**The effects of perceived everyday discrimination on mental health outcomes among emerging adults in the United States: The role of self-esteem**

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Emerging adulthood, defined as ages 18 to mid-to-late 20s, has been gaining attention in cognitive, social, and clinical psychology research. It is recognized as a pivotal developmental stage typified by what they pursue, how they strive, and where they will be (Arnett, 2000). This is a stimulating yet stressful period filled with relatively more changes and challenges in an individual’s lifespan, given that people in this transition period (i.e., childhood to young adulthood) usually need to make major life decisions, take responsibility for their own needs, and explore their future (Wagner & Newman, 2012).

Numerous research reported that emerging adulthood is typically connected to the onset of various mental health illnesses and the development of serious mental health conditions that exacerbate later health (Klodnick et al., 2021). Specifically, emerging adults are more prone to depressive symptoms that lead to suicidal tendencies and social adjustment problems (Martínez-Hernáez et al., 2016), the development of alcohol and substance use problems (Sussman & Arnett, 2014), and reactive aggressive behaviors (Evans & Fite, 2019). Generally, people who have been diagnosed with depressive symptoms will feel sad and worthless, have trouble sleeping, and avoid social interactions (Nezlek et al., 1994). Generalized anxiety disorder (GAD), characterized by overwhelming and unmanageable worry, is comorbid with explicit physical health symptoms among emerging adults (e.g., migraine; Dindo et al., 2017). Moreover, young adults are more likely to be burdened with anxiety due to financial difficulties; GAD is poorly treated and causes residual mental health problems (Gordon et al., 2021). A distinct type of anxiety disorder due to the evolution of social media platforms and increased social interactions, social anxiety, is particularly researched among emerging adults (Michikyan, 2020). With the fear of being negatively evaluated by others, young adults with social anxiety are inclined to excessively monitor their social behaviors and overly pursue positive feedback from others (Leary & Tangney, 2003). Such anxiety interferes with regular social interaction, resulting in problematic engagement in social activities and substantial life dissatisfaction. Another potential mental health problem comes from nonspecific psychological distress that is highly prevalent in college students and associated with suicidal intentions and poor academic performance (Tang et al., 2018). Psychological distress encompasses a wide range of collective depressive symptoms and anxiety, ranging from mild self-report symptoms to severe psychiatric disease (Goldberg & Blackwell, 1970). It was found that people aged 18-25 in the United States are more likely to report incidents of psychological distress within 30 days than other age cohorts (Twenge et al., 2019).

Many potential stress factors may culminate in the mental health risks described above, given the abundance of challenges young adults may have to confront in their everyday social interactions. Perceived everyday discrimination (PED) is defined as “a behavioral manifestation of a negative attitude, judgment, or unfair treatment toward members of a group” through subjective evaluations (i.e., self-report; Pascoe & Richman, 2009). Plentiful social and clinical research have concluded that PED is significantly associated with depression, psychological distress, anxiety, and subjective well-being among emerging adults in the United States (Williams et al., 2003). For example, LGBT individuals perceived significantly higher levels of sexual orientation related discrimination that is correlated with greater likelihood of being diagnosed with depression and psychological distress, compared to their heterosexual counterparts (Burgess et al., 2007). Even within the LGBT group, transgender individuals are more likely to report PED, depressive symptoms, and suicidal attempts than non-transgender individuals (Su et al., 2016). Living in an immigrant country brimming with people from different cultural backgrounds, racial minorities may encounter discrimination related to their race and ethnicity in various settings. Past literature found that PED and experience of related violence may result in increased depression among African American and Hispanic American adolescents, and this effect is moderated by gender, poverty, and neighborhood factors (Patrick, 2019).

To minimize the negative effects of PED, current psychology researchers put extensive efforts into investigating the mechanism of how PED affects mental health outcomes. Self-esteem has been researched as one of the correlates that potentially alleviate such effects. In Rosenberg’s works, self-esteem is early characterized as “a favorable or unfavorable attitude toward oneself and functions as an affective evaluation of the self” (Rosenberg, 1965). A more recent definition is that self-esteem depicts a psychological approximation of the degree to which one individual is evaluated and accepted by themselves and others (e.g., peers, family, friends; Harter, 2003). Individuals with high self-esteem have higher chances of perceiving subjective well-being and obtaining self-confidence in adolescents and adults (Weinberg & Gould, 1995; Chen et al., 2016). From an intuitive perspective, if an individual has low or reduced self-esteem, it is plausible that they will possess lower self-assurance and experience more detrimental emotional consequences resulting from PED. One study about second-generation immigrant adolescents across ethnic groups confirmed this pathway of explanation, in which their PED from school peers negatively influences perceptions of social acceptance and subsequently impacts their mental health outcomes (Espinosa, 2021). Moreover, it was found that gender-related PED predicts increased psychological malfunctioning (e.g., trauma disorders, general anxiety, and annihilation anxiety) through both linear and non-linear reduction in self-esteem among American Indians and Palestinians (Kira et al., 2015).

Returning to the intuitive explanation, self-esteem has a potential moderating effect on the pathway from PED to deteriorated mental health outcomes. Particularly, individuals with higher self-esteem may be “protected” by such a psychological state due to a higher sense of social acceptance and self-evaluation when they are attacked by discrimination. Such a “buffer effect” may result in relieved mental health illness. Fischer and Shaw (1999) studied this moderating effect of self-esteem with a similar rationale among 119 African American young adults, but they found that individuals with high self-esteem had worse scores in mental health measures when they perceived more discrimination, while those with low self-esteem did not have such an effect. The authors stated that this finding seems surprisingly opposite to their hypothesis and proposed one possible explanation that the impact of PED on people with low self-esteem could be possibly lessened due to more internal locus of control for negative incidents. However, they pointed out that their interpretation was not viable because the sample size was too small to clarify such associations. Besides, the mental health measure (i.e., Mental Health Inventory; Veit & Ware, 1983) was too overarching and unreliable because it did not test specific mental health outcomes (e.g., depression) and had poor performance on test-retest reliability analysis (< .80). Several theoretical and technical rationales suggest that it is worthwhile testing the moderating role of self-esteem in the effect of PED on mental health outcomes again using a nationally representative sample from a larger dataset. Researching the effects of self-esteem can bring substantial clinical implications for designing and implementing self-esteem-related program interventions to reduce the negative effects of mental health illness and rates of committing suicidal behaviors (Dat et al., 2022). Given that it is difficult to control PED from unknown outside sources, it is possible to suggest discrimination-targeted self-esteem program interventions for the clinical community.

To quantify the moderation or interaction effects involving scales with multiple items, recent researchers use means or sum scores more commonly than doing latent variable analysis (e.g., confirmatory factor analysis; CFA) or extracting factor scores (Bauer & Curran, 2016). During the development of psychometric theories, the “latent variable” concept and classical test theory (CTT) are based on a foundational assumption that many psychological and behavioral variables, usually not directly measurable, are assessed with measurement errors through direct measures (Jöreskog, 1979; Gulliksen, 1950). Measurement errors occur when any random factors happen to affect true scores of the measured construct. Using these direct measures, or manifest variables, without correcting for measurement errors may lead to biased parameter estimates in regression-based analyses (e.g., path analysis) and abated statistical power (Cole & Preacher, 2014). Flake et al. (2017) further claimed that only 40 out of 301 studies that used composite scores tested and reported evidence of internal structures of multi-item scales. A more critical issue with using sum scores is that this method may prevent researchers from testing desired theoretical models. For example, research on depression based on the number of reported symptoms is invalid if specific domains of depression need to be investigated (e.g., insomnia, sad mood, etc.). Theoretically, a single composite score of observed items of depression does not necessarily represent levels of severity of “depression” unless it is a unidimensional construct and all indicators are equally well-drafted and statistically precise (Fried & Nesse, 2015); shortly speaking, “sum up” of observed scores is not equivalent to “add up” of latent measures.

Latent scores, usually appearing in latent variable modeling approaches (e.g., structural equation modeling), adjust for measurement errors and become increasingly popular as early as 1990s. Nevertheless, despite the extensive applications of latent approaches in additive models, researchers still feel unfamiliar and reluctant to use them in testing interaction effects (i.e,. multiplicative models; Cortina et al., 2021), while the trend of including hypotheses regarding interacting terms has greatly continued in psychology research (Aguinis et al., 2017). One possible reason is that latent interaction testing is not widely introduced; there is also not a “universal” or “golden” mindset of which latent variable model should be used, given various available approaches.

A common latent interaction model in current research uses product indicators (PI). Kenny and Judd (1984) proposed this classical model of nonlinear relationships among latent variables:

, (1)

where y is the outcome variable, is the intercept, and are latent predicting variables, are latent product variables, and is the residual variable of y. In specific, the latent product term is formulated by a set of product indicators (e.g., x1m1). All possible combinations of product indicators need to be included according to the original paper, but now researchers can decide which indicators to include in the model. Recent research suggested a matched-pair strategy to reduce model complexity if there are too many indicators (Marsh et al., 2004). One issue of this approach is that it is overly complicated to specify the nonlinear constraints on the factor loadings and variances associated with the corresponding interaction term. Consequently, Marsh et al., (2004) proposed an unconstrained product indicator (UPI) method that is much simpler to use for applied researchers; moreover, compared to the old version, UPI performed comparably well, particularly when the assumption that latent constructs and residual variables are normally distributed is met (Jackman et al., 2011).

Alternative methods of modeling interaction effects are the reliability-adjusted product indicator method (RAPI; Hsiao et al., 2018) and the two-stage path analysis with interaction (2S-PA; Hsiao et al., 2018). Both methods are able to account for measurement errors by constraining the error variances of latent variables using reliability measures computed from corresponding observed items (i.e., reliability adjustment). Note that RAPI uses composite scores as the single indicators of latent constructs, and hence the latent scores represent “true scores” in CTT; 2S-PA first estimates individual factor scores of each latent variable under measurement model frameworks (e.g., CFA) and corresponding standard errors, and then uses standard errors as definition variables to fix measurement error variances. One advantage of the 2S-PA method is that it simplifies the model and reduces the possibility of convergence issues in the SEM framework.

Although the moderation effect of self-esteem on mental health outcomes has been studied in various representative samples across groups and occasions (Chen et al., 2022; Hart et al., 2022), few studies modeled such an effect in a latent variable framework. The current study posits self-esteem as a moderator of the relation between PED and mental health outcomes among emerging adults (18-28) in the United States. Despite a prior opposite finding of the moderating effect, this study will address a few questions and improve previous analysis by 1) using a nationally representative sample; 2) correcting for measurement errors by modeling latent interactions; 3) specifying four mental health outcomes (i.e., depression, general anxiety disorder, social anxiety, psychological distress); 4) replicating simple effects of self-esteem and PED on mental health outcomes. The hypotheses are 1) self-esteem is negatively associated with depression, general anxiety disorder, social anxiety, and psychological distress; 2) PED is positively associated with depression, general anxiety disorder, social anxiety, and psychological distress; 3) emerging adults who have higher levels of self-esteem will be affected less by PED on depression, general anxiety disorder (GAD), social anxiety, and psychological distress. A figure of the latent interaction model is presented in Figure 1. In addition, the current study aims to compare the performances of three latent interaction approaches (i.e., UPI, RAPI, 2S-PA) in terms of parameter estimates and model evaluation indices.

**Material and Methods**

*Participants*

Data were retrieved from a longest-running American panel survey, Panel Study of Income Dynamics (PSID), designed to examine U.S. residents' physical and psychological states under social change. In this study, a subset of PSID, Transition to Adulthood Supplement (TAS) in the 2019 wave, was used (N = 2,595). The 2019 TAS contains information on everyday discrimination, self-reported mental health outcomes, self-esteem measures, and sociodemographic characteristics for participants aged 18 to 28. A descriptive summary of sociodemographic variables was provided in Table 1. Missing data was not an issue as all data points were used in the analyses.

*Measures*

In the current study, all psychological constructs of interest were measured through scales with multiple items. Table 2 presents a summary of scale names, scoring types, and distribution of composite scores. Considering most of the scales have heavily skewed distributions and categorical items with less than six options, the factor structure of each scale was analyzed through categorical CFA using the diagonally weighted least square estimator accounting for ordinal data and non-normal distribution, and the internal consistency was reported using Cronbach’s alpha. A few model-fit indices were used for model evaluation: The representing the difference between the expected covariance matrix and the empirical one was mostly reported; Nevertheless, given its sensitivity to large sample sizes, alternative indices were considered such as Comparative Fit Index (CFI), Tucker Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA). Table 3 and Table 4 provided summaries of Cronbach’s alpha and model fit evaluation of each scale.

*Self-esteem.* Self-esteem was assessed via Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965), originally designed to measure the self-esteem of high school students. The scale had ten items, each with four options (1 = “strongly agree” to 4 = “strongly disagree”). Five items were positively oriented (e.g., “I feel that I have a number of good qualities.”), while five items were negatively oriented and then reversely coded for congruent interpretation (e.g., “I certainly feel useless at times.”). A high score on this scale represented a high level of self-esteem. A one-factor CFA demonstrated sufficient fit to the items: , df (degree of freedom) = 35, *p* < .001; RMSEA = .17; CFI = .97, TLI = .96; reliability (Cronbach’s ) = .88, 95%CI [.87, .89].

*Perceived Everyday Discrimination*. Discrimination was measured using Everyday Discrimination Scale (EDD; Williams et al., 1997) with 7 items, each having six response categories (1 = “Never” to 6 = “Almost everyday”). Respondents self-reported discrimination experiences associated with less courtesy, ill-respect, intelligence judgement, etc. A one-factor CFA demonstrated sufficient fit to the items: , df = 14, *p* < .001; RMSEA = .11; CFI = .96, TLI = .93; Cronbach’s = .90, 95%CI [.89, .90].

*Depression*. Depression was evaluated through PHQ-9 Depression Screener (Patent Health Questionnaire; Kroenke, Spitzer, & Williams, 2001) in which various depressive symptoms such as depressed mood, sleeping trouble, fatigue, concentration problems, and psychomotor failures were assessed. There were nine items in PHQ-9, each with four response categories (1 = “Not at all” to 4 = “Nearly every day”). Provided a previous study found that either a one-factor or two-factor measurement model on PHQ-9 showed satisfying model fits for the general population in Vietnam (Vu et al., 2022), two factor structures were assessed in this study. A one-factor (“depression” as the only latent factor) model demonstrated adequate fit to the items: , df = 36, *p* < .001; RMSEA = .09; CFI = .99, TLI = .98. The two-correlated-factor model (“somatic” and “cognitive” as latent factors) likewise showed sufficient fit: , df = 36, *p* < .001; RMSEA = .08; CFI = .99, TLI = .99. The Cronbach’s index was .90, 95%CI [.89, .90].

*General Anxiety Disorder*. GAD was assessed by a seven-item scale (GAD-7; Kroenke et al., 2007) which asked about recent general anxiety symptoms in daily life (e.g., “Over the last two weeks, how often have you been bothered by feeling nervous, anxious, or on edge?”). Four response options were provided (1 = “Not at all” to 4 = “Nearly every day”). A one-factor CFA demonstrated sufficient fit to the items: , df = 14, *p* < .001; RMSEA = .07; CFI = .99, TLI = .99; Cronbach’s = .91, 95%CI [.90, .91].

*Social Anxiety*. In addition to general anxiety, social anxiety specific to interpersonal interactions was measured by a four-item scale cited from Michigan Study of A&A Life Transition (MSALT; Eccles et al., 1989). This scale was designed for adolescents and early adults with social and academic experiences at school, at home, and at work. Five options were available in the items (1 = “Never” to 5 = “Almost always or always”). A one-factor CFA demonstrated sufficient fit to the items: , df = 2, *p* < .001; RMSEA = .06; CFI = .99, TLI = .99; Cronbach’s = .84, 95%CI [.82, .85].

*Psychological Distress*. Psychological distress was assessed using the Kessler-6 (K6) scale (PSYCHDIST; Kessler et al., 2002). Participants were asked about past-month distress (e.g., “During the past 30 days, how often did you feel nervous”), with responses ranged from (1 = “None of the time” to 5 = “All of the time”). A one-factor CFA demonstrated sufficient fit to the items: , df = 9, *p* < .001; RMSEA = .07; CFI = .99, TLI = .99; Cronbach’s = .88, 95%CI [.87, .89].

*Analytic Plan*

Since this study was based on multi-item scale measures, the internal consistency assessment, factor structure check, and variable recode work had been done before subsequent analyses using R and RStudio (R Core Team, 2023). Then four parallel latent interaction models were tested using a R package *lavaan* (Rosseel*,* 2012) to investigate the mechanism of how self-esteem moderated the effect of PED on mental health outcomes.

Notes that the double-mean centering strategy was applied in UPI and RAPI. In regression-based research, the mean-centering method was used to account for attenuating correlations among variables. Marsh et al. (2004) recommended producing interaction terms using mean-centered first-order indicators to account for multicollinearity between interaction terms and lower-order factors. Lin et al., (2010) further suggested that centering means of product indicators can account for “unmodeled heteroskedasticity of factor scores” given data in practice rarely followed perfectly normal distributions.

**Results**

A series of summary of parameter estimates with standard errors and 95% confidence intervals were provided in Table 5-8.

*Interaction Model 1: Depression.* Three latent interaction models found significant negative effects of self-esteem on depression: ; ;. Then, it was found that PED positively affected depression: ; ;. For the latent interaction term, significant effects were found using 2S-PA and UPI methods: ; .

*Interaction Model 2: General Anxiety Disorder.* There were negative effects of self-esteem on GAD in three latent interaction models: ; ;. Likewise, positive associations between PED and GAD were found: ; ;. For the latent interaction term, only 2S-PA detected significant effect: .

*Interaction Model 3: Social Anxiety.* Negative correlations between self-esteem and social anxiety were found in three latent interaction models: ; ;. Positive associations between PED and social anxiety were found: ; ;. No significant effects were found for the interaction term in the social anxiety analysis.

*Interaction Model 4: Psychological Distress*. Similar to previous models*,* gegative correlations between self-esteem and psychological distress were found in three latent interaction models: ; ;. Likewise, positive associations between PED and psychological distress were found: ; ;. significant latent interaction effects were found using 2S-PA and RAPI methods: ; .

**Discussion**

It was found that PED was positively associated with all mental health outcomes (i.e., depression, GAD, social anxiety, psychological distress) among the general population of emerging adults aged 18 to 28 in the United States in 2019, throughout three latent interaction methods. As we hypothesized, this finding replicated previous studies about the impacts of PED on mental health outcomes. Take the 2S-PA model examining depression, we interpreted that depression level of emerging adults would increase by .24 unit on average as one’s PED increased by 1 unit. Regarding self-esteem, our findings as well replicated previous research that self-esteem was negatively correlated with depression, GAD, social anxiety and psychological distress. In terms of interpretation of the depression example, an individual’s depression level would decrease by .61 unit on average as their self-esteem measures increased by 1 unit. We found significant latent interaction effects between self-esteem and PED on depression, GAD, and psychological distress. Such effects implied that emerging adults with lower self-esteem levels would be more vulnerable to depression when they perceived PED.

The results generally met our three main goals of the current study but did not demonstrate sufficient substantiation of one underlying theoretical assumption that PED would affect one’s mental health outcomes related to social interaction due to nonsignificant effects on social anxiety. One possible explanation was that PED was not solely related to interpersonal interactions because people may perceive implicit discrimination without human being interactions (e.g., gender stereotypes within career path development) or through restrictions in a social context (e.g., general products designed unsuitable for people with disabilities). People may still be able to feel discriminated against even though they are not interacting with anyone (Greenwald et al., 2022). An alternative reason was that our analyses did not specify a certain type of PED. It is possible that some specific reasons for discrimination may be more relevant to social anxiety (e.g., physical appearance). Overall, it seems that self-esteem moderated the effect of PED on more general mental health outcome measures among adolescents to young adults in the U.S.

The results of comparisons of latent interaction methods showed that 2S-PA is the most sensitive one to detect the potential interaction effects followed by RAPI and then UPI, given that it provided three significant parameter estimates for the interaction terms. Figure 2 – 4 illustrated all the interaction effects. The 95% CI confidence intervals were also narrower for 2S-PA and RAPI than UPI. However, there were at least two limitations of such comparisons at this stage of analysis. First, categorical variables were not supported so far in the 2S-PA method, and therefore continuous versions of scales were used in the current study for consistent and meaningful comparisons. It was unknown that the good performance of the 2S-PA method would carry over to a robust version of analyses correcting for non-normality and ordinal data. Second, UPI demonstrated larger bias than 2S-PA and RAPI, but such simulation results were not carefully examined yet and thus current conclusions of UPI should be treated with caution.

While it was exciting to demonstrate the latent interaction effects in the current study, one future direction is potentially further examining the relations between self-esteem, PED, and mental health outcomes across groups. In other words, three-way latent interactions can be conducted within various grouping variables via theory support. Previous studies have shown that PED and mental health relations varied across gender, race, socioeconomic, educational levels, and many other factors. It will be interesting to see how the moderating role of self-esteem changes across groups.

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**Figure 1**

*Hypothesized Latent Interaction Model*

Diagram

Description automatically generated

*Note.* The model is the same for the other three mental health outcomes.

**Figure 2**

*Interaction Plot for Three Methods: Depression*

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**Figure 3**

*Interaction Plot for Three Methods: General Anxiety Disorder*

*A picture containing line, text, diagram, plot

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**Figure 4**

*Interaction Plot for Three Methods: Psychological Distress*

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**Table 1**

*Demographic Characteristics Summary Among U.S. Young Adults Aged 18-28, 2019*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | | Overall Sample  (n = 2,595) | | | | | | |
| Demographic Variables | | | *N* | | | | *%* | | |
| Sex | |  | |  | |  | |  | |
|  | Male | | 1201  1352 | | | | 46.28  52.10 | | |
|  | Female | |
| Race/Ethnicity |  | |  | |  | |  | |  |
|  | White | | 1072  1083  296 | | | | 41.31  41.73  11.41 | | |
|  | Black | |
|  | Hispanic, Latino, or Spanish | |
|  | Asian | | 51  29  60 | | | | 1.97  1.13  2.31 | | |
|  | Others | |
|  | Missing/Refused/Don’t Know | |
| Sexual Orientation |  | |  | |  | |  | |  |
|  | Gay or lesbian | | 105  2175  227  66  22 | | | | 4.05  83.82  2.54  2.54  .85 | | |
|  | Straight | |
|  | Bisexual | |
|  | Others | |
|  | Missing/Refused | |
| Region |  | |  | |  | |  | |  |
|  | Northeast | | 285  588  1219  492  11 | | | | 10.98  22.66  46.97  18.96  .43 | | |
|  | North Central | |
|  | South | |
|  | West | |
|  | Others | |

**Table 2**

*A Summary of Latent Factors, Scales, and Distributions*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Latent Factor | Scale | Scoring Type | | | Recode | | | Sample Distribution\* | | |
| Self-esteem | Rosenberg Self-Esteem Scale (ROSENB; Rosenberg, 1965) | | 1 (“Strongly disagree”) to 4 (“Strongly agree”) | | | Five items | | | Chart, bar chart  Description automatically generated | |
| Discrimination | Everyday Discrimination Scale (EDD; Williams et al., 1997) | | 1 (“Never”) to 6 (“Almost every day”)  0 (“Not at all”) to 3 (“Nearly every day”) | | | \ | | Chart, bar chart  Description automatically generatedChart, bar chart  Description automatically generated | | |
| Depression | PHQ-9 Depression Screener (Kroenke, Spitzer, & Williams, 2001) | | \ | |
| General Anxiety | Generalized Anxiety Disorder (GAD-7; Kroenke et al., 2007) | | 1 (“Not at all”) to 4 (“Nearly every day”) | \ | | |  |  | | Chart, bar chart  Description automatically generated | |
| Social Anxiety | MSALT (Eccles et al., 1989) | | 1 (“Never”) to 5 (“Almost always or always”)  1 (“Never”) to 5 (“All of the time”) | | | \ | | Chart, bar chart  Description automatically generatedChart, bar chart  Description automatically generated | | |
| Psychological Distress | Non-Specific Psychological Distress-Kessler K6 (PSYCHDIST; Kessler et al., 2010) | | Six items | |

*Note*. Sample distributions were displayed using sum scores of each category in each scale.

**Table 3**

*A Summary of Scale Properties and Internal Consistency*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Scale | Number of Items | | | Cronbach’s | | | | | 95% CI of | |
| Rosenberg Self-Esteem Scale (ROSENB; Rosenberg, 1965) | | 10 | | .88 | | |  | | [.87, .89] | |
| Everyday Discrimination Scale (EDD; Williams et al., 1997) | | 7  9 | | .90 | |  | | | [.89, .90] | |
| PHQ-9 Depression Screener (Kroenke, Spitzer, & Williams, 2001) | | .87 | | [.87, .88] | |
| Generalized Anxiety Disorder (GAD-7; Kroenke et al., 2007) | | 7 |  | | .87.d.91 |  | | [.90, .91] | |  | |
| MSALT (Eccles et al., 1989) | | 4  6 | | .84 | |  | | | [.82, .85] | |
| Non-Specific Psychological Distress-Kessler K6 (PSYCHDIST; Kessler et al., 2010) | | .88 | | [.87, .89] | |

**Table 4**

*Categorical Confirmatory Factor Analysis: Model Evaluation Indices*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Scale/Model |  | Categorical CFA | | | | | | |
|  | Number of factors | |  |  | CFI | TLI | RMSEA | SRMR |
| Self-esteem  (ROSENB) | 1 | | 2451.63 | 35 | .97 | .96 | .17 | .10 |
| Discrimination  (EDD) | 1 | | 229.197 | 14 | .99 | .99 | .08 | .04 |
| Depression  (PHQ-9) | 1 | | 939.15 | 36 | .99 | .98 | .09 | .06 |
|  | 2 | | 738.48 | 36 | .99 | .99 | .08 | .05 |
| General Anxiety  (GAD-7) | 1 | | 382.38 | 14 | .99 | .99 | .07 | .03 |
| Social Anxiety  (MSALT) | 1 | | 34.86 | 2 | .99 | .99 | .06 | .02 |
| Psychological Distress  (PSYCHDIST) | 1 | | 431.44 | 9 | .99 | .99 | .07 | .04 |
| *Note*. For categorical CFA, the estimator is WLSMV (weighted least squares). | | | | | | | | |

**Table 5**

*Standardized Parameter Estimates of the Interaction Models: Depression*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model | Variable and Path |  | Estimate | Standard Error | *p* | 95% CI |
| 2S-PA | Depression 🡨 | Self-esteem  Discrimination  Interaction | -.61\*\*\*  .24\*\*\*  -.09\*\*\* | .02  .02  .02 | <.001  <.001  <.001 | [-.65, -.57]  [.19, .28]  [-.13, -.06] |
| UPI | Depression 🡨 | Self-esteem  Discrimination  Interaction | -.98\*\*\*  .36\*\*\*  -.08\*\*\* | .04  .03  .03 | <.001  <.001  .003 | [-1.06, -.91]  [.04, .42]  [-.14, -.03] |
| RAPI | Depression 🡨 | Self-esteem  Discrimination  Interaction | -.67\*\*\*  .49\*\*\*  -.06 | .04  .04  .03 | <.001  <.001  .09 | [-.74, -.60]  [.42, .56]  [-.12, .01] |

**Table 6**

*Standardized Parameter Estimates of the Interaction Models: General Anxiety Disorder*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model | Variable and Path |  | Estimate | Standard Error | *p* | 95% CI |
| 2S-PA | GAD 🡨 | Self-esteem  Discrimination  Interaction | -.48\*\*\*  .28\*\*\*  -.04\* | .02  .02  .02 | <.001  <.001  .03 | [-.52, -.45]  [.24, .31]  [-.07, -.003] |
| UPI | GAD 🡨 | Self-esteem  Discrimination  Interaction | -.64\*\*\*  .36\*\*\*  -.03 | .03  .03  .03 | <.001  <.001  .21 | [-.70, -.58]  [.31, .41]  [-.08, .02] |
| RAPI | GAD 🡨 | Self-esteem  Discrimination  Interaction | -.43\*\*\*  .43\*\*\*  -.02 | .03  .03  .03 | <.001  <.001  .46 | [-.48, -.38]  [.04, .42]  [-.07, .03] |

**Table 7**

*Standardized Parameter Estimates of the Interaction Models: Social Anxiety*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model | Variable and Path |  | Estimate | Standard Error | *p* | 95% CI |
| 2S-PA | Soc Anx 🡨 | Self-esteem  Discrimination  Interaction | -.45\*\*\*  .05\*  .01 | .02  .02  .02 | <.001  .03  .50 | [-.50, -.41]  [.01, .10]  [-.03, .06] |
| UPI | Soc Anx 🡨 | Self-esteem  Discrimination  Interaction | -.51\*\*\*  .06\*  .001 | .03  .03  .03 | <.001  .03  .97 | [-.57, -.46]  [.01, .12]  [-.05, .05] |
| RAPI | Soc Anx 🡨 | Self-esteem  Discrimination  Interaction | -.39\*\*\*  .12\*\*\*  .01 | .03  .03  .03 | <.001  <.001  .65 | [-.45, -.34]  [.07, .17]  [-.04, .06] |

**Table 8**

*Standardized Parameter Estimates of the Interaction Models: Psychological Distress*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model | Variable and Path |  | Estimate | Standard Error | *p* | 95% CI |
| 2S-PA | Distress 🡨 | Self-esteem  Discrimination  Interaction | -.61\*\*\*  .22\*\*\*  -.11\*\*\* | .02  .02  .02 | <.001  <.001  <.001 | [-.64, -.57]  [.12, .26]  [-.14, -.08] |
| UPI | Distress 🡨 | Self-esteem  Discrimination  Interaction | -.51\*\*\*  .34\*  .001 | .03  .03  .03 | <.001  .03  .97 | [-.57, -.46]  [.01, .12]  [-.05, .05] |
| RAPI | Distress 🡨 | Self-esteem  Discrimination  Interaction | -.92\*\*\*  .12\*\*\*  -.11\*\*\* | .03  .04  .03 | <.001  <.001  <.001 | [-.98, -.85]  [.29, .39]  [-.17, -.06] |