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Determinants of Smoking and Cessation Among Latinos: Challenges and Implications for Research

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Abstract

Tobacco is a significant burden to individual and public health, and disparities exist among Latino smokers with respect to use and cessation. Although the prevalence of smoking is lower for Latinos than for non-Latino Whites and the general U.S. population, numerous health disparities exist within the population of Latino smokers. Much is known about determinants of smoking and cessation but the vast majority of this knowledge is based on research with non-Latino White smokers. This results in at least two important challenges in tobacco research among Latino smokers: (i) demonstrating the generalizability of known determinants of smoking and cessation, and; (ii) identifying culturally relevant variables that influence smoking and cessation among Latinos. An argument for increased research in these areas is presented with a review of existing research among Latino smokers that demonstrates these needs. Research is summarized that suggests socioeconomic position, depressive symptomatology, physical dependence, and gender function differently as determinants of smoking and cessation among Latinos compared with the general population of smokers. Research is also reviewed that suggests the promise of acculturation, acculturative stress, and discrimination as culturally relevant determinants of smoking and cessation. Research and practice implications are discussed, and specific areas for future research are offered.

Tobacco use is the leading cause of preventable death and disease among adults in the United States (U.S.; U.S. Department of Health and Human Services [USDHHS], 2014). It is a risk factor for at least 15 types of cancer (American Cancer Society, 2009), cardiovascular and respiratory diseases, and numerous other health problems (USDHHS, 2014). As such, tobacco is among the most significant burdens to individual and public health in the U.S. Although the prevalence of smoking is lower for Latinos than for non-Latino Whites (12.1% versus 19.4%; Centers for Disease Control and Prevention [CDC], 2014), notable disparities exist among Latinos who smoke compared to non-Latino White smokers. For example, despite a lower smoking prevalence rate among Latinos and lower frequency and amount of smoking among Latino smokers (Trinidad et al., 2009), Latino smokers are no more successful – or less successful – at quitting smoking compared with non-Latino White smokers (CDC, 2002, 2011; Stahre, Okuyemi, Joseph, & Fu, 2010;

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Trinidad, Perez-Stable, White, Emery, & Messer, 2011). Latino smokers are also less likely to be screened for tobacco use (Cokkinides, Halpern, Barbeau, Ward, & Thun, 2008) or to be advised to quit (Cokkinides et al., 2008; Houston, Scarinci, Person, & Greene, 2005; Levinson, Perez-Stable, Espinoza, Flores, & Byers, 2004) during a healthcare encounter, and are less likely to use cessation aids when attempting to quit (Cokkinides et al., 2008; Levinson et al., 2004; Thorndike, Biener, & Rigotti, 2002). Thus, there is a pressing need to more effectively encourage cessation among Latino smokers in order to decrease the burden of tobacco among this population.

There is dearth of information regarding the efficacy of smoking cessation interventions among Latino smokers. A recent review found only 12 published smoking cessation intervention studies directly targeting Latinos and determined they have modest effects at end of treatment, but no longer term effects (Webb, Rodriguez-Esquivel, & Baker, 2010). One factor that may be limiting the development of efficacious interventions among Latinos is that relatively little is known about the processes of smoking and cessation among this population.

Cognitive-behavioral models of drug use (e.g., Baker, Piper, McCarthy, Majeskie, & Fiore, 2004; Niaura, 2000; Witkiewitz & Marlatt, 2004) are the predominant theoretical approaches in psychology to the study of determinants of smoking and the development of interventions. These models generally argue that distal social, intrapersonal, and interpersonal factors interact with more proximal contextual, cognitive, and affective factors that serve as the immediate precipitants of drug use. Further, similar factors are implicated as critical determinants of drug use across these models, such as drug dependence (or specific aspects of it such as craving/urge or withdrawal), negative affect or emotional states, and drug use cues or high-risk situations. An abundance of published research supports the utility of these models for predicting smoking and cessation. However, with regard to Latino smokers, extant research is limited in at least two major ways. First, the majority of this research has been conducted with mostly non-Latino White samples or without attention to race/ethnicity even when diverse samples of smokers are available. Thus, the extent to which current knowledge can be generalized to Latino smokers is not well known. Second, these models do not explicitly consider culturally relevant variables that may uniquely affect smoking, cessation, or their determinants among Latino smokers.

The *Treating Tobacco Use and Dependence Clinical Practice Guideline* calls for increased research to identify motivators and determinants of smoking cessation among minority populations (Fiore et al., 2008). Increased research in these areas stands to significantly impact intervention development, which can in turn positively impact tobacco-related disparities among Latino smokers. As such, the purpose of this review is to summarize selected published research on the process of smoking and cessation among Latinos, with particular attention to research that challenges the generalizability of known determinants of smoking and cessation among Latinos and highlights potentially culturally relevant variables. The ultimate goals are to: (i) bring attention to these published findings and their implications for research and practice with Latino smokers; (ii) bring attention to the continued need to study racial/ethnic minority smokers in their own right to understand how to best serve them, and; (iii) identify gaps in the literature in the areas of smoking and

cessation among Latinos to inform and encourage new research. As much as possible, the research reviewed here will focus on adult Latino smokers in the U.S. Separate youth- and country-specific examinations of the literature are warranted given that the process of smoking and culturally relevant considerations may differ as a function of these factors.

Generalizability of Known Determinants

Socioeconomic position

Socioeconomic position (SEP) is defined as the social standing or class of an individual (American Psychological Association Task Force on Socioeconomic Status, 2007) and is typically operationalized with single-item indicators of educational attainment, income, and occupation. Smoking prevalence rates are highest among individuals with less than a GED and lowest among those with a graduate degree; they are lower among those who live at or above the poverty level compared with those who live below the poverty level (CDC, 2014). Being employed in a working-class job (Barbeau, Krieger, & Soobader, 2004; Waldron & Lye, 1989) and being unemployed (Lee, Crombie, Smith, & Tunstall-Pedoe, 1991; Waldron & Lye, 1989) are also associated with greater odds of smoking in the general population. In contrast, SEP has not been consistently associated with status as a current smoker among Latinos. For example, Kaplan et al. (2014) found lower income and educational attainment to be significantly associated with status as a current smoker. Echaverría and colleagues found lower income and educational attainment – but not unemployment – to be associated with status as a current smoker among Latino young adults (Echaverría, Gundersen, Manderski, & Delnevo, 2015). In contrast Coreil, Ray, and Markides (1991), found that income was associated with status as a current smoker only among young adults and education, employment status, and occupational prestige were unrelated to smoking status. Perez-Stable et al. (2001) found no associations between income or education and current smoking.

Lower SEP has been associated with lower odds of cessation (Businelle et al., 2010; Daza et al., 2006; Foulds et al., 2006; Hymowitz et al., 1997; Sheffer et al., 2012), although not consistently among Latinos. Businelle and colleagues found that a latent SEP variable comprised by income, educational attainment, employment status, and insurance status predicted cessation equally well across White, Black, and Latino smokers (Businelle et al., 2010). Samet, Howard, Coultas, and Skipper (1992) found that income alone and a composite SEP index comprised by education and income was associated with *quit rates* (the proportion of former smokers in a sample of persons who have ever smoked). The few treatment studies targeting Latinos that reported SEP effects on treatment outcomes have not found education (Chiang & Borrelli, 2014; Nevid & Javier, 1997; Pérez-Stable, Sabogal, Marín, Marín, & Otero-Sabogal, 1991; Woodruff, Talavera, & Elder, 2002), income (Chiang & Borrelli, 2014; Nevid & Javier, 1997; Woodruff et al., 2002), or employment (Chiang & Borrelli, 2014) to be predictive of cessation.

Limited evidence suggests that alternative measures of SEP may be predictive of cessation among Latinos. Chiang and Borrelli (2014) examined the predictive utility of multiple indicators of SEP, including “non-traditional” indicators, on smoking cessation in a sample of Latino smokers in cessation counseling. Annual income, educational attainment,

employment status, availability of money to see a doctor, and availability of money for medications were not predictive of cessation. However, *lack of debt* (versus having any debt) was predictive of cessation. Reitzel et al. (2011) found that lower *subjective social status* (one's perception of their relative position in the social hierarchy; Adler & Stewart, 2007) predicted lower odds of abstinence from smoking. Furthermore, subjective social status was equally predictive of abstinence among White, Black, and Latino smokers even after controlling for traditional indicators of SEP. Using the same sample and analytic approach as Reitzel and colleagues, Kendzor et al. (2010) found that greater *financial strain* (perceived difficulty fulfilling financial needs; Pearlin, Lieberman, Menaghan, & Mullan, 1981) was equally predictive of lower odds of abstinence across race/ethnicity, even after controlling for SEP.

Taken together, these findings suggest that subjective or relative measures of socioeconomic condition and indices that combine multiple objective SEP variables may be more useful for understanding the relation between SEP and cessation than single-item objective indicators. Further, this assertion is likely applicable to smokers regardless of race/ethnicity, but may be particularly relevant to Latino smokers for at least two reasons. The first is that because traditional indicators of SEP have shown limited predictive utility among Latinos, there are fewer options for assessing SEP among this population. Second, subjective measures are thought to be broader measures of SEP because they tap into both objective SEP as well as relative social position (Adler & Stewart, 2007; Kawachi, Adler, & Dow, 2010). For Latinos, consideration of relative social position may be more relevant than objective indicators of SEP because it may result in additionally weighing issues such as racial/ethnic minority status, language fluency, immigrant status, immigration status, or unfair treatment. Put another way, subjective measures may indirectly provide a more culturally sensitive assessment of social status among Latinos. Furthermore, at least some of these factors are amenable to intervention. For example, it may be useful to assess for debt and subjective social status as part of standard smoking cessation interventions for their relevance to individual clients. In addition, provision of or referral to financial management counseling, food assistance programs, and other social services, as well as basic cognitive-behavioral skills training within existing smoking cessation interventions may help attenuate debt, financial worries, and the stress caused by them to in turn increase odds of cessation.

Depressive symptomatology

Depression has long been shown to relate to smoking (Fucito & Juliano, 2009; Glassman et al., 1990; Kinnunen et al., 2006; Pratt & Brody, 2010; Schleicher, Harris, Catley, & Nazir, 2009) and lower odds of cessation (Cinciripini et al., 2003; Glassman et al., 1990; Japuntich et al., 2007; Niaura et al., 2001; Weinberger, Mazure, Morlett, & McKee, 2013) in studies with largely non-Latino White samples or where race/ethnicity was not reported. Few studies have examined the relationship between depression and smoking among racial/ethnic minority groups of smokers. Kiviniemi, Orom, and Giovino (2011) found that current depressive symptomatology was associated with greater odds of being a current smoker among White but not Black or Latino persons. Berg et al. (2012) found that current depressive symptomatology was associated with higher smoking prevalence rates among White, Black, and American Indian persons, but not among Latino or Asian persons. In

regards to cessation, Castro et al. (2011) found that greater depressive symptomatology predicted lower odds of abstinence among White and Black but not Latino smokers. Within a sample of Latino smokers receiving an intervention, Muñoz, Marin, Posner, and Perez-Stable (1997) found that diagnostic category (i.e., history of a major depressive episode [MDE], current MDE, no history of MDE) at baseline was not predictive of cessation.

Together, these data suggest that depressive symptomatology may not be a critical determinant of smoking or cessation among Latinos, and this is inconsistent with drug use theories that implicate negative affect as a critical determinant of drug use (e.g., Baker et al., 2004; Witkiewitz & Marlatt, 2004). Depression is a particularly important example of how a well-known determinant of smoking may not generalize to Latino smokers because it is a modifiable risk factor, and thus has treatment implications. For example, depressive symptoms may not be a useful prognostic indicator for cessation among Latinos. Also, because it does not appear to be a significant barrier to cessation, intervention components that target depressive symptoms may have limited utility for Latino smokers. It is important to note that published data are limited, and more research is needed to reliably determine the utility – or lack thereof – of depressive symptoms as a determinant of smoking and cessation among Latinos.

Physical dependence

Dependence and *addiction* refer to the continued compulsive use of a drug despite negative consequences, which may or may not include physical dependence (National Institute on Drug Abuse [NIDA], 2007). *Physical dependence* refers specifically to the development of *tolerance* (when more of a drug is needed to achieve the desired effect or use of the same amount produces a diminished effect over time) or *withdrawal* (emergence of a characteristic set of symptoms when the drug is stopped or continued use of the drug to prevent withdrawal symptoms; NIDA, 2007). In tobacco research, behavioral patterns of smoking are widely used as indicators of physical dependence. The general pattern of Latino smokers differs notably from that of non-Latino White smokers in that they smoke fewer cigarettes per day and are more likely to be “light smokers” (typically defined as less than 10 cigarettes per day; Benowitz, Bernert, Caraballo, Holiday, & Wang, 2009; Caraballo et al., 1998; Daza et al., 2006; Lawrence, Fagan, Backinger, Gibson, & Hartman, 2007; Trinidad et al., 2009; Trinidad et al., 2011), are more likely to smoke on a non-daily basis (Lawrence et al., 2007; Trinidad et al., 2009; Trinidad et al., 2011), and wait longer after waking to smoke (Branstetter, Mercincavage, & Muscat, 2014; Castro et al., 2014; Daza et al., 2006; Trinidad et al., 2011).

This less severe smoking pattern is indicative of less physical dependence on cigarettes. As such, prominent drug use theories (e.g., Baker et al., 2004; Niaura, 2000; Witkiewitz & Marlatt, 2004) would predict that Latinos have less difficulty quitting smoking compared to non-Latino White smokers. But in fact, quit rates among Latino smokers are lower or no different from those of non-Latino White smokers (CDC, 2002, 2011; Stahre et al., 2010; Trinidad et al., 2011). The limited cessation studies that report outcomes by race/ethnicity also do not demonstrate an advantage in quitting among Latinos (Castro et al., 2014; Covey et al., 2008; Daza et al., 2006; Gandhi, Foulds, Steinberg, Lu, & Williams, 2009; Hymowitz

et al., 1997). Moreover, cessation studies with non-Latino White or general populations of smokers demonstrate a consistent relationship between indicators of physical dependence and failed cessation (Ferguson et al., 2003; Foulds et al., 2006; Hymowitz et al., 1997; Kozlowski, Porter, Orleans, Pope, & Heatherton, 1994; Rohsenow, Martin, Tidey, Monti, & Colby, 2013). However, published research among Latinos has not shown indicators of physical dependence to predict cessation (Bock, Niaura, Neighbors, Carmona-Barros, & Azam, 2005; Brothers & Borrelli, 2011; Muñoz et al., 1997; Pérez-Stable et al., 1991; Reitzel et al., 2009; Woodruff et al., 2002).

Taken together, these data suggest that physical dependence may not be a strong motivator for tobacco use among Latino smokers, and this represents another important departure from prominent theories (Baker et al., 2004; Niaura, 2000; Witkiewitz & Marlatt, 2004) that put forward physical dependence as a key determinant of drug use and relapse. Also, it represents yet another prognostic indicator that may not be useful to apply to Latino smokers. As such, there have been repeated calls for research into the non-physical aspects of tobacco dependence as determinants of smoking and cessation among Latinos (Castro et al., 2012; Reitzel et al., 2009; Zhu, Pulvers, Zhuang, & Baezconde-Garbanati, 2007).

Comprehensive self-report measures of tobacco dependence that tap into multiple social and cognitive (as well as physical) aspects of tobacco dependence have emerged in recent years (e.g., Etter, Le Houezec, & Perneger, 2003; Piper et al., 2004; Shiffman, Waters, & Hickcox, 2004; Smith et al., 2010), and research using such measures with Latino smokers is beginning to emerge (e.g., Castro et al., 2012; Kendzor, Businelle, Reitzel, Rios, et al., 2014). However, this is occurring in the absence of known published studies that explicitly examine whether or not the psychometric structure and predictive utility of these scales are similar for Latinos compared to other racial/ethnic groups of smokers. Thus, there is critical need for the psychometric examination of existing tobacco dependence scales among Latino smokers. Such efforts will be vital to effectively assessing and understanding tobacco dependence among this population.

Gender

There is a well-established gender difference in smoking among the U.S. population, such that more men smoke than women (20.5% versus 15.3%; CDC, 2014). Further, this gender difference remains when prevalence rates are stratified by race/ethnicity (CDC, 2014). However, Latinos differ in regards to this phenomenon in one very important way; that is, the culturally relevant factor of acculturation has consistently been found to play a moderating role in the relation between gender and smoking (Bethel & Schenker, 2005), as detailed in the following section. For now, what is important to understand is that smoking behavior among Latino men and women cannot be fully characterized without also attending to this culturally relevant factor. In fact, failure to do so may obscure the identification of Latino subgroups at elevated risk for smoking (Maher et al., 2005).

There is also evidence for a gender difference in smoking cessation among general populations of smokers, although these findings are slightly less consistent than for smoking prevalence. Women appear less likely to succeed at quitting compared with men (Bjornson et al., 1995; Bohadana, Nilsson, Rasmussen, & Martinet, 2003; Ferguson et al., 2003;

Fortmann & Killen, 1994; Hymowitz et al., 1997; Kenford et al., 2002; Swan, Ward, Carmelli, & Jack, 1993; Ward, Klesges, Zbikowski, Bliss, & Garvey, 1997; Wetter et al., 1999). But some research has not found a gender difference in cessation (Daza et al., 2006; Gulliver, Hughes, Solomon, & Dey, 1995; Kabat & Wynder, 1987). The limited available research among Latinos has not demonstrated a gender difference in smoking cessation (Bock et al., 2005; Kaplan et al., 2014; Pérez-Stable et al., 1991; Woodruff et al., 2002). One published study suggests that gender interacts with acculturation to predict cessation among Latinos in treatment such that it is associated with greater odds of cessation among men but not women (Castro et al., 2009). Generally, more research on the relation between acculturation and cessation is needed to clarify inconsistent findings. Also, there is a need to understand whether or not the absence of a gender difference in cessation reflects an advantage among Latina smokers and, if so, what accounts for it. But again, such research would be limited without simultaneous examination of acculturation.

Culturally Relevant Factors

Acculturation and enculturation

Acculturation refers to the behavioral and ideological changes experienced by individuals as a result of their contact with at least two cultures and involves at least two independent processes (Berry, 2005; Schwartz, Unger, Zamboanga, & Szapocznik, 2010). The first process is often termed *enculturation*, which is the extent to which an individual develops and maintains a connection to their heritage culture. The second is what is typically referred to when the term “acculturation” is applied in smoking research, and is the extent to which an individual develops and maintains a connection to the larger mainstream or “receiving,” culture (e.g., U.S. culture). These processes affect multiple intrapersonal domains, including behavior, values, and identity (Schwartz et al., 2010).

Research in smoking has almost exclusively focused on acculturation to U.S. culture. This is largely due to the widespread use of single-item demographic variables as proxies of acculturation (e.g., English-language use, proficiency, or preference, years lived in the U.S., familial generations in the U.S., immigrant status, etc.), or short scales wherein higher scores represent greater acculturation, but do not speak to enculturation. Thus, extant research is limited in that it does not reflect the multidimensional or bidirectional nature of acculturation. Nevertheless, research has consistently demonstrated that such indicators of acculturation are positively related to smoking prevalence among Latina women, but not Latino men (Acevedo, 2000; Acevedo-Garcia, Pan, Jun, Osypuk, & Emmons, 2005; Bethel & Schenker, 2005; Cantero, Richardson, Baezconde-Garbanati, & Marks, 1999; Coonrod, Balcazar, Brady, Garcia, & Van Tine, 1999; Coreil et al., 1991; Maher et al., 2005; Palinkas et al., 1993; Pérez-Stable et al., 1991; Samet et al., 1992; Sundquist & Winkleby, 1999; Wilkinson et al., 2005).

Four known published studies have examined the relationship between indicators of acculturation and cessation among Latinos, and findings are mixed. Bock et al. (2005) used a single-item assessing language fluency and found that Latino smokers who reported little to no English fluency had higher cessation rates than those who reported high English fluency. In contrast, Leischow, Hill, and Cook (1996) used a 5-item measure of language use

(Marin, Sabogal, Marin, Otero-Sabogal, & Perez-Stable, 1987) and found that greater English-language use was associated with higher odds of cessation. Using the same 5-item measure, Pérez-Stable et al. (1991) found no relation between English-language use and cessation. Most recently, in a sample of 271 Latino residents of Texas, Castro et al. (2009) found that demographic proxies of greater acculturation toward U.S. culture (more years lived in the U.S., greater proportion of one's life lived in the U.S., and preference for English-language media) were associated with higher odds of quitting among men but not women. More research is needed to understand how the cessation rates of Latino men and women of different acculturative statuses compare to those of other racial/ethnic groups to understand whether greater acculturation is similarly advantageous for other groups of racial/ethnic minority smokers.

Acculturation is likely an important factor influencing smoking among Latina women and potentially cessation among Latino men. The mechanisms through which acculturation asserts its gender-differentiated effects are not known, but social norms have been speculated to be a major mechanism. That is, the effect may reflect among women the adoption of attitudes or norms from mainstream U.S. culture that are more favorable toward women's smoking and/or the waning of more restrictive attitudes and norms against women's smoking from the heritage culture (Bethel & Schenker, 2005). This would also infer that attitudes and norms toward men's smoking are similar across the U.S. mainstream and heritage cultures. Thus, Latino men's smoking behavior would not be expected to differ with greater acculturation. In regards to cessation, Castro et al. (2009) similarly speculated that because the proxies they examined are thought to be indicators of exposure to U.S. culture, the findings may reflect an effect of social norms in relation to quitting. Whereas women's quit rates are similar between the U.S. and heritage cultures represented in the sample, the quit rates for men in the U.S. are slightly higher compared to those in the heritage culture. Thus, greater exposure to this U.S. perceived norms may encourage quitting among men but not women.

The speculation regarding social norms has historically been only indirectly supported by the lower smoking prevalence rates among women and similar or higher rates among men in many Latin American countries compared with those of women and men, respectively, in the U.S. (World Health Organization, 2015; see Table 1 for examples of this phenomenon). Very recently, Echeverría et al. (2015) lent some support to the social norms hypothesis by demonstrating that being female, being foreign-born, having a Spanish-language preference, and having fewer familial generations in the U.S. were each associated with endorsement of less approving social norms regarding smoking among Latino young adults. Endorsement of less approving social norms was associated with lower odds of being a smoker and partially accounted for the statistical effects of gender, generational status, and language preference on odds of being a smoker. Thus, the social norms hypothesis is a promising area of research among Latino smokers. In addition, more research is needed to clarify the nature of the relationship between acculturation and cessation. Further, no known published research has examined whether or not enculturation influences smoking or cessation. Continued research in this area, particularly with theory-grounded, comprehensive measures of acculturation and enculturation, will allow for a more nuanced examination of how acculturation and

enculturation affect smoking behavior as well as allow for proper identification and targeting of subgroups of Latinos at elevated risk for smoking and failed cessation.

Acculturative stress

Acculturative stress broadly refers to any form of stress resulting specifically from the acculturation process (Berry, 1998) and can include language difficulties, cultural conflicts, or cultural pressures, among other things. Further, this stress can stem from either the heritage or mainstream culture. Like acculturation, the measurement of acculturative stress has been controversial, as it suffers from a lack of uniformity in both its conceptualization and operationalization across studies (see Caplan & Caplan, 2007 and Rodriguez, Myers, Mira, Flores, & Garcia-Hernandez, 2002 for more discussion on this topic). But in fact, the conceptualization of acculturative stress was intended to be no different than classic conceptualizations of stress and coping (Lazarus & Folkman, 1984) other than that the stressor must be rooted in the acculturative process (Caplan & Caplan, 2007; Rodriguez et al., 2002). The limited published research on acculturative stress and smoking among Latinos is specific to adolescent samples at this time. Moreover, findings are mixed, with some studies demonstrating a relationship between acculturative stress and smoking (Lorenzo-Blanco & Unger, 2015; Sa, Seo, Nelson, & Lohrmann, 2013), and others finding no relation (Booker et al., 2008; Forster et al., 2013). No known published study has examined the influence of acculturative stress on smoking among adults or on smoking cessation. However, because general perceived stress has been shown to relate to smoking (Cohen & Lichtenstein, 1990; Kassel, Stroud, & Paronis, 2003; Sperlich, Maina, & Noeres, 2013) and cessation (Crittenden, Manfredi, Cho, & Dolecek, 2007; Gregor & Borrelli, 2012; Nakajima & al'Absi, 2012), there is reason to explore acculturative stress as a culturally relevant determinant smoking and cessation among Latinos.

Experience of discrimination

The experience of *discrimination* refers broadly to unfair treatment based on group membership (Williams & the Psychosocial Working Group, 1998). Research has consistently found experience of discrimination to be associated with greater likelihood of smoking (Borrell et al., 2007; Chae et al., 2008; Guthrie, Young, Williams, Boyd, & Kintner, 2002; Landrine & Klonoff, 2000; Tran, Lee, & Burgess, 2010), including among Latinos (Lorenzo-Blanco & Cortina, 2013a, 2013b; Nguyen, Subramanian, Sorensen, Tsang, & Wright, 2012). Only one known published study has examined the influence of discrimination on smoking cessation. Kendzor, Businelle, Reitzel, Castro, et al. (2014) found that lifetime experience of major discriminatory events was associated with reduced odds of cessation among treatment-seeking Mexican American smokers. Kendzor and colleagues called for a continued need for mezzo- and macro-level interventions to prevent discrimination, identification of individual-level interventions that buffer the psychological impact of discrimination, and identification of the mechanisms through which experience of discrimination impacts cessation.

Limitations, Summary, and Conclusions

Tobacco is a significant burden to individual and public health, and disparities exist among Latinos with respect to use and cessation. Much is known about determinants of smoking and cessation but the vast majority of this knowledge is based on research with non-Latino White smokers. This review of research represents the author's observation and synthesis of trends in the literature that demonstrate two important challenges in tobacco research among Latinos: (i) demonstrating the generalizability of known determinants of smoking and cessation, and; (ii) identification of culturally relevant variables that influence smoking and cessation. This is not meant to imply that these are the only two existing challenges or that other challenges are less important. Further, these challenges are likely also relevant to other minority groups of smokers. In addition, this was not a systematic or comprehensive review of all topics discussed herein. Although great efforts were made to ensure that published research among Latinos on the topics discussed was well-represented, some studies may have been missed. Further, the topics discussed herein are not a comprehensive list of examples of said challenges. There are likely other examples of these challenges in the published literature that were not discussed here. In addition, due to practical limitations, it was not feasible to give several other extremely important factors their due consideration. These include heterogeneity between and within Latino subgroups, similarities between Latinos and non-Latino White or general populations of smokers, youth/adolescent smoking, mezzo- and macro-level determinants of smoking, migration/immigration issues, and tobacco products other than cigarettes, among other issues.

This review discussed four well-established determinants of smoking and cessation among non-Latino White and general populations of smokers (SEP, depressive symptomatology, physical dependence, and gender) and identified evidence that these factors may function differently among Latino smokers. In all four cases, the research demonstrating a lack of generalizability is limited to few studies, and more research is needed in all areas. However, the larger lesson to be learned from these data is that racial/ethnic differences can exist in determinants of smoking and cessation. Thus, great caution should be taken before applying to minority smokers the abundance of existing research conducted with mostly white samples or without attention to race/ethnicity. This review also discussed four culturally relevant variables (acculturation, enculturation, acculturative stress, discrimination) that may be especially important to Latino and other racial/ethnic minority groups of smokers but that have received limited consideration in tobacco research. Research on many of these factors suffers from poor measurement, which may in part drive the noted inconsistent findings. Research among adult Latino smokers is extremely limited in the area of discrimination and non-existent in enculturation and acculturative stress.

The implications for future research are vast, particularly in terms of existing gaps in the research that must be filled. The current gaps are unlikely to be addressed with one "ideal" study; rather, the current issues may be best addressed through a sustained program of research by multiple investigators in the field of tobacco-related health disparities. It is critical that future research explicitly examine determinants of smoking and cessation within and across race/ethnicity whenever possible to more confidently apply prognostic indicators and identify intervention targets. In addition, examination of the generalizability of

constructs studied (e.g., dependence) in the area of drug use and cessation, as well the validity of the measures used to assess them, is necessary. Increased research using theoretically informed measures of cultural constructs will allow for a more nuanced understanding of how culturally relevant factors relate to smoking and cessation. In addition, examination of the mechanisms through which culturally relevant variables influence smoking and cessation (e.g., social norms) would lead to further identification of intervention targets. Such work could also demonstrate a place for culturally relevant variables within existing theoretical models of smoking, thus advancing existing current drug use theories.

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Biography

Yessenia Castro, PhD, earned her doctoral degree in clinical psychology from The Florida State University in 2008. She completed a postdoctoral training program at The University of Texas MD Anderson Cancer Center in 2010 that focused on health disparities in cancer prevention among minority and underserved populations, with an emphasis on smoking cessation among Latinos. She is currently an Assistant Professor in the School of Social Work at the University of Texas at Austin, where she studies the influence of cultural adaptation variables on modifiable cancer risk behaviors among Latinos. She is particularly interested in understanding how cultural variables combine with known key determinants of smoking affect smoking behavior and cessation. She also collaborates on research examining social determinants of and behavioral interventions for smoking cessation and problematic alcohol use among Latinos.

Table 1

2012 Smoking prevalence rates in the U.S.^a and Latin American^b countries representing the top five countries of origin/ancestry^c for U.S. Latinos.

Country	2012 Smoking prevalence rate (%)	
	Men	women
United States	20.0	14.5
Mexico	23.3	7.6
Puerto Rico	16.6	9.2
Cuba	53.2	19.8
El Salvador	No data	No data
Dominican Republic	19.1	12.3

^aRetrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6325a3.htm>.

^bRates for Mexico, Cuba El Salvador, and the Dominican Republic retrieved from the World Health Organization at http://gamapserver.who.int/gho/interactive_charts/tobacco/use/atlas.html. Rates for Puerto Rico retrieved from the Centers for Disease Control and Prevention at http://nccd.cdc.gov/STATESystem/rdPage.aspx?rdReport=OSH_State.CustomReports&rdAgReset=True&rdShowModes=showResults&rdShowWait=true&rdPaging=Interactive

^cBased on 2010 U.S. census data retrieved from the Pew Research Center at <http://www.pewhispanic.org/2012/06/27/the-10-largest-hispanic-origin-groups-characteristics-rankings-top-counties/>.

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