



Psychosocial Stress, Cigarette Smoking, and Negative Affect among Latinx and Black Adults with Psychiatric Disorders

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ABSTRACT

Negative affect levels (NA) are associated with psychosocial stress and poor behaviors among individuals of Latinx and African heritage (Black) backgrounds. Little is known for potentially modifiable associates of these psychiatric disorders. However, there is a significant association between NA levels, psychosocial stress, and cigarette smoking - as an increase consequence of stress-related smoking. According to Díaz-García et al. (2020), modifiable research for NA indicates health care providers related psychosocial stressors clinical interventions, behaviors, family and work stress to reduce NA levels and improve outcomes for diverse patients. This study aims to establish research as the first NA examination for 95 adult participants diagnosed with psychosocial stress disorders. Additionally, the study will identify adult cigarette smoking among individuals of African

heritage (Black) and Latinx background to identify behaviors of adults diagnosed with NA.

Keywords: affect, mental illness, race, smoking, stress

INTRODUCTION

Affect is central to human experience and refers to any dynamic contrast (Díaz-García et al., 2020). Negative affect (NA), characterized by subjective distress, encompasses a range of negative mood states, including anxiety and hostility and related depressive moods, such as sadness and loneliness (Watson et al., 1988). More significant associations of NA as relating to higher levels of depression, stress, and substance use relapse, as well as with lower levels of psychological well-being and physical health (Bravo et al., 2020; Dua, 1993; Hartsell & Neupert, 2019; Tate et al., 2004).

Surprisingly, NA correlations to psychiatric disorders for anxiety and depression predisposes individuals to experience additional negative emotional states (Pinho et al., 2020; Watson et al., 1988, Gómez Maquet et al., 2020; Wetter & Hankin, 2009). Furthermore, studies comparing individuals' effects of anhedonia and schizophrenia controls indicate that those with schizophrenia endorsed higher NA levels (Blanchard et al., 1998). It is crucial research associated with NA psychiatric disorders that population outcomes include those more affected at various levels (Tate et al., 2004; Taylor et al., 2019).

Essential to the NA for psychiatric disorders are individuals who racially identify in the minority ethnic groups. The racial and ethnic minorities express experience differently from NA levels (Jang et al., 2010; Kim et al., 2009; Moazen-Zadeh & Assari, 2016). For example, reported NA levels higher for adults of African and Latinx background (Brondolo et al., 2008; Gore & Aseltine, 2003; Iwata et al., 2002; Twenge & Nolen-Hoeksema, 2002). The higher levels of NA relate to increased stressors exposure deriving from the average adult's perceived racial and discrimination experiences (Grace, 2020; Hosler et al., 2019; Wu et al., 2019).

As an essential aspect of racially and ethnically exclusion, adults, research for NA psychiatric disorders has primarily included White individuals. However, sample sizes of African and Latinx individuals established a deviation between NA and adverse physical and mental health factors. For example, information on minority well-being provides a disproportion experienced for adults with psychiatric disorders and coping mechanisms of adults' psychosocial stress. In this current study, an

examination of the relationship of NA highlight two among individuals of African Heritage and Latinx groups;1) that Black and Latinx adults with psychiatric disorders have higher levels of NA, and 2) the associate of psychosocial stress and cigarette smoking.

Psychosocial stress refers to the social and environmental stressors that interfere with an individual's ability to function. Psychosocial stress includes a range of adverse life experiences such as work stress, discrimination, relationship stress, and childhood adversity (Slopen et al., 2012). Higher psychosocial stress levels negatively affect physical and mental health and might influence the vulnerability to certain psychiatric disorders (Cohen et al., 2007; Howes & Murray, 2014). Furthermore, chronic psychosocial stress might influence the vulnerability to certain psychiatric disorders, such as schizophrenia and depression (Howes & Murray, 2014; Parker, 1983; van Os et al., 2010). There is an independent association between NA and stress, such that higher NA is associated with higher overall stress (Dua, 1993). It is imperative to examine this association among different racial and ethnic groups as research suggested a difference in coping with these stressors (Oliver et al., 2019).

Cigarette smoking remains the leading preventable cause of death and illness in the United States (U.S.). Adults with psychiatric disorders smoke cigarettes at a significantly higher prevalence than adults without psychiatric disorders (U.S. Department of Health and Human Services, 2014; Smith et al., 2014). There is a relationship between cigarette smoking behaviors and NA, especially among psychiatric disorders (Kassel, 2000; Rubin et al., 2020; Tulloch et al., 2016). While there are numerous potential mechanisms for smoking initiation and maintenance, those who experience greater NA levels may be more likely to start using cigarettes (Stein et al., 1996). Furthermore, studies suggest a bidirectional link between cigarette smoking and NA, particularly depressive symptoms (e.g., Kendler et al., 1993; Weinberger et al., 2017).

Minoritized groups, particularly Black individuals, experience the highest rates of tobacco-related morbidity and mortality despite smoking fewer cigarettes per day and having a later onset of smoking than White individuals (U.S. Department of Health and Human Services, 1998), known as the "smoker's paradox" (Alexander et al., 2016). The relationship between smoking behaviors and NA among minoritized racial/ethnic groups is not yet clear, and most research has examined depression symptoms or diagnoses rather than the construct of NA (Kassel, 2000; Rubin et al., 2020; Weinberger et al., 2017). Among Black adults, Hickman III, Delucchi, and Prochaska (2010) found a significant association between smoking and mental illnesses,

including major depression, while Ellis et al. (2015) did not find this association. Due to mixed findings of the relationship between NA and cigarette smoking and the high mortality and morbidity risks of certain minoritized groups, it is crucial to examine this association further.

While previous research suggests relationships between NA and psychosocial stress, and NA and cigarette smoking status, no research has examined these associations among Black and Latinx adults with psychiatric disorders. Psychosocial stress and cigarette smoking are significant factors that have decreased one's functioning and are a significant public health concern. Moreover, psychosocial stress and cigarette smoking have higher rates in both Black and Latinx adults and adults with psychiatric disorders. To the authors' knowledge, the current study is the first to examine the relationship of (1) psychosocial stress and (2) cigarette smoking status to NA among racial and ethnic minoritized adults with psychiatric disorders. The theories associated with psychosocial stress associated greater NA levels for adults that currently cigarette smoking, reporting a greater NA level than former smokers or those who never smoked.

RESEARCH METHODS

Participants

The study was a secondary analysis of cross-sectional data from a parent study conducted at Lincoln Medical Center in the Bronx, New York (Shpigel et al., 2021). The current study's data was re-analyzed from the parent study, titled "Psychosocial and Psychiatric-Related Stress and Cigarette Smoking among Black and Latinx Adults with Psychiatric Disorders." The Institutional Review Boards approved the study of the Albert Einstein College of Medicine (PI: Andrea H. Weinberger, Ph.D.; IRB # 2016-6780) and Lincoln Medical Center (PI: Enmanuel Mercedes, Ph.D.; IRB # 17-001).

Inclusion and exclusion criteria

Participants were eligible for the study if they self-reported a psychiatric diagnosis that was confirmed by review of medical records, had the capacity to provide informed consent, were ≥ 18 years old, were English- or Spanish-speaking, and self-identified their race or ethnicity as either Black (of African Heritage) or Hispanic. Participants were ineligible to enroll if they were unable to provide informed consent, demonstrated signs of current suicidality or were currently experiencing a manic or psychotic episode, were not English- or Spanish-speaking, or self-identified their race or ethnicity as any race or ethnicity other than Latinx and Black.

Study Procedures

Participants for the parent study were recruited from the Adult Outpatient Psychiatric Clinic at Lincoln Medical Center. English-speaking participants were recruited by English-speaking Research Assistants (RAs), and Spanish-speaking participants were recruited by Spanish-speaking RAs. The RAs explained the purpose and procedures of the study and obtained written informed consent from each participant. After providing informed consent, participants filled out measures of demographic information, NA, psychosocial stress, and cigarette smoking. RAs confirmed self-reported psychiatric diagnoses using the participants' electronic medical records. Participants received \$15 for completing the study. For more details on the study procedures for the parent study, see (Shpigel et al., 2021).

Measures

Demographics. Participants reported their age, gender, race/ethnicity, marital status, and employment status.

Psychiatric diagnoses. Participants reported their psychiatric diagnosis(es) by responding to a question asking which psychiatric condition(s) they were receiving mental health services. Diagnoses were confirmed through the participants' electronic medical records.

Negative affect. NA was measured with the six-item Negative Affect Scale (Mroczek & Kolarz, 1998). Responses were on a Likert scale ranging from one ("none of the time") to five ("all of the time"), and item responses were summed to create a total score between 6 and 30, with greater scores indicating greater NA. Sample items include, "During the past 30 days, how much of the time did you feel so sad nothing could cheer you up?" and "During the past 30 days, how much of the time did you feel worthless?" This scale had excellent internal consistency reliability in a national sample of 2,727 U.S. adults in the MIDUS study (51% female; 6% Black; $\alpha = 0.87$; Slopen et al., 2013) and the current study's sample ($\alpha = 0.85$).

Psychosocial stressors. Eight psychosocial stressor variables were measured with the scales used by Slopen et al. (2013) from project 1 of the MIDUS study (Brim et al., 2004). The eight variables included: relationship stress, financial stress; work stress; work-family spillover; perceived inequality; neighborhood

stress, discrimination, and past-year family problems. The Z scores for each measure were combined to generate a total stress score.

Cigarette smoking. Participants were characterized as never having, former, or current cigarette smoking using two questions: “Have you ever smoked cigarettes regularly, that is, at least a few cigarettes every day?” and “Do you smoke cigarettes regularly NOW?” Participants were classified as never-smoking if they responded “no” to the first question; former-smoking if they responded “yes” to the first question and “no” to the second question; and current-smoking if they responded “yes” to both questions.

Statistical Analyses

All statistical analyses were conducted using SPSS, Version 26. Data were checked for missing values and errors prior to the analyses. Descriptive statistics were calculated, and the association between psychosocial stress and NA was investigated using multiple regression analysis. The association between smoking status and NA was investigated using a multifactor ANCOVA. Age and gender were included as covariates in the multiple regression and as additional factors in the ANCOVA. All analyses used $p < .05$ to determine statistical significance, and significant p values were run with the Holm-Bonferroni test to maintain a family-wise error rate of $p \leq .05$.

RESULTS

Baseline Characteristics

A total of 95 participants were included in the analyses. Descriptive statistics for the full sample are reported in Table 1. The mean age of the sample was 46.24 years old and the majority of participants were female (70.5%), unemployed (88.4%), single (54.7%), identified as Latinx (71.6%), and had an annual income of $< \$10,000$ (67.4%). The predominant psychiatric diagnoses were schizophrenia spectrum and other psychotic disorders (33.7%), depressive disorders (32.6%), and bipolar and related disorders (18.9%).

Table 1.

Frequencies and Percentages for Demographic Variables and Primary Psychiatric Diagnosis for the Full Sample.

Variable	Total Sample (N = 95) % or M(SD)
Age	46.24(13.61)
Gender	

Male	29.5%
Female	70.5%
Race	
Black Latinx	15.8%
Black non-Latinx	26.3%
White Latinx	36.8%
Multiracial/Other	21.1%
Ethnicity	
Latinx	71.6%
Non-Latinx	28.4%
Marital Status	
Single	54.7%
Married/living with partner	14.7%
Divorced/separated/widowed	25.3%
Other (includes boyfriend or girlfriend)	5.3%
Education	
Less than high school	32.6%
High school	32.6%
More than high school	34.7%
Employment Status	
Employed	11.6%
Unemployed	88.4%
Annual Household Income ^a	
< \$10,000	67.4%
\$10,000-\$19,999	21.1%
≥\$20,000	10.5%
Smoking Status	
Never smoking	37.9%
Former smoking	25.3%
Current smoking	36.8%
Primary Diagnosis	
Anxiety Disorders	6.3%
Depressive Disorders	32.6%
Bipolar and Related Disorders	18.9%
Schizophrenia Spectrum and Other Psychotic Disorders	33.7%
Personality Disorders	2.1%
Post-Traumatic Stress Disorder	3.2%
Mood Disorder Not Otherwise Specified	1.1%
Attention Deficit Hyperactivity Disorder/Attention Deficit Disorder	2.1%

^a N ≠ 95 because one participant's reported income was missing.

Main Analyses

Aim 1: Relationship between psychosocial stress and negative affect.

A simple linear regression was used to examine the association between psychosocial stress and NA. The *t*-test showed a significant association between NA and psychosocial stress ($t = 4.36, p < .001, 95\% \text{ CI } [.33, .88], R^2 = .18$); for each unit increase in psychosocial stress, there was an estimated 0.60 unit increase in NA ($b = .60$; see Table 2). After controlling for age and gender, the relationship between psychosocial stress and NA remained significant ($t = 4.07, p < .001, 95\% \text{ CI } [.29, .85], R^2 = .16$) with an estimated 0.57 unit increase in NA per unit increase in psychosocial stress ($b = .57$; see Table 3). Age and gender were not significantly related to NA (age $p = .14$, gender $p = .52$).

Table 2.

Results of Simple Linear Regression Examining the Relationship Between Psychosocial Stress Score and Negative Affect (n = 87).

Variable	B (SE)	t	95% CI	p
Intercept	17.14 (0.56)	30.45	[16.02, 18.25]	<0.001*
Total Stress Score	0.60 (0.14)	4.36	[0.33, 0.88]	<0.001*

* $p < .001$.

Table 3.

Results of Multiple Regression Examining the Relationship Between Psychosocial Stress Score and Negative Affect with Covariates (n = 87).

Variable	B (SE)	t	95% CI	p
Intercept	19.74 (1.97)	10.01	[15.82, 23.67]	<0.001*
Total Stress Score	0.57 (0.14)	4.07	[0.29, 0.85]	<0.001*
Age	-0.06 (0.41)	-1.49	[-.14, 0.02]	0.14
Gender	0.83 (1.27)	0.65	[-1.69, 3.35]	0.52

* $p < .001$.

Aim 2: Relationship between psychosocial stress and negative affect.

To investigate whether there was an association between cigarette smoking status and NA, a one-way ANOVA was performed on the full sample. Cigarette smoking did not demonstrate a statistically significant relationship

with NA, $F(2,92) = .04$, $p = .97$, $R^2 = .001$ (see Table 4). The analysis was repeated using a factorial ANCOVA to control for age and gender. There was no main effect for smoking status on NA, $F(2,86) = 2.21$, $p = .12$ and no interactive effect of smoking status and gender on NA, $F(3,86) = 0.12$, $p = .95$ (see Table 5). The interaction between smoking status and age was statistically significant, $F(3,86) = 2.87$, $p = .04$; however, when correcting for Familywise Error Rate, the p -value was no longer significant.

Table 4.

Results of One-Way ANOVA Examining the Relationship Between Smoking Status and Negative Affect (n = 95).

Source	Sum of Squares	df	Mean Square	F	p
Corrected Model	2.440 ^a	2	1.220	0.035	0.965
Intercept	26103.048	1	26103.048	755.612	<0.001*
Smoking Status	2.440	2	1.220	0.035	0.965
Error Total	3178.191	92	34.546		
Corrected Total	30128.000	95			
	3180.632	94			

* $p < .001$. ^a R Squared = 0.001 (Adjusted R Squared = -0.021)

Table 5.

Results of One-Way ANOVA Examining the Relationship Between Smoking Status and Negative Affect with Covariates (n = 95).

Source	Sum of Squares	df	Mean Square	F	p
Corrected Model	292.089 ^a	8	36.511	1.087	0.380
Intercept	2306.167	1	2306.167	68.661	<0.001*
Smoking Status	148.635	2	74.317	2.213	0.116
Smoking Status X Gender	11.605	3	3.868	0.115	0.951
Smoking Status X Age	288.738	3	96.246	2.866	0.041
Error Total	2888.542	86	33.588		
Corrected Total	30128.000	95			
	3180.632	94			

* $p < .001$. ^a R Squared = 0.092 (Adjusted R Squared = -0.007)

DISCUSSION

The purpose of the present study was to examine the relationship between psychosocial stress, cigarette smoking status, and NA among 95 Black and Latinx adults with psychiatric disorders. More significant psychosocial stress was significantly associated with greater NA. While past research has indicated overall stress as positively associated with NA, no prior research examined psychosocial stress in the current study's population (i.e., racial and ethnic minoritized adults with psychiatric disorders; Dua, 1993). Thus, these results advance prior research by indicating that a specific type of stress, psychosocial stress, is associated with NA among Black and Latinx adults with psychiatric disorders. Furthermore, race and ethnicity interventions for stress and psychiatric disorders will improve mechanisms among minority groups (Oliver et al., 2019).

The present study did not find a significant association between cigarette smoking status and NA comparisons for previous findings and a definite association between smoking and NA levels for those with psychiatric disorders (Tulloch et al., 2016). This discrepancy in the study is due to the current study's sample and mainly consisting of economic variations of unemployed. In contrast, the previous study sampling consisting of primarily employed adults (Tulloch et al., 2016). Prior research mixed-method research associates cigarette smoking with NA levels among Black adults (Ellis et al., 2015; Hickman et al., 2010; Weinberger et al., 2017). Hickman III, Delucchi, and Prochaska (2010) found a significant association between smoking status and depression among Black participants.

In contrast, Ellis et al. (2015) found that more significant depressive symptoms were related to a greater likelihood of smoking among only Latinx participants and non-Black participants. Ellis et al.'s (2015) study and the current examination did not find a significant relationship between NA and cigarette smoking among individuals of African heritage. As an examination for future research, independent research for African heritage and Latinx individuals will determine the association and differences of these individuals.

Furthermore, these mixed results are attributed to how depression is defined. Hickman III, Delucchi, and Prochaska (2010) defined depression as a Diagnostic and Statistical Manual of Mental

Disorders-IV diagnosis of Major Depressive Disorder (MDD), while Ellis et al. (2015) defined *depression* as depressive symptoms assessed by two items from the 4-item Patient Health Questionnaire. These discrepancies might indicate that the association of NA with smoking status among Black individuals is only present with more severe manifestations of depression (i.e., MDD) and not with milder manifestations (i.e., depressive symptoms). While no relationship was found between NA and cigarette use in this study, working with psychiatric patients on smoking cessation, especially those who are Hispanic and Black, remains critically important due to the health consequence disparities of smoking for both those with psychiatric disorders and who identify as part of racial/ethnic minoritized groups (U.S. Department of Health and Human Services, 1998; Tam et al., 2016).

Individuals with NA have higher levels of depression, stress, and substance use relapse, along with lower levels of psychological well-being and physical health (Bravo et al., 2020; Dua, 1993; Hartsell & Neupert, 2019; Tate et al., 2004; Watson et al., 1988). However, various clinical interventions aim to modify NA, such as affect regulation and supportive therapy (Bonanno, 2001; Gross & Thompson, 2007; Larsen, 2000; Troy et al., 2019; Brandon, 1994). The results from this study highlight a specific variable, psychosocial stress, to target to potentially decrease NA that could be included in NA-focused interventions or as a separate area of intervention with patients. Given the modifiability of NA and the current study's findings, providers working with Black and Latinx individuals with psychiatric disorders may benefit from assessing psychosocial stress and then targeting stress among those who report experiencing a high level of psychosocial stress (e.g., perceived inequality, neighborhood stress, discrimination) to reduce NA and the consequences of NA. Ultimately, lowering NA for Black and Latinx adults with psychiatric disorders can improve mental and physical health-related outcomes.

CONCLUSION

In summary, NA levels are associated with psychosocial stress, which can interfere with an individual's ability to function. Despite the availability of effective interventions to reducing NA levels, there remains a gap in the

literature to examine potential associates of NA as psychosocial stress and cigarette smoking among individuals of African heritage (Black) and Latinx origins. The psychiatric disorders associated with NA and the first to examine the relationships of specific vulnerabilities for psychosocial stress and smoking among racial and ethnic minorities of adults. The importance of this disorder and current study findings suggesting a positive association between understanding NA and psychosocial stress as a beneficial target for individuals with higher psychosocial stress to decrease NA levels. The dissociation consequences of inclusionary health care for individuals of African heritage (Black) and Latinx adults is potential harm for individuals with mental and physical health-related disorders. Given the current study's findings suggesting a positive association between NA levels and psychosocial stress, it may be beneficial to target individuals with higher psychosocial stress to improve health-related.

LIMITATIONS

There were several study limitations of note; participants were recruited from one hospital in one city, and results may not be generalizable to other participants of African heritage (Black) and Latinx adults with psychiatric disorders. Furthermore, the sample size was predominately lower socioeconomic status, with the majority having an annual income of <\$10,000 and being unemployed. Due to the racial/ethnic composition of the hospital patient population, it was not possible to have other comparison groups (e.g., White individuals). Future research would benefit from a larger sample recruited from multiple locations to increase generalizability and allow comparisons among racial/ethnic groups. Additionally, cultural differences might have impacted how specific questions were answered (e.g., psychosocial stressors). The psychosocial stress measure was previously validated in a sample consisting of U.S. adults aged 25-74 years old (Slopen et al., 2013). However, the current study's sample consisted of adults with psychiatric disorders, some of whom were not born in the U.S. Specific stress domains, such as neighborhood stress, might not have been fully captured by the assessment of stress. For example, as one-third of the study's Latinx participants were not born in the U.S., their neighborhood stress might differ from the neighborhood stress experienced by U.S.-born adults.

All study data, other than psychiatric diagnoses, were obtained through self-report. Thus, data might have been subjected to recall bias, under-reporting, and social desirability. Further, participants' psychiatric

states (e.g., depression) might have impacted their responses. Smoking status was indicated through self-report, and there was no biochemical verification of smoking which has become the gold standard in smoking research (Benowitz et al., 2019). Future research would benefit from obtaining data other than from self-report measures, such as expired breath carbon monoxide levels and structured clinical interviews. Lastly, information about cigarette smoking beyond the two questions needed to classify current cigarette smoking status (i.e., current, former, and never smoking) was not collected in the parent study, nor was information about non-cigarette tobacco products. Future studies would benefit from examining additional smoking-related measures such as duration of smoking, smoking frequency, and smoking dose (i.e., the number of cigarettes smoked per day) and additional tobacco products (e.g., e-cigarettes, cigars).

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