate a good fit.

Subsequently, the measurement invariance of the measurement model in the male and female samples was examined following three steps: configural invariance, metric invariance, and scalar invariance. Traditionally, the chi-square difference test is used as an indicator of significant differences between two models. A statistically nonsignificant chi-square model fit test between two models indicates support for the more restrictive model. In our analysis, once scalar invariance was achieved, latent means were compared across groups. Here, the male sample was treated as the referent group, where the factor means and variance were set to zero and one, respectively. The significance of the latent mean differences between samples was assessed using the Wald test and Cohen's d values (Putnick& Bornstein, 2016). Subsequently, the structural model with the proposed paths was evaluated considering the male and female samples. Following model finalization, the multigroup invariance of each path was tested, and direct and indirect paths were additionally examined for the male and female groups.

Results

Preliminary Analyses

Table 1 displays the means, standard deviations, skewness and kurtosis, and Cronbach's alpha internal consistency estimates for each study variable, as well as the intercorrelations among these variables. Of the study variables, the absolute values of skewness and kurtosis did not exceed one (Byrne, 2010), indicating that the data adhered to the hypothesis of univariate normality. Academic satisfaction exhibited significant positive correlations with academic support, academic self-efficacy, barrier coping self-efficacy, outcome expectations, and goal progress while demonstrating significant negative correlations with perceived discrimination.

Table 1
Means, Standard Deviations, Correlations, and Internal Consistency Estimates among the Observed Variables

Variables	1	2	3	4	5	6	7
1. Academic support	--	.64***	.48***	.65***	.56***	.64***	-.25***
2. Academic self-efficacy		--	.75***	.80***	.77***	.68***	-.27**
3. Coping self-efficacy			--	.78***	.66***	.64***	-.14*
4. Outcome expectation				--	.74***	.73***	-.23***
5. Goal progress					--	.73***	-.19**
6. Academic satisfaction						--	-.17**
7. Perceived discrimination							--
M	3.62	7.10	6.70	6.97	3.63	3.72	2.30
SD	.68	1.86	1.59	1.74	.68	.69	.63
α	.86	.90	.90	.95	.87	.87	.89
Skewness	-.33	-.32	-.24	-.23	-.17	-.26	-.19
Kurtosis	.40	-.53	.01	-.61	.02	.08	-.47

Note: *$p < .05$, **$p < .01$, ***$p < .001$

Item Parceling and Assessment of the Measurement Model

Following Matsunaga's (2008) guidelines, three parcels were created for each latent variable using a factorial algorithm (Rogers & Schmitt, 2004). Specifically, each parcel consisted of items with sequentially descending factor loadings on the given measure, and the direction of taking turns through the parcels was alternated to allow even capitalization of the item distribution across the parcels. Here, the standardized factor loadings ranged from .786 to .954 across factors, which were significant at $p < .001$, suggesting the successful creation of item parcels. The measurement model incorporating the created parcels presented an acceptable fit with the data for the overall group ($\chi^2(325) = 323.09$, $p < .001$, RMSEA = .05, 90% CI [.05, .06], CFI = .97, SRMR = .03), for the male group ($\chi^2(162) = 309.82$, $p < .001$, RMSEA = .07, 90% CI [.06, .09], CFI = .96, SRMR = .04), and for the female group ($\chi^2(155) = 277.75$, $p < .001$, RMSEA = .07, 90% CI [.05, .08], CFI = .96, SRMR = .04). Hence, the proposed model was used for further analyses.

Measurement Invariance and Latent Mean Differences

The analysis of the measurement invariance of the model was conducted across the female and male samples, excluding transgenders and non-binary participants. First, the configural invariance was tested, and it revealed good fit of the model with the data ($\chi^2(336) = 578.78$, $p < .001$, RMSEA = .07, 90% CI [.06, .08], CFI = .96, TLI = .95, and SRMR = .03). Generally, achieving configural invariance indicates that the model structure remains consistent across gender samples without constraining any model parameters across the groups. Second, metric invariance was tested by constraining the factor loadings to remain consistent across the gender groups. This analysis also demonstrated a good model fit ($\chi^2(350) = 598.08$, $p < .001$, RMSEA = .07, 90% CI [.06, .08], CFI = .96, TLI = .95, and SRMR = .05). Achieving metric invariance suggests that the relationships between items and their associated latent factors remain consistent across the gender groups. In other words, items are interpreted in the same manner by each group. Comparisons of the configural invariance indicated that the chi-square model fit test of metric invariance was not statistically significant (ΔX^2 (Δdf) = 19.298 (14), ΔCFI = -.001, $p = .154$), suggesting that

the metric invariance model was supported. Following this, scalar invariance was examined, and it indicated a good model fit ($\chi^2(364) = 619.32$, $p < .001$, RMSEA = .07, 90% CI [.06, .08], CFI = .95, TLI = .95, and SRMR = .05). Generally, scalar invariance constrains the item intercepts to remain consistent across groups. The changes in indices compared to those for the metric model did not reach statistical significance (ΔX^2 (Δdf) = 21.245 (14), ΔCFI = -.001, $p = .096$). Therefore, scalar invariance was achieved, suggesting that comparing the latent means across gender groups was plausible.

Both male and female participants reported similar levels of academic satisfaction, goal progress, outcome expectations, academic self-efficacy, barrier coping self-efficacy, and perceived discrimination. However, males reported statistically significantly higher levels of barrier coping self-efficacy than females (Cohen's $d = .378$).

Multigroup Structural Equation Modeling

Overall, the model demonstrated a fair fit with the data (X^2 (168) = 323.09, $p < .001$; CFI = .974, TIL = .967, SRMR = .028, RMSEA = .053, 90% CI [.045,.062]), explaining 81.6% of the variance in academic satisfaction within the complete sample. Figure 1 illustrates the model path coefficient estimates for the entire sample. Subsequently, the structural invariance across the two gender groups was examined at the sample level by constraining the paths to equality. The results revealed the achievement of structural invariance across the gender groups (ΔX^2 (Δdf) = 32.56 (21), ΔCFI = -.002, $p = .051$).

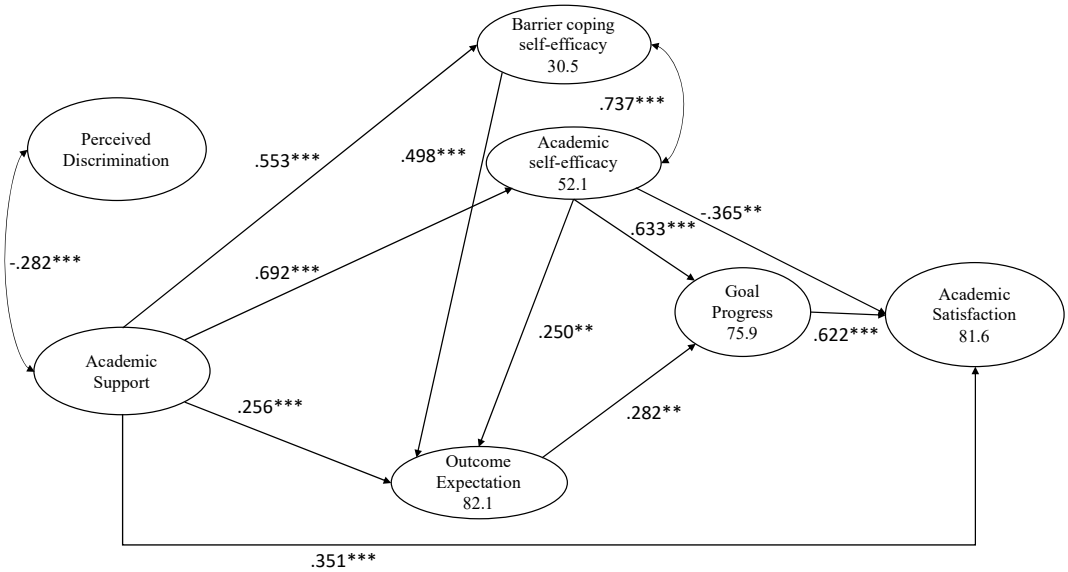

Figure 1

Structural Model Considering East-Asian International Students (N = 325)

Note: Only latent factors and significant paths are shown for clarity of presentation. All estimates of the path coefficients are standardized. (*p < .05, **p < .01, ***p < .001.)

Next, the model was examined separately for each gender group. The model demonstrated acceptable fits for the male (X^2 (168) = 309.823, $p < .001$; CFI = .955, TLI = .944, SRMR = .035, RMSEA = .072, 90%CI [.059, .085]) and female samples (X^2 (168) = 277.745, $p < .001$; CFI = .960, TLI = .949, SRMR = .038, RMSEA = .065, 90% CI [.051, .079]). In the male and female samples, the model accounted for 73.9% and 91.7% of the variance in academic satisfaction, respectively. Figure 2 presents the model path coefficient estimates for the male and female samples.

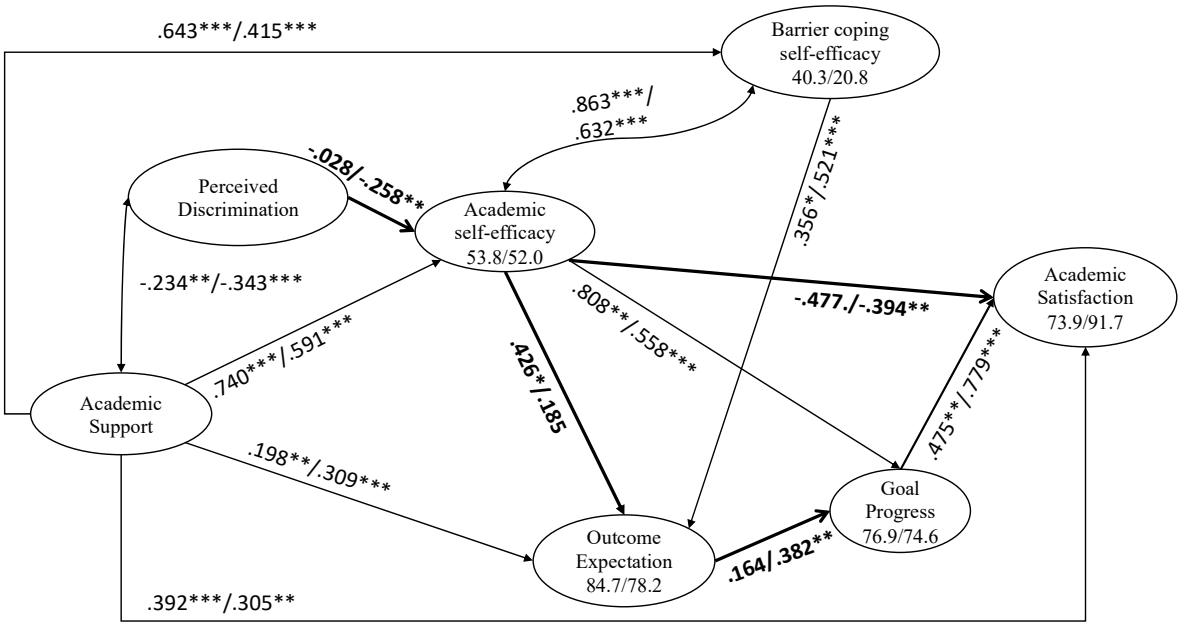

Figure 2

Structural Model Based on Gender (n_{male} = 162, n_{female} = 155)

Note: The values in the circles denote the percentages of the variances explained. The values presented before the slash are derived from male samples and those after the slash are derived from female samples. Only latent factors and significant paths are shown for clarity of presentation. All estimates for the path coefficients and correlations are standardized. (*p < .05, **p < .01, ***p < .001.) Thick lines and values in bold indicate gender differences in the path coefficient values.

Direct Effects

As depicted in Figure 1, perceived discrimination did not predict any factors within the entire sample; it only exhibited a significant negative correlation with academic support. Academic support, in contrast, was a stronger predictor, and it positively regressed on almost every variable of this study at the .001 level, except for goal progress. Further, barrier coping self-efficacy and academic self-efficacy demonstrated strong positive correlations with each other, and both were positively regressed on outcome expectations. Only academic self-efficacy was identified as a positive and direct predictor of goal progress ($\beta = .633$, $p < .001$), yet it yielded a moderately significant negative path to academic satisfaction within the sample, indicating statistical suppression given the bivariate relationships between variables. Similar suppression effects were observed in other groups (male and female samples in Figure 2). Furthermore, academic satisfaction was positively predicted by goal progress ($\beta = .622$, $p < .001$) and academic support ($\beta = .351$, $p < .001$), while outcome expectations were found to also regress on goal progress ($\beta = .282$, $p = .007$).

Subsequently, the model structure was independently examined in the male and female samples (see Figure 2). In the male sample, consistent with the results of the complete-sample analyses, perceived discrimination did not regress on any factors of the model. However, in the female sample, perceived discrimination appeared to be a negative predictor of academic self-efficacy ($\beta = -.258$, $p = .001$). Meanwhile, academic support was a predictor of the following four variables in both samples: academic self-efficacy ($\beta_{male} = .740$, $p_{male} < .001$; $\beta_{female} = .591$, $p_{female} < .001$), barrier coping self-efficacy ($\beta_{male} = .643$, $p_{male} < .001$; $\beta_{female} = .415$, $p_{female} < .001$), outcome expectation ($\beta_{male} = .198$, $p_{male} = .005$; $\beta_{female} = .309$, p_{female}

< .001), and academic satisfaction (β_{male} = .395, p_{male} < .001; β_{female} = .305, p_{female} = .001).

Next, we examined the predictors of outcome expectations and goal progress. In addition to academic support, barrier coping self-efficacy (β_{male} = .356, p_{male} = .017; β_{female} = .521, p_{female} < .001) appeared as a predictor of outcome expectations in both samples; moreover, academic self-efficacy was identified as an additional predictor of outcome expectations among male students (β_{male} = .426, p_{male} = .012). While academic self-efficacy emerged as a predictor of goal progress in both samples (β_{male} = .808, p_{male} = .001; β_{female} = .558, p_{female} < .001), outcome expectations were identified as additional predictors in the female sample (β_{female} = .382, p_{female} = .005).

In terms of the predictors of academic satisfaction, both academic support (β_{male} = .392, p_{male}< .001; β_{female}= .305, p_{female}< .001) and goal progress (β_{male}= .475, p_{male} = .003; β_{female}= .779, p_{female}< .001) yielded positive associations in both the male and female groups. Additionally, female students reported a statistically significant association between academic self-efficacy and academic satisfaction (β_{female} = -.394, p_{female} = .006).

Indirect Effects

Having examined the direct effects of the latent factors, their indirect effects were also tested. In the complete sample, academic satisfaction was predicted by academic support through academic (β = -.253, p = .006) and barrier coping self-efficacy (β = -.202, p = .006). Furthermore, academic satisfaction was predicted by academic support through academic self-efficacy and goal progress (β = .272, p < .001), barrier coping self-efficacy and goal progress (β = .218, p < .001), academic self-efficacy, outcome expectations and goal progress (β = .030, p = .042), as well as barrier coping self-efficacy and outcome expectations and goal progress (β = .024, p = .045). Furthermore, academic support could indirectly influence academic satisfaction through outcome expectations and goal progress (β = .045, p = .031). Outcome expectations also displayed an indirect association with academic satisfaction through goal progress (β = 4.223, p = .007).

For East-Asian international male students, no statistically significant indirect paths were identified in the model. However, in the female group, academic satisfaction was indirectly predicted by both perceived discrimination (β = .102, p = .032) and academic support (β = -.233, p = .009) through academic self-efficacy. Both perceived discrimination (β = -.112, p = .018) and academic support (β = .092, p = .035) could indirectly regress on academic satisfaction through both academic self-efficacy and goal progress. Additionally, in the female sample, academic support could also indirectly influence academic support through barrier coping self-efficacy (β = -.164, p = .015), barrier coping self-efficacy and goal progress (β = .181, p = .006), or outcome expectations and goal progress (β = .092, p = .035). In this group, academic satisfaction was also indirectly linked to outcome expectation through goal progress (β = 5.723, p = .005).

Discussion

This study aimed to investigate the academic experiences of East-Asian international students amid the COVID-19 pandemic based on the SCCT satisfaction model (Lent & Brown, 2006). Overall, this study revealed that after consolidating three parcels for each instrument (e.g., academic satisfaction, outcome expectations), the data aligned well with the model, achieving configural, metric, and scalar measurement invariance across both the female and male groups. Mean difference tests were also conducted across both gender groups. Additionally, no significant direct predictive role of perceived discrimination was found on socio-cognitive constructs within the model.

Measurement Invariance and Latent Mean Differences

This study represents the first attempt to test the applicability of Lent and Brown's (2006) SCCT satisfaction model on a sample of East-Asian international students in the U.S. The study's findings contribute to the extant

literature based on the SCCT satisfaction model by demonstrating a robust fit of the data with the model, achieving configural, metric, and scalar measurement invariance across female and male groups. This indicates that the factor structure, item loadings, and item intercepts can be considered consistent between these two groups. Moreover, the data also indicate a good fit in both the male and female groups. This result is consistent with those of previous studies (Lent et al., 2018; Sheu et al., 2020), supporting the generalizability of the SCCT satisfaction model across genders. However, as the items were aggregated into three parcels for each instrument, the obtained results cannot imply the measurement invariance of each instrument. To address this, all items must be included as separate indicators without item aggregation.

Comparing the results of the latent mean difference tests revealed that female and male students exhibited similar levels of academic satisfaction, academic support, goal progress, outcome expectation, academic self-efficacy, and perceived discrimination based on race. However, males reported a statistically higher level of barrier coping self-efficacy than female students. This elevated score may suggest that male students generally perceive themselves as more adept at handling challenges than their female peers. This difference may be attributed to gender socialization norms, wherein males are expected to remain strong and self-defensive in the face of adversity, whereas females are expected to be receptive, compromising, and cooperative while resolving conflicts through relational means (Sizoo, 2000). This observation aligns with the findings of Tsai and Wei (2018), who discovered that Chinese international male students were more likely to adopt behavior-oriented coping skills when confronted with discrimination than their female counterparts. Therefore, in situations of perceived discrimination, under the influence of cultural expectations and societal pressure, male students may feel empowered to act as "expected of a man," whereas female students may have a greater tendency to be less responsive or not at all responsive.

Overview of the Model Findings

Overall, the SCCT satisfaction model demonstrated a good fit with the data across the entire sample, as well as across the female and male samples separately. In particular, academic support played a significant role in this SCCT model. This result is consistent with those of previous studies (e.g., Hui et al., 2013; Sheu et al., 2017), which report academic satisfaction to be linked with environmental factors, such as perceived support.

Moreover, academic support significantly predicted outcome expectations, academic self-efficacy, and barrier coping self-efficacy. These findings are consistent with those of previous studies, which reported that stronger academic self-efficacy and barrier coping self-efficacy, as well as more positive outcome expectations, are associated with supportive academic environments (e.g., Ojeda et al., 2011; Sheu et al., 2014). These results suggest that East-Asian international students experiencing favorable academic settings are more likely to feel confident in their academic pursuits, overcome challenges, and maintain a positive outlook toward their future.

Goal progress is among the major predictors of academic satisfaction and exhibits a strong association with academic self-efficacy in the considered sample of East-Asian international students. The obtained results are consistent with those of previous studies, as well as with the theoretical framework of the SCCT satisfaction model (Lent, 2004), which suggests that life satisfaction is influenced by goal progress. Numerous studies have reported that students are more likely to feel satisfied, particularly when they feel confident about short-term goals and receive prompt feedback on their progress through exams and tests (Lent et al., 2006).

However, goal progress was neither associated with academic support nor perceived discrimination. This demonstrates that the goal progress of students in the current sample is not predicted by contextual support or barrier factors. This finding is inconsistent with the theoretical hypothesis proposing

direct effects of contextual support and barrier factors on goals (Lent et al., 2008); however, it does align with the findings of previous studies conducted in Asia (Sheu et al., 2014, 2017). These studies also discovered a nonsignificant relationship between contextual factors and goal progress among college students in China (Sheu et al., 2017) and Taiwan but not in Singapore (Sheu et al., 2014). These inconsistent findings across the Asian population underscore the complex sub-cultures within the broader Asian demographic. For East-Asian international students, academic self-efficacy plays a more important role than academic support in promoting goal progress, which can have practical implications in terms of future intervention plan development (Sheu et al., 2014).

Interestingly, outcome expectation, a critical cognitive variable within the SCCT model, did not directly predict academic satisfaction but did so indirectly through goal progress. Upon closer examination of the study sample, we observed that only female students who expected more positive outcomes were prone to making progress in their academic pursuits, thus indirectly predicting academic satisfaction via progress. However, this was not true among their male counterparts. Thus, the role of outcome expectations remains ambiguous in the current literature. While some researchers have discovered that outcome expectations can be useful for predicting interests or choice of majors (e.g., Quimby et al., 2007), others have noted their insignificant associations with interests, goals, and persistence (e.g., Lent et al., 2005). Lent et al. (2011) have debated the accuracy of outcome expectations assessments in capturing the essence of expected outcomes among college students, while Sheu et al. (2020) have argued that the relationship between outcome expectations and academic satisfaction is largely mediated through indirect effects rather than direct effects. Considering these inconsistent results about the role of outcome expectations, more studies exploring the impact of outcome expectations within the academic field are warranted.

The direct effects of perceived discrimination on the cognitive variables within the SCCT model were also not entirely substantiated in this study. This suggests that subjective perceptions of discrimination do not necessarily translate to academic experiences. However, this result is inconsistent with existing results (e.g., Xu et al., 2021; Wei et al., 2012, 2021). The outcome of this study may indicate that discrimination detrimentally affects the academic experiences of international students, suggesting a complex and nuanced relationship between perceived discrimination and academic experiences. It is also plausible that the nature of perceived discrimination holds significance. The perceived discrimination scale (Williams et al., 1997) was adopted to examine daily discrimination incidents in social interactions, potentially making it difficult for students to translate their experiences across contexts (e.g., from encounters of unfair treatment in social settings such as restaurants to being excluded from a study group). In this regard, utilizing a measurement specifically designed to gauge their academic discriminatory experiences, such as perceived language discrimination, could prove beneficial.

The unique racial experience of East-Asian international students can be another possible reason for the insignificant role of perceived discrimination. The participants of this study had little exposure to living as a racial minority, and having relocated to another country, they could be anticipating differential treatment. A study also revealed that non-U.S.-born Asian students possessed higher well-being levels than U.S.-born Asian students despite experiencing similar levels of discrimination (Wang et al., 2019). It is plausible that varying racial experiences during early childhood could mitigate minority distress in the U.S.

Moreover, the East-Asian values and philosophical principles embraced by international students may foster adaptability, perseverance, and resilience. Given the East-Asian culture's emphasis on education, students are more likely to persevere and strive for academic excellence. Consequently, students may experience stronger positive

emotions (e.g., hope, contentment) and milder negative emotions (e.g., shame and anxiety; Datu & Fong, 2018) in their pursuit of academic goals, in turn cultivating resilience and fortitude.

However, the observation that perceived discrimination significantly affected the satisfaction of female students indirectly via the cognitive variable (i.e., academic self-efficacy) and its pathways (i.e., academic self-efficacy and goal progress) is concerning. It implies that female students are more likely to internalize external barriers than their male counterparts, and this process can further prevent females from making satisfactory goal progress. This finding may be linked to gender role socialization, as previously discussed in the context of Asian culture. Tsai and Wei (2018) also noted that female Chinese international students were more inclined to employ internalization as a coping mechanism against discrimination. However, they interpreted internalization as a means of self-improvement, which could aid students in avoiding preoccupation with experiences of racial discrimination and redirecting their focus toward cultural values (e.g., relationship harmony). In contrast to the results of this study, the process of "self-examination" over perceived discrimination does not facilitate self-improvement. Instead, it diminishes the students' confidence in pursuing their goals and feeling satisfied with their academic experiences. Given the inconsistent findings on the relationship between perceived discrimination and self-efficacy, more research on this topic is warranted.

Finally, although perceived discrimination could not successfully predict any constructs in this study, its significantly negative correlations with all variables remain noteworthy. As summarized in Table 1, perceived discrimination exerted a notable influence on academic experiences, displaying statistically negative correlations with all the other academic variables. Therefore, addressing the negative impact of discrimination on East-Asian international students is particularly important.

Although the overall fit of the model with the data was confirmed, several individual paths failed to meet the criteria for statistical or practical significance. For instance, the mediation pathway of academic support, academic self-efficacy, and academic satisfaction differed from those reported in previous studies, indicating a reversal in the direction of relationships (i.e., change in the direction of regression coefficients compared to the direction of their respective bivariate correlations). This suggests that in this sample, goal progress may act as a suppressor (MacKinnon et al., 2000; Maassen & Bakker, 2001; Yang et al., 2013). Notably, a suppression effect occurs when the "magnitude of the relationship between an independent variable and a dependent variable becomes larger when a third variable is included" (Mackinnon et al., 2000, p. 2). However, this finding is consistent with the results of a meta-analysis examining the SCCT satisfaction model. Sheu et al. (2020) proposed that the relationship between self-efficacy and academic satisfaction may primarily be mediated by goal progress rather than being direct. Therefore, future research must investigate the roles of academic self-efficacy, goal progress, and academic satisfaction. However, it is important to approach the interpretation of the direct effect in this study with caution.

Practical Implications

This research offers new insights into the significance of perceived discrimination within the context of higher education in the U.S. Contrary to expectations, the East-Asian international students in this study did not report a significant negative correlation between perceived discrimination and academic performance. This finding suggests that international students possess unique attributes. The distinct backgrounds and ways of upbringing of East-Asian international students compared to those of other U.S.-born minorities may influence their discrimination-related perspectives and coping mechanisms. Practitioners and educators must examine the experiences of international students with

careful consideration, avoiding the tendency to pathologize or overlook their unique strengths.

However, the negative influence of discrimination on the academic self-efficacy of female students is concerning. Given the significant correlations between academic self-efficacy and other socio-cognitive variables, implementing appropriate intervention measures to increase self-efficacy is crucial. Based on Bandura's (1977) four sources of self-efficacy, mental health professionals may adopt various strategies to enhance the self-efficacy of East-Asian international students. For instance, organizing workshops to teach step-by-step coping strategies against common challenges (e.g., academic goal setting, expected communication with professors, presentation skills, and group discussion skills) may be beneficial. Additionally, East-Asian international students could proactively seek academic feedback and support to promote their academic satisfaction, as well as participate in affect management workshops (Sheldon & Lyubomirsky, 2006). These initiatives aimed at bolstering self-efficacy can potentially help in cultivating a positive academic environment for East-Asian international students and enhance their perception of institutional support.

In line with previous research, this study highlights the pivotal influence of institutional environment and support on the academic experiences of students of color. The study specifically underscores the protective function of academic support in enhancing the academic satisfaction of international students. Administrators of international student organizations can devise more tailored and supportive programs (e.g., writing programs or career decision-making programs) that focus on the unique challenges and barriers encountered by international students (e.g., communication skills or language barriers). By fostering collaborations between teachers and students of various genders and nationalities, these initiatives must aim at cultivating a sense of "family," wherein individuals work together toward a common goal. Conchas (2001) discovered that such collaborative and inclusive atmospheres can foster a sense of belonging, which can be pivotal in improving the academic experiences of students of color. Academic institutions (e.g., international centers or women's centers) must acknowledge the unique challenges faced by female students, who are particularly vulnerable to discrimination. Administrators and organizations must develop programs that challenge gender norms, offer role models, and conduct workshops aimed at enhancing understanding among domestic students and empowering international students to challenge negative self-perceptions when confronted with unfair treatment.

Limitations and Directions for Future Research

Despite its valuable contributions to the existing literature, this study still has several limitations that can guide future studies. First, the participants of this study may not be representative of all East-Asian international students in the U.S. Compared to previous studies, this study has made strides in differentiating Asian international students. However, researchers and clinicians must acknowledge the heterogeneity within this broad group. A significant portion of the current sample identified with binary gender identities; consequently, the study largely ignored the experiences of non-binary individuals. Similarly, the majority of the participants identified as heterosexuals, leading the study to overlook the experiences of sexual minorities. Moreover, variations in educational levels (undergraduate vs graduate students) and academic programs (STEM vs non-STEM) were introduced as additional factors and potential mediators between environmental support/barriers and traditional socio-cognitive variables of the SCCT. Researchers are encouraged to incorporate these variables in future studies based on the SCCT satisfaction model. The application of this model at a more granular level, such as exploring cultural heritage identification and adopting intersectional perspectives, may be insightful. Thus, future studies must aim to investigate the complex intersectionality of identities by considering larger samples.

Second, the data for this study were collected using an online survey platform (i.e., Qualtrics). While such online data collection is widely adopted in psychology research and is generally deemed reliable (Carpenter et al., 2019), it is still possible that the obtained results differ from those collected in community settings. Considering the high dropout rate observed in the current study owing to various reasons, it is important to exercise caution when generalizing the obtained results to all East-Asian international students in the U.S. Future studies could consider gathering responses through more traditional data-collection strategies to replicate the current study.

Additionally, owing to the insignificant correlation of perceived discrimination with other variables, this study could not advocate the inclusion of perceived discrimination in the SCCT satisfaction model; however, future research in this direction is warranted. For instance, specifying the context of perceived discrimination, such as language discrimination or feelings of safety, could prove helpful when understanding the academic experiences of East-Asian international students. Moreover, qualitative methodologies can be adopted to capture the unique lived experiences and the nuances of academic satisfaction, racial identity development, and perceived discrimination within this specific population. Furthermore, integrating institutional factors into the model could be beneficial. Notably, the contextual factors (e.g., academic support, and perceived discrimination) considered in this study predominantly remain at the individual level. Considering higher levels of context, such as types of institutions (e.g., predominantly white institutions) may provide deeper insights into the academic experiences of East-Asian international students.

Another limitation of the current study lies in its cross-sectional design, which precludes the examination of causal relationships. Therefore, longitudinal, experimental, or intervention studies are recommended to test causality relationships and assess the practical applicability of the model for this population. These studies could explore ways to promote self-efficacy, facilitate goal progress, or provide environmental support. Additionally, this study did not include affect variables or psychosocial factors (e.g., anxiety, adjustment) in the current population. Future studies may consider adding these variables to the SCCT satisfaction model and reevaluating the relationship between goal progress and academic satisfaction while considering the suppressor role of academic self-efficacy, as identified in this study.

Conclusion

East-Asian international students represent a unique and diverse group with intricate dynamics, warranting additional attention and support from academic institutions and professionals, including mental health practitioners in university counseling centers. Despite the slight decline in the number of international students enrolling in U.S. institutions owing to the COVID-19 pandemic, the number of East-Asian international students will likely continue to increase at least in the next few years (IIE, 2020). This is because overseas academic credentials and experiences offer East-Asian students unique skills and better future employment prospects (Arthur & Flynn, 2011). Thus, the primary purpose of this study was to test the applicability of Lent's (2004) SCCT satisfaction model to the academic experiences of East-Asian international students amid the COVID-19 pandemic.

The findings of this study revealed that the SCCT satisfaction model is generally applicable across the entire sample and the male and female samples separately. Significant gender differences were observed in the latent mean differences of the main constructs and their pathways. However, perceived discrimination did not emerge as a significant factor influencing academic satisfaction among East-Asian international students. This result suggests that East-Asian international students possess unique perspectives regarding their racial identity and experiences, and mental health providers and psychologists must be careful when guiding them toward academic satisfaction. Most

importantly, this study highlighted the protective role of academic support and offered vital insights and recommendations for implications at institutional and individual levels to enhance the academic satisfaction of East-Asian international students. Additionally, the study delineated the tailoring of such efforts to accommodate the needs of different gender groups. By fostering a culture that celebrates diversity and inclusivity, institutions can send a more positive message to the next generation of East-Asian international students.

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