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To cite this article: Shannon M. Savell, Mihret Niguse, Nava Caluori, Jazmin L. Brown-Iannuzzi, Melvin N. Wilson, Kathryn Lemery-Chalfant & Daniel S. Shaw (22 Jan 2024): Cascading Influences of Caregiver Experiences of Discrimination and Adolescent Antisocial Behavior, Journal of Clinical Child & Adolescent Psychology, DOI: [10.1080/15374416.2024.2301770](https://doi.org/10.1080/15374416.2024.2301770)

To link to this article: <https://doi.org/10.1080/15374416.2024.2301770>



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Cascading Influences of Caregiver Experiences of Discrimination and Adolescent Antisocial Behavior

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ABSTRACT

Objective: Although a growing body of work has found that parents' experiences of racial and socioeconomic (SES) based discrimination are directly related to their children's behavior problems, more work is needed to understand possible pathways by which these factors are related and to identify potential targets for prevention and/or intervention.

Method: Using a large ($N = 572$), longitudinal sample of low-income families from diverse racial backgrounds, the current study explored whether caregivers' experiences of racial and SES discrimination during their children's middle childhood (i.e. ages 7.5–9.5) predicted youth-reported antisocial behavior during adolescence and potential factors mediating these associations (e.g. caregiver depressive symptoms and positive parenting practices).

Results: We found that higher levels of caregiver experiences of discrimination at child ages 7.5–9.5 predicted higher levels of caregiver depressive symptoms at child age 10.5, which were related to lower levels of caregiver endorsement of positive parenting practices at child age 14.5, which in turn, predicted higher levels of youth-reported antisocial behavior at age 16.

Conclusion: The findings highlight the adverse effects of racism and discrimination in American society. Second, the findings underscore the need to develop interventions which mitigate racism and discrimination among perpetrators and alleviate depressive symptoms among caregivers.

The murder of George Floyd and the disproportionate impact of the COVID-19 pandemic on Black and Brown people revealed to many Americans that discrimination committed by both individuals and systems was still abundant in American society. In a national survey of White, Black, and Hispanic workers, the Gallup Center found that one in four Black and Hispanic employees in the U.S. reported having been discriminated against in the workplace within the past year (Lloyd, 2021). Discrimination not only occurs in the work place but also extends into many different facets of life for people of color, and those that hold other marginalized identities, such as in academic environments (Zirkel & Johnson, 2016), the neighborhood context (Stewart et al., 2009), and interactions with the criminal justice system (Taylor et al., 2018). Although many Americans would like to think racial discrimination against Black and Brown people is an issue of the past (Norton & Sommers, 2011), the disheartening reality is that minoritized people still experience individual and systems-level discrimination today.

The extant literature has established the deleterious effects of racial discrimination on the health and well-being of adults. Stock et al. (2017) found that for adults, racial discrimination experienced within the past year exacerbates the effects of current racial exclusion experiences and adversely impacts mental health, including alcohol use willingness, and reduced perceived control over one's life. Further, longitudinal research suggests that the accumulation of discriminatory experiences over time is associated with an increased risk of mental health problems for adults (Bécares & Zhang, 2018). These findings are supported by a meta-analysis conducted by Carter et al. (2019) of over 242 studies published from 1998 to 2015. These studies revealed that racial discrimination is positively associated with multiple types of adverse adult mental health outcomes (e.g., anxiety, depressive symptoms, hostility, anger, and stress) and adverse physical health outcomes (e.g., high blood pressure, elevated body mass index), as well as higher rates of substance use (e.g., alcohol, smoking, polysubstance use) (Carter et al., 2019; Pascoe & Smart

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 Supplemental material for this article can be accessed online at <https://doi.org/10.1080/15374416.2024.2301770>

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Richman, 2009). Interestingly, a meta-analysis by Paradies et al. (2015) found that from over 300 articles on adult racial discrimination and health, the effect size for the association between discrimination and mental health (mean weighted effect size of $-.23$) was larger than the association between discrimination and physical health (mean weighted effect size of $-.09$). Additionally, prior work with other marginalized racial groups, such as Hispanic participants, has also found significant associations between participants' perception of daily discrimination experiences and mental health symptomology (e.g., anxiety symptoms), which have been shown to be related to downstream effects on performance at work and life satisfaction (Howarter & Bennett, 2013). As detailed above, the impact of racial discrimination extends into many critical domains affecting one's quality of life.

Individuals from marginalized racial groups may face discrimination not only directed toward one's racial identity but also as a result of another subordinate-group identity (e.g., being a woman, being lower SES, being a sexual minority). The *Intersectionality* framework, which has historically been used to describe the experiences of African American women at the convergence of race and gender, is critical in fully capturing the deleterious, compounding, and *unique* effects of multiple forms of discrimination experienced by people with various marginalized identities (Crenshaw, 1989; Purdie-Vaughns & Eibach, 2008). For example, although all women may experience sexism, the situation and presentation of sexism differs depending on the race/ethnicity of the woman (for reviews see: Hall et al., 2019; Purdie-Vaughns & Eibach, 2008). Further, Black and Brown individuals may experience discrimination based on their perceived or actual socioeconomic status. The U.S. history of slavery and persistent racial discrimination by both individuals and systems has created a gap in wealth between Black/Brown and White people (Kaba, 2011). Thus, Black/Brown people are disproportionately more likely to come from lower-SES backgrounds and, thus, more likely to experience SES-based discrimination in addition to racial discrimination (Kaba, 2011). And, both racial majority and minoritized individuals assume that Black/Brown people are lower-SES, which has consequences for subsequent judgments, including anti-poverty attitudes and opposition toward policies aimed at helping the poor (e.g., Brown-Iannuzzi et al., 2019; Dupree et al., 2021). This suggests that, as a result of holding multiple subordinate identities, marginalized individuals may experience prejudice for a number of different identities and unique prejudices as a result of holding multiple identities simultaneously. Intersectionality highlights the

importance of recognizing the unique and complex experiences of marginalized individuals along multiple marginalized identities simultaneously (Ailshire & House, 2011).

In prior work utilizing five nationally representative data sources, SES-based discrimination was found to be a strong predictor of adult coronary heart disease, life expectancy, diabetes and obesity within each racial group (Braveman et al., 2010). However, racial disparities were still present at every level of SES, suggesting that racially-based stressors can have grave impacts that are not always buffered by higher levels of education and income (Braveman et al., 2010). Research using experiences of discrimination based on SES found SES discrimination experienced by adults in the past year was associated with poorer sleep quality among African Americans but not among White Americans (Van Dyke et al., 2016). One potential explanatory hypothesis for these findings is that African Americans, unlike White Americans, are disproportionately exposed to structural and institutional discrimination, which are macro-level conditions in which policies limit access to resources, power, and opportunities (Hatzenbuehler et al., 2010; U.S. Department of Health and Human Services, 2021).

Cascading Paths from Parent Discrimination to Wellbeing and Parenting

The negative impact of everyday racial- and socioeconomic-based discrimination on mental health may also have downstream consequences on other critical domains of functioning for adults, particularly for parents. For example, elevated levels of depressive symptoms in the context of frequent discrimination may adversely impact parenting practices, including levels of involvement, positivity, and reactivity/harshness (Anderson et al., 2015), which in turn could adversely affect child functioning. Although it is well established that experiences of racial and SES-based discrimination are related to diminished psychological well-being for adults, a growing body of work also has found that parents' experiences of discrimination are indirectly linked to their children's psychological well-being (Ford et al., 2013; Hughes et al., 2006; Savell et al., 2018). Research on perceived racial discrimination in relation to mothers' parenting practices found support for cascading processes. In one study, perceived racial discrimination was associated with increases in rural African American mothers' stress-related problems, which, in turn, was associated with an increase in depressive symptoms and subsequent adverse effects

on maternal monitoring and repetitious arguing with their children (mean age = 12.7) (Brody et al., 2008). A cross-sectional study with Latinx immigrant mothers and fathers found that parents experiencing elevated levels of racial discrimination endorsed lower levels of social support (possibly as a result of social withdrawal in the context of depressive symptoms), and subsequently exhibited lower levels of child monitoring and higher levels of inconsistent and harsh discipline practices with their children (mean age = 10) compared to parents experiencing lower levels of discrimination (Ayón & García, 2019). Gassman-Pines (2015) found, in a cross-sectional study, that Mexican immigrant parents reported that they interacted less warmly and more negatively with their children on the days they experienced workplace discrimination; further, these parents also reported experiencing lower emotional wellbeing for themselves and higher levels of child (mean age = 3.8) internalizing and externalizing problem behaviors.

This prior cross-sectional work points to a possible cascading path from parental discrimination experiences to parental mental health and parenting practices and subsequently to child problem behavior; however, prospective, longitudinal research is needed to more thoroughly examine such a potential cascading process. As prior research has indicated the value of positive parenting practices in promoting child prosocial behavior and preventing antisocial activities (Chen et al., 2019; Danzig et al., 2015), including among low-income, ethnically/racially diverse samples (O'Neil et al., 2009; Sitnick et al., 2015; Waller et al., 2015), prospective research is needed to identify factors that compromise parents' ability to provide positive parenting. Prior work highlights how children who experience the impact of caregiver's discrimination through negative parenting practices are at an increased risk of developing emotional and behavioral problems (Mays et al., 2007), but the precise mechanisms underlying these associations remain poorly understood (Murry et al., 2022).

Despite the growing body of work highlighting the link between parental discrimination and adolescent behavior, prior work has devoted less attention to the potential cascading relationships, such as how exposure to parent discrimination experiences might lead to compromised parent mental health, then reductions in positive parenting practices and subsequent increases in adolescent antisocial behavior. More research is needed to understand such possible pathways by which parents' experiences of discrimination are related to their children's antisocial behavior to identify points of prevention and intervention based on the prominent role discrimination continues to play in American society.

Youth Behavior and Mental Health in the Context of Discrimination

There is an extensive body of work highlighting the negative effects of adolescent experiences of discrimination on their mental health and problem behaviors (e.g., McNeil et al., 2014; Neblett et al., 2008). For example, early adolescent racial discrimination in African Americans was associated with higher levels of depressive symptoms, greater perceived stress, and lower levels of psychological well-being (Neblett et al., 2008). A longitudinal study by Riina and McHale (2010) also found a link between younger (mean age = 10.37) and older adolescent (mean age = 14.05) experiences of discrimination and poor relationship quality with both mothers and fathers.

Although less attention in the literature has been paid to the negative effects of parents' discrimination on their children's psychosocial outcomes, theoretically racial- and SES-based discrimination experienced by caregivers could compromise optimal parenting practices and have downstream consequences on youth behavior. Building on the well-established association between mother's perceived discrimination and depressive symptoms in African American families, there is also an established relationship between elevated levels of maternal depressive symptoms and child externalizing behaviors (McNeil et al., 2014). In a cross-sectional study, Boyd et al. (2011) found that African American mothers with higher depressive symptoms reported higher levels of externalizing behaviors in their children (ages 7–14). Along with externalizing behaviors in children, prior longitudinal research has shown that more parental experiences with discrimination predicted higher levels of depressive symptoms and lower psychological well-being among adolescents ages 12–17 (Ford et al., 2013). Further, parental experiences of racially based discrimination have been linked to higher levels of internalizing problem behaviors (e.g., depressive symptoms and anxiety) for African American children at age 7 (Anderson et al., 2015) and greater externalizing behaviors for Latinx and African American children ages 7–14 (McNeil et al., 2014).

Additionally, more work is needed to better understand the unique influence of family system level factors (e.g., parental discrimination, mental health, and parenting) on the school-age years as prior work has focused on earlier developmental periods or adolescence alone. The school-age years represent important developmental sequelae including self-concept formation and expansion of self-regulation skills which are key predictors of later behavioral problems (Markus & Nurius, 1984). There are also unique socioemotional

developmental challenges associated with the school-age years (Markus & Nurius, 1984). Further, prior work has highlighted hormonal changes during middle to late childhood in these pre-adolescent periods that may be particularly influential in early peer evaluation, social comparison, and other social stressors which can have downstream effects on the transition to adolescence and later adolescent behavior problems (Shanahan et al., 2007). The effects of social stressors faced by children in the school-age years and the quality of emotional support they receive from caregivers during that time may impact the development of their coping skills for social stressors that tend to intensify during the transition to adolescence and beyond. Further, the experiences of receiving social support from caregivers during these early social stressors influences whether they continue to go to caregivers for emotional support when such stressors increase in frequency or intensity as they develop (Chipuer, 2004; Schinka et al., 2012; Shanahan et al., 2007).

The school-age years represent a critical time in which experiences in the parent-child relationship may be particularly influential on socioemotional development and child behavior prior to adolescence when experiences in peer relationships may have a greater impact on behavior (Dexter et al., 2013). To that end, during middle to late childhood, children are learning to interact with their peers often through parental modeling as they are still watching and imitating their family members (Kumar & Raj, 2016). Taken together, experiences during middle to late childhood set the stage for an adaptive or maladaptive transition to adolescence (Côté, 2009; Votruba-Drzal, 2006).

Under a developmental psychopathology framework, challenging parental experiences during children's middle to late childhood likely represent increased risk for difficulties in the transition to adolescence and downstream consequences on behavior in late adolescence (Eme, 2017). Parental depressive symptoms in the context of experiences of discrimination may interfere with parent-child relationship functioning in those important school age years. Specifically, they may make engaging in positive behavior support and proactive parenting, both of which require considerable energy and time, less likely for parents enduring depressed mood and low activation. Decreased positive behavior support and proactive parenting during the transition to adolescence may again have negative downstream effects on the development of antisocial behaviors during the adolescent years.

However, from a resilience perspective, supporting parents' mental health and parenting practices in the context of the emotional impact of discrimination

experiences may positively impact parent level factors and have positive benefits downstream on the parent-child relationship which may then set the stage for an adaptive transition to adolescence and later adolescent behavior (Anderson et al., 2021; Lei et al., 2021). Importantly, supporting parents in the context of discrimination should not be pursued in isolation and efforts to dismantle systems of oppression that foster continued prevalence of discrimination need to be pursued simultaneously.

Utilizing the current study's sample of ethnically and racially diverse, low income parents and children, Savell et al. (2018) found that parental experiences of racial- and SES-based discrimination during middle childhood were associated with later youth and caregiver reports of antisocial behaviors at age 14. However, in the context of a positive parent-child relationship (e.g., high levels of warmth, support, and communication), children whose parents were experiencing higher levels of discrimination appeared to be buffered from the negative effects of discrimination on their 14-year-old's antisocial behavior (Savell et al., 2018). However, the prior study did not account for parent mental health nor more robust measures of positive parenting practices.

Despite a growing body of work linking parental experiences of discrimination and youth problem behaviors, more research is needed to understand nuances in the possible mechanisms by which these two variables are related. In particular, the effects of low levels of positive parenting practices (e.g., supporting positive behavior, proactive parenting) in the context of elevated parental depressive symptoms remain understudied. The present study seeks to add to the growing body of work by investigating two potential mechanisms (i.e., elevated levels of parental depressive symptoms and low levels of positive parenting) by which parental experiences of discrimination in their children's school-age years are longitudinally related to their adolescents' antisocial behavior.

The Current Study

The current study examined the cascading influences of caregivers' discrimination experiences on adolescent antisocial behaviors in a large ($N = 572$) longitudinal sample of low-income families from African American, Hispanic American, and European American backgrounds. The advantage of the current sample is that we can investigate how diverse and intersectional experiences of prejudice may impact parents and their children. Specifically, extending from past work by Savell et al. (2018) and Anderson et al. (2015), the current study uniquely explored whether caregivers'

experiences of racial and SES discrimination during their children's middle childhood (i.e., age 7.5–9.5) would predict adolescent self-reported antisocial behavior at age 16 via caregiver depressive symptoms and positive parenting practices. These findings have the potential to shed new light on cascading influences between caregiver discrimination and adolescent antisocial behavior. Building on the relation reported in Savell et al. (2018) from youth age 14 and extending later into adolescence (i.e., age 16), we expected that caregiver experiences of discrimination in middle childhood (i.e., child age 7.5–9.5) would predict elevated depressive symptoms at child age 10 and subsequently lower levels of positive parenting practices (e.g., supporting positive behavior, proactive parenting, warmth, support and communication) at child age 14, which would in turn predict increased adolescent antisocial behavior at age 16. Finally, although the sample is comprised of low-income families exposed to socioeconomic-based discrimination, we expected Black and Hispanic American caregivers would experience more discrimination than European American caregivers, recognizing the often compounding intersection of race and socioeconomic status.

Methods

Participants

The participants in the present study were drawn from the 731 families participating in the ongoing, multisite Early Steps Project. Families were initially recruited when the child was between 2 years 0 months and 2 years 11 months of age from Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in the metropolitan areas of Pittsburgh, PA, and Eugene, OR, and the city of Charlottesville, VA, and surrounding counties (Dishion et al., 2008). Families were screened using inclusion criteria during recruitment such as: (a) child behavior (conduct problems, high-conflict relationships with adults), (b) family problems (maternal depressive symptoms, daily parenting challenges, substance use problems, teen parent status) and (c) socio-demographic risk (no more than 2 years post high school education, and low family income). Two or more of the three risk factors were required for inclusion in the sample. All children in the sample had above-normative levels of externalizing problems to ensure significant levels of problem behavior. For a detailed description of the study design and the Family Check-Up intervention, see Dishion et al. (2008).

Of the 731 families (49% female children), 272 (37%) were recruited in Pittsburgh, 271 (37%) in the Eugene

site and 188 (26%) in Charlottesville. Across all sites children were from the following racial groups: 27.9% African American, 50.1% European American, 13.0% biracial and 8.9% other races (e.g., American Indian, Native Hawaiian) and 13.4% of the sample reported being Hispanic American. Throughout the duration of the study two- to three-hour in-home assessments were conducted with the families annually between ages 2 and 5 and 7.5 to 10.5, with additional two-hour home-based follow-up assessments at youth ages 14 and 16.

Caregivers completed questionnaires regarding socio-demographic characteristics, contextual factors, and child behavior, and participated in parent-child discussion tasks that were tailored to be developmentally appropriate at each age. The Primary Caregiver (PC) was identified as the main adult provider of childcare, which generally was the biological mother of the target child (96% of the time), but in some cases was a grandparent, father, or a non-relative. The PC also designated Alternate Caregivers (AC), who could be any significant adult caregiver of the target child (TC) and, in most cases, was the father figure (61%). The present study utilized data from 572 families from the Early Steps Multisite Project for assessments when TCs were ages 2, 7.5, 9.5, 10.5, 14, and 16 years old. Retained families (572 families continued to participate in the study in at least one assessment wave between the age 7.5 and age 16 assessment) and attrited families (159 families did not participate in the relevant questionnaires at any wave between the age 7.5 assessment and age 16 assessment and were no longer included in the analytic sample) did not significantly differ ($ps > .05$) on child gender, child race, PC race, intervention status, site location, annual family income or PC education level at child age 7.5.

Compliance with Ethical Standards

Parents provided written consent prior to the administration of any measures at each assessment. A Certificate of Confidentiality was obtained from the National Institutes of Health to offer further protection of participants' confidentiality and encourage honest reporting. Institutional review board approval was obtained at each site for all screening and assessment procedures. The authors have no conflicts of interest to report.

Measures

Demographic Characteristics

At each annual assessment with the PC and TC, a semi-structured interview was conducted to assess family demographic characteristics such as gender, race and

ethnicity, household annual income, parent education, and household composition. For the current study, site location and intervention status were collected at the age 2 assessment and demographic information on PC and TC gender and race and ethnicity, PC education level, and family income were collected at the age 7.5 assessment. Site location was included as a fixed effect and because there were three locations, two variables were included in our analyses to control for the effect of location. The first contrasted Charlottesville, VA with Pittsburgh, PA, and the second contrasted Eugene, OR with Pittsburgh, PA.

PC Experiences of Everyday Discrimination

PC experiences of discrimination were measured using the Microaggression Scale (MIC; adapted from Walters et al., 2002), administered at the age 7.5 and 9.5 assessments. The MIC is a 9-item measure assessing experiences of ethnic/racial and income discrimination from others. See the Supplemental Materials for the list of items on the MIC utilized in the present study. Parents rated the frequency of discrimination in specific situations that they faced at child ages 7.5 and 9.5 (e.g., “Have you ever been expected to act in a stereotypical manner because of your ethnicity/race? because of your income?”) on a scale ranging from 1 (*almost never*) to 5 (*almost always*). Total scores across the nine items on the MIC for race and SES based discrimination were calculated at age 7.5 and at age 9.5. For both ages 7.5 and 9.5, Cronbach alphas indicated excellent internal reliability for PC income ($\alpha = .88-.89$) and racial discrimination ($\alpha = .87-.88$). Scores for race discrimination at age 7.5 and 9.5 were correlated at .65 and were averaged. Similarly, scores for SES based discrimination at age 7.5 and 9.5 were correlated at .62 and were averaged. Finally, the average racial discrimination score across ages 7.5 and 9.5 was added to the average SES based discrimination score across ages 7.5 and 9.5. This combined score that represented intersectional racial and SES discrimination was utilized in the present study analyses.

Primary Caregiver Depressive Symptoms

Primary caregivers completed the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) at the age 10.5 assessment. The CES-D Scale is a 20-item self-report scale designed to measure depressive symptomatology in the general population. Primary caregivers rated how often they felt each symptom during the past week on a four-point scale ranging from “rarely or none of the time” to “most or all of the time.” Sample items include “I had trouble keeping my mind on what I was doing” and “I had crying spells.” Summed scores were utilized. Cronbach alphas indicated excellent internal consistency among items ($\alpha = .92$).

Positive Parenting Practices

A latent factor was developed to assess multiple facets of primary caregivers’ positive parenting practices, which included positive behavior support, proactive parenting and positive parent-child relationship quality. Primary caregivers completed the Parenting Youth and Adolescents (PARCA) measure at the age 14 assessment. The PARCA is a 14-item self-report measure designed to assess perceived parental competence in four domains: supporting positive behavior, proactive parenting, limit setting and monitoring (McEachern et al., 2012). We utilized the two parenting strategies associated with increasing the frequency of positive behaviors that are not punitive in nature. Parents were asked to rate how often they engage in each item on a seven-point scale from “*not at all*” to “*most of the time*.” A sample item from the supporting positive behavior scale is “Reward your child when they did something well or showed a new skill?” and a sample item from the proactive parenting scale is “Prepare your child for a challenging situation (such as starting a new school or going into a stressful situation)?” Total scores were used in this analysis. Cronbach alphas indicated adequate internal consistency for positive behavior support ($\alpha = .72$) and for proactive parenting ($\alpha = .74$).

PCs also completed the Adult Child Relationship Scale (ACRS) at the age 14 assessment. The ACRS is a 15-item measure adapted from the Student-Teacher Relationship Scale (Pianta et al., 1995), which assesses the quality of the parent – child relationship and yields two subscales: the Positive Relationship subscale and the Conflict Relationship subscale (See Supplemental Materials for the list of items used). To determine if a positive parent – child relationship would explain the effects of caregiver discrimination on adolescent anti-social behavior, the five-item Positive Relationship subscale was used in the present study. A sample item from the Positive Relationship subscale is “If upset, this child seeks comfort from me.” Responses were on a Likert scale of 0 (*Definitely not*) to 4 (*Definitely*). Cronbach alpha ($\alpha = .79$) indicated acceptable internal consistency. We utilized structural equation modeling for developing the latent factor of positive parenting practices including the total scores on proactive parenting, supporting positive behavior, and positive parent-child relationship quality.

Adolescent Antisocial Behavior

To assess youth antisocial behaviors, target youth completed an adapted version of the Self Report of Deviance Questionnaire (SRD; Elliot et al., 1985) at the age 16 in

home assessment that did not include substance use items as a more in-depth measure of adolescent substance use was administered at this wave. The 46-item SRD assesses the frequency of aggressive and other antisocial behaviors an individual has engaged in over the past 12 months. Responses are coded on a Likert scale of 0 (*never*), 1 (*once/twice*), and 2 (*more often*). Sample items include: “Have you cheated on school tests? Have you stolen or tried to steal a bicycle or skateboard? Have you been arrested?” Scores on the 46 items were summed to create a total score. Cronbach alpha indicated excellent internal reliability, $\alpha = .90$.

Data Analysis

Descriptive statistics and intercorrelations were computed using the Base package in R (R Core Team, 2021). The main study hypotheses were tested with structural equation models (SEM) using the “lavaan” package in R. The lavaan package was used to longitudinally investigate via SEM the pathways between primary caregiver experiences of discrimination in children’s middle childhood and adolescent antisocial behaviors. A latent variable of positive parenting practices at youth age 14 was created to account for multiple indicators of positive parenting. The latent variable, positive parenting practices at youth age 14, incorporated positive behavior support, positive parent-child relationship, and proactive parenting. The indicators of the latent variable were significantly correlated ($ps < .001$) suggesting adequate factor loadings. In our first reported model, the loading of supporting positive

behavior on this latent factor was constrained to 1, the loading of positive parent-child relationship quality was .41, and the loading of proactive parenting practices was .53. In our second reported model, these loadings were 1 (constrained), .35, and .45, respectively. The outcome variable (i.e., youth antisocial behavior at age 16) showed skewness and was transformed using square root transformation prior to estimation. We chose to transform the variable rather than using robust standard errors or other approaches, in line with recent work by Knief and Forstmeier (2021), which suggests that this method may be the most helpful approach when variance strongly increases with the mean, as was the case with these data. Transformation resulted in reduced skew for youth antisocial behavior (2.7 to 0.66).

To test the study hypotheses, we first fit a serial mediation model (Cascading Developmental Model depicted in Figure 1) which included PC depressive symptoms at youth age 10.5 and subsequently levels of positive parenting practices at youth age 14 as potential mediators of the relationship between PC experiences of discrimination at youth ages 7.5 and 9.5 and adolescent antisocial behavior at age 16. This model controlled for intervention status and youth gender. The full model is depicted in Figure 1. Additionally, we fit a multigroup model to examine whether there was any better fit when the paths were allowed to vary based on treatment group compared to when they were not allowed to vary based on treatment group (see Sensitivity Analysis below for more details). Conventionally, well-fitting models have χ^2 values between two to five times larger than the model degrees of freedom, comparative fit index (CFI)

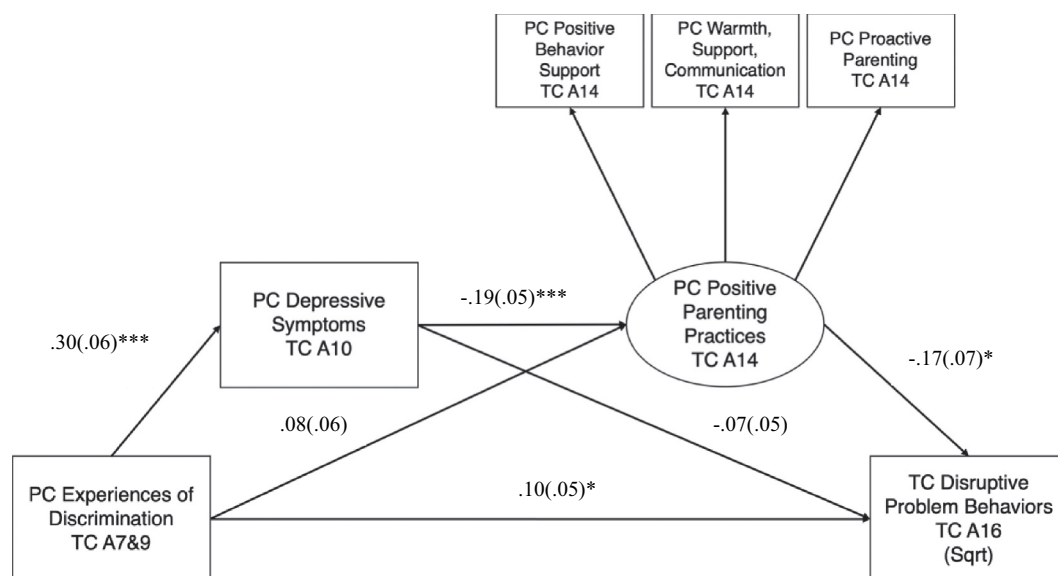


Figure 1. Cascading developmental model. Standardized regression coefficients are shown with standard errors in parentheses. Intervention status and TC gender were included as covariates in this model. $^{***}p < .001$, $^{**}p < .01$, $^*p < .05$. PC = Primary Caregiver; TC = Target Child; A = Age

and Tucker-Lewis Index (TLI) values $> .95$, a root mean square error of approximation (RMSEA) value $< .80$, and a standardized root mean square residual (SRMR) value $< .80$, although there is some debate around the exact cutoff points (Hooper et al., 2008).

Next, we fit a second serial mediation model (Ecological Model with PC Race as First Predictor depicted in Figure 2) that accounted for ecological factors in which PC's educational level, family income, and site location of the family were included as covariates in addition to intervention status and youth gender. Location was included as a fixed effect and because there were three locations, two variables were included in our analyses to control for the effect of location. The first contrasted Charlottesville, VA with Pittsburgh, PA, and the second contrasted Eugene, OR with Pittsburgh, PA. To increase sample size and subsequent power to detect effects, African American and Hispanic/Latinx PCs were included in one group to reflect the broad experiences of PCs coming from a marginalized racial background. Whether the PC came from a marginalized racial background was the first predictor of the cascading pathway, followed by levels of PC discrimination, PC depressive symptoms, PC positive parenting practices, and TC antisocial behavior. The full model is depicted in Figure 2. The second model incorporated ecological factors to account for the expectation that although the sample is comprised of low-income families exposed to socioeconomic-based discrimination in rural, suburban, and urban locations, we expected African American and Hispanic American PCs would experience more discrimination than European American PCs. This strategy attempted to account for the often compounding intersection of race and socioeconomic status. However, the experiences of African American and Hispanic/Latinx individuals are distinct within the historical and cultural aspects of the United States; future research with larger

samples of Hispanic/Latinx and African American caregivers would benefit from study designs that are well-powered to examine the unique experiences of these groups separately.

Results

Descriptive Statistics and Intercorrelations

Descriptive statistics for categorical demographic characteristics are presented in Table 1 and continuous demographic characteristics are presented in Table 2. Descriptive analysis of race and SES discrimination revealed that the average discrimination scores were 5.61 (SD = 2.00) with a range of 4 to 13.89 with 84% of PCs endorsing multiple experiences of discrimination in their children's school-age years. Intercorrelations are presented in Table 3.

Cascading Developmental Model

A linear regression controlling for intervention status and youth gender ($n = 572$) showed that higher levels of caregiver experiences of discrimination at child ages 7.5 and 9.5 predicted more adolescent antisocial behavior at child age 16, $b = .100$, $SE = .045$, $p = .027$. We next tested our serial mediation model. Our full model including the covariates youth gender and intervention status ($n = 391$) showed adequate fit, $\chi^2_{(10)} = 23.20$, $p = .212$; CFI = 0.983; TLI = .957; RMSEA = 0.029 [0.000, 0.066], SRMR = 0.027. Higher levels of caregiver experiences of discrimination in their children's middle childhood predicted higher levels of caregiver depressive symptoms at child age 10.5, $b = .303$, 95% CI [.186, .432], $SE = .062$, $p < .001$, which then predicted lower levels of positive parenting practices at child age 14, $b = -.187$, 95% CI [-.289, -.081], $SE = 0.053$,

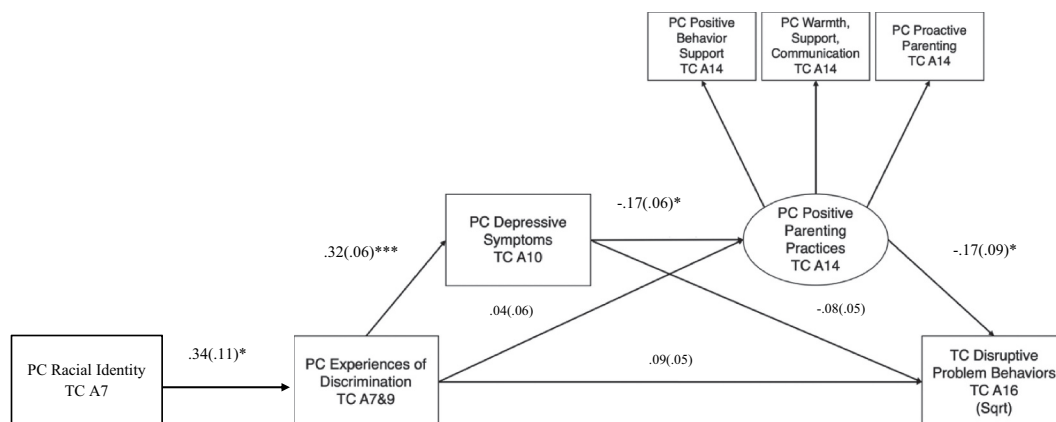


Figure 2. Ecological model. Standardized regression coefficients are shown with standard errors in parentheses. PC's educational level, family income, site location of the family, intervention status, and TC gender were included as covariates in this model. $^{***}p < .001$, $^{**}p < .01$, $^*p < .05$. PC = Primary Caregiver; TC = Target Child; A = Age

Table 1. Descriptive statistics of categorical variables.

Variable	N (%)	Variable	N (%)
Intervention Status		PC Race	
Treatment group	288 (50.3%)	Asian	2 (0.4%)
Control Group	284 (49.7%)	Black/African American	163 (28.8%)
TC Gender		Hispanic/Latinx	49 (0.17%)
Male	283 (49.5%)	Native American	10 (1.75%)
Female	289 (50.5%)	Native Hawaiian/Pacific Islander	1 (0.17%)
TC Race		White	313 (55.4%)
Black/African American	165 (29.20%)	Biracial	17 (3.85%)
Hispanic/Latinx	42 (7.4%)	Other	5 (0.90%)
White	270 (47.80%)		
Native American	4 (0.7%)	Site Location	
Biracial	64 (11.3%)	Charlottesville, VA	147 (25.7%)
Other	8 (1.4%)	Eugene, OR	207 (36.1%)
		Pittsburg, PA	218 (38.1%)

Note: Primary Caregiver (PC) and Target Child (TC) gender were coded as 1 = male, 8 = female. Intervention status was coded as 0 = control, 1 = Family Check-up. Site location was included as a fixed effect and because there were three locations, two variables were included in our analyses to control for the effect of location. The first contrasted Charlottesville, VA with Pittsburgh, PA, and the second contrasted Eugene, OR with Pittsburgh, PA.

Table 2. Descriptive statistics of continuous variables.

Variable Name	Mean	SD	Range	Number Missing (%)
PC Education in Years (TC age 7.5)	12.59	2.07	0–19	81 (14.2%)
Annual Family Income (TC age 7.5)	\$27,801.74	\$18,085.45	\$0–\$100,000	97 (17.0%)
PC Race and SES Discrimination (TC age 7.5–9.5)	5.61	2.00	4–13.89	117 (20.5%)
PC Depressive Symptoms (TC age 10.5)	3.21	1.59	0–7.55	70 (12.2%)
Proactive Parenting (TC age 14)	4.93	1.22	1–6	55 (9.62%)
Positive Relationship (TC age 14)	20.03	4.35	5–20	43 (7.52%)
Positive Behavior Support (TC age 14)	5.5	0.94	2.57–4.43	44 (7.69%)
TC Self-Reported Antisocial Behavior (TC age 16)	1.92	1.36	0–7.42	0 (0%)

Note: Primary Caregiver (PC) education is the number of years of education. Annual income is in US dollars. TC is target child.

Table 3. Intercorrelations among constructs in full model.

	PC Discrimination	PC Depressive Symptoms	Positive Parent-child Relationship	Positive Behavior Support	Proactive Parenting	TC Antisocial Behaviors
PC Discrimination	1					
PC Depressive Symptoms	.29****	1				
Positive Parent-child Relationship	-.01	-.14**	1			
Positive Behavior Support	.01	-.19***	.32****	1		
Proactive Parenting	.10*	-.11*	.12*	.44****	1	
TC Antisocial Behaviors	-.11*	.02	-.14**	-.12*	.44****	1

Note: * $p < .1$, ** $p < .05$, *** $p < .01$, **** $p < .001$ PC is Primary Caregiver. TC is Target Child.

$p < .001$. Lower levels of positive parenting practices in turn predicted higher levels of youth-reported antisocial behavior at age 16, $b = -.171$, 95% CI $[-.328, -.044]$, $SE = .073$, $p = .019$. The confidence intervals of a 5,000 resample bootstrapped estimate of the indirect effect of caregiver discrimination on adolescent antisocial behavior via caregiver depressive symptoms and positive parenting did not include zero, $b = .010$, 95% CI $[-.002, .024]$, $SE = .006$, suggesting that the data are consistent with serial mediation. See Figure 1 for a depiction of the results.

Ecological Model with PC Race as First Predictor

A one-way ANOVA revealed that African-American PCs were endorsing more racial and SES based

discrimination than Hispanic/Latinx and White PCs (ps between .001 and .02). We next tested our serial mediation model with PC race as the first predictor ($n = 317$). The full model including the covariates youth gender, intervention status, PC educational level, annual family income and family site location (with Pittsburgh, PA, as the reference group), fit the data adequately, $\chi^2(20) = 33.70$ CFI = .938, TLI = 0.824, RMSEA = 0.043 [0.014, 0.067], SRMR = 0.031. Holding a marginalized racial identity (i.e., PCs coming from Black and Hispanic American backgrounds) predicted higher levels of caregiver experiences of discrimination at child ages 7.5 and 9.5, $b = .335$, 95% CI $[-.116, .558]$, $SE = .111$, $p = .003$. Higher levels of caregiver experiences of discrimination in their children's middle childhood predicted higher levels of caregiver depressive symptoms at

child age 10.5, $b = .323$, 95% CI [.206, .457], $SE = .064$, $p < .001$, which then predicted lower levels of positive parenting practices at child age 14, $b = -.167$, 95% CI [-.280, -.053], $SE = 0.057$, $p = .003$. Lower levels of positive parenting practices were, in turn, related to higher levels of youth-reported antisocial behaviors at age 16, $b = -.167$, 95% CI [-.348, -.024], $SE = .085$, $p = .048$. The confidence intervals of a 5,000 resample bootstrapped estimate of the indirect effect of caregiver discrimination on adolescent antisocial behavior via caregiver depressive symptoms and positive parenting did include zero, $b = .003$, 95% CI [.00, .01], $SE = .003$, suggesting that the data are inconsistent with serial mediation, see Figure 2 for a depiction of results. However, each hypothesized pathway was significant and in the expected direction, consistent with a cascading model of the effect of caregiver racial identity on perceived discrimination, depressive symptoms, positive parenting, and adolescent antisocial behavior.

Sensitivity Analysis for Intervention Effects

Although the present study accounted for the effects of the intervention within the model, it should be noted that separate multigroup analyses suggested that these models did not fit any better when the paths were allowed to vary based on treatment group than when they were not allowed to vary based on treatment group, suggesting that the effects are similar for both intervention and control group participants.

Discussion

The present study extends a growing body of research on the effects of parental discrimination on child development (e.g., Anderson et al., 2015; Ford et al., 2013; Savell et al., 2018) by investigating two potential mechanisms: parental depressive symptoms and low positive parenting practices. Consistent with prior research, we found that caregiver experiences of discrimination during their child's school-age years were associated with future parent depressive symptoms and lower levels of positive parenting, which in turn were associated with higher levels of later youth antisocial behavior. We found evidence for a negative cascading effect of discrimination to proximal family processes that have been consistently linked to youth problem behavior: maternal depressive symptoms and low positive parenting (Boyd et al., 2011; Mays et al., 2007). This finding suggests that systems of oppression that allow discrimination experiences to persist may jeopardize children's psychosocial development by increasing proximal family process risks for adolescent antisocial behavior.

Additionally, and in line with Brody et al. (2008) and others (e.g., Anderson et al., 2015), we found that caregivers' experiencing higher levels of race and SES discrimination in their children's middle childhood (e.g., ages 7.5–9.5) were more likely to be experiencing higher levels of depressive symptoms at child age 10.5. Further, in our ecological model, we found that based on the systematic oppression of people of color in the United States, unsurprisingly African American and Hispanic American PCs reported experiencing the highest levels of race and SES-based discrimination. However, future work with larger samples of Hispanic/Latinx and African American PCs would benefit from study designs that can examine the unique experiences of these groups separately. Previous work has largely focused on parental discrimination experienced in their children's early childhood or late adolescence; thus, focusing on the school-age years in the present study represents a novel contribution to the present literature on the impact of parental discrimination on their children's problem behavior across development (Ford et al., 2013; Hughes et al., 2006).

Building on prior work (e.g., Varner et al., 2020), we found that caregivers experiencing elevated levels of depressive symptoms in the context of discrimination were less likely to engage in positive parenting practices (e.g., supporting positive behavior, proactive parenting, warmth, support and communication). Previous research on parental discrimination and parenting practices has focused on the effects of harsh, coercive parenting in the context of discrimination and diminished parent mental health (Anderson et al., 2015; Ayón & García, 2019; Mays et al., 2007). Understanding how low levels of positive parenting practices in the context of parental discrimination experiences and associated downstream effects on parental mental health may impact adolescent antisocial behavior represents an important contribution to the literature for teachers, policy makers, and practitioners developing interventions to support families in reducing risk for adolescent antisocial behavior. The findings highlight the critical need for teachers and policy makers to be aware of the impact of broader systems in which the youth is situated (e.g., family system, societal structures and systems of oppression that allow daily discrimination experiences to persist) on youth behavior and for clinicians to consider the impact of these broader systems in their case conceptualization and treatment planning with youth.

The prevalence of discrimination has come to the forefront of many Americans' minds in response to the murder of George Floyd and subsequent rise of the Black Lives Matter movement (Rickford, 2016). Recent research sheds light on the far-reaching impacts of

discrimination on one's health and wellbeing (American Public Health Association, 2018). Individuals from marginalized racial groups face discrimination not only directed toward racial identity but also toward one's SES (Braveman et al., 2010), which has profound effects on mental health and well-being (Bécares & Zhang, 2018). The negative impact of racial and SES discrimination also has downstream consequences on other critical domains of life, particularly for parents. Experiences of discrimination often are associated with worsening mental health concerns for family systems and, as our findings suggest, may influence the degree to which parents are able to engage in positive parenting practices. Supporting families experiencing discrimination remains critical; however, simultaneous efforts to dismantle systems of oppression that allow the perpetration of discrimination to persist are essential.

Strengths and Limitations

The present study has a number of strengths including the use of multiple informants, the use of a large, prospective longitudinal design that spans middle childhood into mid-adolescence, and a sample of low-income families from diverse racial and ethnic backgrounds and communities (i.e., rural, suburban, and urban settings). The findings themselves extend prior work on the links between caregiver discrimination and youth problem behavior and highlight the meaningful effects of how discrimination influences maternal depressive symptoms and subsequent low levels of positive parenting practices, and subsequent youth-reported adverse impacts on their antisocial behavior. However, several limitations should be acknowledged in interpreting these findings. PCs self-reported on their discrimination experiences, depressive symptoms, and parenting practices; hence, associations among these variables should be interpreted in light of the potential for both reporter and method bias to inflate the magnitude of associations (Fergusson & Horwood, 1989). To partially address this limitation, the present study utilized a multi-informant approach by incorporating adolescent reports of antisocial behavior. However, it would benefit future work to include additional methods (e.g., observations of parenting) and informants (e.g., teacher reports of youth antisocial behavior) to increase the credibility of findings. Additionally, it would strengthen future study designs examining the cascading influences of parental discrimination to account for parental depressive symptoms and child behavior in early childhood. As 96% of the PCs were biological parents of the target children in the present study, future research also would benefit from genetically informed research designs that are able to account for the potential dynamic interplay between environment and

genetic risk for adolescent antisocial behavior (Lemery-Chalfant et al., 2019).

Scant research in the present literature has explored the potential buffering effect of family-based interventions on the strength of the association between parental experiences of racial and socioeconomic based discrimination and their children's problem behavior in late adolescence. Although the present study accounted for the effects of the intervention within the model, separate multigroup analyses suggested that these models did not fit any better when the paths were allowed to vary based on treatment group than when they were not allowed to vary based on treatment group, suggesting that the effects are similar for both intervention and control group participants. This suggests that modifications to family-based interventions will be needed to address discrimination as an ecological stressor for families. To our knowledge, it has not been examined in the prior literature whether other evidence-based family interventions (e.g., Parent-child Interaction Therapy, Parent Management Training, Incredible Years) are able to buffer the negative effects of parental discrimination on parenting practices and their children's later problem behavior; this area remains an important topic of future study. Threats to parent well-being, such as parental experiences of discrimination, may have less of an impact on youth behavior when there is a stronger bond between parent and child, which may be facilitated by a culturally informed family-based intervention to bolster positive parenting practices and support the parent-child relationship. Future research could build on the present study by implementing strengths-based, culturally informed family interventions to buffer the effects of parental discrimination on the psychological well-being of the parent and child, as well as the overall family system. However, these intervention efforts cannot be pursued in isolation; rather, simultaneous efforts to mitigate racism and discrimination among perpetrators, and policy change to reduce systemic racism, are needed.

Implications and Conclusion

The present study reaffirms the deleterious effects of parents' exposure to racial and SES discrimination and the need to dismantle systems that condone and endorse oppression. Leaning on Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1986), experiences in the parent-child relationship (e.g., caregiver mental health, parenting practices) and broader community and societal context (e.g., systems of oppression) represent critical features of the child's environment that influence risk for

adolescent antisocial behaviors; thus, in terms of Bronfenbrenner's ecological model, discrimination experienced by caregivers may impact the development of adolescent antisocial behaviors at the level of both the microsystem and exosystem.

Our findings indicate that the consequences of higher levels of caregiver experiences of discrimination during their child's school-age years contributes to antisocial behaviors in their child's late adolescence. Additionally, we found that higher levels of PCs' depressive symptoms predicted lower levels of caregiver endorsement of positive parenting practices, which then predicted higher levels of adolescent antisocial behaviors. Consistent with the ecological systems theory first proposed by Bronfenbrenner (1986) and updates to this theory specifically for families of color proposed by Stern et al. (2022), interventions should take into account the effects of systems of oppression on the family system. As a society, we need to work to address discrimination based on race, class, socioeconomic status, gender, sexual orientation or any other facet of an individual's identity. When supporting parents in strengthening their use of positive parenting practices, it will be essential to address experiences of discrimination and its negative impact on parent mental health.

Acknowledgments

Support for this research was provided by the National Institute on Drug Abuse to the fifth, sixth, and seventh authors (R01 DA023245, R01 DA022773). We also extend our appreciation to the staff and research participants of the Early Steps Multisite Study.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

Funding

The work was supported by the National Institute on Drug Abuse [R01 DA023245, R01 DA022773].

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