

# Daily general discrimination predicts changes in trait negative affectivity: A 30-year cohort longitudinal study using a random-intercept cross-lagged panel model

Allison M. Daurio  | Jeanette Taylor

Department of Psychology, Florida State University, Tallahassee, Florida, USA

## Correspondence

Allison M. Daurio, Florida State University, Tallahassee, FL, USA.  
Email: [daurio.allison@gmail.com](mailto:daurio.allison@gmail.com)

## Abstract

**Objective:** Increasing evidence indicates discrimination is an emerging risk factor for reducing psychological well-being. Negative affectivity is a personality trait that has been associated with discrimination. Yet, few studies to date have examined the longitudinal relationship between discrimination and personality. The current study addresses this gap by examining how general discrimination and negative affectivity influence each other longitudinally.

**Method:** The Midlife in the United States (MIDUS) dataset was used for the current study. The MIDUS sample ( $N=4244$ ) was predominately white (90.7%), 52% female, and had an average age of 46 years old. Individuals completed follow-up measures 10 and 20 years after baseline. Data were analyzed using a random-intercept cross-lagged panel model.

**Results:** Individuals that scored higher on trait negative affectivity also tended to score higher on perceived daily discrimination. We found general perceived discrimination at age 55 unidirectionally predicted changes in negative affectivity around retirement age, but not from age 45 to 55. In contrast, negative affectivity did not significantly predict increases in perceived discrimination at any timepoint.

**Conclusion:** Our results indicate that perceived discrimination has pernicious impacts on well-being up to a decade later and may do so by increasing an individual's tendency to experience negative emotions (i.e., negative affectivity).

## KEYWORDS

discrimination, negative affectivity, random-intercept cross-lagged panel model

## 1 | INTRODUCTION

Negative affectivity is a relatively stable personality trait characterized by an individual's tendency to report negative emotions (e.g., anger, nervousness, and rejection) and distress in any situation (Watson & Clark, 1984). While personality traits, such as negative affectivity, are relatively stable over time, they can change as we age (e.g., Bleidorn

& Hopwood, 2019). Several longitudinal studies examining change in negative affectivity indicate slight decreases in mid-to-late life (e.g., Charles et al., 2001; Ferring & Phillip, 1995; Pinquart, 2001; Stacey & Gatz, 1991). Overall, trait negative affectivity has been shown to be moderately stable over 10-year intervals (Bleidorn et al., 2021). However, little is known about why personality changes over time leading to recent calls by personality researchers

to examine this (Bleidorn et al., 2020). Negative affectivity relates to both internalizing (e.g., mood disorders) and externalizing (e.g., substance and conduct problems) mental health outcomes (e.g., Sellbom et al., 2020). Thus, negative affectivity can be conceptualized as a personality trait that underlies a broad range of psychopathology (Lahey et al., 2017). Understanding potential factors that influence change in negative affectivity over time may have important implications for prevention and treatment of mental health problems.

One of the historically popular theories of personality development indicated that personality changes predominantly via genetics and is unaltered by environmental influences such as psychotherapy interventions (McCrae, 2002). However, research indicates that both psychopharmaceutical and psychological interventions change personality traits (Roberts et al., 2017). Therefore, more modern theories propose personality can change as a result of both environmental and biological influences (Roberts et al., 2005), and this is now the predominant view in personality development research (e.g., Back et al., 2011; Hopwood, 2018; Roberts & Jackson, 2008). Personality traits can also be expressed in state-specific ways that may vary considerably over occasions and contexts. In terms of negative affectivity, trait expressions refer to the broad and stable affective disposition that increases an individual's likelihood to experience negative emotions. In contrast, state negative affect refers to the momentary experience of negative emotions that fluctuate as a result of situational characteristics, specific events, and other factors (Watson & Clark, 1984). Specifically, personality process models posit that personality change occurs through repeated and habitual alterations in *state* expressions of personality that then generalize into trait changes (Bleidorn et al., 2020), similar to how cognitive behavior therapy provides general changes in mental health through repeated habitual intervention to change thoughts, feelings, and behaviors. Thus, *trait* negative affectivity may change through perpetual changes in *state* expressions of negative affect. In the current study, we are interested in how trait negative affectivity may change over time.

Chronic social stressors, such as discrimination, may influence trait levels of negative affectivity due to their repeated and frequent occurrence which provide momentary increases in state negative affect. Discrimination occurs when individuals have social characteristics (e.g., gender, race, and socioeconomic status) that impact their access to resources and exposure to chronic stress (e.g., Turner, 2009). Discrimination is considered an insidious social stressor due to its uncontrollable and often unpredictable nature (Dickerson & Kemeny, 2004; Williams & Mohammed, 2009). Indeed, several systematic reviews and meta-analyses consistently document that self-reported

discrimination predicts worse mental and physical health outcomes (Lewis et al., 2015; Schmitt et al., 2014; Vargas et al., 2020; Williams et al., 2019).

Most research completed in the field measures subjective or *perceived* discrimination in relation to health outcomes. Therefore, individuals may report experiencing discrimination regardless of whether objective discrimination was present. Self-reported perceptions of discrimination impact health outcomes irrespective of whether objective discrimination is present, similar to other forms of stress (Paradies, 2006; Pascoe & Smart Richman, 2009). Additionally, perceived discrimination at the individual level can be conceptualized via life-time events in which there was a discrete and observable occurrence of discrimination (e.g., denial of housing) or as a chronic stressor that continuously occurs in day-to-day life (e.g., treated with less respect than others; for review see Lewis et al., 2015). Similar to the literature on general psychological stress, chronic/daily perceived discrimination is more strongly connected to negative health outcomes than specific life-time events of discrimination (Cohen et al., 1997; Schmitt et al., 2014).

Most reviews and meta-analyses indicate that the majority of research on perceived discrimination's health impacts focuses on racism; however, other forms of perceived discrimination based on gender, age, sexual orientation, or disability yield similar negative effect sizes to health outcomes like substance and alcohol use problems (Pascoe & Smart Richman, 2009; Schmitt et al., 2014; Williams et al., 2019). Additionally, experiences of perceived discrimination yield similar psychophysiological stress response in experimental and cross-sectional studies regardless of the specific form that is measured (Schmitt et al., 2014; Williams et al., 2019). Thus, there is little evidence to indicate one form of discrimination versus general discrimination is substantially different in producing pernicious impacts on health. There is also an increased need to understand the role of general perceived discrimination on health as individuals often experience more than one marginalized social status (Lewis et al., 2015; Vargas et al., 2020). Therefore, the current study tests the role of general daily perceived discrimination instead of a specific form of perceived discrimination.

Although research has examined discrimination's impact on well-being, there has been limited attention focused on how perceived discrimination may impact personality traits. Ecological momentary assessment and experimental studies have demonstrated that experiences of perceived discriminatory events predict increases in state negative affect (e.g., Brondolo et al., 2008; Broudy et al., 2007; Crocker et al., 1991; King, 2005; McCoy & Major, 2003; Taylor et al., 2004), but there has been limited research examining whether

perceived discrimination impacts trait negative affectivity. It is possible that chronic daily forms of perceived discrimination may result in increased trait negative affect through the repeated experience of state negative affect as indicated in the personality process model. Indeed, a longitudinal study using a young adult sample found general perceived discrimination predicted increases in neuroticism 13 years later, a personality trait highly related to negative affectivity (Kim et al., 2021). However, this study did not examine the potential bidirectionality of the relationship between perceived discrimination and personality traits.

Notably, an important tenant of personality change is that an individual's personality increases their likelihood of experiencing different environments which in turn can impact an individual's personality development (e.g., Caspi & Shiner, 2006). That is, personality traits, such as negative affectivity, may impact how an individual perceives a situation which in turn may act as a positive feedback loop that further reinforces and leads to increases in negative affectivity. Individuals high (vs. low) on negative affectivity perceive neutral situations as more negative, experience more interpersonal stressors, and perceive overall daily events as more negative (e.g., Watson & Pennebaker, 1989). Similarly, negative cognitive bias is the tendency for individuals to attend to negative stimuli and dwell more readily on negative interactions (e.g., Beck et al., 2005). Individuals with high negative affectivity have increased attention for negative stimuli and have more difficulty disengaging from negative situations than those low on negative affectivity (e.g., Grafton et al., 2016). Thus, individuals high (vs. low) on negative affectivity may report more frequent experiences of discrimination.

The purpose of the current study is to understand the interplay between negative affectivity and perceived daily discrimination. Both negative affectivity and daily perceived discrimination predict a broad range of mental and physical health problems (e.g., Schmitt et al., 2014; Sellbom et al., 2020). However, there is a need to understand how perceived discrimination and negative affectivity changes throughout the life course (Bleidorn et al., 2020; Lewis et al., 2015). One commonly used methodological approach to understand how observational data of two variables may influence each other over time and also helps make inferences about causality is the cross-lagged panel model (CLPM; Cole & Maxwell, 2003; Little, 2013, but see Sorjonen et al., 2023). The CLPM typically includes an autoregressive path that informs how one variable changes over time (e.g., how discrimination at baseline predicts future discrimination at follow-up 1 and follow-up 2). In addition, the CLPM can provide estimates for cross-lagged paths. The

cross-lagged paths yield information about the temporal order of the constructs within the model by providing an estimate of how one construct predicts subsequent change in another construct while controlling for the stability of the constructs (i.e., autoregressive paths). However, advancements in statistical modeling suggest the traditional CLPM produces results that cannot determine reciprocal causation because the CLPM conflates within-person effects and trait-level between-person effects (Berry & Willoughby, 2017; Hamaker et al., 2015). As such, the CLPM assumes that none of the variance and covariance among constructs across time is due to their trait-like stability (Littlefield et al., 2022). Due to this limitation, the CLPM produces erroneous results when mean trait levels of participants are not constant across timepoints (Hamaker et al., 2015; Littlefield et al., 2022). Specifically, the autoregressive paths do not account for the trait stability of constructs (e.g., stability of negative affectivity over time) leading to false-positive correlations (Hamaker et al., 2015).

A random-intercept CLPM (RI-CLPM) has been suggested as a best-practice alternative to the CLPM (Mund & Nestler, 2019) in order to fully disentangle the within-person effects (i.e., whether the individual level change in negative affectivity is related to the individual-level change in perceived discrimination) from the between-person effects (i.e., whether the group-level change in negative affectivity is related to the group-level change in perceived discrimination). The RI-CLPM differs from the traditional CLPM in that a latent variable (i.e., random intercept) is created that estimates the variance for each construct that is repeatedly assessed. This captures the between-person stability of each construct over time (in this case negative affectivity and perceived discrimination). The between-person variance is captured by the correlation of the random intercepts. The addition of the random intercepts allows for the autoregressive paths to estimate whether there are within-person changes across timepoints by calculating the parameter estimate using (1) the change from timepoint A to timepoint B and (2) the latent variable score for a given participant (i.e., mean negative affectivity across all timepoints). Thus, the autoregressive paths in a RI-CLPM indicate the degree to which, for instance, an individual who has scored above their expected score is likely to again score above their expected score on a future occasion (Hamaker et al., 2015). For purposes of the current study, the autoregressive paths represent the degree to which changes in negative affectivity and perceived daily discrimination can be predicted by deviations from their expected scores while controlling for the trait-level (between-person) variation. The cross-lagged paths in the RI-CLPM then indicate how much the expected individual score on negative affectivity can be predicted by expected

deviations from perceived discrimination (and vice versa) controlling for the individual deviations indicated on the autoregressive paths and between-person variance. That is, the RI-CLPM can inform how individual differences in perceived discrimination and negative affectivity change through the life course and can provide information regarding how perceived discrimination and negative affectivity may predict each other longitudinally.

The RI-CLPM can also inform whether there is a unidirectional or reciprocal relationship between perceived discrimination and negative affectivity. We hypothesized the latter. Specifically, given that experiences of discrimination are predictive of continuous changes in state negative affect (e.g., Brinkman & Rickard, 2009; Ong et al., 2013; Vartanian et al., 2014) and personality traits are theorized to change via repeated changes in state expressions of personality traits (Bleidorn et al., 2020), it is hypothesized that frequent experiences of perceived discrimination will predict heightened levels of negative affectivity through time. No prior research exists on, to our knowledge, whether negative affectivity predicts changes in perceived discrimination. In cross-sectional and longitudinal studies on perceived discrimination and negative health outcomes, perceived discrimination is often viewed as a unidirectional predictor of worse health outcomes, and studies have not examined whether those outcomes can also impact how individuals perceive discrimination (for reviews and meta-analyses see Pascoe & Smart Richman, 2009; Williams et al., 2019). However, personality traits impact how individuals perceive and react to their environment (Allport, 1961). Individuals with elevations of negative affectivity report experiencing more interpersonal stress (Watson & Pennebaker, 1989) and may be more prone to negative cognitive bias (Grafton et al., 2016), which may in turn effect how often they perceive discriminatory events in their daily life. Therefore, it is hypothesized that negative affectivity will predict increases in future reported perceived discrimination.

## 2 | METHOD AND PROCEDURES

### 2.1 | Participants

The Midlife in the United States (MIDUS) dataset is an open access and longitudinal study of health and well-being in a nationally representative, English speaking, and noninstitutionalized sample in the United States (Brim et al., 2019; Radler et al., 2014). At MIDUS I (baseline measurement) collected in 1994–1995, adult participants ( $N = 7108$ ) were recruited through national random digit dialing ( $n = 3487$ ), over sampling for metropolitan

areas in the United States ( $n = 757$ ), and siblings and twins from the random digit dialing ( $n = 2864$ ). Only individuals recruited through national random digit dialing and oversampling of metropolitan areas were used. A total of 3692 participants completed self-administered questionnaires and a 30-min phone interview at MIDUS I. Participants then completed the same measures 10 (MIDUS II) and 20 (MIDUS III) years later. The MIDUS I dataset was comprised of approximately 49.2% women with an average age of 46 years. The sample's racial demographics consisted of 87.9% white, 6.4% Black or African American, 0.7% Native American/Eskimo, 1.6% Asian/Pacific islander, 0.7% multi-racial, 2.6% other, and 15.4% of the sample had missing racial data. The majority of the sample identified as heterosexual (96.8%), 1.6% identified as gay/lesbian, and 1.5% of the sample identified as bisexual. Approximately 70% of individuals who completed data collection at MIDUS I completed data collection at MIDUS II, and the response rate was 77% from MIDUS II to MIDUS III. Individuals who were white, female, married, and had better health were more likely to be retained from MIDUS I to MIDUS II (Radler & Ryff, 2010; Sheffler et al., 2019). Analyses are based on weighted data that adjusts for sociodemographic differences between U.S. population and the recruited sample (Brim et al., 1996).

### 2.2 | Perceived daily discrimination

Perceived daily discrimination was assessed via The Everyday Discrimination Measure (Williams et al., 1997), a 9-item questionnaire regarding how often participants experience forms of interpersonal discrimination on a day-to-day basis (e.g., “you receive poorer service than other people at restaurants or stores”). Participants rated items on a 4-point scale (1—often to 4—never). Items were reversed coded such that higher scores reflect experiencing more frequent perceived daily discrimination. If an item was skipped, the mean value of completed items was imputed. Imputed values were only added if participants responded to at least five out of the nine items. The internal consistency was excellent (MIDUS I  $\alpha = 0.93$ , MIDUS II and MIDUS III  $\alpha = 0.92$ ). If participants reported any perceived discriminatory experiences, they then were asked for the *main* reasons for their discrimination. Participants were allowed to report multiple forms of perceived discrimination as their main reason (e.g., age, gender, race, and sexual orientation; see Table 1). Given past meta-analyses (e.g., Pascoe & Smart Richman, 2009) indicating that perceived discrimination shows a similar relationship to psychopathology irrespective of the form of perceived discrimination, the current study evaluated general perceived discrimination's impact on personality.

**TABLE 1** Reasons for discrimination across all timepoints.

Reason for discrimination	MIDUS I (%) n = 1586	MIDUS II (%) n = 981	MIDUS III (%) n = 510
Age	24.72	28.44	32.94
Gender	34.49	34.35	36.47
Race	26.54	19.27	21.18
Ethnicity	10.91	9.48	9.61
Religion	7.44	8.77	10.39
Height/weight	15.76	19.47	18.43
Appearance	11.03	11.52	10.78
Physical disability	2.96	4.99	3.92
Sexual orientation	4.16	2.75	3.53
Other	15.51	21.00	13.73

*Note:* Only participants reporting any experiences of daily discrimination selected reasons for their discrimination. Thus, the sample size for individuals that report reasons for discrimination are smaller than the overall sample. Participants could select multiple reasons for discrimination resulting in percentages summing to more than 100.

Abbreviation: MIDUS, Midlife in the United States.

## 2.3 | Negative affectivity

Negative affectivity was measured via the Positive and Negative Affect Schedule (PANAS) using a 6-item version assessing how much participants felt negative emotions in the past 30 days (Mroczek & Kolarz, 1998; Watson & Clark, 1994). Items were answered on a 5-point scale (1—*all of the time* to 5—*none of the time*). Similar to daily perceived discrimination, items were reverse coded such that higher scores reflect experiencing negative affectivity more frequently and total scores reflect the average score of all items. The internal consistency for the negative affectivity scale fell within the good range (MIDUS I  $\alpha = 0.87$ , MIDUS II and MIDUS III  $\alpha = 0.85$ ).

## 2.4 | Statistical approach

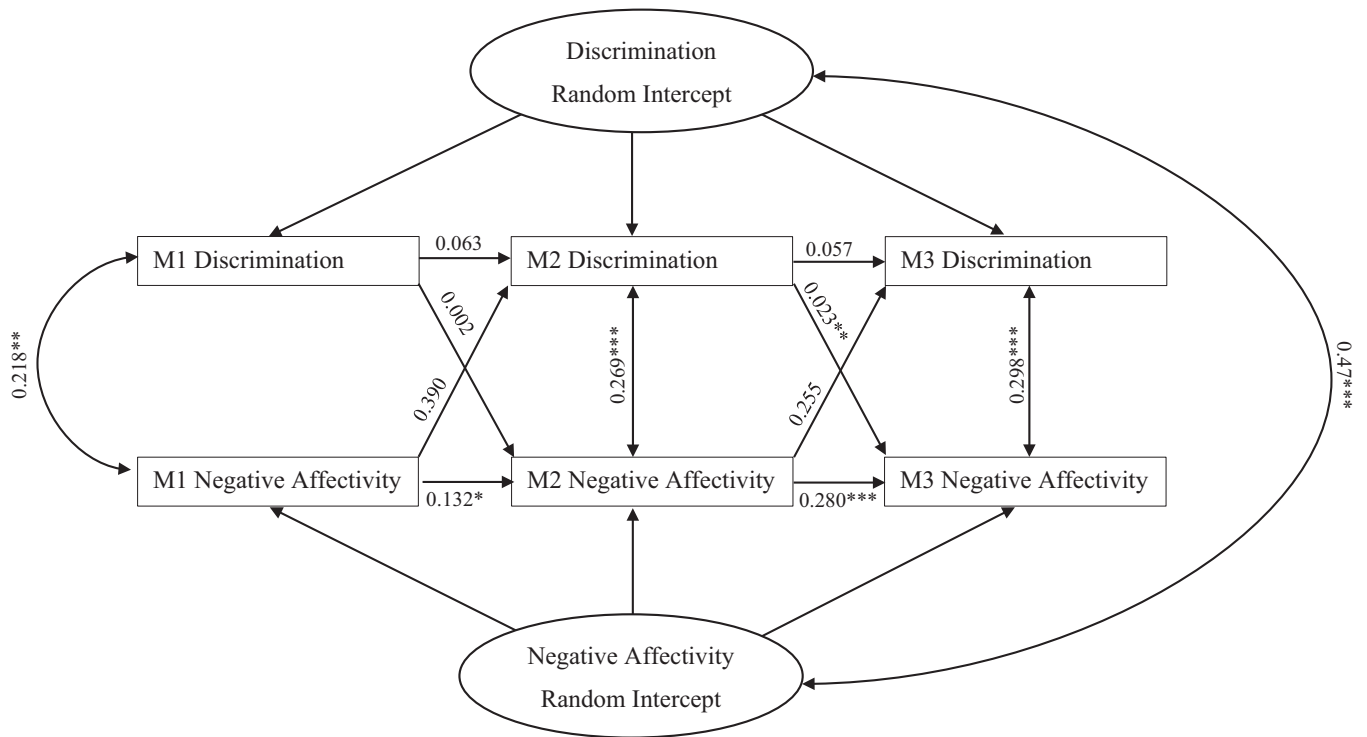
A three-wave RI-CLPM was used to determine the unidirectional or reciprocal effects of perceived daily discrimination and negative affectivity. Autoregressive paths examined the temporal stability of perceived daily discrimination and negative affectivity, and cross-lagged paths assessed the reciprocal relationship between the two constructs over the course of 20 years (see Figure 1). Cross-lagged paths of discrimination and negative affectivity were examined from MIDUS I to MIDUS II and then again from the first MIDUS II to MIDUS III to determine how negative affectivity and perceived discrimination impact each other over time. Negative affectivity

and perceived discrimination were specified to correlate at each timepoint. The 0.6–3 version of the lavaan package for R statistical package (Rosseel, 2012) was used to conduct the analysis. Full information maximum likelihood (FIML) estimation was used for missing data. Model fit was evaluated using the Comparative Fit Index (CFI), Tucker–Lewis index (TLI), and Root Mean Square Error of Approximation (RMSEA). TLI and CFI values  $>0.95$  indicate good fit. An RMSEA equal to or  $<0.05$  indicates good fit, whereas values  $>0.08$  indicate a poor fit.

## 3 | RESULTS

Descriptive statistics for correlations between variables can be found in Table 2. Across all timepoints and analyses negative affectivity and perceived discrimination were significantly correlated with each other. Analysis of missing data indicated individuals with missing MIDUS II or MIDUS III were more likely to be male, younger, have higher scores on negative affectivity and report more daily perceived discrimination at baseline. Additionally, the most common patterns of missing data were for individuals who missed one timepoint of assessment (e.g., all of MIDUS II or MIDUS III).

To clarify the temporal relationship between perceived discrimination and negative affectivity, a RI-CLPM was used. The results from the RI-CLPM demonstrated good fit ( $X^2 = 0.863$ ,  $df(1)$ ,  $p > 0.05$ , RMSEA = 0.00, TLI = 1.00, CFI = 1.00). The results of the RI-CLPM are displayed in Figure 1. As hypothesized, the correlation between



**FIGURE 1** Random intercept cross-lagged panel model results. M1, MIDUS I; M2, MIDUS II; M3, MIDUS III; MIDUS, Midlife in the United States. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

the random intercepts was significant indicating that individuals that were higher on trait negative affectivity also tended to score higher on perceived daily discrimination. In terms of the within-person effects, individuals who scored higher or lower than their expected level of negative affectivity tended to do so again 10 years later across each timepoint. However, there were no significant changes in levels of perceived daily discrimination across timepoints. Thus, individuals reported experiencing increased negative affectivity with each passing decade, but they did not report significant changes in perceived daily discrimination throughout time. Additionally, and partially consistent with hypotheses, there was one significant cross-lagged path indicating that perceived discrimination at MIDUS II (median age 55) predicted increases in negative affectivity at MIDUS III (median age 64). That is, increased perceived discrimination at age 55 predicted more negative affectivity 10 years later.

## 4 | DISCUSSION

Prior meta-analyses and reviews have found positive correlations between negative affectivity and perceived discrimination (Schmitt et al., 2014; Vargas et al., 2020; Williams et al., 2019); however, there is a dearth of studies investigating the longitudinal relationship between the two constructs and few studies have examined this

relationship in an older adult population. The present study aimed to clarify the longitudinal relationship between negative affectivity and perceived discrimination over 30 years in mid-to-late life. We used a RI-CLPM to determine (a) whether scores on the two variables were related to one another at a trait level (between-person effect), (b) to characterize changes in negative affectivity and daily perceived discrimination across time controlling for their trait-like stability, and (c) determine whether higher levels than usual on negative affectivity are predictive of higher levels of perceived discrimination 10 years later, vice versa, or whether there was a reciprocal relationship between negative affectivity and perceived discrimination.

First, we found a medium-to-large positive between-person correlation among perceived daily discrimination and negative affectivity. Individuals who reported higher levels of negative affectivity also reported a higher frequency of daily perceived discrimination and vice versa. Prior meta-analyses have found a positive association in the cross-sectional and experimental studies of negative affectivity and perceived discrimination (e.g., Schmitt et al., 2014), in line with our results. The consistency of the association found across a variety of methods including cross-sectional self-report, experimental, and now longitudinal designs indicate how robust the association is between these two constructs. Second, after controlling for these between-person effects, we found small to medium positive carry-over

TABLE 2 Bivariate correlations, means, and standard deviations.

	1	2	3	4	5	6	7	8	9	10
1. Sex	-									
2. M1 age	0.02	46.44 (13.35)								
3. M1 daily discrimination	0.01	-0.19**	13.19 (4.96)							
4. M1 negative affectivity	0.11**	-0.12**	0.22**	1.57 (0.64)						
5. M2 age	0.01	1.00**	-0.16**	-0.14**	55.81 (12.84)					
6. M2 daily discrimination	0.04	-0.19**	0.56**	0.20**	-0.19**	12.92 (4.50)				
7. M2 negative affectivity	0.10**	-0.13**	0.17**	0.49**	-0.13**	0.26**	1.53 (0.59)			
8. M3 age	0.01	1.00**	-0.18**	-0.14**	1.00**	-0.19**	-0.15**	63.99 (11.56)		
9. M3 daily discrimination	0.04	-0.17**	0.54**	0.19**	-0.17**	0.60**	0.17**	-0.17**	12.59 (4.58)	
10. M3 negative affectivity	0.07**	-0.08**	0.15**	0.42**	-0.08**	0.23**	0.56**	-0.08**	0.27**	1.49 (0.60)

Note: Means and standard deviation of variables are on the diagonal. N's range from 1355 to 3573. Sex was coded 1 = men; 2 = women.

Abbreviations: M1, MIDUS I; M2, MIDUS II; M3, MIDUS III; MIDUS, Midlife in the United States.

\*\* $p < 0.01$ .

stability paths of negative affectivity, but not perceived discrimination. Participants who scored higher or lower than their expected level of negative affectivity tended to do so again 10 years later. The carry-over effect sizes were larger between ages 55 to 65 (MIDUS II to MIDUS III) than from 45 to 55 (MIDUS I to MIDUS II). These results support the nascent literature that suggests there is an increase in individual difference change of personality starting in later adulthood after a small plateau of personality change in middle-adulthood (e.g., Briley & Tucker-Drob, 2014), as indicated by the larger carry-over effect sizes of negative affectivity between ages 55 to 65. Additionally, our results coincide with recent findings that individual difference changes for emotional stability, a personality trait highly related to negative affectivity (Wilt & Revelle, 2015), are generally constant across the lifespan including in mid-to-late life (Schwaba & Bleidorn, 2018).

Regarding the main hypothesis, we did not find evidence of a reciprocal relationship between negative affectivity and daily perceived discrimination. It was hypothesized that negative affectivity would predict changes in perceived discrimination as individuals higher on negative affectivity tend to have increased attention for negative stimuli and ruminate on negative situations more so than those lower on negative affectivity (e.g., Grafton et al., 2016). However, our results suggest this may not be the case. There are no prior longitudinal studies of negative affectivity's association with perceived discrimination, and the current null finding must be interpreted cautiously. On its face, the result suggests that the increased likelihood of negative cognitive bias that has been linked to high levels of negative affectivity (e.g., Grafton et al., 2016) does not appear to translate into increases in perceptions of discrimination. Our hypothesis was based on the assumption that negative cognitive bias leads to appraisals of events as more negative with discrimination being one such negative appraisal. This highlights the need for research on specific factors that influence a person's cognitive appraisal of events as discriminatory as this is at the core of self-reports of discrimination. Alternatively, it is possible that there is a significant relationship from negative affectivity to later perceived discrimination, but it was undetected due to the loss of power when examining longer time intervals.

In contrast, we found changes in perceived discrimination around age 55 predicted changes in negative affectivity 10 years later, controlling for trait-level and within-person changes of negative affectivity across time. That is, if an individual experienced more perceived daily discrimination at age 55, they also experienced more negative affectivity at age 65, or the reverse, if an individual experienced less perceived daily discrimination at age 55 then they experienced less negative affectivity a decade

later. This finding highlights the way that chronic perceived discrimination may take an exacting toll that is imperceptible in the moment yet stable in the duration of its effect. Our results are consistent with prior research that found among young adults, perceived discrimination predicts increases 13 years later in the personality trait neuroticism (Kim et al., 2021). Furthermore, it is consistent with another finding among adolescents that indicate there is a unidirectional relationship between perceived racial discrimination and depressive symptoms (Lavner et al., 2022). Together, our findings provide further evidence for unidirectional effects of general perceived discrimination to negative affectivity. However, unlike in adolescents, where this unidirectional relationship was seen across every timepoint (Lavner et al., 2022), our results indicate daily perceived discrimination predicts changes in negative affectivity only during retirement age, but not in middle adulthood.

This finding may be understood in the context of personality development. Although a majority of individual difference change of personality appears to occur in adolescence and early adulthood, research indicates the mid-60s may be a time of increasing individual differences in personality change compared to middle adulthood (e.g., Allemand et al., 2007; Schwaba & Bleidorn, 2018). Thus, perceived discrimination may play an important role during retirement age due to increased plasticity of personality during this period. Additionally, individuals experience large shifts in their social roles between the ages of 55 to 65. For example, individuals may become grandparents, may be switching from the role of employee to retiree, or may experience more serious health issues. It is possible that perceived discrimination may have a prominent impact on the development of negative affectivity as individuals reassess their identity, mortality, and values during this transition phase. On the other hand, it is possible that between age 55 to 65 individuals are experiencing new forms of perceived discrimination (e.g., age and disability), in addition to other forms of perceived discrimination they have had to cope with throughout their lives (e.g., race and sex). Indeed, there was an increase in the percentage of people that reported perceived age, shape, and physical disability-based discrimination from MIDUS II to MIDUS III, whereas the percentage of people that reported perceived gender and ethnicity-based discrimination remained relatively stable from MIDUS I to MIDUS II. Thus, perceived discrimination may have a particular impact on negative affectivity during this period due to changes related to the aging process.

Overall, these results add to emerging research that highlights the pernicious effects of perceived



discrimination on mental health and well-being (e.g., Schmitt et al., 2014; Williams et al., 2019). Our results indicating perceived discrimination can predict changes in negative affectivity in mid-to-late life is particularly concerning as negative affectivity is considered an underlying personality trait for a plethora of mental health disorders including depression, anxiety, and substance problems which are most common among older adults (Wu & Blazer, 2014). That is, perceived discrimination may be a particularly insidious social stressor that increases individuals' likelihood of developing or re-experiencing mood disorders, anxiety disorders, and heavy or problematic substance use. Greater emphasis on universal prevention programs that support individuals experiencing perceived discrimination are needed to promote healthy development, and structural changes are necessary to reduce the frequency that perceived discrimination is experienced. At an individual and clinical level, it may be particularly important to assess for experiences of perceived discrimination when someone is presenting for treatment, as their experience of perceived discrimination may be maintaining their psychopathology. Indeed, in recent studies that use cognitive behavior therapy that specifically addresses experiences of perceived discrimination are effective at reducing health disparities among historically marginalized groups and increases resilience among individuals that experience daily perceived discrimination (e.g., Bogart et al., 2018, 2020).

Although the current study addresses the dearth of research on the longitudinal relationship between perceived discrimination and negative affectivity, it is not without its limitations. First, the study's timepoints are separated by 10-year intervals. Our results may differ if the time intervals were shorter as the relationship between two variables becomes weaker with longer time periods between measurements. Future research should examine the directional relationship of perceived discrimination and negative affectivity in shorter time periods in mid-to-late life. Furthermore, shorter time periods may be useful to better understand the dynamic changes that may occur in perceived daily discrimination. In prior studies, personality trait changes were able to be detected using time intervals of 4 to 7 years (e.g., Roberts & DelVecchio, 2000) which may be an appropriate timeframe to replicate our current results.

Additionally, the MIDUS dataset consists primarily of White individuals and is no longer as representative of the U.S. population as it was originally. Future research should attempt to replicate our results using a more racially diverse participant pool that more closely reflects the current U.S. demographics. Moreover, although our research broadens the extant literature on the relationship between perceived discrimination and negative affectivity

in mid-to-late adulthood, more research examining the role of *how* perceived discrimination may impact negative affectivity and well-being in later life (i.e., past the age of 65) is needed.

Outside of these limitations, this study is among the first to look at the longitudinal nature of the relationship between perceived discrimination and negative affectivity, specifically in older adults. It contributes to the consistent cross-sectional findings that experiencing perceived discrimination is associated with increased mental and physical health problems (e.g., Vargas et al., 2020; Williams et al., 2019) and extends prior research by showing that this relationship is unidirectional with perceived discrimination relates to worse mental health (i.e., more negative affectivity). Our results also provide further context for how environmental factors may influence personality change. At a practical level, our results provide further evidence that, as individuals experience higher levels of perceived discrimination compared to their own usual experiences, they may be at increased risk for personality changes that increases the tendency to experience negative emotions (e.g., anger, nervousness, rejection, and depression). This, in turn, may lead to increased risk of mental health problems such as mood, substance, and anxiety disorders. This study provides further evidence for the hypothesis that reducing perceived discrimination and building resilience against its impacts may be useful in reducing mental health symptoms among older adults.

#### **AUTHOR CONTRIBUTIONS**

AMD: Conceptualization, methodology, formal analysis, investigation, writing original draft, Writing-reviewing editing. JT: Supervision, writing - reviewing and editing.

#### **ACKNOWLEDGMENTS**

We would like to thank Alexandria Meyer, Ashby Plant, Thomas Joiner, and Mark Winegardner who provided feedback and thoughtful comments on the original draft of this project.

#### **FUNDING INFORMATION**

This research received no specific grant from any funding agency, commercial, or not-for-profit sectors.

#### **CONFLICT OF INTEREST STATEMENT**

None.

#### **DATA AVAILABILITY STATEMENT**

Data for the current study are from a public repository of the Midlife in the United States (MIDUS): A National Longitudinal Study of Health & Well-Being.

## ETHICS STATEMENT

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

## PRE-REGISTRATION

<https://osf.io/23qfd>.

## ORCID

Allison M. Daurio  <https://orcid.org/0000-0002-8964-8326>

## REFERENCES

- Allemand, M., Zimprich, D., & Hertzog, C. (2007). Cross-sectional age differences and longitudinal age changes of personality in middle adulthood and old age. *Journal of Personality, 75*(2), 323–358.
- Allport, G. W. (1961). *Pattern and growth in personality*. Holt, Rinehart, & Winston.
- Back, M. D., Baumert, A., Denissen, J. J. A., Hartung, F.-M., Penke, L., Schmukle, S. C., Schönbrodt, F. D., Schröder-Abé, M., Vollmann, M., Wagner, J., & Wrzus, C. (2011). PERSOC: A unified framework for understanding the dynamic interplay of personality and social relationships. *European Journal of Personality, 25*, 90–107.
- Beck, A. T., Emery, G., & Greenberg, R. L. (2005). *Anxiety disorders and phobias: A cognitive perspective*. Basic Books.
- Berry, D., & Willoughby, M. T. (2017). On the practical interpretability of cross-lagged panel models: Rethinking a developmental workhorse. *Child Development, 88*(4), 1186–1206.
- Bleidorn, W., & Hopwood, C. J. (2019). Stability and change in personality traits over the lifespan. *Handbook of Personality Development, 1*, 237–252.
- Bleidorn, W., Hopwood, C. J., Back, M. D., Denissen, J. J., Hennecke, M., Hill, P. L., Jokela, M., Kandler, C., Lucas, R. E., Luhmann, M., Orth, U., Roberts, B. W., Wagner, J., Wrzus, C., & Zimmermann, J. (2021). Personality trait stability and change. *Personality Science, 2*, 1–20.
- Bleidorn, W., Hopwood, C. J., Back, M. D., Denissen, J. J., Hennecke, M., Jokela, M., Kandler, C., Lucas, R. E., Luhmann, M., Orth, U., Roberts, B. W., Wagner, J., Wrzus, C., & Zimmermann, J. (2020). Longitudinal experience-wide association studies—A framework for studying personality change. *European Journal of Personality, 34*(3), 285–300.
- Bogart, L. M., Dale, S. K., Daffin, G. K., Patel, K. N., Klein, D. J., Mayer, K. H., & Pantalone, D. W. (2018). Pilot intervention for discrimination-related coping among HIV-positive black sexual minority men. *Cultural Diversity and Ethnic Minority Psychology, 24*(4), 541–551.
- Bogart, L. M., Galvan, F. H., Leija, J., MacCarthy, S., Klein, D. J., & Pantalone, D. W. (2020). A pilot cognitive behavior therapy group intervention to address coping with discrimination among HIV-positive Latino immigrant sexual minority men. *Annals of LGBTQ Public and Population Health, 1*(1), 6–26.
- Brim, O. G., Baltes, P. B., Bumpass, L. L., Cleary, P. D., Featherman, D. L., Hazzard, W. R., et al. (1996). National Survey of Midlife Development in the United States (MIDUS), 1995–1996. Retrieved April 2001 from Harvard Medical School Web site: <http://midmac.med.harvard.edu.researchhtml>.
- Briley, D. A., & Tucker-Drob, E. M. (2014). Genetic and environmental continuity in personality development: A meta-analysis. *Psychological Bulletin, 140*(5), 1303–1331.
- Brim, O. G., Ryff, C. D., & Kessler, R. C. (2019). *Chapter one. The MIDUS national survey: An overview* (pp. 1–34). University of Chicago Press.
- Brinkman, B. G., & Rickard, K. M. (2009). College students' descriptions of everyday gender prejudice. *Sex Roles, 61*(7–8), 461–475.
- Brondolo, E., Brady, N., Thompson, S., Tobin, J. N., Cassells, A., Sweeney, M., Mcfarlane, D., & Contrada, R. J. (2008). Perceived racism and negative affect: Analyses of trait and state measures of affect in a community sample. *Journal of Social and Clinical Psychology, 27*(2), 150–173.
- Broudy, R., Brondolo, E., Coakley, V., Brady, N., Cassells, A., Tobin, J. N., & Sweeney, M. (2007). Perceived ethnic discrimination in relation to daily moods and negative social interactions. *Journal of Behavioral Medicine, 30*(1), 31–43.
- Caspi, A., & Shiner, R. L. (2006). Personality development. In W. Damon, R. Lerner, & N. Eisenberg (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (6th ed., pp. 300–365). Wiley.
- Charles, S. T., Reynolds, C. A., & Gatz, M. (2001). Age-related differences and change in positive and negative affect over 23 years. *Journal of Personality and Social Psychology, 80*(1), 136–151.
- Cohen, S., Kessler, R. C., & Gordon, L. U. (Eds.). (1997). *Measuring stress: A guide for health and social scientists*. Oxford University Press on Demand.
- Cole, D. A., & Maxwell, S. E. (2003). Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology, 112*(4), 558–577.
- Crocker, J., Voelkl, K., Testa, M., & Major, B. (1991). Social stigma: The affective consequences of attributional ambiguity. *Journal of Personality and Social Psychology, 60*(2), 218–228.
- Dickerson, S. S., & Kemeny, M. E. (2004). Acute stressors and cortisol responses: A theoretical integration and synthesis of laboratory research. *Psychological Bulletin, 130*(3), 355–391.
- Ferring, D., & Phillip, S. H. (1995). The structure of subjective well-being in the elderly: A test of different models by structural equation modeling. *European Journal of Psychological Assessment, 11*, 32.
- Grafton, B., Southworth, F., Watkins, E., & MacLeod, C. (2016). Stuck in a sad place: Biased attentional disengagement in rumination. *Emotion, 16*(1), 63–72.
- Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. (2015). A critique of the cross-lagged panel model. *Psychological Methods, 20*(1), 102–116.
- Hopwood, C. J. (2018). Interpersonal dynamics in personality and personality disorders. *European Journal of Personality, 32*, 499–524.
- Kim, J., Song, K., & Sutin, A. R. (2021). Gender differences in the relationship between perceived discrimination and personality traits in young adulthood: Evidence using sibling fixed effects. *Social Science & Medicine, 286*, 114329.

- King, K. R. (2005). Why is discrimination stressful? The mediating role of cognitive appraisal. *Cultural Diversity and Ethnic Minority Psychology, 11*(3), 202–212.
- Lahey, B. B., Krueger, R. F., Rathouz, P. J., Waldman, I. D., & Zald, D. H. (2017). A hierarchical causal taxonomy of psychopathology across the life span. *Psychological Bulletin, 143*(2), 142–186.
- Lavner, J. A., Ong, M. L., Carter, S. E., Hart, A. R., & Beach, S. R. (2022). Racial discrimination predicts depressive symptoms throughout adolescence among black youth. *Developmental Psychology, 59*, 7–14.
- Lewis, T. T., Cogburn, C. D., & Williams, D. R. (2015). Self-reported experiences of discrimination and health: Scientific advances, ongoing controversies, and emerging issues. *Annual Review of Clinical Psychology, 11*, 407–440.
- Little, T. D. (2013). *Longitudinal structural equation modeling*. Guilford Press.
- Littlefield, A. K., King, K. M., Acuff, S. F., Foster, K. T., Murphy, J. G., & Witkiewitz, K. (2022). Limitations of cross-lagged panel models in addiction research and alternative models: An empirical example using project MATCH. *Psychology of Addictive Behaviors, 36*(3), 271–283.
- McCoy, S. K., & Major, B. (2003). Group identification moderates emotional responses to perceived prejudice. *Personality and Social Psychology Bulletin, 29*(8), 1005–1017.
- McCrae, R. R. (2002). The maturation of personality psychology: Adult personality development and psychological well-being. *Journal of Research in Personality, 36*(4), 307–317.
- Mroczek, D. K., & Kolarz, C. M. (1998). The effect of age on positive and negative affect: A developmental perspective on happiness. *Journal of Personality and Social Psychology, 75*(5), 1333–1349.
- Mund, M., & Nestler, S. (2019). Beyond the cross-lagged panel model: Next-generation statistical tools for analyzing interdependencies across the life course. *Advances in Life Course Research, 41*, 100249.
- Ong, A. D., Burrow, A. L., Fuller-Rowell, T. E., Ja, N. M., & Sue, D. W. (2013). Racial microaggressions and daily well-being among Asian Americans. *Journal of Counseling Psychology, 60*(2), 188–199.
- Paradies, Y. C. (2006). Defining, conceptualizing and characterizing racism in health research. *Critical Public Health, 16*(2), 143–157.
- Pascoe, E. A., & Smart Richman, L. (2009). Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin, 135*(4), 531–554.
- Pinquart, M. (2001). Correlates of subjective health in older adults: a meta-analysis. *Psychology and aging, 16*(3), 414.
- Radler, B., Iverson, J., & Smith, D. (2014). Building a DDI-based (3.2) harmonized data extract tool for MIDUS: An update.
- Radler, B. T., & Ryff, C. D. (2010). Who participates? Accounting for longitudinal retention in the MIDUS national study of health and well-being. *Journal of Aging and Health, 22*(3), 307–331.
- Roberts, B. W., & DelVecchio, W. F. (2000). The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin, 126*(1), 3–25.
- Roberts, B. W., & Jackson, J. J. (2008). Sociogenomic personality psychology. *Journal of Personality, 76*(6), 1523–1544.
- Roberts, B. W., Luo, J., Briley, D. A., Chow, P. I., Su, R., & Hill, P. L. (2017). A systematic review of personality trait change through intervention. *Psychological Bulletin, 143*(2), 117–141.
- Roberts, B. W., Wood, D., & Smith, J. L. (2005). Evaluating five factor theory and social investment perspectives on personality trait development. *Journal of Research in Personality, 39*(1), 166–184.
- Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling and more. Version 0.5–12 (BETA). *Journal of Statistical Software, 48*(2), 1–36.
- Schmitt, M. T., Branscombe, N. R., Postmes, T., & Garcia, A. (2014). The consequences of perceived discrimination for psychological well-being: A meta-analytic review. *Psychological Bulletin, 140*(4), 921–948.
- Schwaba, T., & Bleidorn, W. (2018). Individual differences in personality change across the adult life span. *Journal of Personality, 86*(3), 450–464.
- Sellbom, M., Carragher, N., Sunderland, M., Caele, A. L., & Batterham, P. J. (2020). The role of maladaptive personality domains across multiple levels of the HiTOP structure. *Personality and Mental Health, 14*(1), 30–50.
- Sheffler, J. L., Piazza, J. R., Quinn, J. M., Sachs-Ericsson, N. J., & Stanley, I. H. (2019). Adverse childhood experiences and coping strategies: Identifying pathways to resiliency in adulthood. *Anxiety, Stress and Coping, 32*(5), 594–609.
- Sorjonen, K., Nilsonne, G., Melin, B., & Ingre, M. (2023). Uncertain inference in random intercept cross-lagged panel models: An example involving need for cognition and anxiety and depression symptoms. *Personality and Individual Differences, 201*, 111925.
- Stacey, C. A., & Gatz, M. (1991). Cross-sectional age differences and longitudinal change on the Bradburn affect balance scale. *Journal of Gerontology, 46*(2), P76–P78.
- Taylor, T. R., Kamarck, T. W., & Shiffman, S. (2004). Validation of the Detroit area study discrimination scale in a community sample of older African American adults: The Pittsburgh healthy heart project. *International Journal of Behavioral Medicine, 11*(2), 88–94.
- Turner, R. J. (2009). Understanding health disparities: The promise of the stress process model. In *Advances in the conceptualization of the stress process* (pp. 3–21). Springer.
- Vargas, S. M., Huey, S. J., Jr., & Miranda, J. (2020). A critical review of current evidence on multiple types of discrimination and mental health. *American Journal of Orthopsychiatry, 90*(3), 374–390.
- Vartanian, L. R., Pinkus, R. T., & Smyth, J. M. (2014). The phenomenology of weight stigma in everyday life. *Journal of Contextual Behavioral Science, 3*(3), 196–202.
- Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin, 96*(3), 465–490.
- Watson, D., & Clark, L. A. (1994). *The PANAS-X: Manual for the positive and negative affect schedule-expanded form*. University of Iowa. <https://doi.org/10.17077/48vt-m4t2>
- Watson, D., & Pennebaker, J. W. (1989). Health complaints, stress, and distress: Exploring the central role of negative affectivity. *Psychological Review, 96*(2), 234–254.
- Williams, D. R., Lawrence, J. A., Davis, B. A., & Vu, C. (2019). Understanding how discrimination can affect health. *Health Services Research, 54*, 1374–1388.

- Williams, D. R., & Mohammed, S. A. (2009). Discrimination and racial disparities in health: Evidence and needed research. *Journal of Behavioral Medicine*, *32*(1), 20–47.
- Williams, D. R., Yu, Y., Jackson, J. S., & Anderson, N. B. (1997). Racial differences in physical and mental health: Socio-economic status, stress and discrimination. *Journal of Health Psychology*, *2*(3), 335–351.
- Wilt, J., & Revelle, W. (2015). Affect, behaviour, cognition and desire in the big five: An analysis of item content and structure. *European Journal of Personality*, *29*(4), 478–497.
- Wu, L. T., & Blazer, D. G. (2014). Substance use disorders and psychiatric comorbidity in mid and later life: A review. *International Journal of Epidemiology*, *43*(2), 304–331.

**How to cite this article:** Daurio, A. M., & Taylor, J. (2024). Daily general discrimination predicts changes in trait negative affectivity: A 30-year cohort longitudinal study using a random-intercept cross-lagged panel model. *Journal of Personality*, *00*, 1–12. <https://doi.org/10.1111/jopy.12927>