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Nonjudging Facet of Mindfulness Predicts Enhanced Smoking Cessation in Hispanics

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Abstract

Although most smokers express interest in quitting, actual quit rates are low. Identifying strategies to enhance smoking cessation is critical, particularly among underserved populations including Hispanics, for whom many of the leading causes of death are related to smoking. Mindfulness (purposeful, non-judgmental attention to the present moment) has been linked to increased likelihood of cessation. Given that mindfulness is multifaceted, determining which aspects of mindfulness predict cessation could help to inform interventions. This study examined whether facets of mindfulness predict cessation in 199 Spanish-speaking smokers of Mexican heritage (63.3% male, mean age=39, 77.9% high school education) receiving smoking cessation treatment. Primary outcomes were 7-day abstinence at weeks 3 and 26 post-quit (biochemically-confirmed and determined using an intent-to-treat approach). Logistic random coefficients regression models were utilized to examine the relationship between mindfulness facets and abstinence over time. Independent variables were subscales of the Five Facet Mindfulness Questionnaire (Observing, Describing, Acting with Awareness, Nonjudging, Nonreactivity). The Nonjudging subscale (i.e., accepting thoughts and feelings without evaluating them) uniquely predicted better odds of abstinence up to 26 weeks post-quit. This is the first known study to examine whether specific facets of mindfulness predict smoking cessation. The ability to experience thoughts, emotions, and withdrawal symptoms without judging them may be critical in the process of quitting smoking. Results indicate potential benefits of mindfulness among smokers of Mexican heritage and suggest that smoking cessation interventions might be enhanced by central focus on the Nonjudging aspect of mindfulness.

Keywords

Mindfulness; Smoking Cessation; Hispanic smokers

Given that tobacco use is the leading cause of preventable morbidity and mortality in the U.S. (Mokdad, Marks, Stroup, & Gerberding, 2004), and that most smokers who attempt to quit are unsuccessful (CDC, 2011), identifying strategies to enhance smoking cessation is critical. This is particularly important among Hispanics, who represent the largest ethnic minority group in the U.S. (U.S. Census Bureau, 2014) and experience profound health disparities (Myers, 2009). Although the prevalence of smoking is lower among Hispanics than in the general U.S. population (12.5% vs. 18.1%; CDC, 2014), three of the four leading causes of death in Hispanics are related to smoking (NCHS, 2011). Hispanics living in the U.S. experience culturally-related stressors (including discrimination and acculturative stress) that have harmful consequences for mental health and smoking cessation (Kendzor et al., 2014; Torres et al., 2012). Identifying strategies to enhance cessation despite high levels of stress in this understudied and underserved population is critical. The current study sought to investigate whether specific aspects of mindfulness predict smoking cessation among smokers of Mexican heritage.

Mindfulness has been defined as “paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally” (Kabat-Zinn, 1994, p. 4). This form of nonjudgmental attention should foster self-acceptance in the midst of difficult life experiences and lessen the likelihood of impulsive reactions to stress. Indeed, research suggests that mindfulness-based training reduces emotional reactivity in the face of stressors (Arch & Craske, 2010; Britton, Shahrar, Szepsenwol, & Jacobs, 2012). Dispositional mindfulness, the tendency for mindful responding in daily life, is associated with lower perceived stress, depressive symptoms, and neuroticism (Brown & Ryan, 2003). There is also growing evidence that mindfulness-based interventions, aimed at increasing dispositional mindfulness, enhance smoking cessation (Brewer et al., 2011; Davis, Fleming, Bonus, & Baker, 2007; Davis, Goldberg et al., 2014; Davis, Manley et al., 2014). These trials included 10.3%, 0.0%, 1.5%, and 1.7% Hispanics, respectively, highlighting the need for research on mindfulness and smoking cessation in this population.

Vidrine, Businelle et al. (2009) reported that among smokers interested in quitting (10% of whom were Hispanic), those with greater mindfulness indicated lower nicotine dependence, lower withdrawal severity, higher self-efficacy for avoiding smoking in high-risk situations, and greater expectancies that they could control emotions without smoking. Moreover, Heppner et al. (under review) found that among African American smokers receiving cessation treatment, those with greater mindfulness were more likely to be abstinent up to 26 weeks post-quit. Thus, initial research suggests that mindfulness is linked to improved cessation outcomes; however, more work is needed to determine whether this association exists among Hispanic populations.

In addition, research is needed to clarify which aspects of mindfulness might promote smoking cessation. Although mindfulness has been conceptualized as multifaceted (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), the aforementioned studies of dispositional mindfulness and cessation used unidimensional measures of mindfulness. Baer et al. (2006) conducted an influential factor analysis of mindfulness questionnaires that revealed five facets: 1) *Observing* (paying attention to present sensations), 2) *Describing* (labeling thoughts and feelings), 3) *Acting with Awareness* (staying focused on the present moment

and acting deliberately), 4) *Nonjudging* (accepting thoughts and feelings without judging them), and 5) *Nonreactivity* (perceiving thoughts and feelings without reacting to them). Although these facets are related, they can be distinguished conceptually. For example, a person may be highly attuned to emotions (i.e., observing anxiety) but not be able to describe them in words or refrain from judging them as negative. Baer et al.'s work resulted in the Five Facet Mindfulness Questionnaire (FFMQ).

Research has begun to examine differential associations between FFMQ facets and psychosocial functioning. Cebolla et al. (2012) found that in an adult Spanish sample, whereas Nonjudging, Acting with Awareness, Describing, and Nonreactivity were each related to lower psychiatric symptoms, Observing was not. Among the subscales, the Nonjudging facet showed the strongest associations with lower psychiatric symptoms. Although no known research has examined associations between FFMQ subscales and smoking cessation, Roberts and Danoff-Burg (2011) found that Acting with Awareness was associated with smoking fewer cigarettes per day among college students. Additional research suggests that Nonjudging, Describing, and Acting with Awareness are related to lower eating pathology and alcohol use (Adams et al., 2012; Fernandez et al., 2010). The Observing facet may only predict better psychosocial functioning and healthier behaviors among experienced meditators, who have practiced observing sensations with a nonjudgmental, nonreactive stance (Baer et al., 2008). In fact, in non-meditating samples, greater observation of experiences may be maladaptive if individuals are prone to focusing on unpleasant thoughts and emotions with a judgmental attitude. Thus, we did not expect Observing to predict smoking cessation in the current sample of non-meditators.

Notably, none of the above studies on mindfulness and health risk behaviors focused on Hispanics living in the U.S. The current study is the first known to examine associations between dispositional mindfulness and smoking cessation in a Hispanic population. In a sample of Spanish-speaking smokers of Mexican heritage, we sought to examine whether specific facets of mindfulness predict smoking cessation over time. Hispanics living in the U.S. frequently experience stress related to social disadvantage, discrimination, and acculturation, and these stressors can impede efforts to quit smoking and contribute to health disparities (Kendzor et al., 2014; Myers, 2009; Torres et al., 2012). Mindfulness appears to promote enhanced emotion regulation in stressful situations (Arch & Craske, 2010; Britton et al., 2012), and Hispanic smokers who are able to notice uncomfortable experiences nonjudgmentally and without automatically reacting to them might be less likely to smoke in an attempt to relieve distress. Thus, we hypothesized that the Nonjudging and Nonreactivity FFMQ subscales (which focus on how participants respond to distressing thoughts, emotions, and situations) would predict abstinence. Determining which specific aspects of mindfulness are linked to cessation could be critical to inform mindfulness-based smoking cessation treatments for Hispanic populations.

Method

Data were collected as part of a longitudinal study examining predictors of smoking cessation among Spanish-speaking adults of Mexican heritage. As part of this clinical research study, participants received smoking cessation treatment including nicotine patch

therapy, self-help materials, and six brief in-person and telephone counseling sessions based on an empirically validated intervention for Spanish-speaking smokers (Wetter et al., 2007). All participants received the same treatment, which was based on the Treating Tobacco Use and Dependence Clinical Practice Guideline (Fiore et al., 2000) and motivational interviewing (Miller & Rollnick, 2002) and did not specifically teach mindfulness. Questionnaire data (including trait mindfulness) were collected at baseline (1 week before the quit date), and biochemically-confirmed smoking cessation was assessed at 3 and 26 weeks post-quit. Procedures were approved by the Institutional Review Board, and all participants completed informed consent.

Participants

One hundred ninety-nine participants were recruited through media advertising ($n = 165$) in the Houston area or through the population-based Mexican American Cohort Study ($n = 34$), a longitudinal study of health risk factors among individuals of Mexican heritage (Barceñas et al., 2007). Individuals were eligible if they: 1) were of Mexican heritage, 2) preferred to speak Spanish, 3) were 18-65 years old, 4) were a current smoker having smoked 5 cigarettes/day in the past year, 5) had an expired carbon monoxide (CO) level of 8 parts per million (ppm; SRNT, 2002), 6) were motivated to quit smoking in the next month, and 7) possessed a valid home address and home telephone number. Exclusion criteria were: 1) contraindication for use of the nicotine patch, 2) active substance use disorder, 3) regular use of tobacco products other than cigarettes, 4) use of bupropion or nicotine replacement products other than patches supplied by the study, 5) pregnancy or lactation, 6) another household member enrolled in the study, or 7) participation in another smoking cessation program or research study within the past 90 days.

Measures

Demographic information—Participants indicated their age, gender, partner status (married/living with partner vs. single/divorced/separated/widowed), and educational attainment.

Nicotine dependence—The Heaviness of Smoking Index (HSI; Heatherton, Kozlowski, Frecker, Rickert, & Robinson, 1989) is a 2-item self-report measure that is supported as a reliable and valid indicator of nicotine dependence (Borland et al., 2010) and has been used in Hispanic smokers (J. I. Vidrine, Vidrine et al., 2009). The two items (administered at baseline) are: “How many cigarettes a day do you smoke on average?” and “How soon after you wake up do you smoke your first cigarette?” (“time to first cigarette”).

Mindfulness—The FFMQ (Baer et al., 2006) is a 39-item self-report measure of dispositional mindfulness. Participants rate how often each item describes them from 1 (never or rarely true) to 5 (very often or always true). The FFMQ yields five subscales: 1) *Observing* (e.g., “I pay attention to sensations, such as the wind in my hair or the sun on my face”), 2) *Describing* (e.g., “I’m good at finding the words to describe my feelings”), 3) *Acting with Awareness* (e.g., “I rush through activities without really being attentive to them [reverse-scored]), 4) *Nonjudging* (e.g., “I think some of my emotions are bad or inappropriate and I shouldn’t feel them” [reverse-coded]), and 5) *Nonreactivity* (e.g., “I

perceive my feelings and emotions without having to react to them”). For the current study, the FFMQ was translated into Spanish using a back-translation procedure by two bilingual individuals of Hispanic origin and reviewed by personnel of the institution’s International Department of Medical Translation. The translated version was then reviewed by Mexican American individuals reflecting diverse levels of acculturation so that consensus on wording was reached. The resulting Spanish FFMQ was administered at baseline. In the current sample, all subscales showed adequate internal consistency (α : 0.71 - 0.83).

Smoking abstinence—Seven-day point prevalence abstinence at 3 and 26 weeks post-quit was defined as self-reported complete abstinence from smoking for the previous 7 days, verified by either CO <8 ppm or salivary cotinine <20 ng/ml. At each time point, participants who reported a lapse and/or produced CO or cotinine levels inconsistent with abstinence were considered not abstinent. An intent-to-treat (ITT) approach was used, such that when abstinence status could not be determined due to missing data, participants were considered not abstinent.

Depressive symptoms—Given that mindfulness is associated with lower depressive symptoms (Brown & Ryan, 2003) and that depressive symptoms often predict worse cessation outcomes (Leventhal et al., 2008), ancillary analyses controlled for depression. The Center of Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), a psychometrically sound 20-item measure of past-week depressive symptoms, was administered at baseline.

Statistical Analyses

To examine the relationship between baseline mindfulness and abstinence over time, logistic random coefficients regression models were utilized. Models specified an unstructured covariance matrix for the vector of random intercept and slope of time for each participant. Primary outcomes were biochemically-confirmed 7-day abstinence at weeks 3 and 26 post-quit. First, models were created to predict repeated-measures abstinence from all FFMQ subscales entered simultaneously. Next, separate models were created to predict abstinence from each FFMQ facet. Analyses were conducted with and without controlling for demographic variables (gender, education, age, and partner status; chosen based on past research, e.g., Businelle et al., 2010) and nicotine dependence (HSI). Finally, models were created to examine whether any associations remained significant after controlling for baseline depressive symptoms.

Results

Of 199 participants, 63.3% were male, 69.3% were married or living with a partner, and 77.9% reported less than or equal to high school education. Mean age was 38.73 ($SD = 10.14$). Mean scores on FFMQ subscales were as follows: Observing $M = 24.19$ ($SD = 6.37$), Describing $M = 27.24$ ($SD = 5.17$), Acting with Awareness $M = 30.42$ ($SD = 5.99$), Nonjudging $M = 27.30$ ($SD = 6.31$), and Nonreactivity $M = 19.16$ ($SD = 4.97$).

The Nonjudging facet predicted greater odds of abstinence, both with ($OR = 1.06$, $p = .02$) and without ($OR = 1.08$, $p = .01$) controlling for demographic covariates and dependence.

None of the other subscales were significant predictors in separate models ($ps > .15$). When subscales were entered simultaneously (rather than in separate models), the same pattern emerged: Nonjudging predicted greater odds of abstinence (OR = 1.09, $p = .03$), over and above other facets of mindfulness. None of the other facets emerged as significant predictors ($ps > .30$). After controlling for demographic covariates and dependence, Nonjudging remained a significant predictor of greater odds of abstinence (OR = 1.09, $p = .03$). Analyses were also conducted using completers-only (rather than ITT), and the pattern of results was identical.

Finally, given that Nonjudging was associated with lower depressive symptoms ($r = -.39$, $p < .001$), baseline CES-D score was entered as a covariate. In separate models, Nonjudging remained a significant predictor after controlling for depression and demographics (OR = 1.06, $p = .04$); this association approached significance when also controlling for dependence (OR = 1.06, $p = .057$). In simultaneous models, Nonjudging remained significant after controlling for depression and demographics (OR = 1.09, $p = .048$) and approached significance after also controlling for dependence (OR = 1.07, $p = .07$). Although Nonjudging was not significant at the .05 level once all covariates were included, it was still a significant predictor when both depression and demographics were controlled. Thus, the relationship between Nonjudging and abstinence does not appear to be fully explained by lower concurrent depressive symptoms.

In effort to enhance our understanding of the clinical significance of the findings, abstinence rates were examined for participants low versus high on Nonjudging. At week 3 post-quit, 22.7% of participants in the lowest quartile of Nonjudging were abstinent, versus 53.8% of those in the highest quartile. At week 26 post-quit, only 4.5% of those low in Nonjudging were abstinent, compared to 23.1% of those high in Nonjudging.

Discussion

Nonjudgment may be a key aspect of mindfulness contributing to enhanced cessation outcomes among Spanish-speaking smokers of Mexican heritage. Notably, Bishop et al. (2004) highlighted a nonjudgmental, accepting orientation to experience as one of two core aspects of mindfulness. Learning to experience unpleasant thoughts, feelings, and physical sensations associated with smoking cessation *without judging them* may lessen distress and increase likelihood of abstinence. Example FFMQ Nonjudging items (reverse-coded) are: “I tell myself I shouldn’t be feeling the way I’m feeling” and “When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about” (Baer et al., 2006). If a person tells himself that he should not be feeling irritable and judges himself as a “bad” person because he is having strong cravings, these judgmental self-statements may further escalate negative emotions, increasing the likelihood of smoking in attempt to relieve distress (Marlatt & Witkiewitz, 2005). Alternatively, if a person recognizes that unpleasant sensations are a natural part of the quit process (i.e., accepting instead of judging them as “bad” sensations that need to be escaped), he might be more likely to abstain from smoking in the context of these sensations.

Accepting thoughts, feelings, and physical sensations without judgment may be particularly helpful for Hispanic smokers in the U.S., for whom discrimination and stress associated with acculturation can increase psychological distress and interfere with cessation (Kendzor et al., 2014; Torres et al., 2012). If individuals are able to notice uncomfortable experiences without judgment, they may be less likely to smoke in attempt to escape distress. Importantly, mindfulness does not involve ignoring/suppressing or denying thoughts or emotions related to difficult situations. Rather, mindfulness skills encourage individuals to notice distressing experiences (including any associated thoughts and emotions), and then bring their attention back to other features of the present moment so that their responses are flexible, adaptive, and non-impulsive. It is unclear why the Nonreactivity facet did not predict cessation in this sample; research should continue to examine the relevance of this facet for cessation.

Although no other known research has examined facets of mindfulness with regard to smoking cessation, at least three studies support the unique importance of Nonjudgment in relation to alcohol use. Ostafin et al. (2013) found that Nonjudging moderated the association between automatic responses to alcohol and alcohol preoccupation (i.e., Nonjudging weakened the link between automatic emotional reactions to alcohol and difficulty disengaging from alcohol-related thoughts). Ostafin and Marlatt (2008) reported that “Accepting without Judgment” weakened the link between automatic motivation to drink and problematic alcohol use. Fernandez et al. (2010) found that Nonjudging was uniquely associated with lower alcohol-related consequences. Given that smoking and problematic drinking are often fueled by self-criticism and negative emotions, mindfully experiencing uncomfortable thoughts and feelings without judging them may reduce the likelihood that they will trigger unhealthy behaviors.

The current study is limited by an exclusive focus on Spanish-speaking smokers of Mexican heritage who were motivated to quit smoking, and results may not generalize to smokers who would be ineligible for this study (e.g., smokers who are not motivated to quit, have a substance use disorder, are pregnant, or for whom nicotine patches are contraindicated). The majority (63%) of participants were male, and the results could be more applicable to men than women. In addition, mindfulness was only measured at baseline, and future research should examine how changes in mindfulness over time relate to abstinence outcomes. This study is strengthened by its focus on an underserved ethnic group, examination of multiple facets of mindfulness, use of longitudinal data, and biochemical confirmation of smoking status.

Results highlight the importance of the Nonjudging facet of mindfulness in predicting enhanced smoking cessation outcomes in smokers of Mexican heritage. Notably, this study examined dispositional mindfulness (i.e., naturally-occurring individual differences) rather than mindfulness-based treatment. Research should examine whether mindfulness-based treatment enhances certain aspects of mindfulness, and whether increases in mindfulness facets lead to higher abstinence rates. Smoking cessation interventions that encourage mindful experience of thoughts, emotions, and physical sensations without judgment might be effective for enhancing smoking cessation among Hispanics, and potentially for other populations of smokers as well.

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