

Smoking Cessation: Next Steps for Special Populations Research and Innovative Treatments

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Objective: The current introductory article provides the rationale for the special section on understudied smokers and innovative treatments. This article proposes a definition of “special populations” of smokers, outlines a priori criteria by which to judge whether an intervention should be adapted for these smokers, and delineates a process by which cultural adaptation of an intervention can be achieved. Next steps for innovative, theory-based treatments with special populations and with general populations of smokers are discussed. **Method:** Special populations of smokers are defined as having (a) >10% higher smoking prevalence than the general population of smokers, (b) disproportionate tobacco-related health disparities, (c) less access to treatments, and (d) a lack of prospective, longitudinal treatment trials. **Results:** Cultural adaptation of evidenced-based treatments (EBTs) for underserved smokers should be applied more widely, outside the bounds of race and ethnicity, but also judiciously, following several a priori criteria. Cultural adaptation may be justified if the target population differs from the general population in (a) rates and patterns of smoking, (b) burden of tobacco-related health diseases, (c) predictors of smoking behavior, (d) risk factors for treatment failure, (e) protective factors that facilitate quitting, (f) treatment engagement, (g) treatment response, and (h) perceived social validity of the EBT. Once these criteria are met, four phases of cultural adaptation of an EBT for the target population are proposed. Innovative treatments need to be developed that use novel channels and linkages between channels; test novel theories or build on mechanisms research to more accurately pinpoint targets of change; and increase consumer demand for EBTs. **Conclusion:** The process of cultural adaptation should be thoughtfully conducted with a priori definitions and criteria as well as standardized processes. Coupled with innovative, theory-based treatments, these considerations could help to jump-start stalled smoking cessation rates.

Keywords: smoking cessation, special populations, cultural adaptation, underserved smokers

Despite advances in pharmacotherapy, smoking cessation rates have reached an asymptote in the United States. The current smoking prevalence among U.S. adults in 2006 (20.8%) is not significantly different from that in 2004 (20.9%; Centers for Disease Control and Prevention, 2007a). The Healthy People 2010 goal of reaching 12% smoking prevalence is now unattainable.

Decreasing the prevalence of smoking will take a multitarget, multichannel, multimethod approach at different levels of social strata: individuals (i.e., address smoker heterogeneity, develop innovative treatments), groups (i.e., target populations with higher than average smoking prevalence; eradicate disparities in treatment access, engagement, and effectiveness), cultural/societal level (i.e., increase frequency and effectiveness of mass media campaigns, create greater consumer demand for evidenced-based treatments [EBTs]), health care systems and insurers (i.e., increase counseling and reimbursement, reduce out-of-pocket costs to

smokers who want to quit), and government (i.e., increase taxation, expand smoke-free laws, increase funding of state quit lines).

Although all of these factors are critical to jump-starting stalled smoking cessation rates, in January 2009 the *Journal of Consulting and Clinical Psychology* initiated a call for papers focusing on the first two areas: innovative treatment approaches for smoking cessation and testing smoking cessation interventions in understudied or underserved populations. Manuscripts on innovative treatments could include, but were not limited to, behavioral therapy, cognitive-behavioral therapy, combined pharmacological and behavioral therapies, and theory-based therapies that have been tested in other fields but have not yet been applied to smoking cessation. Manuscripts focusing on understudied populations could include, but were not limited to, targeting different cultures, ethnicities, ages, and medical and psychiatric comorbidities. A preference was given to articles with a clearly articulated theoretical foundation and clinical implications.

The goal of this special section is to present cutting-edge research on smoking and to stimulate the field to produce innovative theory-based treatments and address the needs of understudied and undertreated smokers, recognizing that these are just two of several critical areas needed to help curtail smoking prevalence. Three articles focus on underserved smokers: Piper et al. (2010) examined smoking cessation treatment response among smokers with different psychiatric diagnoses; Borrelli, McQuaid, Novak, Ham-

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mond, and Becker (2010) targeted Latino smokers with children with asthma for smoking cessation; and Webb, Rodríguez de Ybarra, Baker, Reis, and Carey (2010) sought to answer the important question of whether African American smokers respond to a standard smoking cessation treatment that is not culturally tailored.

Three articles in the special section focus on innovative theory-based treatments for smoking: Two articles (Cinciripini et al., 2010; MacPherson et al., 2010) integrate evidenced-based treatment for depression into smoking cessation treatment. Lamb, Kirby, Morral, Galbicka, and Iguchi (2010) utilized a creative contingency management approach to motivate treatment participation and smoking cessation.

In what follows, the rationale for targeting underserved smokers, as well as next steps for future research, is discussed. An important area for research with underserved smokers is to consider adapting EBTs to the needs of different underserved groups (i.e., cultural adaptation). This article proposes a definition of “special populations” of smokers, outlines a priori criteria by which to judge whether an intervention should be adapted for these smokers, and delineates a process by which cultural adaptation of an intervention can be achieved. In the latter half of this article, the next steps for developing and testing innovative treatments are discussed, which include three priority areas for research: (a) how to better capitalize on existing channels of treatment delivery, (b) testing new theoretical models or testing models that have been shown to be effective in other areas of research, and (c) developing creative methods to enhance the use of existing EBTs.

Underserved Smokers

Smoking Prevalence

EBTs for smoking cessation include nine pharmacotherapies and three types of counseling (intra- and extratreatment social support, skills building) conducted with three types of modalities (individual, group, and telephone; Fiore et al., 2008; Hughes, 2008). What has not yet been answered is whether these treatments and modalities will prove efficacious in various subpopulations of smokers who are underserved.

This article defines underserved smokers as meeting the following criteria: (a) have >10% higher smoking prevalence than the general population, (b) have disproportionate tobacco-related health disparities, (c) have lack of access to effective treatments or have other barriers to treatment, and (d) are understudied in terms of the availability of prospective, longitudinal treatment trials. Table 1 lists the groups of smokers who meet these criteria. For example, compared with the general population of smokers, smoking rates are doubled among young adults with cancer, tripled among those with psychiatric disorders, and quadrupled among homeless persons.

The groups listed in Table 1 also have a disproportionate burden of tobacco-related disease compared with a general population of smokers, especially substance abusers who smoke and smokers with HIV/AIDS or medical comorbidities (Crothers et al., 2005; Hurt et al., 1996; Scanlon et al., 2000; Turner et al., 2001; Twardella, Rothenbacher, Hahmann, Wusten, & Brenner, 2006; Wilson, 2006). Many of the groups in Table 1 have less access to effective treatments or are less likely to receive advice to quit from

health care practitioners, especially smokers with low socioeconomic status (SES), mobility-impaired smokers, and Native American smokers (Connor, Cook, Herbert, Neal, & Williams, 2002; Murphy, Mahoney, Hyland, Higbee, & Cummings, 2005; Reed & Burns, 2008). It is recognized that membership in any of the groups in Table 1 may interact with SES (poverty, education, and occupation) to increase or decrease smoking-related disparities (Fagan, Moolchan, Lawrence, Fernander, & Ponder, 2007).

There is a dearth of randomized clinical trials evaluating the effectiveness of evidenced-based smoking cessation treatments in the groups listed in Table 1. Piper et al. (2010) have taken an important step in this direction by analyzing smoking cessation treatment response among smokers with and without psychiatric diagnoses. Although much of the previous work in the area has focused on the role of depression in smoking cessation, Piper et al. (2010) also assessed the impact of anxiety and substance use disorders on smoking cessation.

One cautionary note for interpreting the data in Table 1 is that much of the available data are over 15 years old. (One widely cited study was published in 2000 but analyzes data from a national survey conducted in 1992.) Thus, there is a need for state and national survey data to include these understudied populations and update these data. Given their high smoking rates, disproportionate tobacco-related health disparities, lack of access to treatment, and lack studies on effective treatments, the groups listed in Table 1 are good targets for future research and treatment.

Cultural Adaptation of Evidenced-Based Treatments for Special Populations

The next step for research with underserved smokers is to consider cultural adaptation of EBTs, as very few trials have been conducted with the groups listed in Table 1. Cultural adaptation involves any modification of an EBT's design, treatment components, approach to delivery, or nature of the therapeutic relationship in order to accommodate the cultural beliefs, values, attitudes, and behaviors of the target population (Hawkins, Kreuter, Resnicow, Fishbein, & Dijkstra, 2008). The historical, environmental, and social forces that influence the target population should also be taken into account during the cultural adaptation process (Resnicow, Soler, Braithwaite, Ahluwalia, & Butler, 2000). In this special section, one article used key values of the Latino population to culturally adapt a theory-based smoking cessation treatment (Borrelli et al., 2010), and another article evaluated whether African American smokers respond to an evidenced-based smoking cessation intervention without any ethnocultural modifications (Webb et al., 2010).

Typically, cultural adaptation is a process that is applied to the adaptation of EBTs for different racial and ethnic groups, but this application may be too narrow. Many of the groups listed in Table 1, like those of different racial and ethnic categories, also differ from the general population of smokers in that they experience discrimination, have a disproportionate burden of tobacco-related disease, and have norms and customs that serve both as risk factors for smoking and as protective factors to facilitate quitting. For example, smokers with mobility impairments experience discrimination, and these feelings of social stigmatization should be considered when designing interventions, as has been done in African American smoking cessation interventions (Resnicow et al., 2000).

Table 1

Underserved Groups in Smoking Cessation (Smoking Prevalence $\geq 10\%$ Higher Than the General Population, Greater Tobacco-Related Health Disparities and Disease Burden, and Lack of Clinical Trials)

Group	Smoking prevalence	% of population with disorder	
		12 months	Lifetime
Schizophrenia	64.0%–74.0% ^a	1.1–1.3% ^b	0.05–1.5% ^{b,c}
Depression	34.0%–60.0% ^a	6.5–10.1% ^{b,d}	16.9% ^d
Alcohol abuse/dependence	67.9% ^e	3.1% ^d	13.2% ^d
Bipolar disorder	69.0% ^e	2.8% ^d	4.4% ^d
Generalized anxiety disorder	54.6% ^e	19.1% ^d	5.7% ^d
Drug use	74.0%–88.0% ^f	1.4% ^d	8.0% ^d
		% of general population	
Native Americans	32.4% ^g	0.9% ^h	
Mobility impaired	32.5% ⁱ	8.2% ^j	
HIV/AIDS	47.0–65.0% ^k	0.5% ^l	
Homeless	70.0–78.0% ^m	0.2% ⁿ	
Young adults with cancer	42.6% ^o	0.2% ^p	
GED	46.0% ^g	5.0% ^q	
Below poverty level	30.6% ^g	12.4% ^r	
Smoking-related cancers (other than lung)	38.8% ^g	0.5% ^s	
Coronary heart disease	29.3% ^g	6.4% ^t	
Stroke	30.1% ^g	2.6% ^u	
Emphysema	49.1% ^g	0.7% ^v	
Chronic Bronchitis/COPD	41.1% ^g	4.3% ^w	
Men who have sex with men	33.2% ^x	4.0% ^y	
Military	33.8% ^z	0.5% ^{aa}	

Note. GED = General Education Development; COPD = chronic obstructive pulmonary disease.

^a Vanable, Carey, Carey, & Maisto (2003). ^b Regier et al. (1993); United States Department of Health and Human Services (1999). ^c American Psychiatric Association (1994). ^d National Comorbidity Survey Replication Study (2007a, 2007b). ^e Lasser et al. (2000); Diaz et al. (2009). ^f Clemmeny, Brooner, Chutuape, Kidorf, & Stitzer (1997); Kalman (1998). ^g Centers for Disease Control and Prevention (2007a, 2007c). ^h United States Census Bureau (2002). ⁱ Brawarsky, Brooks, Wilber, Gertz, & Walker (2002); Armour et al. (2007). ^j United States Census Bureau (2003a). ^k Burkhalter, Springer, Chhabra, Ostroff, & Rapkin (2005); Gritz, Vidrine, Lazev, & Amick (2004). ^l McQuillan & Kruszon-Moran (2008). ^m Connor, Cook, Herbert, Neal, & Williams (2002); Lee et al. (2005). ⁿ National Alliance to End Homelessness (2007). ^o Bellizzi, Rowland, Jeffery, & McNeel (2005). ^p Horner et al. (2009). ^q Kutner, Greenberg, & Baer (2005). ^r United States Census Bureau (2003b). ^s United States Census Bureau (2008); Horner et al. (2009). ^t American Heart Association (2004). ^u Centers for Disease Control and Prevention (2007b). ^v National Heart, Lung, and Blood Institute (2001). ^w American Lung Association, Epidemiology and Statistics Unit, Research Program Services (2007). ^x Tang et al. (2005). ^y Binson et al. (1995). ^z Bray et al. (2003). ^{aa} United States Department of Defense (2009).

The nosology and process of cultural adaptation should be applied more widely, outside the bounds of race and ethnicity.

There are arguments for and against special populations research. On the one hand, critics contend that cultural adaptation is cost inefficient and fear that it will produce an “endless proliferation of adapted variants of EBTs for various clinical problems in various target communities” (Lau, 2006, p. 296). On the other hand, dissemination of EBTs without consideration of cultural factors could lead to lower treatment participation, failed change attempts, and disengagement from future change attempts, especially among underserved populations who are already at high risk for treatment failure. Treatment tailoring has been shown to increase attention to the message, create more effortful processing, and result in fewer counterarguments and greater perceived credibility of the message (Hawkins et al., 2008).

Perhaps a middle ground is to establish a priori criteria to judge whether an intervention should be adapted for a particular group of underserved smokers in order to prevent unnecessary intervention development for a myriad of groups (e.g., smokers with tattoos who watch David Letterman and who are allergic to gluten). Lau (2006) contended that cultural adaptation is indicated when there is a reasonable threat of failure of an EBT and presented several criteria by which to make this determination for parent manage-

ment intervention research. Table 2 presents an adaptation and extension of these criteria for smoking cessation. A particular population may not respond to an EBT for smoking cessation if there are differences from the general population in (a) rates and patterns of smoking, (b) the burden of tobacco-related health diseases, (c) predictors of smoking behavior, (d) risk factors for smoking, (e) protective factors that may aid quitting, (f) treatment engagement (e.g., participation, attrition, adherence), (g) treatment response, or (h) perceived social validity of the EBT (e.g., target members view EBT strategies as relevant, helpful, or acceptable; Lau, 2006). Table 2 displays these criteria and illustrates how they can be applied to a special population of smokers (e.g., smokers with mobility impairments) to justify the modification of an EBT.

Once it is determined that the group constitutes a “special population (Table 1)” and that the population meets the criteria for adaptation of EBTs (Table 2), four phases of cultural adaptation are proposed (Figure 1) in order to help standardize the cultural adaptation process and aid cross-study comparisons. In Phase 1 of the cultural adaptation process, several methods are used to identify the changes to the EBT that are necessary to achieve congruency with the target population. Both quantitative and qualitative data collection from the target population are used to help guide changes in the intervention in terms of surface structure (matching

Table 2
Criteria by Which to Justify the Need for Cultural Adaptation of Evidenced-Based Treatments for Smoking Cessation: Example of Smokers With Mobility Impairments

Criteria (differences from general smokers)	Smokers with mobility impairments
1. Smoking rates	Of adults with mobility impairments, 32.5% smoke; among poor and disabled adults, 36.7% smoke; among women with physical disabilities, 43.3% smoke. Smoking rates among people with mild, moderate, and severe functional disabilities are 44.1%, 49.9%, and 50.9%, respectively. ^a
2. Disproportionate burden of tobacco-related health disparities	Smoking is associated with the development and worsening of secondary conditions and worsening of primary disabilities. ^b
3. Predictors of smoking behavior (e.g., mediators)	High levels of negative affect and stress, lack of pleasant activities, lack of physical activity, boredom. ^c
4. Risk factors for treatment failure (e.g., moderators)	Multiple medical comorbidities, more severe mobility impairments, high levels of depression, high unemployment, low income. ^d
5. Protective factors (e.g., those that facilitate quitting)	High levels of motivation to quit in the context of high smoking prevalence may be indicative that this population may not have access to treatments, or that current treatments aimed at a general population of smokers are not effective for this population. ^e
6. Treatment engagement (participation, attrition, adherence)	Difficulty of travel to treatment centers, especially in inclement weather; inability to afford EBTs; multiple medical appointments, rehabilitation, and procedures of daily care are overwhelming; energy fluctuations; problems with physical accessibility to treatment centers; as well as pain, fatigue, weakness, lack of personal assistance, and lack of child-care. ^f
7. Treatment response	No data are available.
8. Social validity of EBTs (EBTs are accessible, and viewed as helpful, acceptable, and relevant)	Many quit lines are not equipped for those with hearing impairments; travel to smoking cessation services is difficult; individuals are less likely to receive physician advice to quit.

Note. EBTs = evidence-based treatments.

^a Armour et al. (2007); Brawarsky, Brooks, Wilber, Gertz, & Walker (2002); Centers for Disease Control and Prevention (2006a); Chevarley, Thierry, Gill, Ryerson, & Nosek (2006). ^b Hawkes (2007); Nosek et al. (2006). ^c Hughes, Robinson-Whelen, Taylor, & Hall (2006); Robinson-Whelen, Hughes, Taylor, Hall, & Rehm (2007). ^d DeJong et al. (2002). ^e Friend, Mernoff, Block, & Reeve (2006). ^f Iezzoni, Killeen, & O'Day (2006).

intervention materials and messages to the observable social and behavioral characteristics of the target population, such as people, places, language, music, foods, brand names, locations, and clothing; Resnicow et al., 2000) and deep structure (incorporating the core cultural values of the target group to increase saliency of the message and program impact; Resnicow et al., 2000). It is recommended that community-based participatory research methods be used during this process such that members of the target community and their requisite agencies and organizations are involved in all phases of the research (Israel, Schulz, Parker, & Becker, 2001).

Changes in both surface and deep structure facilitate participants' experience of self-reference and identification with the message, which in turn, increases the likelihood that participants' will identify discrepancies between their actual and ideal behaviors. This process enhances the likelihood that an intervention will lead to behavior change (Borrelli, Riekert, Weinstein, & Cardella, 2007) rather than counterarguments (Hawkins et al., 2008). For example, providing a brochure or a website that is written for a general population may not be effective because it depends on individuals from the target population being highly motivated to

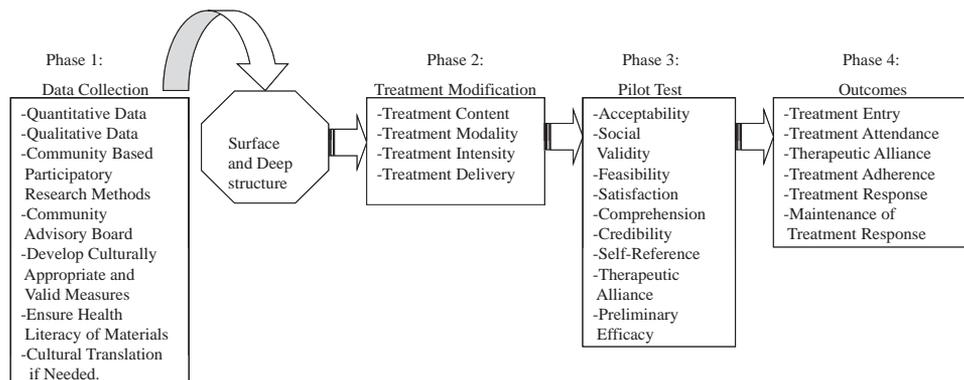


Figure 1. Process of cultural adaptation for evidence-based treatments for smoking cessation.

sift through the information and find things that are relevant to themselves (Hawkins et al., 2008).

Attention to the elements of both surface and deep structure is important. For example, low-income smokers contact quit lines at rates similar to higher income smokers (Prout et al., 2002; Swartz, Cowan, Klayman, Welton, & Leonard, 2005), but low-income smokers are less likely to complete treatment and tend to have lower quit rates (El-Bastawissi et al., 2003). One reason may be that quit lines are tailored to the surface structure of the target population (e.g., 90% of quit lines are available in Spanish) but not to deep structure. Changes in surface structure may initially attract the consumer, but attending to deep structure could promote treatment engagement and completion.

The quantitative and qualitative data from Phase 1 guide Phase 2 of the adaptation process, which includes modifications of the following treatment parameters: treatment content (what are the important mechanisms that need to be targeted for change), modality (how will the intervention be delivered), intensity (frequency and duration of contact), and delivery (who will deliver the intervention; see Figure 1). Phase 3 involves pilot testing the culturally adapted intervention. This includes not only measuring initial efficacy but also a variety of factors that could influence efficacy (e.g., acceptability, social validity, comprehension, credibility, self-reference; see Figure 1). Phase 3 could be operationalized as an iterative process, in which the intervention is modified on the basis of interim data. Phase 4 involves measurement of a variety of outcomes in addition to treatment response, such as treatment participation and attrition, in order to provide data for the further justification for the use or non-use of the adapted EBT. For example, an adapted EBT may produce an equally good treatment response when compared with a nonadapted EBT, but if the adapted EBT has a lower drop-out rate and greater patient satisfaction, these results could provide further justification for using the adapted EBT.

In sum, special populations research needs to strike a balance between forcing EBTs developed for general smokers onto special populations, on the one hand, and creating various interventions for a myriad of underserved groups of smokers, on the other hand. A middle ground can be achieved by having a definition of what constitutes a “special population” and setting a priori criteria that justify the need for cultural adaptation of interventions. Once the need for cultural adaptation has been established, standardization of the process of cultural adaptation should be considered (Figure 1), as this could help facilitate cross-study comparisons and comparative effectiveness research.

Research Priorities for Underserved Smokers and Cultural Adaptation

This special section of the *Journal of Consulting and Clinical Psychology* contains two articles that begin to address some of the issues described above surrounding cultural adaptation. For example, the study by Webb et al. (2010) found that African American smokers who received a standard EBT for smoking cessation without any ethnocultural adaptations achieved significantly higher smoking cessation rates in comparison with contact controls. In contrast, Borrelli et al. (2010) found that, among Latino smokers with children with asthma, a culturally adapted smoking cessation intervention outperformed standard clinical guidelines.

Table 3 displays suggested research priorities with understudied populations in terms of both content and process. The content areas that need to be addressed range from tobacco surveillance to the development of culturally appropriate sampling methods and methods of creating sustainable infrastructures within communities. The challenge comes in the process by which these questions are addressed: selecting the appropriate control groups and treatments for special populations, addressing within-group heterogeneity, and establishing the methods by which the internal validity and treatment fidelity of the original EBT can be preserved during the cultural modification process.

Innovative Treatments

The second focus of this special issue is on developing and testing innovative treatments for smoking cessation and includes three priority areas for research: (a) how to better capitalize on existing channels of treatment delivery, (b) testing new theoretical models or testing models that have been shown to be effective in other areas of research, and (c) developing creative methods to enhance the use of existing EBTs.

Four articles in the special issue focus on innovative treatments or novel theoretical approaches: one uses a novel channel for treatment delivery (Borrelli et al., 2010), two test theory-based treatments that have not yet been applied to smoking cessation (Cinciripini et al., 2010; MacPherson et al., 2010), and one uses creative methods to increase participation and smoking cessation treatment (Lamb et al., 2010).

Novel Channels for Treatment Delivery

Novel channels for intervention delivery have focused on integrating smoking cessation treatment into existing infrastructures as well as on capitalizing on technological innovations to provide smoking cessation treatment. Studies have shown that smoking cessation can be effectively integrated into medical treatment, such as medical home care (Borrelli et al., 2005a; Borrelli et al., 2001), emergency rooms (Bock et al., 2008; Colby et al., 2005), hospitalizations (Froelicher et al., 2004; Smith & Taylor, 2006), diabetes treatment (Hokanson, Anderson, Henrikus, Lando, & Kendall, 2006), dental care (Stevens, Severson, Lichtenstein, Little, & Leben, 1995), cancer treatment (Gritz et al., 1993; Wewers, Jenkins, & Mignery, 1997), primary care (Goldstein et al., 2003), and prenatal clinics (Heil et al., 2008), to name a few. In this issue, Borrelli et al. (2010) targeted Latino caregivers who smoke by integrating smoking cessation into home-based pediatric asthma treatment, thus helping Latino smokers (typically light smokers) better connect their smoking to their child’s health, and getting a “foot in the door” with smokers who are unmotivated to quit.

In comparison with medical settings, the integration of smoking cessation into mental health treatment is understudied. The bulk of the studies have been conducted among smokers in substance abuse treatment (e.g., Prochaska, Delucchi, & Hall, 2004). Only a few studies integrate smoking cessation treatment into other psychiatric settings, such as posttraumatic stress disorder treatment (McFall et al., 2005) or treatment for depression (Brown et al., 2003). Data from Piper et al. (2010) in this issue suggest that those with anxiety disorders and depression have the most difficult time

Table 3
Research Priorities With Underserved Smokers/Special Populations

Research priorities
Research content areas for cultural adaptation
<ol style="list-style-type: none"> 1. Conduct epidemiological surveillance on rates and patterns of smoking. 2. Understand the cultural beliefs, values, attitudes, and behaviors, as well as relevant historical, environmental, and social forces that impact the target population. 3. Examine beliefs about nicotine replacement therapy and smoking cessation medications. 4. Examine protective factors within individuals and communities that promote and sustain smoking cessation. 5. Expand research on health communication and how to increase the saliency, self-reference, and credibility of cessation messages. 6. Understand barriers to treatment participation, engagement, and adherence and test methods to overcome barriers. 7. Examine predictors of smoking initiation, cessation, and relapse. 8. Expand the research on the prevalence and effects of environmental tobacco smoke in these populations.^a 9. Develop culturally appropriate sampling methods, survey designs, and measures and assess reliability and validity of measures in the target population.^a 10. Examine important moderators and mediators of change (acculturation, stress, discrimination, socioeconomic status, coping, depression, self-efficacy, gender, risk perception). 11. Understand within-group heterogeneity in smoking patterns, prevalence, and response to pharmacological and behavioral interventions. 12. Examine whether there is a differential response to pharmacological and behavioral interventions and the biological (pharmacodynamics and pharmacokinetics) and psychosocial mechanisms (e.g., depression, self-efficacy, risk perception) of these differences. 13. Examine community infrastructures within which to embed cessation interventions in order to promote sustainability over time. 14. Examine disparities in counseling by health care practitioners and methods to eradicate these disparities. 15. Examine methods and modalities of smoking cessation in hospitalized smokers and follow-up after care. 16. Examine methods of increasing consumer demand in target populations for smoking cessation services (e.g., quit lines). 17. Monitor tobacco industry strategies that target these populations.^a 18. Examine the effect of policy (tax increases, smoke-free laws) on cigarette consumption, quitting, and reduction.^a

Cultural adaptation: Process

1. Should EBTs that are efficacious for a general population of smokers be first tried in special populations, or is that risking treatment failure?
2. To what extent should EBTs be culturally adapted? At what point does tailoring dilute the original EBT intervention such that it is no longer evidenced-based?
3. In designing culturally adapted interventions, how can it be determined that active ingredients of EBTs are not omitted or that added components are not iatrogenic?
4. How can culturally adapted interventions be designed without compromising the treatment fidelity and internal validity of the EBT?
5. How much smaller should treatment effects be for a given special population before cultural adaptation is considered necessary (Franklin et al., 2006; Lau, 2006)?
6. How does one segment special populations, given considerable within-group heterogeneity (e.g., differences within the Latino culture depending on country of origin)?
7. What should be the control group? Should control and intervention groups be equated on surface structure but vary on deep structure? Is comparing a culturally adapted EBT with an EBT that is not culturally adapted setting up a "straw person" comparison? How is "buy in" obtained from community agencies for testing EBTs that are not culturally adapted?

Note. EBTs = evidence-based treatments.

^a United States Department of Health and Human Services (2002).

quitting smoking, so targeting these populations in treatment settings may be a priority. Integrating smoking cessation treatment into psychiatric settings enhances sustainability of the intervention and has the potential to promote culture change among both staff and patients.

Other creative channels have shown efficacy in reaching smokers, especially underserved and inner-city smokers who do not have consistent access to the medical system. For example, beauty salons may be a cost-efficient and effective way to reach African American women for health behavior change (Linnan & Ferguson, 2007), and churches may serve such a purpose as well (Pederson, Ahluwalia, Harris, & McGrady, 2000).

E-Health, including web-based interventions and e-mail, are channels of intervention that have the potential to reach many smokers without sacrificing the ability to tailor feedback or treatment recommendations (Cobb, Graham, Bock, Papandonatos, & Abrams, 2005; Riley, Obermayer, & Mary-Jean, 2008). Researchers can use computer algorithms, online coaching, and proactive

e-mail prompts to tailor treatment, or users can self-tailor by the use of chat rooms and selective browsing. E-Health can be used as a stand-alone treatment or as a treatment adjunct (Strecher et al., 2005). Research is needed to identify the active ingredients of this modality, as well as the efficacy of such emerging platforms as text messaging, social networking, and Twitter (e.g., Riley et al., 2008). Integrating these technologies with other channels of intervention (e.g., medical settings), as well as forming linkages between channels, should be investigated. The expanded chronic care model (Barr et al., 2003) may be useful in this regard, as it provides a framework for establishing linkages and communication between linkages.

Whereas there is always room for discovery of novel channels for smoking cessation intervention, research on making the best use of existing channels may be more pressing. For example, the "teachable moment," a time when smokers are more receptive to cessation messages because of the emergence of a salient health event, may be one way to augment the efficacy of a channel for

intervention, but the constructs involved in this process and ways to potentiate its effect remain unstudied.

Testing New Theoretical Models

An important criterion for articles in the special section was that they be theory-based. Theory guides the search for reasons why people do or do not change their behaviors. Clarification of key concepts within a theory helps to identify targets for intervention, preserve the internal validity of a study, and enhance the exportability of effective interventions (Borrelli et al., 2005b). Key priorities to jump-start stalled smoking cessation rates involve (a) discovering new theories, either *de novo* or theories that have shown success in other disciplines; (b) building on mechanisms research to more accurately pinpoint targets of change; and (c) determining whether existing theories are applicable to, and valid for, special populations.

Collaboration between smoking researchers and researchers in other fields, such as anthropology or behavioral economics, can facilitate the paradigm shifts that are needed to develop new treatments in smoking cessation. At the same time, it is important to look within psychology for theories that have shown success in the treatment of other behaviors and could have the potential for success in smoking cessation.

Two studies in this special section achieved this by applying EBTs for depression to the treatment of smoking cessation. MacPherson et al. (2010) used Behavioral Activation to help smokers quit, as Behavioral Activation has been shown to be an effective therapy for reducing depression in psychiatric populations (Jacobson, Martell, & Dimidjian, 2001). Behavioral Activation is theorized not only to alleviate negative affect but also to augment positive affect through increasing pleasant events and access to natural sources of positive reinforcement (Jacobson et al., 2001). The approach is consistent with research showing that positive and negative affect are distinct processes (Moskowitz, 2003; Werth-Cook et al., 2004), suggesting that both be targeted in the intervention process. Prior research on affect and smoking has focused almost exclusively on the role of negative affect, but positive affect has also shown a strong association with treatment outcome (al'Absi, Hatsukami, Davis, & Wittmers, 2004; Doran et al., 2006).

Similarly, Cinciripini et al. (2010) in this issue apply a treatment typically used for the treatment of chronic depression to help pregnant smokers quit. Study participants received 10 individual counseling sessions of smoking cessation plus the Cognitive Behavioral Analysis System of Psychotherapy (CBASP; McCullough, 2000), which focused on interpersonal stress and on increasing the quality of one's relationship with significant others or they received smoking cessation plus health and wellness. At 6 months follow-up, women with higher levels of baseline depressive symptoms who had received CBASP had a higher probability of abstinence and greater improvements in depression than those treated with health and wellness. Both this study and the MacPherson et al. (2010) study illustrate that EBTs in other areas of psychology can be effectively applied to smoking cessation.

The Precaution Adoption Model (Weinstein, 1988) is another theory that has been studied in other areas of health behavior change but only sporadically applied to smoking cessation (Borrelli et al., 2002). This theory focuses on the way people process

risk and communication about risk. Three primary constructs are involved in the theory: perceived vulnerability (degree to which an individual feels personally vulnerable to the health effects of their risky behavior), precaution effectiveness (degree to which an individual believes that engaging in the precautionary behavior, such as quitting smoking, will have personal health benefits), and optimistic bias (the degree to which an individual perceives their personal risk to be less than that of others; Borrelli, Hayes, Dunsiger, & Fava, in press; Weinstein, Marcus, & Moser, 2005).

In this issue, Borrelli et al. (2010) report on the application of the Precaution Adoption Model to smoking cessation and directly mapped the three main theoretical constructs of the theory onto the intervention content. For example, perceived vulnerability of the intervention group was targeted by providing smokers with feedback on their own carbon monoxide levels as well as on the amount of smoke exposure their child with asthma received; optimistic bias was targeted by presenting data about how the levels of smoke exposure to their child compared with those of children of nonsmokers, and precaution effectiveness was targeted by presenting information on how both the smokers' health and the children's asthma improves with decreased smoke exposure.

The search for new theories for smoking cessation is expanding and is being given greater emphasis by the National Institutes of Health on transdisciplinary collaboration (Baker et al., 2003). Theory development could also be facilitated in other ways, such as by holding joint annual meetings between two scientific societies and devoting special journal issues to the topic of theory and theory development. The development of new behavioral and pharmacological treatments is dependent on the discovery of creative and innovative explanatory frameworks.

Using Creative Methods to Increase the Use of Evidence-Based Treatments

Although evidenced-based behavioral and pharmacological treatment approaches produce long-term abstinence rates between 20% and 33% (Fiore et al., 2008), only 20% to 30% of smokers utilize EBTs to quit (Cokkinides, Ward, Jemal, & Thun, 2005), and only 6% use a combination of both behavioral and pharmacological treatment (Shiffman, Brockwell, Pillitteri, & Gitchell, 2008), which is the most effective treatment for smoking cessation (Fiore et al., 2008). Minority and low-income smokers are less likely to use nicotine replacement therapy and other first-line pharmacological treatments (Fu et al., 2005; Levinson, Perez-Stable, Espinoza, Flores, & Byers, 2004) and are more likely to discontinue use prematurely (Burns & Levinson, 2008). Use of EBTs is low, despite the fact that 342 state Medicaid programs and 96% of U.S. health plans provide coverage for some form of EBT counseling (Centers for Disease Control and Prevention, 2006; McPhillips-Tangum, Rehm, Carreon, Erceg, & Bocchino, 2006).

Obviously, EBTs are zero percent effective if they are not used. Lack of use may be due to cultural beliefs about treatment (Fu et al., 2007) or to lack of knowledge about which treatments are effective. Studies have shown that both smokers (Kozlowski et al., 1998) and health care professionals (Borrelli & Novak, 2007) have limited knowledge about EBTs for smoking cessation.

Creating consumer demand for EBTs is imperative, because repeated failed quit attempts could lower self-efficacy to engage in future quit attempts. Contingency management has long been

shown to be effective for decreasing use of addictive substances and may also be integral to increasing consumer demand for treatment. Volpp et al. (2009) showed that financial incentives produced significantly higher rates of smoking cessation program enrollment, completion, and smoking cessation among smokers at a worksite. However, in this study and other contingency management studies, smokers do not receive payment until the final completion of the target goal, which may be too distal to promote smoking cessation in hard-to-treat smokers. In this issue, Lamb et al. (2010) achieved a high rate of treatment participation and a promising rate of behavior change in hard-to-treat smokers through their escalating contingency management approach, whereby smokers receive payment for successive approximations of the target behavior. The effect of incentives on treatment adherence and outcome in smoking cessation has not been studied in underserved smokers and is a ripe area for future research.

Other models could also be useful for increasing consumer demand for EBT for smoking cessation. Motivational interviewing, for example, has been effective in motivating treatment entry for alcohol dependence (Connors, Walitzer, & Dermen, 2002) and shows promise for motivating entry into tobacco treatment (Steinberg, Ziedonis, Krejci, & Brandon, 2004). Community-based participatory research methods (Israel et al., 2001) could guide adaptations of EBTs so that different subpopulations might be more receptive to treatment entry and completion. Researchers should look for models in other fields of study that may be effective for increasing consumer demand, such as those in business or economics (Orleans, 2007).

Conclusions

This special section focuses on targeting underserved smokers and on developing innovative EBTs for smoking cessation, two of the several research priorities that need to be addressed in order to jump-start stalled smoking cessation rates. Cultural adaptation of EBTs for smoking cessation should be expanded beyond the bounds of race and ethnicity to include other groups of underserved smokers who may be at risk for treatment failure with standard EBTs, such as those listed in Table 1. Piper et al (2010) in this issue, for example, show that response to standard smoking cessation treatment varies by psychiatric diagnosis.

However, in order to avoid an endless proliferation of smoking cessation treatments that are tailored to different underserved groups, justification for the development of EBTs for underserved groups should be based on a priori criteria, such as those outlined in Table 2. Once this justification has been established, research on both treatment content (e.g., differential response to treatment and mechanisms of change) and the process of cultural adaptation (e.g., active ingredients of cultural adaptation) can be initiated. The studies by Webb et al. (2010) and Borrelli et al. (2010) indicate that, while respectable smoking cessation rates can be obtained with standard interventions, culturally adapted interventions may produce greater effects. The process of cultural adaptation should be standardized to facilitate cross-study comparisons (see Figure 1).

Another important issue for further study is the need for innovative treatment approaches, including using novel channels for treatment delivery, testing new theoretical models, and developing creative methods to increase the reach and use of existing EBTs. Two key research priorities are (a) developing linkages between

various channels of smoking cessation delivery and using a theoretical framework to guide this integration (e.g., expanded chronic care model; Barr et al., 2003) and (b) potentiating the effect of these channels through developing de novo theories or applying effective theoretical models from other fields of research to smoking cessation.

Three studies in this special section utilize theory-based treatments that have demonstrated effectiveness in other areas of health behavior change and apply them to smoking cessation (Borrelli et al., 2010; Cinciripini et al., 2010; MacPherson et al., 2010). Although these articles report the main effects of treatment on smoking cessation, more research is needed on the mechanisms of change so that intervention targets can be more accurately pinpointed. Direct tests are needed as to whether these theories and the interventions that stem from them apply to, and are valid for, special populations.

Finally, although there are effective EBTs for smoking cessation, research on ways to increase consumer demand for them is lacking. Several theoretical models may show promise to increase consumer demand, such as the one described in this issue by Lamb et al. (2010).

Increasing surveillance is needed to determine the potential shifts in special populations. For example, the smoking prevalence among health care professionals in the United States is currently low but was very high in the early 1960's, largely due to marketing strategies by the tobacco companies. My father, for example, started smoking later than his peers. He entered podiatry school as a nonsmoker, and by the end of the first year, was smoking two to three packs per day because the tobacco companies sent free shipments of cigarettes to the school, claiming improved memory and concentration. My father continued to smoke for 30 years (he has now quit). By the criteria outlined in Table 1, the health care professionals in the early 1960s might have been considered a "special population" to whom interventions should be targeted. The question is, which groups will be considered a "special population" of the future, and how can we prevent uptake and foster cessation in that population?

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