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Overt and Subtle Discrimination and Psychological Well-Being: Examining the Mediating and Moderating Role of Ethnic-Racial Identity Among Emerging Adults



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Abstract

Ethnic-racial identity (ERI) has been reported as mediator and moderator of the relation between discrimination and psychological well-being. However, it remains unclear how different forms of discrimination (i.e., overt and subtle) predict well-being over time, and whether ERI exploration and commitment mediate or moderate this association. This preregistered study explored the associations of overt and subtle discrimination with well-being (i.e., depression, substance use, life satisfaction) in a sample of 323 ethnic-racial minoritized college students ($M_{age\ WI} = 18.03$, 62.7% female) from longitudinal data collected in the US. Cross-lagged panel models across three waves indicated no associations of overt discrimination, but participants experiencing more subtle discrimination during their transition to college reported more depressive symptoms after four months. Ethnic-racial identity did not function as mediator or moderator. Findings indicate the need for a more nuanced understanding of the role of ERI during emerging adulthood.

Keywords

overt and subtle discrimination, psychological well-being, ethnic-racial identity, emerging adulthood

Introduction

Youth who are faced with ethnic-racial discrimination on average report lower psychological well-being (e.g., Benner et al., 2018; Pascoe & Smart Richman, 2009). Different forms of ethnic-racial discrimination (i.e., overt and subtle) have been separately associated with poorer psychological well-being among ethnic-racial minoritized groups (Jones et al., 2016; Lui & Quezada, 2019). However, studies investigating the distinct effects of overt and subtle forms of discrimination on psychological well-being are still scarce, especially from a longitudinal perspective (Yip et al., 2019). Furthermore, ethnic-racial identity (ERI) has been identified both as a factor that may explain the link between discrimination and psychological well-being (i.e., mediator) and account for individual differences within this association (i.e., moderator, Brittian et al., 2015; Torres & Ong, 2010). The multiple approaches used to operationalize ERI and the inconsistent findings about its role in this association point to methodological limitations in the designs and analysis of existing studies.

In this study, we addressed these gaps in the literature by analyzing the unique longitudinal associations of overt and

subtle discrimination with psychological well-being (i.e., depression, substance use, and life satisfaction) among ethnic-racial minoritized emerging adults in the U.S. We also examined the role of two ERI dimensions (i.e., exploration and commitment) by testing their mediating and moderating roles

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in these relations. The aim was to provide some clarity on the association of discrimination with psychological well-being outcomes and the role of ERI therein, and to help guide future research on this topic.

Overt and Subtle Discrimination in Relation to Psychological Well-Being

Ethnic-racial discrimination has been defined as “experiences of unfair treatment in which individuals are excluded, their opportunities are restricted, or they are otherwise marginalized based exclusively on their membership of a particular ethnic or racial group” (Umaña-Taylor, 2016, p. 117). Ethnic-racial discrimination manifests in two forms: overt and subtle. Overt discrimination refers to biased actions and verbal expressions explicitly and intentionally directed at the members of ethnic-racial minoritized groups (Jones et al., 2016). Some examples would be being verbally or physically harassed because of one’s perceived ethnicity and racial group membership. In contrast, subtle discrimination refers to actions and verbal expressions that are relatively automatic and unintentional yet demonstrate ethnic-racial biased tendencies (Sue et al., 2007). Incidents of subtle discrimination, also called microaggressions, occur often and ambiguously (Lui & Quezada, 2019). Some examples are being treated as a potential criminal, being associated to romantic/sexual obsessions, being perceived as a homogenous group despite having ethnic differences and being objectified as foreign by being denied of belonging to the country of birth (Armenta et al., 2013; Lui & Quezada, 2019).

In line with theories centering development of minoritized youth (e.g., Garcia-Coll et al., 1996), overt ethnic-racial discrimination is a risk factor for poor psychological well-being outcomes (Benner et al., 2018, 2022; Pascoe & Smart Richman, 2009). In these past empirical studies, psychological well-being has been conceptualized in various ways referring to: depression, substance use, and life satisfaction as solitary indicators, or a composite score of psychological well-being that merges multiple outcomes. For instance, a meta-analysis of 134 studies conducted in the U.S. suggests that the detrimental effect of chronic and recent overt ethnic-racial discrimination on mental health is stronger for depressive symptoms than psychiatric distress and a composite variable of general psychological well-being (Pascoe & Smart Richman, 2009). Two other recent meta-analyses of 379 studies found small to moderate, approximately equally sized correlations of ethnic-racial discrimination with depression, internalizing symptoms, overall psychological well-being, and risky health behavior among adolescents (Benner et al., 2018, 2022). Similar findings were observed in Europe and among the Maori population in New Zealand suggesting the broad relevance of overt discrimination for mental health (de Freitas et al., 2018; Stronge et al., 2016). Additionally, the association does not appear limited to the internalizing

domain, as higher perceived ethnic-racial discrimination was also linked to a higher risk of substance use across various ethnic-racial minoritized groups in the US, such as African Americans, Latinxs, and Asian Americans (Pascoe & Smart Richman, 2009; Tran et al., 2010).

In comparison, relatively little research has examined the link between subtle ethnic-racial discrimination and psychological adjustment (Jones et al., 2016; Lui, 2020). In a meta-analysis and narrative review of 72 studies, race-based microaggressions are associated with higher levels of depression and anxiety, alcohol use, smoking, psychological distress, anger, and subjective psychological well-being (Lui & Quezada, 2019). The average association between microaggression and adjustment outcomes was the largest for psychological well-being and the smallest for physical symptoms and health risk behaviors. In addition, a recent systematic review focusing on nine studies with Latinx-Americans supported the negative associations of subtle racial discrimination with mental health outcomes (Choi et al., 2022). In sum, there is less empirical research testing the association of subtle racial discrimination to well-being compared to overt racial discrimination, yet its link to psychological well-being outcomes is evident. Moreover, research suggests that subtle and benevolent forms of racism might occur more often than overt forms of racism due to social unacceptability of overt forms (Lui, 2020). Few research suggesting that more ambiguous experiences of discrimination (subtle) can be more detrimental in comparison to overt forms as the ambiguity makes it harder to identify the event as discrimination (Öztürk & Berber, 2022; Robinson-Wood et al., 2015). Thus, subtle forms can indeed lead to more rumination, questioning which harms the psychological well-being in comparison to overt forms.

Discrimination, Ethnic-Racial Identity, and Well-Being Among Emerging Adults

Ethnic-racial identity is a multidimensional construct that reflects not only individuals’ knowledge, beliefs, and attitudes toward their ethnic-racial group membership(s), but also the processes through which the content of ERI develops (Phinney & Ong, 2007; Umaña-Taylor et al., 2014). Although different conceptualizations exist in how ERI is operationalized, in this study we used Phinney’s theoretical framework, which posits that ERI formation can be captured by the processes of exploration and commitment (Phinney, 1992). Exploration consists of a process of search, observation, and consideration of one’s identity and background, for example by learning more about the group history and taking part in cultural events and practices, while commitment is linked to a sense of belonging in and positive feelings toward one’s group membership (Marcia, 1980). Achieving a stable ERI is meant to be generally promotive for youth psychological well-being, especially when individuals experience adversity and

discrimination (Rivas-Drake et al., 2014). However, from a methodological perspective, it appears important to investigate exploration and commitment separately, for example by using independent measures/subscales instead of a composite score (Phinney & Ong, 2007; Yip et al., 2019), as combining them may mask the heterogeneity of the two very different processes. Moreover, from a theoretical perspective, extant research shows that these two dimensions might function differently in relation to discrimination and psychological well-being. For instance, while ERI commitment appears to have an overall buffering role against detrimental consequences of discrimination, exploration has been found to either protect (Litam & Oh, 2020; Stock et al., 2011) or exacerbate (see Yip et al., 2019) such effects.

As emerging adulthood follows adolescence and preludes adulthood (Arnett, 2006), ages 18 to 29 are suggested to be the years when individuals focus further on the self, exploring and reconsidering their identities, including ERI (Phinney, 2006; Syed & Azmitia, 2008). This continued identity negotiation is partially driven by contextual changes, such as the transition from high school to college, which has been referred to as a “consciousness-raising experience” (Azmitia et al., 2008, p. 11). College represents a new environment that provides opportunities for interpersonal, cultural enrichment, and encourages reflection on identity through broadening perspectives and life experiences. Therefore, it is essential to understand the role of ERI processes in psychological well-being during emerging adulthood (Syed & Mitchell, 2013).

Ethnic-Racial Identity as Mediator. The Rejection-Identification Model (RIM) posits that higher levels of perceived discrimination are linked to higher levels of ERI, as discrimination against one’s ethnic-racial in-group may heighten the salience of one’s ERI (Branscombe et al., 1999; Tajfel & Turner, 1986). Therefore, discrimination’s adverse effects on psychological well-being could be mitigated by strengthening one’s ethnic identity commitment which boosts positive self-evaluation and adjustment (Branscombe et al., 1999; Rivas-Drake et al., 2014).

Several cross-sectional studies have tested the role of ERI as a mediator, examining the exploration and commitment dimensions as well as other ERI aspects, for instance distinguishing between affirmation (i.e., degree of positive feelings toward one’s ethnic-racial group) and resolution (i.e., identity achievement) (Umaña-Taylor et al., 2004). In line with the RIM, higher levels of ethnic-racial group identification mediated the relationship between discrimination and life satisfaction (such that discrimination was directly linked with higher ethnic-racial identification and lower life satisfaction, but indirectly linked with increased life satisfaction through ethnic-racial identification) in a US sample of multiracial adults (Giamo et al., 2012), among the Maori population in New Zealand (Stronge et al., 2016), and among young adults of immigrant descent in the Netherlands (Verkuyten, 2008). Armenta and Hunt (2009) also observed

that perceived group discrimination was associated with higher self-esteem through ethnic-racial group identification in a sample of adolescents of Mexican descent in the US. However, although ethnic-racial group identification mediated the relation between personal discrimination and self-esteem, only ERI affirmation (and not exploration) was positively associated with self-esteem, and the direction of the relation between personal discrimination and ERI was opposite to the RIM hypothesis (Romero & Roberts, 2003). Concerning emerging adulthood, a study among ethnic-racial minoritized college students showed that perceived group discrimination was indirectly associated with less depressive symptoms through ERI affirmation for Latinx but not African American students (Brittian et al., 2015). No mediation effect was observed for ERI exploration and resolution. Among ethnically diverse undergraduate students in the US, microaggression was negatively associated with psychological distress via ethnic identity, but microaggression had direct and indirect positive associations with substance use (Forrest-Bank & Cuellar, 2018). In conclusion, mixed findings are evident in the literature, especially regarding the interplay between specific ERI processes, different forms of discrimination, and variations in participants’ ages and ethnic-racial backgrounds. This is attributable - at least in part - to the different conceptualizations and measures used to operationalize ERI. Furthermore, most previous studies tested ERI in mediation models with cross-sectional data. Testing mediation models with cross-sectional data does not comply with the assumption that mediation is inherently a longitudinal and causal process (Montoya, 2023). As cross-sectional studies lack the causal order of mediator and outcome, the present study extends prior work by testing the mediating role of ERI with a longitudinal design.

Ethnic-Racial Identity as Moderator. The Social Identity Theory (SIT; Tajfel, 1979) suggests that a person’s sense of identity is partially connected to their group membership(s). Positive feelings about one’s social group(s) contribute to positive self-perception and higher self-esteem and can counteract the negative consequences of unfair treatment by other groups (Tajfel & Turner, 1986). Therefore, ERI might be a protective factor against the consequences of discrimination by moderating its detrimental effects on psychological well-being. This reasoning is consistent with the commitment process, which implies a clearer understanding of ERI within one’s general identity and might also be connected to a sense of “shared common fate” and engagement in forms of communal coping (Mayeri, 2000; Yip et al., 2019). However, this might not apply to the exploration process, which is characterized by persistent uncertainty about the appreciation and sense of belonging toward one’s ethnicity (Phinney, 1992). Indeed, while high levels of ERI commitment are likely to help individuals cope with discrimination-related stress, greater ERI exploration may increase vulnerability (Torres & Ong, 2010). Interestingly, the aggravating effect of ERI exploration

appears to be most evident in emerging adult samples, calling for further investigation into this developmental phase (Yip et al., 2019).

In studies on ethnic-racial minoritized youth, the level of ERI was one factor influencing the strength of the relation between discrimination and psychological well-being. For example, a stronger ERI buffered the impact of discrimination among minoritized group members, i.e., those with higher levels of ERI reported fewer depressive symptoms and a lower willingness to use drugs than those with lower levels of ERI in face of discriminatory acts (Litam & Oh, 2020; Stock et al., 2011). However, a longitudinal study with a sample of 18-year-old African-American and Latinx youth showed differential results depending on the ERI dimension (affirmation vs. achievement/exploration) and outcome used (criminal offending, including drug and alcohol use vs. emotional and behavioral problems such as aggression; Williams et al., 2014). Confirming the protective effect of ERI, no association was found between discrimination and criminal offending among participants with high levels of affirmation, while this association was present for youth with low levels of affirmation. On the other hand, the association between discrimination and aggression was stronger among participants with higher levels of achievement/exploration and those with lower levels of affirmation (Williams et al., 2014). Moreover, a composite score of ERI exploration, commitment, belonging, and affirmation did not moderate the relation between perceived discrimination and depressive symptoms among ethnic-racial minoritized emerging adults (Miranda et al., 2013). Therefore, when only considering research on ERI exploration and commitment among emerging adults, the body of evidence is not only quite limited but also unclear about the potential moderating role of ERI.

The Current Study

In this study, we examined the associations between perceived overt and subtle discrimination and psychological well-being in emerging adulthood. In addition, we focused on the role of ERI exploration and commitment as mediators and moderators of the potential relation between discrimination and psychological well-being. Finally, we were interested in whether different well-being outcomes would impact the results of our analyses: in particular, we operationalized psychological well-being as depression, substance use,¹ and life satisfaction. Following Open Science recommended practices (see Nosek et al., 2018), all research questions, hypotheses, and analyses were preregistered on the Open Science Framework before conducting the statistical analyses.² The present study addressed the following research questions and confirmatory and exploratory hypotheses:

Research Question 1. Do overt and subtle discrimination predict psychological well-being? Do the two forms of

discrimination have unique associations with psychological well-being, when tested in the same model?

Hypothesis 1. Both perceived overt (H1a) and subtle (H1b) discrimination at W1 predict psychological well-being four and nine months later. Although we had a clear theoretical expectation for the directionality between overt/subtle discrimination and psychological well-being (Garcia-Coll et al., 1996), we tested these relations in a cross-lagged model (with lags going in both directions). The reason for this was to check for the theoretically under-developed assumptions that ethnic-racial minority youth are hypersensitive to unfair treatment thus, it leads to more reporting of discrimination (Lilienfeld, 2017). Yet, it is also possible that learning about the experiences of others can help ethnic-racial minority youth to identify and define experiences of discrimination they had, thus leading to more reporting of discrimination (see for interventions with minoritized youth, Juang et al., 2020).

Research Question 2. Do ERI exploration and commitment mediate and/or moderate the association of overt and subtle discrimination with psychological well-being? Which conceptualization (moderating or mediating effect) better explains the role of ERI in the relation between discrimination and psychological well-being?

Hypothesis 2a. ERI exploration and commitment mediate the association of overt and subtle discrimination with psychological well-being, such that higher levels of discrimination at W1 are linked to a stronger ERI exploration and commitment at W2, and that this, in turn, is associated with higher psychological well-being at W3.

Hypothesis 2b. ERI exploration and commitment at W1 moderate the association of overt and subtle discrimination at W1 with psychological well-being at W3, such that the effect of discrimination at W1 on psychological well-being at W2 and W3 is weaker for adolescents high on ERI exploration and commitment than for those low on ERI exploration and commitment at W1. Despite contrasting findings in the literature (see Yip et al., 2019), we hypothesized that both ERI dimensions (i.e., exploration and commitment) would moderate the association between discrimination and well-being following the SIT (Tajfel, 1979; Tajfel & Turner, 1986) and previous research (e.g., Litam & Oh, 2020; Stock et al., 2011).

Exploratory Research Question 1. Does the strength of the relation between overt, subtle discrimination, and psychological well-being differ depending on the operationalization of psychological well-being (i.e., depression, substance use, or life satisfaction)?

Method

Participants and Procedures

The sample for this research came from a longitudinal study on the academic experiences of two cohorts of first-generation

ethnic-racial minoritized students at a large public university in the Midwest of the US. Specifically, we used data from the second cohort of students participating in this study, who started college in 2012. Participants were recruited before the fall semester in August 2012. They were invited to a student orientation for first-year ethnic-racial minoritized undergraduate students, and the initial paper questionnaires (Wave 1) were filled out as part of this student orientation. Subsequent online surveys were sent by email in December 2012 (Wave 2) and May 2013 (Wave 3). Discrimination, ERI, and psychological well-being were assessed at all three waves. A US \$7 gift card was given to participants after the completion of the follow-up surveys. For more details on data collection procedures, see Nelson et al. (2018) and Zhou et al. (2019).

All participants ($n = 323$ at Wave 1) were incoming students who self-identified as members of ethnic-racial minoritized groups. Participants were 18–22 years old ($M = 18.03$, $SD = 0.54$), and 62.7% self-identified as women ($n = 195$). Most participants self-identified as belonging to one ethnic-racial group (82.0%). Among these, the most common identifications were Asian/Asian American (56.3%), Black and African/African American (18.3%), and Latinx (7.1%). All other participants reported more than one self-identification (18.0%). Participants mostly came from families where parents had a high school diploma (23%), Bachelor's (20%), or Master's degree (13%), and held a job (73%).

Measures

Overt and Subtle Ethnic-Racial Discrimination. Perceived ethnic-racial discrimination was measured with nine items consisting of two subscales: overt (Soto et al., 2012) and subtle discrimination (Armenta et al., 2013). Both subscales assessed how frequently participants had experienced certain events in the previous year. Overt discrimination referred to denial of opportunities, rejection, and unfair or rude treatment due to perceived ethnicity or race (3 items, $\omega_{range} = .77-.81$; e.g., "...denied opportunities because of your ethnicity or race"). Subtle discrimination referred to perceived covert discrimination and implied othering, such as comments on language proficiency and questions about citizenship or residency (6 items, $\omega_{range} = .78-.80$; e.g., "...had someone comment on or be surprised by your English language ability"). All responses were rated on a 4-point Likert-scale ranging from 0 (*never*) to 3 (*five or more times*). Means were calculated for the two different subscales separately. Higher scores indicate higher levels of perceived overt and subtle discrimination.

Psychological Well-Being. Psychological well-being was assessed as depression, substance use, and life satisfaction. Depression was measured using six items ($\omega_{range} = .82-.89$; e.g., "Feeling no interest in things") from the Brief Symptom Inventory (Derogatis & Spencer, 1982). The items were rated on a 5-point Likert-scale ranging from 0 (*not at all*) to 4 (*extremely*) and referred to the previous week. Substance use

was measured with four items that assessed (1) drinking alcohol, (2) binge drinking, (3) marijuana/pot use, and (4) cigarette use in the last month ($\omega_{range} = .74-.75$). All items were rated on a 5-point Likert-scale ranging from 0 (*none*) to 4 (*more than 7 times within the past month*). Finally, life satisfaction was assessed using the five items from Satisfaction with Life Scale ($\omega_{range} = .81-.87$; e.g., "So far, I have gotten the important things I want in life"; Diener et al., 1985). All items were rated on a 5-point Likert-scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) and did not refer to a specific time frame. Means were calculated for each indicator of psychological well-being.

Ethnic-Racial Identity. ERI was measured using 12 items from the Multigroup Ethnic Identity Measure (MEIM; original questionnaire by Phinney, 1992; adapted 12-item version by Roberts et al., 1999). Specifically, exploration (five items, $\omega_{range} = .72-.77$; e.g., "I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs") and commitment (seven items, $\omega_{range} = .87-.89$; e.g., "I have a clear sense of my ethnic background and what it means for me") subscales were used. All items were rated on a 4-point Likert-scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The MEIM items do not refer to a specific time frame. Higher mean scores indicate higher levels of ERI exploration and commitment.³

Analytical Plan

Sensitivity Power Analysis. We conducted a post hoc sensitivity power analysis instead of a prospective power analysis because the data were collected as part of a university event, and the project team sought to enroll as many students as possible. We calculated power for each estimated pathway in our models by means of a Monte Carlo simulation in Mplus (version 8; Muthén & Muthén, 2017). To do this, we first re-estimated our models in Mplus and saved the starting values. Then, we ran a Monte Carlo simulation for each model, using the starting values as input. We simulated the achieved power with the actual sample size as well as with increasingly large samples up to 10,000, to test the required sample size for sufficient power ($\geq .80$) for each estimated pathway. We discuss the results from the power analyses in the respective paragraphs of the Results section.

Data Cleaning and Screening. Before testing our hypotheses, we screened the data on the level of the individual and on the level of the variables. At the individual level, we checked for outliers as well as patterns that hinted at careless or unrealistic responses. Across Wave 1–3, we excluded data due to careless responding on our study variables from 5 participants, from 15 participants, and 7 participants, respectively. All variables were standardized to deal with non-normality. The procedure for data cleaning and screening is described in more detail in the Supplemental Material, pp. 2–3.

Sensitivity Analysis. There was substantial attrition across waves, with Wave 1 $n = 323$, Wave 2 $n = 160$, and Wave 3 $n = 162$. We tested whether individuals with missing data ($n = 250$) differed from individuals without missing data ($n = 73$) on any of the study variables, gender, and age (Table S1 of the Supplemental Material). Results showed no significant differences between the two groups in any of the examined variables, with the exception of life satisfaction at Wave 1, depression at Wave 3, and age. In particular, individuals with missing data reported being less satisfied with life (Cohen's $d = .28$), more depressed (Cohen's $d = .47$), and were significantly older (Cohen's $d = .16$). Because differences were limited, we continued with a Full Information Maximum Likelihood (FIML) approach to handle missing data in the Structural Equation Modeling (SEM) analyses (Enders, 2010).

Hypotheses Testing. To answer our research questions, we conducted a series of SEMs, which are described in more detail in the Results section. Model fit was evaluated using the Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Squared Residual (SRMR). We considered TLI and CFI-values of $\geq .95$ and RMSEA and SRMR-values of $\leq .08$ as being indicative of acceptable fit (Hu & Bentler, 1999; West et al., 2012), and used a χ^2 -difference test to compare the fit of sequential models. Predictive effects were considered significant when the p value was $< .05$ and the 95% confidence interval did not encompass the 0-point. All main analyses were conducted in R using the *lavaan* package (Rosseel, 2012). The dataset and R scripts for the analyses are available on the project OSF page: <https://osf.io/mjwty/>.

Results

Descriptive Statistics

Calculated means and standard deviations of perceived overt and subtle discrimination, ERI exploration and commitment, and psychological well-being outcomes at Waves 1–3 are presented in Table 1. Visually inspecting this table, we see that participants reported relatively little discrimination, as

Table 1. Descriptive Statistics of the Main Study Variables Across Time.

	Wave 1		Wave 2		Wave 3	
	Mean	SD	Mean	SD	Mean	SD
Overt discrimination	1.44	0.56	1.60	0.61	1.60	0.58
Subtle discrimination	1.66	0.58	1.82	0.63	1.68	0.58
ERI exploration	2.79	0.55	2.94	0.46	2.96	0.45
ERI commitment	3.13	0.52	3.15	0.44	3.31	0.45
Depression	1.49	0.48	1.56	0.60	1.57	0.61
Substance use	1.12	0.26	1.14	0.27	1.30	0.52
Life satisfaction	3.60	0.69	3.58	0.71	3.62	0.71

evidenced by mean scores below the midpoint of the scale. Descriptively, they reported a little more subtle than overt discrimination. Engagement in ERI behaviors was relatively frequent, as evidenced by scores that were a little (for exploration) or substantially (for commitment) above the midpoint of the scale, and relatively stable. Symptoms of depression and substance use were relatively infrequent and life satisfaction was on average high, as evidenced by scores below and above the midpoint, respectively. There was variation in all variables, with the least variation existing in substance use during the first two waves.

Pearson's correlations among all variables were reported in Table S2 of the Supplemental Material. We discuss general patterns in the direction of correlations in terms of effect size rather than significance. There were positive correlations of perceived overt discrimination with same-wave depression and substance use, and negative correlations with life satisfaction across all three waves (all small effect sizes; Cohen, 1988). Moreover, perceived subtle discrimination was positively associated with depression and life satisfaction (small effects) but negatively associated with substance use (small effects). ERI exploration was positively related to perceived overt and subtle discrimination (small effects); in addition, exploration was negatively correlated with depression and substance use (small effects) and positively with life satisfaction (small to medium effects). ERI commitment was mostly negatively related with perceived overt discrimination (small effects) and positively with perceived subtle discrimination (small effects). Furthermore, higher levels of ERI commitment were associated with lower levels of depressive symptoms (small to medium effects), lower levels of substance use (small effects), and higher levels of life satisfaction (medium effect sizes).

In addition, we have examined the associations between our variables for the main ethnic-racial groups in our sample: Asian/Asian American ($n = 182$), Black and African/African American ($n = 59$), and Latinx ($n = 23$). To do this, we have estimated the correlations between the study variables within each group separately. For Asian/American participants, the largest subgroup, correlations largely mirrored those in the entire sample, with some effects being rendered insignificant but no changes in the signs of the estimates (Table S3). The findings were a bit more mixed for the other, substantially smaller subgroups. For Black and African/African American participants, quite a few effects were no longer significant and a few new effects emerged (Table S4). Specifically, within waves there was now a significant association between ERI exploration and more depression at Wave 2 and subtle discrimination and more depressive symptoms at Wave 3 (both medium effects). Both overt discrimination and substance use at Wave 2 also were related to more depressive symptoms at Wave 3 (medium effects). Several of the non-significant correlations also changed signs compared to the findings in the entire sample. Similarly, for

Latinx participants there were several changes compared to the findings for the entire sample (Table S5). Many correlation coefficients were no longer significant and a few new significant correlations emerged. In particular, ERI commitment was now linked to less substance use within Wave 2 and ERI exploration to less depression within Wave 3 (medium effects). Furthermore, overt discrimination at Wave 1 was associated with less ERI commitment (medium effect) and more depression at Wave 2 (large effect). Subtle discrimination at Wave 1 was also related to more substance use at Wave 2 (medium effect). Finally, both ERI exploration and ERI commitment at Wave 1 were associated with less depressive symptoms at Wave 3 (large and medium effects, respectively).

Hypothesis Testing

Association of Discrimination and Psychological Well-Being Over Time. In order to assess whether or not, and to what extent, overt and subtle discrimination were associated with psychological well-being over time (RQ1), we performed three sets of three-wave cross-lagged panel models. In each model, we included overt discrimination, subtle discrimination, and one of the psychological well-being variables (i.e., depression, substance use, or life satisfaction) for each wave.⁴ Autoregressive paths (i.e., the predictive effect of a variable on itself) from one wave to the next were included for each variable. Additional autoregressive paths from Wave 1 to Wave 3 were included when they would improve the model fit. Cross-lagged paths (i.e., the predictive effect of one variable on another variable) from one wave to the next were included from overt and subtle discrimination to the psychological well-being variable

and from the psychological well-being variable to overt and subtle discrimination. Overt and subtle discrimination were permitted to covary at Waves 2 and 3. We additionally tested a second model with all the predictive pathways of Wave 2 to Wave 3 set equal to those of Wave 1 to Wave 2, to see whether the effects were time-invariant. If the constrained model did not significantly fit worse, findings from this model were interpreted in the interest of parsimony.

For *depression*, model indices suggested an acceptable fit for both the time-constrained and unconstrained models (see Table S6), but model comparisons indicated that the time-constrained model presents worse model fit,⁵ indicating that the pathways were not equal. Therefore, we interpreted findings from the unconstrained model (see Figure 1). All autoregressive effects were substantially significant ($\beta > .24$), indicating that individuals' rank-ordering on perceived discrimination and depression scores was consistent across time. That is, individuals who reported higher perceived discrimination and depression than their peers at one point also tended to report higher perceived discrimination and depression at a later point, respectively. For the cross-lagged effects, the predictive coefficient of overt discrimination on depression was not significant from Wave 1 to Wave 2, nor from Wave 2 to Wave 3. The predictive coefficient of subtle discrimination, however, was significant from Wave 1 to Wave 2 ($\beta = .23$), but not from Wave 2 to Wave 3 ($\beta = -.14$). The significant effect from Wave 1 to Wave 2 indicated that young adults who experienced subtle discrimination more often also reported higher levels of depression. The post hoc power analysis (Table S6) suggested that with the available sample size ($n = 323$), we had sufficient power ($\geq .89$) to detect all autoregressive

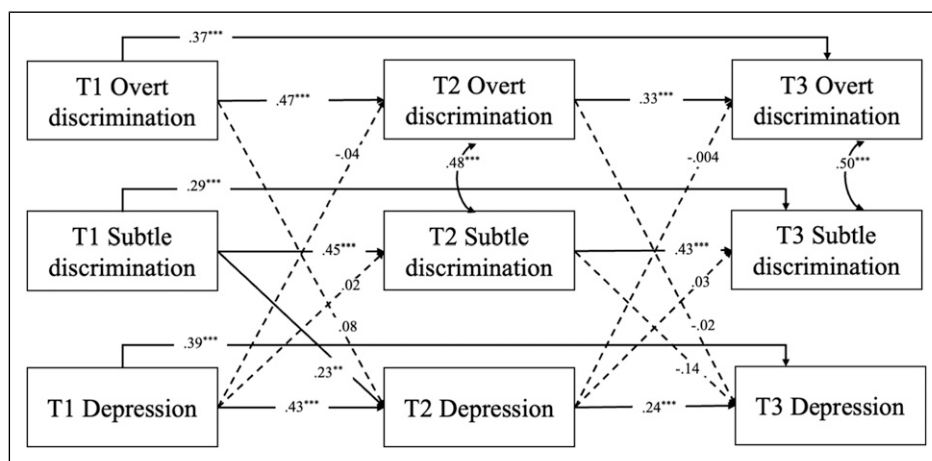


Figure 1. Unconstrained cross-lagged panel model of overt and subtle discrimination and depression across all three waves. *Note.* Standardized coefficients are presented in the figure. Dotted lines indicate non-significant associations. Some estimates are presented in three decimals as they represented very small effects. The autoregressive pathways of W3 regressed on W1 were added following modification suggestions. Such pathways are often suggested as improving model fit when constructs are relatively stable across longer periods of time (Mulder & Hamaker, 2021). Adding a random intercept to take out trait-like between-person differences can be used to account for such longer-term stability; however, such models are computationally more complex.

effects and the effect of subtle discrimination at W1 on depression at W2. However, even in a simulation with 10,000 participants power would not be sufficient to detect an effect of depression at W1 on subtle discrimination at W2, depression at W2 on overt discrimination at W3, and overt discrimination at W2 on depression at W3.

For *substance use and life satisfaction*, model indices suggested an acceptable fit for both the time-constrained and unconstrained models and model comparisons indicated that the time-constrained model did not have worse model fit⁶ (see Table S7 and S8). We therefore interpreted findings from the time-constrained models (see Figures 2 and 3). All autoregressive effects were significant ($\beta > .31$), indicating that individuals' perceived discrimination, substance use, and life satisfaction scores were predictive of their later scores on these same variables. For the cross-lagged effects, none of the predictive coefficients of overt and subtle discrimination on substance use and life satisfaction were significant, except for the predictive coefficient of substance use on later subtle discrimination. As the aim of the present study was to examine the directional effect of discrimination on well-being, and the role of ERI therein, we decided not to further investigate this reversed effect for the role of ERI. For the model with substance use, the simulation suggested we had enough power for all autoregressive effects and near-sufficient power for the effect of substance use at W1 on subtle discrimination at W2 and of substance use at W2 on subtle discrimination at W3 (both = .76; Table S7). With a sample of 4,200, power would be sufficient to detect all autoregressive and cross-lagged effects. For life satisfaction, power was sufficient to detect all autoregressive effects (Table S8). Even with a sample of 10,000, however, we simulated that there would

not be enough power to detect effects of life satisfaction at W1 on subtle discrimination at W2 and subtle discrimination at W1 on life satisfaction at W2.

The Mediating and Moderating Role of Ethnic-Racial Identity. We continued to explore whether ERI mediated and/or moderated the relationship between overt and subtle discrimination at Wave 1 and psychological well-being at Wave 3 (RQ2). Note, that we only continued with this step for models from the previous step where there was a significant link between at least one of the predictors and psychological well-being, and that for these models only significant predictors were included.⁷ Therefore, we only proceeded with testing the mediation and moderation effect of ERI on the link between *subtle discrimination* at Wave 1 and *depression* at Wave 3, starting with estimating a baseline model with depression and subtle discrimination at Wave 1 as predictors of depression at Wave 3 (Table 2).

The mediation model (H2a) had acceptable fit, CFI = .994, TLI = .973, RMSEA = .035, and SRMR = .048 (see Table S9). Neither the direct effect of subtle discrimination on depression nor the effect of ERI on depression was significant (see Figure 4). Moreover, there was no significant indirect effect of subtle discrimination on depression via either ERI exploration or commitment. Thus, ERI did not mediate the association between subtle discrimination and depression. However, the post hoc power analysis suggested that with the available sample size, we did not have sufficient power to find evidence for the estimated pathways (power ≤ 0.27 for all non-autoregressive paths). Moreover, even with a sample of 10,000 there would be insufficient power to detect effects of subtle discrimination at W1 on depression at W3 and of

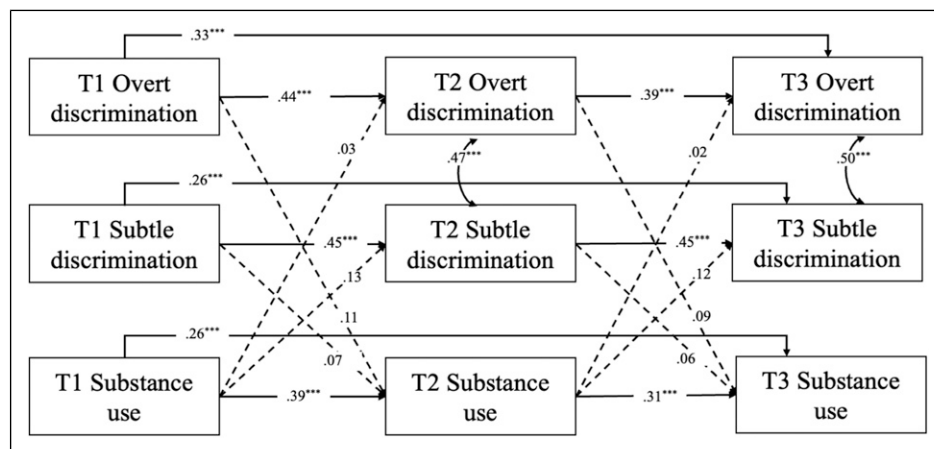


Figure 2. Time-constrained cross-lagged panel model of overt and subtle discrimination and substance use across all three waves. Note. Standardized coefficients are presented in the figure. Dotted lines indicate non-significant associations. The autoregressive pathways of W3 regressed on W1 were added following modification suggestions. Such pathways are often suggested as improving model fit when constructs are relatively stable across longer periods of time (Mulder & Hamaker, 2021). Adding a random intercept to take out trait-like between-person differences can be used to account for such longer-term stability; however, such models are computationally more complex.

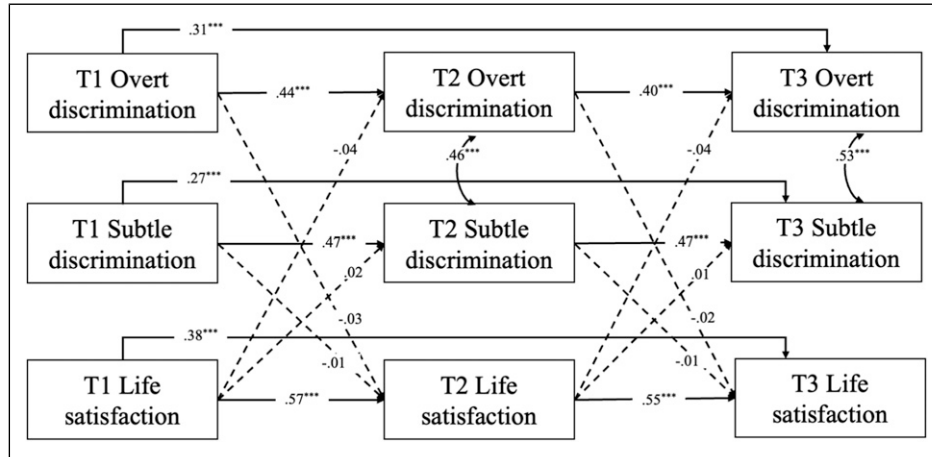


Figure 3. Time-constrained cross-lagged panel model of overt and subtle discrimination and life satisfaction across all three waves. Note. Standardized coefficients are presented in the figure. Dotted lines indicate non-significant associations. The autoregressive pathways of W3 regressed on W1 were added following modification suggestions. Such pathways are often suggested as improving model fit when constructs are relatively stable across longer periods of time (Mulder & Hamaker, 2021). Adding a random intercept to take out trait-like between-person differences can be used to account for such longer-term stability; however, such models are computationally more complex.

Table 2. Model Parameters of the Baseline Model of Depression at W3 Regressed on Subtle Discrimination at W1.

	<i>b</i>	<i>SE</i>	β	95% CI	<i>p</i>
Depression W1	0.46	.07	0.48	[0.32, 0.60]	<.001
Subtle discrimination W1	-0.01	.07	-0.01	[-0.1, 0.14]	.910

Note. Model was just identified: CFI = 1.000, TLI = 1.000, RMSEA = .000, and SRMR = .000.

commitment at W2 on depression at W3. In the moderation model (H2b), ERI exploration and commitment on Wave 1 were included as both a predictor and an interaction term with subtle discrimination on depression at Wave 3. The model was just identified (see Table S10). None of the main effects nor the interaction effects were significant⁸ (see Figure 5). Moreover, the post hoc power analysis indicated insufficient power for all non-

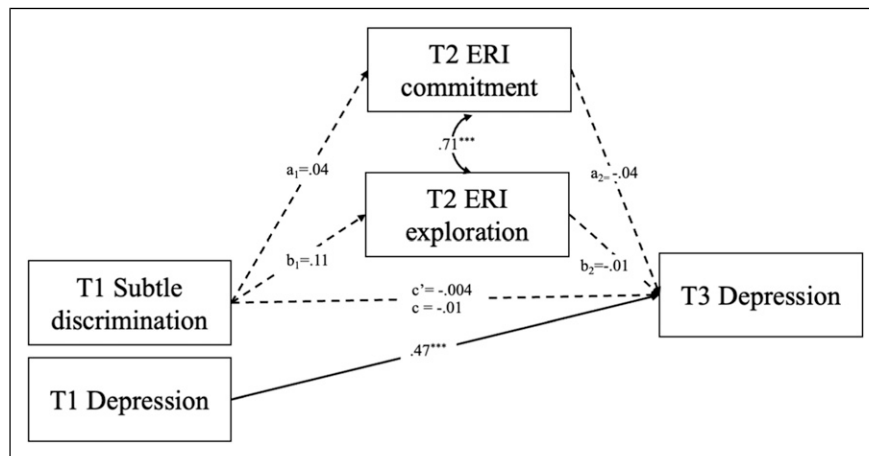


Figure 4. Mediation model of depression at W3 regressed on subtle discrimination at W1, mediated by ERI exploration and commitment at W2. Note. Standardized coefficients are presented in the figure. Dotted lines indicate non-significant associations. Some estimates are presented in three decimals as they represented very small effects.

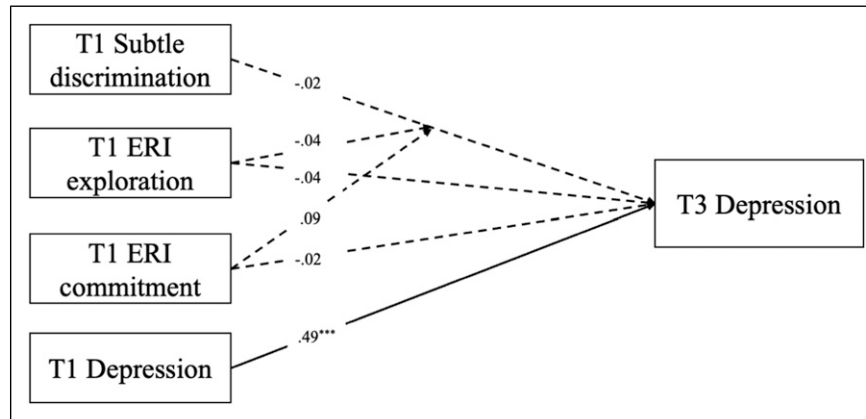


Figure 5. Moderation model of depression at W3 regressed on subtle discrimination and ERI exploration and commitment at W1, and the interaction between subtle discrimination and ERI exploration and commitment. *Note.* Standardized coefficients are presented in the figure. Dotted lines indicate non-significant associations. Some estimates are presented in three decimals as they represented very small effects.

autoregressive pathways. Even with a sample of 10,000, power would not be enough to detect effects of subtle discrimination at W1 on depression at W3 and commitment at W1 on depression W3. was not able to be computed as the moderation was just identified (with zero degree of freedom).

Discussion

In this study, we explored associations of overt and subtle discrimination with psychological well-being using a longitudinal design in a sample of ethnic-racial minoritized emerging adults attending the first year of college. In addition, we examined the role of ERI as a mediator and moderator in these associations. Our findings indicated that only subtle discrimination at the beginning of college predicted higher depression among emerging adults after four months. We did not find any significant associations between subtle discrimination and life satisfaction or substance use in the expected direction, nor between overt discrimination and any well-being indicator. ERI was neither the underlying mechanism nor a buffering factor for the relation between subtle discrimination and depression.

Contrary to our expectations based on theory and previous meta-analyses (e.g., Benner et al., 2018, 2022; Garcia-Coll et al., 1996), perceived overt discrimination did not predict psychological well-being over time (four and nine months later; not supporting H1a). However, it is also possible that two methodological characteristics of the study might explain these unexpected results. First, most previous empirical studies relied on cross-sectional data, whereas our study used longitudinal data. Thus, overt discrimination might relate to how well youth are doing at that moment, but this relation is not necessarily true in the long run. Second, in our study, overt discrimination was assessed with a 3-item scale. Using a 3-item measure may have influenced our results as recent meta-analyses indicate that the relation between discrimination and

psychological well-being is stronger in studies using discrimination measures with more items (Benner et al., 2022). Potentially, the discrepancy in findings may also reflect a publication bias, with studies reporting null findings less often having been published. Thus, although our preregistered study showed the absence of a longitudinal effect, research on overt discrimination and psychological well-being with a longitudinal design using a discrimination measure with more items is needed. It should be noted that a significant cross-lagged effect from substance use to subtle discrimination emerged. This result may be in line with the assumption that heightened perception of discrimination by ethnic-racial minoritized youth might be a consequence of their psychological adjustment and awareness to unfair treatment (Lilienfeld, 2017). However, as previously mentioned in the results section, we did not investigate the reversed effect when testing ERI as a mediator or moderator as we only aimed to examine the directional effect of discrimination on psychological well-being and the potential role played by ERI in this relation.

In line with our expectation, participants who more frequently experienced subtle discrimination reported higher depressive symptoms four months later. However, subtle discrimination was unrelated to substance use and satisfaction with life. Moreover, only subtle discrimination at Wave 1 was predictive of depressive symptoms four months later (partially supporting H1b). This finding is in line with previous studies using cross-sectional data, which showed that racial micro-aggression is related to lower psychological well-being (Jones et al., 2016; Lui, 2020; Lui & Quezada, 2019), as well as in line with work that suggests a stronger association with internalizing problems (Benner et al., 2018, 2022). As discrimination at the beginning of college (Wave 1) reflected the experiences discrimination in the last six months of high school, it is possible that stressful transitioning period from high school to college might have left young adults more vulnerable to negative relations of subtle discrimination (Azmitia et al., 2008). Yet, it is important to approach this

finding carefully, as there was no effect of subtle discrimination on any of the other indicators of psychological well-being, nor on depression nine months later. In fact, the effect swapped from a positive to a negative effect, although the effect was small in size, non-significant, and did not result in poorer model fit after constraining it to be equal to the effect from Wave 1 to Wave 2. In sum, similar to overt discrimination, the evidence for a longitudinal effect of subtle discrimination is limited and in need of replication.

No evidence was found for a mediating (H2a) or moderating (H2b) role of ERI exploration and commitment in the relation between subtle discrimination and depression. We did not test for the mediating and moderating role of ERI in the association of overt discrimination with depression, substance use, and life satisfaction, given that there was no main effect of discrimination on any of these well-being outcomes. These findings were in contrast to our expectations and may suggest that the RIM (Branscombe et al., 1999) and SIT (Tajfel, 1979) may not apply to the role of ERI during the first years of emerging adulthood. Indeed, a recent meta-analysis found that ERI exploration appeared to increase vulnerabilities associated with discrimination among this age group rather than acting as a buffer (Yip et al., 2019). The absence of a mediation and moderation effect may also be understood in light of several other personal and contextual factors (e.g., self-esteem, social support, academic achievement, ethnic-racial diversity of the university) that might have an effect on youths' psychological well-being and may mask or overrule the influence of ERI processes during such a critical moment as the transition to college (Azmitia et al., 2008). For instance, a qualitative study among mostly Black college first-generation students showed that recurrent themes for the students were confusion about academic procedures and financial aid, negative feelings such as anxiety and isolation, and coping strategies/sources of social support used to navigate this new reality, while participants did not mention identity-related features (Ricks & Warren, 2021).

Furthermore, it is important to keep in mind that evidence from previous studies for the mediating and moderating role of ERI exploration and commitment during emerging adulthood is quite scarce and rather ambiguous. Indeed, past research investigating these processes has mostly focused on adolescence, but increasing evidence points toward the salience of ERI also during emerging adulthood, starting to shed light on the different roles this construct may have in individuals' global identity (Phinney, 2006; Syed & Azmitia, 2008). Given that complexity and intersectionality among identity domains are distinctive characteristics of this developmental period, we could assume that different processes other than solely exploration and commitment might also be at play. For instance, emerging adults often elaborate further the content of their ERI, reaching an "achieved identity" status (Marcia, 1980), or even undergo a radical transformation of

their ERI (Umaña-Taylor et al., 2014). At the same time, individuals in this developmental period start constructing personal ERI-related narratives in an attempt to integrate their ERI with other aspects of the self and develop a sense of coherence. In addition, the ethnic-racial identity field often suffers from "jingle" fallacies, for example, measuring specific ERI dimensions but then reporting them under the general ERI denomination or considering different concepts (such as group membership vs. identity) as one, as well as from a proliferation of measures and subscales assessing the same constructs (Peck, 2004; Syed, 2020). Such elements might contribute to a false perception of a homogeneous body of evidence confirming findings in the literature and may "outshine" existing studies that present null or opposite results with respect to the mediation and moderation effects of specific ERI dimensions (see Brittian et al., 2015; Miranda et al., 2013; Williams et al., 2014). More conceptual work, in addition to pre-registered empirical studies reporting non-significant results, is therefore needed to define more clearly the gaps in our knowledge about ERI.

Strengths, Limitations, and Future Directions

The present study presents several strengths such as its longitudinal design, the methodological conceptualization including different forms of discrimination and of psychological well-being, examination of both mediation and moderation effects, and the preregistration of research questions, hypotheses, and analyses (Nosek et al., 2018). Nonetheless, some limitations should also be noted.

First, the limited sample size and considerable attrition rate across assessment waves might have impacted the capacity to detect significant and relatively small effects, especially for complex statistical analyses including mediation and moderation (Abraham & Russell, 2008). The attrition was particularly problematic for depression, where participants with missing data reported experiencing more depressive symptoms than individuals without. Thus, our longitudinal sample may have been more adjusted than the general BIPOC student population that the study started with. Limited sample size meant that we could not investigate possible multigroup effects based on ethnic-racial background. However, given that the link between discrimination and psychological well-being outcomes and the role played by ERI may vary by generation status (Feliciano & Rumbaut, 2019) and ethnic-racial group membership (Tran et al., 2010), future research with a larger sample size should additionally pay attention to such group differences (e.g., immigration/generation status, specific minoritized group). We preliminarily investigated ethnic-racial group differences by looking at the correlations among our study variables for the major ethnic-racial groups in our study, but it is important to note two important caveats about these and similar analyses. First,

there is little a priori reason to expect differences in the relations between ERI, discrimination, and outcomes (see Syed & Juang, 2014). Second, and perhaps more importantly, correlations do not begin to stabilize until the sample size reaches 250 (Schönbrodt & Perugini, 2013), so the group-specific analyses reported in our study are noisier and potentially unreliable. In addition, despite running a retrospective power analysis and displaying sufficient power, Monte Carlo simulation indicated that statistical power was insufficient to detect many effects in our study. Importantly, our sample size is in line with empirical studies commonly seen in the literature (Jones et al., 2016; Lui & Quezada, 2019) indicating that many published studies on this topic are underpowered and potentially unreliable. This issue of insufficient power is an additional reason why we should be cautious about the accuracy of the published literature, and why using a transparent and preregistered approach, such as in the present study, is preferable over only reporting results that are statistically significant. Considering the limitations of the sample, the present study could inform future work regarding the required sample size for studying these associations.

A second limitation is that we employed relatively short-term quantitative measures that differed in timeframe and relied on a retrospective evaluation of discrimination experiences. Although there were no clear patterns in the stability of our constructs based on the timeframe, it is important that future work uses a similar timeframe for all measures. Furthermore, intensive longitudinal designs may deepen our understanding of harmful effects of discrimination by collecting data that relies on weekly or daily experiences, while expanding research further into the college years might be effective in capturing long-term changes. In addition, extending research on discrimination, ERI, and psychological well-being with qualitative measures such as interviews would help us get closer to the actual, lived experience of emerging adults during this time. Such methods may also help us better understand the specific interpersonal and environmental contexts in which our participants were immersed (i.e., the transition into the first year of college), and which may have affected the psychological processes under study.

Third, college attendance is not a comprehensive and common experience among all young adults, especially considering that ethnic-racial minoritized youth are overall less likely to attend 4-year colleges (Arnett, 2006). Indeed, students can be considered a peculiar population also with respect to identity formation, coping strategies, and culture-related experiences (Hwang & Goto, 2008). Hence, incorporating non-college youths' perspectives regarding discrimination and ethnic-racial affiliations in future research might widen results generalizability (see also Syed & Azmitia, 2008).

Finally, data for this study was collected in a specific social, historical, and geographical context (i.e., Midwest college

campus in a pre-pandemic period). Hence, there could have been significant cultural shifts in the college experience for ethnic-racialized minority students and first-generation students throughout these years, also in relation to unique COVID-related challenges. Although there is no strong theoretical reason to expect that the different contexts would lead to different associations, results need to be interpreted with caution and warrant further replication in different contexts and geographical regions.

Conclusion

This study provides insights into the longitudinal associations of discrimination with psychological well-being among ethnic-racial minoritized college students and the role of ERI within these associations. Although caution is needed when interpreting the study findings and the longitudinal design calls for further replications, results suggest that even though there might be a link between perceived discrimination and psychological well-being months after they were experienced, these associations need further investigation. Furthermore, the role of ERI in this relation may not be as robust as it seemed in the cross-sectional designs, which calls for further conceptual work to fully comprehend the interplay of these processes and the unique experiences of heterogeneous ethnic-racially minoritized groups during emerging adulthood.

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Declaration of Conflicting Interests

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Transparency and Openness Statement



The hypotheses, theoretical justifications, and the analysis plan of this study were preregistered. The preregistration file can be downloaded from the OSF platform, and all deviations from the preregistration plan are indicated in the manuscript (<https://osf.io/9p4n3>). In addition, anonymized raw data, analysis code, and materials used in this manuscript are available (<https://osf.io/mjwty/>).

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. We included substance use as an indicator of psychological well-being because even though substance use during the transition to college and in college may be typical, elevated levels of any over a long time period would be a potential problem for the age group (Swisher & Dennison, 2020).
2. Preregistration can be found at the following link: <https://osf.io/9p4n3>.
3. As becomes clear in the Introduction, the operationalization of ERI has also differed in past research. Therefore, we tested whether an alternative operationalization of ERI as a latent factor could be used. The Confirmatory Factor Analyses did not show an acceptable fit. Past work has suggested that this does not necessarily mean that the items cannot be understood as a latent factor, but that this may also reflect the complexity of personality constructs (Hopwood & Donnellan, 2010). However, because we could not identify the reason for the poor fit and in line with our preregistration, we did not use this operationalization in our analyses (see p. 1 of the Supplemental Material).
4. Following reviewer comments, we ran a sensitivity analysis including gender as a control variable in our models, which we did not preregister. Results indicated that gender did not significantly predict any of the psychological well-being indicators or the exploration of ethnic identities and experiences of discrimination. Our main findings remained unchanged after controlling for gender.
5. Model fit for the depression time-constrained model: CFI = .947, TLI = .916, RMSEA = .051, and SRMR = .072. Model fit for the depression time-unconstrained model: CFI = .978, TLI = .949, RMSEA = .040, and SRMR = .044.
6. Model fit for the substance use time-unconstrained model: CFI = .975, TLI = .942, RMSEA = .040, and SRMR = .047. Model fit for the substance use time-constrained model: CFI = .975, TLI = .960, RMSEA = .033, and SRMR = .057. Model fit for the life satisfaction time-unconstrained model: CFI = .961, TLI = .909, RMSEA = .064, and SRMR = .042. Model fit for the life satisfaction time-constrained model: CFI = .961, TLI = .939, RMSEA = .052, and SRMR = .050.
7. This decision reflects a deviation from the preregistered analysis plan, where we did not specify a condition for continuing with the follow-up mediation and moderation analyses. We decided not to run these analyses for non-significant associations between discrimination and well-being to reduce the

complexity of modeling, due to the smaller longitudinal sample and reduced power.

8. Because including many predictors in a model may render existing effects insignificant, we also tested additional mediation and moderation models in which only either ERI exploration or commitment was included. Findings from these models did not differ substantially from those reported in the manuscript. Findings from the mediation and moderation analyses with ERI exploration and commitment separately are presented in Tables S11–14 in the Supplemental Material.

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