



Making a Bad Situation Worse: Race, Poor Health Behaviors, and Daily Family Stressor Reactivity

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Abstract

Prior research posits that for African Americans, engaging in poor health behaviors (PHBs), such as smoking or drinking, buffers the negative effects of stressful life events. This study explored how PHBs exacerbate (double jeopardy) or buffer reactivity to daily family stressors among African Americans and European Americans ($N=1931$) ages 34–84 from the National Study of Daily Experiences (NSDE II). During 8 days of telephone interviews, respondents reported on family stressors, health behaviors (number of cigarettes and alcoholic beverages), affect, and physical symptoms. For African Americans affective reactivity to family arguments was exacerbated on days they smoked more than usual and on days they drank more than usual. In contrast, drinking buffered African Americans' reactivity to network events (i.e., events that happen to a family member). For African Americans, drinking mitigated the negative effects of network stressors, while exacerbating reactivity for family arguments, underscoring the significance of stressor context.

Keywords African Americans · Stress · Family relationships · Health disparities · Daily diary · Health behaviors

Introduction

Despite greater stressor exposure, African Americans report comparable or better mental health compared to European Americans (Breslau et al., 2006), whereas African Americans often experience poorer physical health compared to their European American counterparts (Assari, 2018). In an effort to explain this paradox of mental health, researchers forwarded *the buffering hypothesis* or the Environmental Affordances (EA) Model, positing that engaging in poor health behaviors (PHBs; e.g., smoking, drinking alcohol, emotional eating) protects African Americans from poor mental health in the short term, while contributing to African Americans' increased risk of chronic disease

and mortality over the long term (Boardman & Alexander, 2011; Jackson et al., 2010; Mezuk et al., 2010). Studies suggested that among African Americans, those who engaged in more PHBs were less likely to experience depression in the context of stressful life events (Boardman & Alexander; Jackson et al.; Mezuk et al.). This was true even though African Americans were found to be less likely to turn to PHBs when stressed (Boardman & Alexander). Other work, however, contradicted these findings, revealing no racial differences in the role of PHBs (Keyes et al., 2011). Further, research suggested that although prevalence rates for mental health disorders may be lower among African Americans, African Americans experienced more severe, persistent, and debilitating depression when it did occur (Breslau et al.). Together, these equivocal findings highlight the need for additional research that examines the links between race, stressors, health behaviors, and health and well-being.

Race, Poor Health Behaviors, and Daily Family Stressors

Scholars further emphasize the importance of considering the specific social and environmental conditions that affect African Americans' health and well-being (Murry et al., 2018). Although African Americans' extensive family

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networks are often cited as protective, racial differences in the availability and quality of family relationships also failed to explain the race paradox in mental health (Mouzon, 2013). Mouzon (2013) found that African Americans actually reported more family strains (e.g., conflicts, social support demands) compared to European Americans, adding to research citing the costs associated with African Americans' family ties (Cichy et al., 2012; Taylor et al., 2011). A growing body of work finds that race-specific factors, such as systemic racism and discrimination, heightened negative family interactions, take a toll on romantic and parent-child relationships (Murry et al.). Family stressors also placed individuals at risk for engaging in PHBs, such as alcohol use, including binge drinking (Rodriguez et al., 2020) and smoking (Slopen et al., 2013). Arguably, there is reason to expect that PHBs may co-occur with daily family stressors that arise in the course of everyday family interactions (e.g., arguments, other family members' problems). It remains unclear if and to what extent PHBs moderate the effects of daily family stressors on health and well-being and whether these associations vary by race.

Prior research focused on African Americans' disproportionate exposure to chronic stressors, such as discrimination, or less frequently occurring major stressful life events, such as job loss or life-threatening illness (Jackson et al., 2010). These studies relied on between-person differences in the links between stress and mental health (Jackson et al.; Mezuk et al., 2010), where the focus was on *who* is stressed rather than *when* people are stressed. By definition, stress is a process that occurs within an individual when someone encounters a challenging or disruptive event and evidences a reaction to the event (Smyth et al., 2018). Daily diary methods capture these within-person processes, making it possible to examine day-to-day fluctuations in health and well-being within the same individual over time, as well as associations with naturally occurring stressful experiences (Almeida, 2005; Bolger et al., 2003). Thus, the current study seeks to shift the focus from a wide range of relatively infrequent life events to focus on more frequently occurring daily events to examine how stressors and health behaviors interact to have proximal influences on health and well-being (Almeida, 2005).

Even among family stressors, however, it is important to acknowledge that not all types of family stressors are the same. The current study considered two distinct types of family stressors, *family arguments*, which are comprised of overt conflicts and avoided disagreements, and *family network events*, which include stressful events that happen to a family member (e.g., sister's relationship difficulty) that illicit distress in the respondent (Cichy et al., 2012). Family stressors occur frequently in daily life and daily diary research found that African Americans report experiencing a family argument on 15% of days and a network event on 3%

of study days (Cichy et al.). Although both types of family stressors are expected to be disruptive, PHBs may confer different effects on reactivity depending upon the unique stressor context. Arguably, family network events, which involve someone else's problems, are likely to be the most outside of the respondent's immediate control. Research on the "Superwoman Schema," a schema for cultural expectations for how Black women are expected to enact womanhood, found direct effects between the obligation to help others and depression (Nelson et al., 2022), suggesting network stressors may hold unique consequences for African Americans. Further, these findings underscore the significance of distinguishing between the different sources of family stress. To address this gap in the literature, the current study separately explored the extent to which PHBs buffer or exacerbate affective and physical reactivity to family arguments and family network events to explicitly consider variability across different family stressor contexts.

Environmental Affordances Model (Buffering Hypothesis)

According to the Environmental Affordances Model (EA; *buffering hypothesis*), the negative effects of family stressors should be reduced on days when individuals engage in PHBs, such as cigarette smoking or drinking alcoholic beverages (Jackson et al., 2010; Mezuk et al., 2010). Jackson et al. (2010) suggested that individuals may turn to PHBs to alleviate the immediate symptoms of stress because the perceived, immediate rewards are more accessible than the delayed, longer-term consequences of PHBs (e.g., heart disease, cancer). For example, both smoking and drinking alcoholic beverages are perceived to increase feelings of relaxation and to reduce anxiety (Carrigan et al., 2008).

Mezuk et al. (2010) further suggested that stress-responsive behaviors are also shaped by the characteristics of the environment. In African American families, stressful family experiences are likely to occur within the context of chronic stressors, such as discrimination, economic and relationships strains, and stressful life events (Mouzon, 2013). On a daily basis, these contextual factors may exhaust the resources African Americans have available to cope with daily stressors creating a context where engaging in more PHBs on days family stressors arise may be a more environmentally accessible coping strategy (Mezuk et al.). Arguably, daily family network events (i.e., stressors experienced by a close family member) and to a lesser extent, family arguments, are stressful experiences over which individuals have limited control that are simultaneously agitating and anxiety-provoking. Therefore, engaging in PHBs in the context of experiencing family stressors may buffer family stressor-related differences in daily affect and physical symptoms,

and this effect may be particularly evident among African Americans (Hypothesis 1).

Double Jeopardy Hypothesis

The *double jeopardy hypothesis* offers an alternative perspective, suggesting that engaging in PHBs is a deleterious coping strategy (Aronson et al., 2008), such that when family stressors co-occur with PHBs, stressor reactivity may be exacerbated. For example, although drinking alcohol reduces an individual's own anxiety (Carrigan et al., 2008), drinking also reduced inhibitions, impaired decision-making, and can increase aggressiveness (Armeli et al., 2007), possibly creating additional sources of family stress and intensifying rather than alleviating distress. Similarly, prior research also suggested that the nicotine-depletion cycle experienced by smokers taxed the resources available to effectively cope with stressors, increasing rather than decreasing daily negative affect (Aronson et al.).

Moreover, research revealed racial differences in the effects of PHBs. African Americans smoked fewer cigarettes per day yet experienced greater health consequences from smoking than other racial/ethnic groups (Moolchan et al., 2007). Also, despite lower rates of drinking, African Americans experienced more consequences when they drank (e.g., arguments with a spouse, arrests, injuries/accidents, and health consequences; Mulia et al., 2009; Zapolski et al., 2014), even for those who reported little or no heavy drinking (Mulia et al.). These findings may reflect cultural norms in African American families against alcohol use and within-group social disapproval when drinking occurs as well as societal differential treatment toward African Americans when they drink (Zapolski et al.). For these reasons, PHBs may exacerbate family stressor-related increases in daily negative affect and physical symptoms for both races; however, we anticipated these effects would be amplified among African Americans (Hypothesis 2). Conceivably, social and physiological consequences associated with smoking and drinking among African Americans may translate into greater costs to daily health and well-being when family stressors and PHBs co-occur.

The Current Study

In summary, this study expanded upon previous research by testing two competing hypotheses, the *Environmental Affordances Model/buffering hypothesis*, where engaging in PHBs mitigates the negative effects of family stressors or reduces stressor reactivity and the *double jeopardy hypothesis*, whereby engaging in PHBs intensifies the negative effect of family stressors or exacerbates stressor reactivity. Existing research related to both hypotheses focused on exposure to major stressful life events across multiple

life domains (Boardman & Alexander, 2011; Jackson et al., 2010; Mezuk et al., 2010). Therefore, the current study represents an important step in reconciling these disparate perspectives by shifting the focus from individual differences in responses to life events to focus on within-person variability—how PHBs modulate individuals' affective and physical responses to naturally occurring family stressors. Family stressors are ubiquitous and are among the strongest contributors to mental health (Hammen, 2005), where the same family relationships that offer love and support are at times conflicted and demanding (Cichy et al., 2012; Taylor et al., 2011). Moreover, variability within family stressors (i.e., family arguments and network events) may also offer important insights into how race and PHBs are associated with family stressor reactivity. The use of the daily diary paradigm made it possible to examine the immediate health implications associated with co-occurring family stressors (i.e., family arguments and network events) and PHBs. In this study, we considered both affective reactivity (i.e., family stressor-related differences in daily affect) and physical reactivity (i.e., family stressor-related differences in physical health symptoms). This approach adds to the literature by taking a more process-oriented approach to the study of how stressors and health behaviors interact to have a proximal influence on health and well-being (Almeida, 2005).

Methods

Participants

The sample is from the second wave the National Study of Daily Experiences (NSDE II), the daily diary study from Midlife in the United States (MIDUS II). NSDE respondents included a national subsample of European American men and women aged 35–84 years from across the United States ($n = 1703$) and a subsample of African Americans from Milwaukee, WI stratified by income to increase socioeconomic diversity ($n = 228$). Milwaukee, one of the most segregated cities in the U.S., offered a unique context to explore racial health disparities (Massey & Denton, 1993).

Compared to European Americans, African Americans were younger, reported fewer years of education and lower household incomes, and were less likely to be married. There were no racial differences in the number of drinks consumed, although African Americans reported smoking more cigarettes than European Americans did. African Americans also reported higher negative affect, more physical symptoms, less family support, and more family strain compared to their European American counterparts.

Procedures

All respondents participated in daily telephone interviews for eight consecutive days, where they provided information about their daily stressful experiences (e.g., family stressors, health behaviors, affect, and physical symptoms). For more information, please see Cichy et al., 2012.

Measures

Daily Family Stressors

Family stressors were assessed using the Daily Inventory of Stressful Events (DISE; Almeida et al., 2002) that included a series of questions about whether respondents had experienced a series of different stressful events, including arguments and network events (i.e., stressors that do not directly involve the respondent they deem to be stressful, such as learning about a sister's marital difficulties). Respondents indicated who else was involved in the event, and events were coded as family stressors if they involved a child, parent, spouse/partner, grandchild, and other relatives (e.g., siblings). Family arguments and network events were each indicated as a dichotomous variable (1 = *event occurred on that day*; 0 = *no event on that day*).

Daily Health Behaviors

Each day, respondents reported on the number of cigarettes they smoked and the number of alcoholic beverages (e.g., bottle of beer, glass of wine, or shot of liquor) they consumed.

Daily Negative Affect

Daily negative affect was assessed using 14-items and respondents indicated how often during the past day they experienced fourteen different negative emotions (e.g., sad, angry on a 4-point scale ranging from 0 (*none of the time*) to 3 (*all of the time*; Stawski et al., 2019). The score for negative affect is the average across all fourteen emotions, where higher scores indicated greater negative affect. Reliabilities for negative affect were 0.97 at the between-person level and 0.77 at the within-person level (Scott et al., 2020).

Daily Physical Symptoms

Each day, participants were asked whether they had experienced 25 physical symptoms: pain and musculoskeletal symptoms (e.g., headache), gastrointestinal (e.g., nausea), flu and respiratory symptoms (e.g., cough), and other physical symptoms (e.g., teeth-related symptoms; Charles & Almeida, 2006). This variable was created by taking the

sum of the number of symptoms; higher scores reflected a greater number of symptoms.

Demographic Covariates

Respondents reported on their age (continuous, standardized), gender (1 = *male*, 0 = *female*), race (1 = *European American*, 0 = *African American*), and marital status (where 1 = *married*, 0 = *never married/separated/divorced/widowed*). Education was coded into the following categories: 1 = *less than high school*, 2 = *high school diploma/some college*, 3 = *college degree*, and 4 = *graduate/professional degree*. Income, including household income from wages, pensions, Social Security, and government assistance was coded: 0 = *\$0-\$10,000*, 1 = *\$10,001-\$20,000*, 2 = *\$20,001-\$35,000*, 3 = *\$35,001-\$50,000*, 4 = *\$50,001-\$75,000*, 5 = *\$75,001-\$100,000*, 6 = *\$100,001-\$150,000*, and 6 = *more than \$150,000*.

Psychosocial Covariates

We also controlled for global perceptions of family ties to further account for psychosocial resilience/vulnerability factors associated with daily health and well-being. Four items measured perceived family support (e.g., item: *How much can you rely on family for help when you have a serious problem?*) and perceived family strain (e.g., item: *How often do members of your family make too many demands on you?*). Respondents answered these items using a 4-point scale from 1 (*a lot*) to 4 (*not at all*; Walen & Lachman, 2000). Responses were recoded; higher scores reflected higher support ($\alpha = 0.82$) and strain ($\alpha = 0.80$).

Analytic Strategy

EA/Buffering and Double Jeopardy hypotheses models

We examined the extent to which daily PHBs moderate affective and physical reactivity to daily family stressors using two-level multilevel models. Each buffering/exacerbation model included the within-person and between-person effects for daily PHBs and each type of family stressor (i.e., arguments and network events) and the interactions between PHBs and family stressors. In the equations below, WELL-BEING refers to daily negative affect or the number of physical health symptoms.

$$\text{Level 1: WELL - BEING}_{di} = \beta_{0i} + \beta_{1i}(\text{PHB}_{di}) + \beta_{2i}(\text{STRESSOR}_{di}) + \beta_{3i}(\text{PHB}_{di} * \text{STRESSOR}_{di}) + e_{di} \quad (1)$$

$$\begin{aligned} \text{Level 2: } \beta_{0i} &= \delta_{00} + \delta_{01}(\text{RACE}) \\ &+ \delta_{02}(\text{PHB}_{.i}) + \delta_{03}(\text{STRESSOR}_{.i}) \quad (2) \\ &+ \delta_{03}(\text{PHB}_{.i} * \text{STRESSOR}_{.i}) + U_{0i} \end{aligned}$$

$$\beta_{1i} = \delta_{10} + \delta_{11}(\text{RACE}_i) + U_{1i} \quad (3)$$

$$\beta_{2i} = \delta_{20} + \delta_{21}(\text{RACE}_i) + \delta_{22}(\text{PHB}_{.i}) + \delta_{23}(\text{RACE}_i * \text{PHB}_{.i}) + U_{2i} \quad (4)$$

$$\beta_{3i} = \delta_{30} + \delta_{31}(\text{RACE}_i) + U_{3i} \quad (5)$$

Equation 1 indicates that at Level 1, β_{0i} is the well-being on day d for individual i , when no family stressors were present. β_{1i} and β_{2i} reflect the differences in affect or symptom reports associated with PHBs and the occurrence of stressors, respectively, while β_{3i} is the interaction between daily PHBs and the occurrence of stressors on well-being. This is the critical interaction that will be used to evaluate support for the buffering or double jeopardy hypotheses. At Level 2, Eq. 2 indicates that the sample average well-being on non-stressor days (δ_{00}) varies as a function of race (δ_{01}), individual differences in PHBs and occurrence of daily family stressors, and their 2-way interaction (δ_{02} , δ_{03} , and δ_{04} , respectively). Equation 3 indicates that the sample average effect of daily PHBs (Level 1; δ_{10}) differs by race (δ_{11}). Equation 4 indicates that the sample average effect of daily family stressors on affect or symptoms reports (i.e., stressor reactivity; δ_{20}) varies as a function of race (δ_{21}), individual differences in PHBs (δ_{22}), and their interaction (δ_{23}). Equation 5 indicates that the sample average interaction between daily PHBs and the occurrence of daily family stressors (δ_{30}) differs by race (δ_{31}). This parameter serves as a critical 3-way interaction examining race differences in the moderating effect of daily PHBs (Level 1) on stressor reactivity.

Models for cigarette smoking excluded non-smokers who reported smoking zero cigarettes during the interview days ($n = 323$, with data on 87% of study days) and models for drinking only included those who reported drinking one or more alcoholic beverages (number of drinks > 0 ; $n = 889$, with data on 91% of study days). Given that the goal of the current study was to test the buffering and double jeopardy hypotheses, the text exclusively summarizes the findings for the 3-way interactions (Race x PHBs x Family Stressor).

Results

Preliminary Analyses

First, we examined whether sociodemographic characteristics, family stressors, affect, or number of physical

symptoms varied between smokers and non-smokers or between those who reported drinking vs. those who abstained from drinking during the study period. Results revealed that compared to non-smokers, smokers were older, less educated, reported lower incomes, reported higher daily NA, and more physical symptoms. There were no statistically significant differences between smokers and

non-smokers in exposure to family stressors. Compared to non-drinkers, drinkers were better educated, reported higher incomes, and reported fewer physical symptoms. There were no statistically significant differences between drinkers and non-drinkers in exposure to family stressors. To account for the sociodemographic differences, each model included age, gender, income, education, marital status, family support, family strain, and number of daily stressors as covariates. Results also revealed racial differences in the likelihood of being a smoker or drinker, where African Americans were less likely than European Americans to report being smokers or drinkers.

Race, Poor Health Behaviors, and Daily Family Stressor Reactivity

To examine the competing hypotheses, we estimated a set of models that included the direct effects of smoking (drinking) and the daily family stressors (i.e., family arguments, network events) to examine the extent to which smoking (drinking) buffered (or exacerbated) affective and physical reactivity to daily family stressors. For the sake of clarity, the tables only include the within-person effects of family stressors and PHBs, although the models presented in the tables do control for the between-person effects of family stressors, PHBs, and all 2-way and 3-way interactions (full tables available upon request). Across all models, global perceptions of family support and strain were significantly associated with daily NA. Those who reported more family support reported less NA ($p < 0.01$), whereas those who reported more family strain reported more NA. Only family strain was significantly associated with daily physical symptoms, where those who reported more family strain also reported more daily physical symptoms ($p < 0.01$). Missing data were handled by estimating models using Maximum Likelihood (ML) estimation to maximize cases, where complete data were available and minimize the influence of cases with missing data. Table 1 includes the models for cigarette smoking and NA (Model 1) and Symptoms (Model 2) and Table 2 includes the models for drinking alcohol and NA (Model 1) and Symptoms

Table 1 Multilevel model parameter estimates for the effects of race, family stressors, and cigarette smoking on daily health and well-being

Predictors	Model 1: negative affect		Model 2: physical symptoms	
	Unstandardized coefficient	S.E.	Unstandardized coefficient	S.E.
Intercept	0.62**	0.22	1.55	1.39
Race ^a	-0.08	0.11	0.50	0.67
Family argument (wp)	0.24***	0.07	1.43***	0.37
Family network event (wp)	0.10	0.13	0.79	0.70
# of cigarettes (wp)	0.03***	0.01	0.03	0.03
Race × argument (wp)	0.02	0.08	-1.24**	0.41
Race × network event (wp)	-0.01	0.14	-0.44	0.75
Race × cig (wp)	-0.02***	0.01	-0.03	0.04
Argument × cig (wp)	0.10***	0.03	0.20	0.15
Network × cig (wp)	0.09	0.08	0.30	0.42
Race × argument × cig (wp)	-0.09***	0.03	-0.11	0.15
Race × network × cig (wp)	-0.10	0.08	-0.48	0.43

Models controlled for the between-person (bp) effects of stressors, smoking, and all 2-way interactions [i.e., race x argument (bp); race x network event (bp), race x cig (bp)] and 3-way interactions [i.e., race x argument (bp) x cig (bp); race x network event (bp) x cig (bp)]. Models also adjusted for age, gender, income, education, marital status, family support, family strain, and total number of daily stressors and exclude non-smokers. ^aRace: 0=African American, 1=European American

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

(Model 2). In order to illustrate the interaction effects, the figures compared high smoking/drinking days (i.e., 1 standard deviation above the mean) to low smoking/drinking days (i.e., 1 standard deviation below the mean).

Race, Cigarette Smoking, and Family Stressor Reactivity

Affective Reactivity (NA)

The *WP smoking effect* moderated the *WP family argument effect* and this interaction was qualified by a significant 3-way interaction with race (Table 1, Model 1). Consistent with the double jeopardy hypothesis, smoking exacerbated family argument-related increases in negative affect. Figure 1 shows that this effect is only significant for African Americans ($p < 0.001$) not for European Americans ($p = 0.56$).

Table 2 Multilevel model parameter estimates for the effects of race, family stressors, and drinking alcohol on daily health and well-being

Predictors	Model 1: negative affect		Model 2: physical symptoms	
	Unstandardized coefficient	S.E.	Unstandardized coefficient	S.E.
Intercept	0.67***	0.10	2.38***	0.71
Race ^a	-0.28***	0.06	0.15	0.42
Family argument (wp)	0.24**	0.09	0.98*	0.48
Family network event (wp)	0.16	0.11	1.84**	0.63
# of drinks (wp)	-0.02**	0.01	0.01	0.06
Race x argument (wp)	-0.05	0.09	-0.95 ⁺	0.49
Race x network event (wp)	-0.11	0.12	-1.72***	0.65
Race x drinks (wp)	0.03**	0.01	-0.02	0.06
Argument x drinks (wp)	0.19***	0.05	1.33***	0.28
Network x drinks (wp)	0.01	0.10	-1.76**	0.55
Race x argument x drinks (wp)	-0.17**	0.05	-1.45***	0.29
Race x network x drinks (wp)	0.01	0.10	1.71**	0.57

Models controlled for the between-person effects of stressors, drinking, and all 2-way and 3-way interactions [i.e., race x argument (bp); race x network event (bp), race x drinks (bp)] and 3-way interactions [i.e., race x argument (bp) x drinks (bp); race x network event (bp) x drinks (bp)]. Models also adjusted for age, gender, income, education, marital status, family support, family strain, and total number of daily stressors and exclude non-drinkers. ^aRace: 0=African American, 1=European American

⁺ $p < .06$, * $p < .05$, ** $p < .01$, *** $p < .001$

Physical Reactivity (symptoms)

Results provided no evidence that smoking buffered or exacerbated physical reactivity to family stressors for either race (Table 1, Model 2).

Race, Drinking Alcohol, and Family Stressor Reactivity

Affective Reactivity (NA)

The *WP drinking effect* also moderated the *WP family argument effect* and this interaction was qualified by a significant 3-way interaction with race (Table 2, Model 1). Consistent with the double jeopardy hypothesis, findings indicate that drinking exacerbated family argument-related increases in negative affect. Figure 2 illustrates that this effect is only significant for African Americans ($p < 0.001$), not for European Americans ($p = 0.33$).

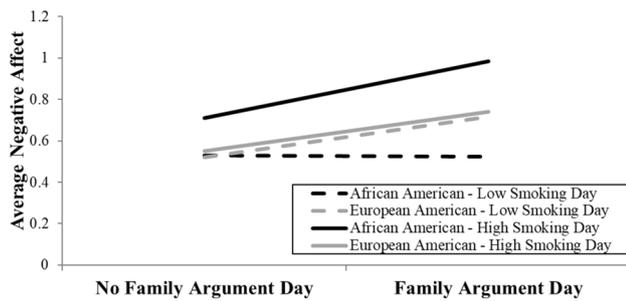


Fig. 1 For African Americans only, smoking more than usual exacerbates emotional reactivity to family arguments. Low Smoking Day refers to 1 SD below the mean and High Smoking Day refers to 1 SD above the mean

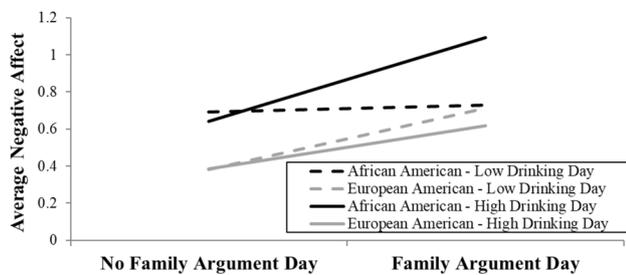


Fig. 2 For African Americans only, drinking more than usual exacerbates emotional reactivity to family arguments. Low Drinking Day refers to 1 SD below the mean and High Drinking Day refers to 1 SD above the mean

Physical Reactivity (symptoms)

For physical symptoms, the *WP drinking effect* also moderated the *WP family argument effect* and this interaction was qualified by a 3-way race interaction. Also consistent with double jeopardy, drinking exacerbated family argument-related increases in physical symptoms (Fig. 3), although this effect was only significant for African Americans ($p < 0.001$), not for European Americans ($p = 0.20$).

The *WP drinking effect* also moderated the *WP family network effect* and this interaction was qualified by a 3-way race interaction. In contrast to the findings for family arguments, drinking buffered physical reactivity to family network events among African Americans only ($p < 0.001$). Drinking more than usual appeared to dampen African Americans’ family network event-related increases in physical symptoms (Fig. 4).

Additional Analyses

In a set of additional analyses, we systematically explored the significance of considering the interactions between

yesterday’s stressors (i.e., lagged effects) and today’s PHBs. Lagged effects were obtained by lagging the time-varying family argument and network stressor variables and including these variables as additional carriers in our multilevel models. First, we examined whether lagged effects of family stressors predicted NA or physical symptoms, and the results revealed no significant associations. Next, we examined whether lagged family stressors predicted the next day’s PHBs. There were no significant associations between lagged family stressors and the next day’s smoking or drinking. Together, these supplemental analyses provided no evidence that yesterday’s stressors are influencing the next day’s PHBs. We also explored age differences in the interactive effects of family stressors, PHBs, and race on daily negative affect and physical symptoms (i.e., 4-way interactions), but no effects were statistically significant.

Discussion

The current study examined the extent to which engaging in poor health behaviors buffered (Environmental Affordances Model/buffering hypothesis) or exacerbated (double jeopardy hypothesis) affective and physical reactivity to naturally occurring daily family stressors. Consistent with double jeopardy, smoking or drinking more than usual in the context of experiencing family arguments had deleterious effects on daily health and affective well-being, particularly for African Americans. In contrast, drinking more than usual buffered physical reactivity to family network events, although this effect was only significant for African Americans. Together, our findings suggested that the waxing and waning of poor health behaviors may confer additional vulnerabilities to the effects of daily family stressors on African Americans’ health and well-being, however, these deleterious effects may not extend to all sources of daily family stress.

Race, Poor Health Behaviors, and Daily Affective Well-Being

Consistent with the double jeopardy hypothesis (Aronson et al., 2008), smoking and drinking more than usual exacerbated or increased affective reactivity to family arguments, effectively making a bad situation worse, particularly among African Americans. Our findings are consistent with prior research that suggested smoking increased rather than decreased daily negative affect (Aronson et al.), and this seems to be particularly true for African Americans. Our findings provided further support for the greater health consequences of smoking observed among African Americans compared to other racial/ethnic groups (Moolchan et al., 2007).

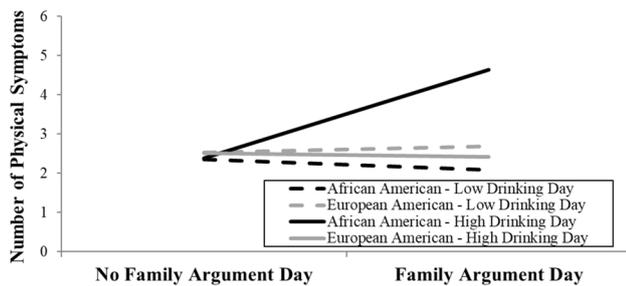


Fig. 3 For African Americans only, drinking more than usual exacerbates physical reactivity to family arguments. Low Drinking Day refers to 1 SD below the mean and High Drinking Day refers to 1 SD above the mean

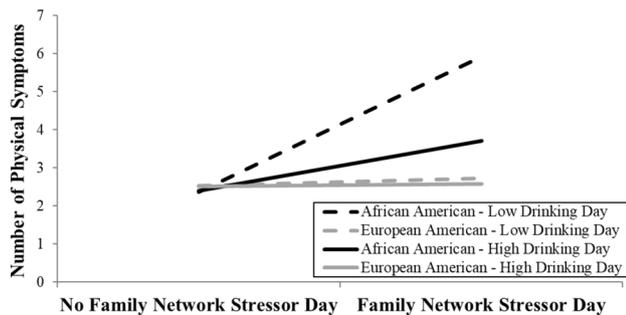


Fig. 4 For Africans Americans, drinking more than usual buffers (dampens) physical reactivity to family network events. Low Drinking Day refers to 1 SD below the mean and High Drinking Day refers to 1 SD above the mean

Further, our findings indicated that drinking more on days when a family argument occurs may create more distress rather than alleviating the negative emotions elicited by the argument. Conceivably, at the same time drinking reduces one's own anxiety (Carrigan et al., 2008), it may reduce inhibitions and emotion regulation (Armeli et al., 2007), thus creating more problems than it solves. African Americans may be particularly vulnerable to double jeopardy due to cultural norms in African American families against alcohol use (Zapolski et al., 2014) and the adverse consequences of drinking they experience even with small amounts of alcohol (Mulia et al., 2009).

By utilizing the daily diary paradigm, our study provided a more nuanced, contextualized view of racial differences in the immediate implications of both family stressors and PHBs for health and affective well-being. Our findings related to the co-occurrence of family arguments and PHBs contributing to double jeopardy among African Americans diverged from prior studies underscoring how PHBs buffer African Americans' mental health from life stressors (Boardman & Alexander, 2011; Jackson et al., 2010; Mezuk et al., 2010). These discrepancies may be attributed to differences in the study time frame and stressor context. First, prior

research has focused on major stressors experienced during one's lifetime or within 1 to 3 years (e.g., life-threatening illness, involuntary job loss; Jackson et al.). In comparison, the current study focused on more frequently, naturally occurring family stressors and assessed their occurrence in daily life, highlighting their complementary and more immediate effects on health and well-being. Second, prior research focused on stressful life events and chronic stressors that are out of an individual's immediate control (e.g., illness, job loss, racism/discrimination; Jackson et al.), whereas daily family arguments, although at times unanticipated, are still within an individual's scope of influence. Third, prior research focused on race differences in associations among life stressors, PHBs, and mental health at the individual differences level. In contrast, the current study contextualized the stress process as occurring within an individual by considering racial differences in within-person associations between family stressors, PHBs, and affect. Taken together, our findings suggested that in the short term, African Americans are particularly vulnerable to daily adverse outcomes when family arguments co-occur with PHBs. Future longitudinal studies are needed to determine if this vulnerability persists over time and contributes to more distal outcomes, such as racial disparities in mental health (Breslau et al., 2006). Further, although beyond the scope of the present study, future research exploring the EA model should also explore how the accumulation of stressors over time shapes long-term health and well-being.

Race, Poor Health Behaviors, and Daily Physical Well-Being

In contrast, the findings for physical reactivity provided support for both competing hypotheses and highlighted the significance of family stressor context (Cichy et al., 2012). As predicted by double jeopardy (Keyes et al., 2011), drinking more than usual exacerbated physical reactivity to family arguments, although only for African Americans. Regardless of the amount of alcohol consumed, Africans Americans are more likely than European Americans to be arrested for intoxication and report more negative consequences associated with alcohol, including family arguments and disapproval (Mulia et al., 2009; Zapolski et al., 2014). Conceivably, family disapproval of alcohol use combined with systemic racism and societal differential treatment toward African American drinking may help to explain why drinking was only associated with exacerbated family stressor reactivity among African Americans, not among European Americans. Together, our findings for affective and physical reactivity to family arguments added to the body of research that finds that African Americans experience more alcohol-related social consequences (e.g., argument with a spouse) compared to other racial/ethnic groups (Zapolski et al.).

In contrast, consistent with the EA/buffering hypothesis (Jackson et al., 2010; Mezuk et al., 2010), for African Americans only, drinking more than usual buffered or reduced physical reactivity to family network events (i.e., other family members' problems). The differential effect of PHBs for reactivity to arguments and network events suggested that the type of stressor has important implications for the extent to which PHBs buffered or exacerbated daily stressor reactivity.

Arguably, network stressors, where something happened to a close family member, are events over which individuals have little control. Mezuk and colleagues (2010) argued that engaging in PHBs is a more environmentally accessible coping strategy, particularly for uncontrollable stressors that tax and exhaust individuals' resources. Under circumstances where the stressor does not directly involve the respondent, other efforts to cope with the stressor by actively trying to change the situation may be futile and inaccessible. Therefore, it appeared that the relaxation and reduced anxiety that often occurs with drinking alcohol (Carrigan et al., 2008) may buffer African Americans' physical reactivity to other family members' stressors in the short-term. It remains unclear, however, what the longer-term implications of this buffering are for physical health.

In comparison, drinking may exacerbate physical reactivity to family arguments because drinking alcohol on the day a family argument occurs could do more harm than good. As stated earlier, drinking often reduced inhibitions and emotion regulation (Armeli et al., 2007), which may further escalate the argument or make it more difficult to cope rationally with the argument, thus eliciting more physical distress. Physical effects, including feeling hung over, fatigued, or nauseous may also accompany drinking more than usual. Conceivably, part of this effect may reflect the impact of alcohol consumption on physical symptoms, however, our analyses did not provide strong evidence for the within-person association between drinking and physical symptoms. Further, arguments with family may be qualitatively different from network events involving family. In close family relationships, the same issues are likely to re-occur, such that arguments may be more predictable than network events, and individuals may have more control over whether these events occur and how they cope when they do occur.

Limitations and Directions for Future Research

Despite the strengths of the current study, it is not without limitations. It is important to acknowledge that the data precluded us from unambiguously determining the extent to which respondents smoked or drank to cope with their experienced family stressors. Respondents reported on the

number of cigarettes smoked and the number of alcoholic beverages consumed separately from their reports of stressful family experiences. Therefore, we cannot conclude that respondents smoked or drank in response to the family stressors they experienced. Our additional analyses examining lagged effects of family stressors suggested that neither engagement in PHBs nor reactivity to family stressors was attributable to family stressors on the previous day. While this reduced concerns regarding direction of associations, future studies are needed to determine if and when individuals are turning to PHBs to cope with daily family stressors. Further, engaging in PHBs could also generate family stress. For example, drinking may be a source of conflict between spouses or between parents and their children, particularly in African American families where cultural norms are less approving of alcohol use (Zapolski et al., 2014). Also, our measures of smoking and drinking relied on individuals' self-reports of PHBs. Although the daily diary approach often alleviates memory distortions (Bolger et al., 2003), it is still possible that individuals may have relied on an abstraction of their usual consumption (e.g., "I am a 3-pack a day smoker"), which could have resulted in inaccurate reports of consumption on a given day, as well as reduced within-person variability in PHBs.

We also explored age differences in our supplemental analyses. Despite the wide age range of the NSDE sample, we found little evidence of age differences in the interactive effects of family stressors, PHBs, and race. These tests and lack of significant age differences should be interpreted with caution as they are based on four-way, cross-level interactions, which this study was not adequately powered to detect. Indeed, previous research has shown that the power to detect two-way cross-level interactions in many daily diary and intensive repeated measures studies is inadequate (Stawski et al., 2019). Future studies with adequate sample sizes and power should evaluate age-related differences. Similarly, additional research that is adequately powered to disentangle the moderating effects of daily family stressors and global perceptions of family ties is needed to determine the degree to which global perceptions of family support or strain buffer or exacerbate the effects of daily stressors or PHBs on daily health and well-being.

Further, the current study focused on one specific class of daily stressful interpersonal events involving family members. Prior work revealed that PHBs buffer African Americans from the harmful psychological effects of life events (Boardman & Alexander, 2011; Jackson et al., 2010; Mezuk et al., 2010); therefore, it is possible that PHBs may still buffer reactivity to other types of daily stressors, such as daily race-specific discrimination. Future research should continue to explore the extent to which PHBs buffer or exacerbate reactivity to other types of daily stressors.

Also, although the Milwaukee sample is comparable to the general population of African Americans living in Milwaukee,

WI (U.S. Census Bureau, 2000), caution should be exercised in generalizing our findings to African Americans living in other parts of the country. Similarly, the stem questions utilized to assess daily stressors were not originally developed to include the culturally responsive language African American respondents may use to describe their own stressors. Future research with larger, more geographically diverse samples and more culturally responsive language to assess stressors is needed.

Finally, the current study focused on two PHBs, smoking and drinking, however, previous research emphasized the significance of additional PHBs, such as emotional eating, as possible explanatory mechanisms for poor health as well as racial disparities in health and well-being (Jackson et al., 2010; Mezuk et al., 2010). In the future, daily diary studies should include measures of emotional eating given the well-documented links between consuming comfort foods, stress, and obesity (Jackson et al.).

Conclusions

Contrary to research focusing on life events, where PHBs buffer African Americans from stress (Jackson et al., 2010; Mezuk et al., 2010), our findings are consistent with a *double jeopardy* explanation; African Americans' affective and physical reactivity were exacerbated when daily family arguments co-occurred with PHBs. Importantly, however, our findings also underscored the importance of stressor type (Almeida, 2005; Cichy et al., 2012). For African Americans only, physical reactivity to family network events was reduced on days when they drank more than usual. Together, these findings suggested that the interaction between race, PHBs, and health is complex and that more accessible coping strategies, such as drinking alcohol, may to some extent mitigate the negative effects of family stressors, such as network stressors, whereas these same strategies may inadvertently exacerbate reactivity to naturally occurring arguments with family. Our findings begin to reconcile the disparate perspectives on the role of PHBs in racial disparities in health, however, future research is needed to fully elucidate how the short-term benefits of engaging in PHBs in the context of network stressors confer longer-term risks to African Americans' health and well-being.

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Declarations

Conflict of Interest The authors have no relevant financial or non-financial interest to disclose.

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