



Psychosocial Correlates of Perceived Stress and Depressive Symptoms among Help-Seeking Hispanic Smokers

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### Abstract

**Objectives:** Research has demonstrated robust associations between perceived stress, depressive symptoms, and cigarette smoking. The extent to which these findings from the general population generalize to Hispanic smokers is unknown. The present study examined (a) correlates of perceived stress and depressive symptoms among help-seeking Hispanic smokers and (b) whether maladaptive coping and social support were related to stress and depressive symptoms. **Design:** Hispanic smokers ( $N=123$ ) enrolled in an RCT completed demographic and smoking history, perceived stress, depressive symptoms, perceived social support, and maladaptive coping measures. **Results:** Bivariate associations indicated that perceived stress was positively correlated with depressive symptoms and maladaptive coping, and inversely related to perceived social support. These relationships were maintained in multiple regression analyses. Depressive symptoms were positively correlated with nicotine dependence, perceived stress, and maladaptive coping, and inversely related to education and perceived social support. Hierarchical regression analyses demonstrated independent associations between depressive symptoms and maladaptive coping, perceived stress, and education, but not perceived social support or nicotine dependence. **Conclusions:** These findings suggest that stress and depression among Hispanics are related to factors known to impact cessation. Recommendations for targeted interventions are discussed.

### Keywords

Hispanics; smoking; perceived stress; depressive symptoms; social support

### Cover Page Footnote

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## **Psychosocial Correlates of Perceived Stress and Depressive Symptoms among Help-Seeking Hispanic Smokers**

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### **ABSTRACT**

**Objectives:** Research has demonstrated robust associations between perceived stress, depressive symptoms, and cigarette smoking. The extent to which these findings from the general population generalize to Hispanic smokers is unknown. The present study examined (a) correlates of perceived stress and depressive symptoms among help-seeking Hispanic smokers and (b) whether maladaptive coping and social support were related to stress and depressive symptoms.

**Design:** Hispanic smokers ( $N=123$ ) enrolled in an RCT completed demographic and smoking history, perceived stress, depressive symptoms, perceived social support, and maladaptive coping measures.

**Results:** Bivariate associations indicated that perceived stress was positively correlated with depressive symptoms and maladaptive coping, and inversely related to perceived social support. These relationships were maintained in multiple regression analyses. Depressive symptoms were positively correlated with nicotine dependence, perceived stress, and maladaptive coping and inversely related to education and perceived social support. Hierarchical regression analyses demonstrated independent associations between depressive symptoms and maladaptive coping, perceived stress, and education, but not perceived social support or nicotine dependence.

**Conclusions:** These findings suggest that stress and depression among Hispanics are related to factors known to impact cessation. Recommendations for targeted interventions are discussed.

**Keywords:** Hispanics, smoking, perceived stress, depressive symptoms, social support

### **INTRODUCTION**

Hispanic smokers living in the U.S. are underrepresented in the smoking literature. Smoking rates in this heterogeneous ethnic group are generally lower compared to White non-Hispanics, African Americans, and Native Americans (Centers for Disease Control and Prevention, [CDC] 2012). However, certain subgroups of Hispanics (e.g., Cubans and Mexican-

Americans) have smoking rates that are comparable to the national average (American Lung Association, 2010). Hispanic smokers are primarily male (CDC, 2012) and many are non-daily smokers (Trinidad et al., 2009). Evidence suggests that smoking rates in this population may increase in the future (CDC, 2011) with acculturation to the mainstream American culture (Pérez-Stable et al., 2001). In addition, Hispanic smokers report lower motivation to quit (Tong et al., 2006) and a lower likelihood of cessation compared to non-Hispanic Whites (CDC, 2002; Levinson et al., 2004). It is important to focus on Hispanics, as the leading causes of morbidity and mortality in this group are caused or exacerbated by smoking, such as heart disease, cancer, and stroke (Heron, 2007). To date, we know little about factors associated with smoking among Hispanics in the U.S., or the extent to which longstanding findings based on mostly middle-class, non-Hispanic White smokers can be applied to this group. Identification of factors influencing smoking behavior in this population is essential for the development of evidence-based, ethno-culturally specific smoking cessation interventions.

The life changes and adjustment necessary to acculturate into the U.S. culture may substantially impact the emotional well-being of Hispanics. Maladjustment to these changes may result in psychological distress. Indeed, Hispanics experience more depressive symptoms compared to other racial/ethnic groups (Mendelson, Rehkopf, and Kubzansky, 2008). Distress in the forms of negative stress and depressive symptoms are associated with smoking in the general population (Cohen and Williamson, 1988; Kassel, Stroud, and Parnois 2003; Shiffman, 1993). The stress-coping model suggests that substance use is directly related to attempts to cope with distress (Shiffman and Wills, 1985), which has also been found for tobacco smoking (Wills, 1986). Smokers report higher levels of perceived stress (Hajek, Taylor, and McRobbie, 2010), and increased smoking intensity during stressful circumstances (Todd, 2004; Cohen, 1990). Among women in particular, Hispanics with depressive symptoms are more likely to smoke compared to non-Hispanic Whites (Rickert, Wiemann, and Berenson, 2000). Hence, it is important to examine psychosocial factors that are associated with perceived stress among Hispanic smokers. However, virtually no previous studies have considered this issue.

The positive association between smoking and depression is well established (e.g., Anda, et al., 1990; Benjet et al., 2004; Hu, Davies, and Kandel, 2006; Kendler et al., 1993; Rohde et al., 2004). The etiology of this relationship is complex. Some research suggests shared environmental and genetic influences (Fergusson, Goodwin, and Horwood, 2003; Hu, Davies, and Kandel, 2006; Rohde et al., 2004), and other studies suggest that smoking may be a maladaptive coping strategy, specifically for self-medication of depressive symptoms (Lerman et al., 1998; Markou, Kosten, and Koob, 1998; Mineur and Picciotto, 2009). Evidence also suggests that smoking increases the risk of depressive symptoms (Boden, Fergusson, and Horwood, 2010). Little previous research has examined depression and smoking behavior among Hispanics. The existing studies have found higher rates of depressive symptoms among smokers compared to never-smokers (Cox et al., 2005; Pérez-Stable et al., 1990; Benjet et al., 2004) and former smokers (Benjet et al., 2004).

Social support is another factor that has the potential to covary with stress and depressive symptoms among Hispanic smokers. High perceived social support among smokers increases the likelihood of quitting (Mermelstein et al., 1986; Lichtenstein et al., 2002; Mermelstein, Lichtenstein, and McIntyre, 1983). This finding is also probable among Hispanics, as social support is a key dimension of Hispanic culture (Sabogal, Marin, and Otero-Sabogal, 1987) and is positively associated with health (Harley and Eskenazi, 2006). Lack of social support may

increase substance use (Lindenberg, Reiskin, and Gendrop, 1994). In contrast, strong support may buffer the effects of distress among smokers interested in quitting (Turner et al., 2008). Brothers and Borelli (2009) found greater smoking cessation rates among Hispanic smokers with positive partner support compared to those with low perceived support. They also found that the combination of depressed mood and lack of partner support was related to lower cessation rates. Smoking may be used as a maladaptive strategy to manage stress and depressive symptoms. Maladaptive coping refers to efforts to avoid or abandon distress that often fail to lead to a resolution (e.g., self-blame, disengagement, denial, and substance abuse; Lazarus and Folkman, 1984). Stress and maladaptive coping are associated with smoking maintenance and difficulty quitting (Bindu et al., 2011). Thus, these factors are important to consider with respect to intervention development and delivery among Hispanic smokers.

Although the literature confirms the roles of stress, depression, social support and coping in the general smoking population, the extent to which these findings generalize to Hispanics living in the U.S. is unclear. The current study aimed to examine the association between perceived stress and depressive symptoms among help-seeking Hispanic smokers and to determine whether maladaptive coping and social support were related to stress and depressive symptoms. We hypothesized the following: (1) perceived stress and depressive symptoms would be positively related; (2) perceived stress and depressive symptoms would be independently associated with maladaptive coping strategies; and (3) perceived stress and depressive symptoms would show independent, inverse associations with social support.

## **METHODS**

### **Participants and Data Collection**

Participants were part of a randomized controlled trial (RCT) testing the efficacy of a self-help smoking cessation intervention (Webb Hooper, Rodriguez de Ybarra, and Baker, 2013). Smokers were recruited through advertisements, community outreach, and word-of-mouth. Eligible participants were ages 18-65, had permanent contact information, smoked five or more cigarettes per day, were not receiving behavioral smoking cessation treatment, and were able to read 5<sup>th</sup>-6<sup>th</sup> grade English. Data for the current study were from the baseline assessment of 123 participants who self-identified as Hispanic (any race; 29% of the full sample). Following verbal informed consent, trained research assistants administered a baseline assessment (all measures administered in English) over the telephone.

### **Measures**

#### *Demographics and smoking history.*

Participants reported age, sex, race/ethnicity, marital status, education level, and annual household income. They also completed a smoking history instrument that assessed years smoking, cigarettes per day, and nicotine dependence using the Fagerström Test for Nicotine Dependence (FTND; Heatherton, et al., 1991;  $\alpha = .70$ ; range=0-10).

#### *Depressive symptoms.*

The 20-item Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) assessed depressive symptoms during the past week. Participants indicated how many days they experienced symptoms/behaviors on a Likert scale ranging from 0 (rarely or none of the time—less than 1 day) to 3 (most or all of the time—5 to 7 days). Higher scores indicated greater depressive symptoms (range=0-60;  $\alpha = .81$ ).

#### *Perceived stress.*

The 10-item Perceived Stress Scale (PSS; Cohen, Kamarck, and Mermelstein, 1983) assessed the experience of past-month stressful events on a Likert scale ranging from 0 (never) to 4 (very often). Example items included:

*“In the last month, how often have you been upset because of something that happened unexpectedly?”* and

*“In the last month, how often have you found that you could not cope with all the things that you had to do?”*

Higher scores indicated greater perceived stress (range = 0-40;  $\alpha = .87$ ).

*Perceived social support.*

The 12-item Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) assessed social support on a Likert scale ranging from 1 (very strongly disagree) to 7 (very strongly agree), with higher scores indicating greater perceived social support (range=12-84). Items assessing support from family, friends, and significant others were included:

*“There is a special person in my life who cares about my feelings,”* *“My friends really try to help me,”* and

*“I can talk about my problems with my family.”*

The instrument demonstrated excellent internal consistency ( $\alpha = .93$ ) in the current sample.

*Coping strategies.*

The Brief COPE (Carver, 1997) measured maladaptive coping over the past few weeks. Items were rated on a 4-point scale ranging from 1 (not used at all) to 4 (used a great deal). Because Hispanics were underrepresented in the validation sample, we conducted a factor analysis with oblique rotation to determine the items assessing maladaptive strategies. The eigenvalues (component 1: 3.00; component 2: 2.55) and scree plot indicated two factors, explaining 42.96% of the variance for the set of variables. Items with loadings of .30 or greater were retained on each scale (items with the highest loading were retained in cases of cross loadings). Of interest for the current study, Factor 2 was labeled maladaptive strategies (10-items; range = 10-40) due to high loadings on denial, venting, substance use, behavioral disengagement, and self-blame (18.34% of variance).<sup>1</sup> Items were summed, with higher scores indicating more frequent use of maladaptive coping. This measure demonstrated strong internal consistency (maladaptive  $\alpha = .81$ ) in the current sample.

## RESULTS

Sample characteristics are shown in Table 1. Participants ranged from 18 to 61 years ( $M = 35.56$ ,  $SD = 10.85$ ). The sample was 55% female, and 59% were single. Most participants completed high school (92%), and 30% reported an annual household income of >\$40,000/year. Participants reported smoking 16.59 ( $SD = 9.09$ ) cigarettes per day, for 17.40 years ( $SD = 10.24$ ), and low nicotine dependence ( $M = 4.11$ ,  $SD = 2.61$ ). Overall, participants reported moderately elevated levels of depressive symptoms, perceived stress, and maladaptive coping, and high perceived social support.

Bivariate correlations between variables are displayed in Table 1. None of the demographic or smoking history variables were correlated with perceived stress. Education level was inversely associated with depressive symptoms, while nicotine dependence was positively

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<sup>1</sup> Factor 1 was labeled adaptive strategies due to high loadings on active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, and self-distraction (24.63% of the variance).

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associated with depressive symptoms. As hypothesized, perceived stress and depressive symptoms were significantly correlated. We also found that both perceived stress and depressive symptoms were positively associated with maladaptive coping and inversely related to social support.

Table 1 Sample Characteristics and Bivariate Correlations with Perceived Stress and Depressive Symptoms (N =123)

|                                     | <i>M</i> | <i>SD</i> | <i>Possible Range</i> | <i>Observed Range</i> | <i>Correlation with Perceived Stress</i> | <i>Correlation with Depressive Symptoms</i> |
|-------------------------------------|----------|-----------|-----------------------|-----------------------|--|---|
| <i>Demographics</i>                 |          |           |                       |                       |  |   |
| Age                                 | 35.6     | 10.85     | 18-65                 | 18-61                 | -.07                                     | .07   |
| <i>Smoking History</i>              |          |           |                       |                       |  |   |
| Rate (cigarettes per day)           | 16.6     | 9.1       | 5—                    | 5-60                  | .12                                      | .16   |
| Duration (years smoked)             | 17.4     | 10.2      | 0—                    | 2-42                  | -.07                                     | .09   |
| Nicotine Dependence                 | 4.1      | 2.6       | 0-11                  | 0-9                   | .14                                      | .21*  |
| <i>Psychosocial Characteristics</i> |          |           |                       |                       |  |   |
| Perceived Stress                    | 20.6     | 7.8       | 0-40                  | 0-40                  | 1.0                                      | .48**                                       |
| Depressive Symptoms                 | 25.0     | 9.8       | 0-60                  | 3-55                  | .48**                                    | 1.0   |
| Perceived Social Support            | 62.5     | 16.6      | 12-84                 | 12-84                 | -.28**                                   | -.29*                                       |
| Maladaptive Coping                  | 20.3     | 6.3       | 10-40                 | 10-36                 | .49**                                    | .53**                                       |
| <i>Demographics</i>                 |          |           |                       |                       |  |   |
|                                     | <i>N</i> | <i>%</i>  |                       |                       |  |   |
| Gender (% Female)                   | 68       | 55%       |                       |                       | -.03                                     | -.13  |
| Marital Status (% single)           | 123      | 59%       |                       |                       | -.08                                     | -.14  |
| Education (≥ high school)           | 122      | 92%       |                       |                       | -.12                                     | -.29**                                      |
| Annual Household Income             |          |           |                       |                       | -.01                                     | -.17  |
| < \$10,000                          | 22       | 18%       |                       |                       |  |   |
| \$10,000—20,000                     | 20       | 16%       |                       |                       |  |   |
| \$20,001—30,000                     | 29       | 24%       |                       |                       |  |   |
| \$30,001—40,000                     | 14       | 11%       |                       |                       |  |   |
| > \$40,001                          | 37       | 30%       |                       |                       |  |   |

Note. \* $p < .05$  level (two-tailed); \*\*  $p < .01$  level (two-tailed).

Multivariate Correlates of Perceived Stress and Depressive Symptoms

Table 2 depicts the regression model examining independent relationships with perceived stress. The model explained 34% of the variance in maladaptive coping [ $R^2 = .336$ ,  $F(3, 115) = 19.42$ ,  $p < .001$ ]. As hypothesized, depressive symptoms were independently associated with perceptions of stress, such that greater depressive symptoms were found among smokers with more

perceived stress, after controlling for other correlated factors. We also found that maladaptive coping was the strongest independent correlate of perceived stress, such that greater endorsement of maladaptive strategies was related to greater perceptions of stress. Finally, perceived social support was inversely associated with perceived stress, indicating that smokers who felt supported by others also reported lower stress levels.

Table 2 also displays findings from the regression model examining independent relationships with depressive symptoms. The model accounted for 38% of the variance in maladaptive coping ( $R^2 = .378$ ,  $F(3, 112) = 16.55$ ,  $p < .001$ ). Controlling for education and nicotine dependence, we found the hypothesized relationship between perceived stress and depressive symptoms. Specifically, perceptions of stress were greater among smokers with more depressive symptoms. Again, we found that maladaptive coping was the strongest independent correlate of depressive symptoms. The use of maladaptive coping was related to greater depressive symptoms. Social support was not independently associated with depressive symptoms.

Table 2 Multivariate Regression Models for Perceived Stress and Depressive Symptoms

*A. Perceived Stress*

| Variable                 | B    | SE  | t     | p       |
|--------------------------|------|-----|-------|---------|
| Depressive Symptoms      | .21  | .07 | 2.92  | .004*   |
| Perceived Social Support | -.08 | .04 | -2.09 | .04*    |
| Maladaptive Coping       | .40  | .11 | 3.65  | < .001* |

*B. Depressive Symptoms*

| Variable                 | B     | SE  | t     | p       |
|--------------------------|-------|-----|-------|---------|
| Education                | -1.12 | .54 | -2.07 | .04     |
| Nicotine Dependence      | .20   | .29 | .67   | .49     |
| Perceived Stress         | .31   | .11 | 2.73  | .007    |
| Perceived Social Support | -.07  | .05 | -1.55 | .13     |
| Maladaptive Coping       | .52   | .14 | 3.79  | < .001* |

Note. A: Model  $R^2 = .336$ ;  $p < .001$ ; B: Model  $R^2 = .38$ ;  $p < .001$ ; \* Significant predictor

**DISCUSSION**

This study contributes to the literature by examining whether established relationships among psychosocial factors known to influence smoking behavior generalize to Hispanic smokers living in the U.S. As expected, we found that perceived stress and depressive symptoms were independently associated. Maladaptive coping was the strongest correlate of both perceived



stress and depressive symptoms. Perceived social support was independently associated with perceived stress, but not depressive symptoms.

The experience of distress in the forms of negative stress and depressive symptoms has robust associations with smoking (Cohen and Williamson, 1988; Kassel, Stroud, and Parnois 2003; Shiffman, 1993). The influence of negative mental states is important to consider, as they can inhibit smoking cessation (Cohen, 1990; Anda et al., 1990). This study is unique in that no previous research among U.S. Hispanic smokers has examined the association between these variables. Participants reported moderate to high perceived stress levels and depressive symptoms. Hispanics may face unique stressors, related to factors such as prejudice, acculturation pressure (Cervantes, Padilla, and Salgado de Snyder, 1991; Hovey, 2000; Berry, 2003), and navigating more than one culture (Romero and Roberts, 2003). Moreover, bicultural stress or conflict is positively related to depressive symptoms (Benet-Martinez et al., 2002; Romero and Roberts 2003) and smoking (Romero, Martinez, and Carvajal, 2007). This is problematic because feelings of depression among Hispanic smokers are associated with low cessation self-efficacy compared to other racial/ethnic groups (Martinez et al., 2010) and a lower likelihood of cessation (Anda et al., 1990; Glassman et al., 1990).

Maladaptive coping demonstrated the strongest independent relationship with both perceived stress and depressive symptoms in this sample of Hispanic smokers. Although the direction of these relationships is unclear, the stress generation hypothesis suggests that maladaptive coping (e.g., denial) can lead to increased stress and depressive symptoms over time (Holahan et al., 2005), which has implications for one's ability to quit smoking. Conversely, experiencing greater stress could also lead one to engage in greater use of maladaptive coping (i.e., a conditioned maladaptive response). The stress-coping model suggests that smoking may be a maladaptive strategy used to manage distress (Shiffman and Wills, 1985; Wills, 1986). Findings from this study provide indirect support for the model in a Hispanic sample, as stress and depressive symptoms were higher among smokers who endorsed greater use of strategies such as self-blame and denial. Our findings also suggest that maladaptive coping styles may ultimately serve to reduce the odds of quitting, perhaps acting as an explanatory factor in cessation among Hispanic smokers with high distress levels. Although this possibility is consistent with previous research (Bindu et al., 2011), it remains speculative and requires further examination.

Our hypothesis regarding perceived social support was partially supported. We found significant bivariate associations between social support and perceived stress and depressive symptoms. The multivariate models, however, revealed that perceived social support maintained a relationship with perceived stress, but not depressive symptoms. This suggests that lower perceived social support was associated with greater stress. The current study is the first to examine the relationship between social support and indices of distress among Hispanic smokers, and indicates that social support may serve a buffering role against stressful circumstances. The only other study to consider social support and depressed mood among Hispanic smokers found that low levels of support, in particular, hindered outcomes when depressive symptoms were present (Brothers and Borelli, 2011).

We acknowledge that this study has limitations. First, the cross-sectional design did not allow for investigation of temporal relationships and precludes causal interpretations. Second, this sample may not be representative of the overall population of Hispanic smokers in the U.S. Participants in this study were help-seeking, able to read English, and at least high school

educated. Hispanic ethnicity represents a heterogeneous group, and we did not assess nativity, which may have provided additional information. We also note that diagnostic assessments of depression were not conducted. Finally, self-report measures were used to assess psychosocial variables, which are associated with well-known limitations.

## CONCLUSION

This study contributes to an important gap in the literature regarding relationships between psychosocial variables and smoking among U.S. Hispanics. The impact of these findings is significant, as stress and depression commonly co-occur among smokers, and are known to reduce the likelihood of cessation. A greater understanding of theoretically important factors that play a role in the experience of distress among Hispanic smokers have important implications for developing smoking cessation interventions that are specific to this population. Future research should examine stress and depression as predictors or mediators of smoking cessation among Hispanics. Future studies should also consider differences in nationalities among Hispanics and preferred language; much of the research has been conducted with samples of Mexican Americans. We also suggest that future intervention research consider addressing psychological distress, maladaptive coping, and social support as intervention components, in addition to cultural factors such as acculturation.

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