Physiological, psychological, social, and cultural influences on the use of menthol cigarettes among Blacks and Hispanics

Felipe González Castro

[Received 26 February 2003; accepted 31 July 2003]

Patterns of menthol cigarette consumption among Blacks and Hispanics are likely a product of the interactive effects of several factors: the physiological and pharmacological sensory effects of menthol, the “cool” psychological identity of being menthol smokers, the promotional marketing of menthol cigarettes, and the cultural effects of health-related beliefs and subjective culture norms. This article presents two conceptual frameworks—a moderation logic model and a mediation logic model—for organizing the disparate literature on factors affecting the consumption of menthol cigarettes among Blacks and Hispanics. Three factor domains are examined as direct effect predictors of menthol cigarette smoking: (a) physiological and pharmacological, (b) psychological, and (c) social and environmental. In addition, a fourth domain of cultural variables is presented as a class of moderator or mediator variables that can interact with these physiological, psychological, and social factors as determinants of menthol cigarette use. These cultural variables are examined as mediating or moderating factors that influence the use of menthol cigarettes by Black and Hispanic consumers. Recommendations are offered for future research to further understand the influence of cultural and other factors as determinants of menthol cigarette smoking among Blacks and Hispanics.

Menthol and cigarette use among Black and Hispanic populations

Motivational determinants of menthol use

The study of the motivational determinants of menthol cigarette consumption among Blacks and Hispanics raises many complex issues regarding the interactive effects of several factors ranging from physiological to cultural, as these may contribute to dependence on menthol cigarettes. How may the pharmacological effects of menthol interact with perceived self-image, and as influenced by social marketing, all within the context of cultural health-related beliefs, to prompt and maintain the use of mentholated cigarettes among Black and Hispanic consumers?

Factors that may prompt cigarette smoking at higher rates among Black and Hispanic consumers include the following: menthol’s physiological and pharmacological effects (sedation, stimulation), as this may interact with psychological effects (ethnic identity, self-concept and self-esteem), with social effects (peer and family influences), with social marketing effects (targeted advertising and cigarette availability within the community), and with cultural effects (health-related beliefs, customs, and traditions). A well-specified multilevel model can help guide future studies that examine these interactive effects across several levels of analysis (physiological, psychological, social), to identify the critical factors and their interactions that explain the consumption of menthol cigarettes among Blacks and Hispanics.

Thus, in the case of the simple question, “What factors motivate menthol cigarette consumption?” the answer is complex and multiply determined. Moreover, the answer to a subsequent question also is complex, “Are these motivational factors more pronounced for Black or Hispanic consumers, and are there additional culturally specific factors involved?”

Felipe González Castro, M.S.W., Ph.D., Department of Psychology, Arizona State University.

Correspondence: Felipe González Castro, M.S.W., Ph.D., Department of Psychology, Arizona State University, Tempe AZ 85287-1104. Tel: +1 (480) 965-4969; fax: +1 (480) 965-8544; email: felipe.castro@asu.edu

ISSN 1462-2203 print/ISSN 1469-994X online © 2004 Society for Research on Nicotine and Tobacco

DOI: 10.1080/1462220031000164987
Racial and ethnic differences in prevalence rates

Cummings, Giovino, & Mendicino (1987) studied cigarette smoking brand preferences in the Buffalo, New York, area by sampling 70 White and 365 Black adult smokers from a family medicine center. In addition, they sampled 1,070 White and 92 Black smokers who called the local Stop Smoking Hotline. From the medical clinic sample, Cummings et al. found that Blacks were twice as likely to smoke mentholated cigarettes (66.6%), relative to the White smokers (28.6%), \( \chi^2 (1, N=435) = 38.1, p < .01 \). Similarly, from the smokers’ hotline sample, the Black smokers also were twice as likely to smoke menthol cigarettes (59.8%), compared with the White smokers (23.6%), \( \chi^2 (1, N=162) = 55.3, p < .01 \). The consumption of cigarette brands Newport, Kool, and Salem accounted for nearly 60% of all brands of cigarettes smoked by Blacks, a pattern of brand preference not observed among the White smokers.

Similarly, Haynes, Harvey, Montes, Nickens, and Cohen (1999) examined data from the Hispanic HANES survey (HHANES; 1982–1984) on patterns of cigarette consumption among Mexican American, Puerto Rican, and Cuban American cigarette smokers. Regarding brand preferences, Marlboro and Winston were the most popular brands consumed by Hispanic men. However, a large proportion of Puerto Rican men (21.0%) smoked the menthol brand Newport, whereas a large proportion of Cuban American men (15.6%) preferred Benson and Hedges. Among women, Marlboro, Winston, and Salem were the preferred brands. The Puerto Rican women favored Newport (22.0%), and the Cuban American women favored Benson and Hedges (18.7%). Remarkably, in terms of preferences for the three major menthol cigarette brands (Newport, Salem, and Kool), Hispanic women consumed these brands in significant percentages; for Mexican American, Puerto Rican, and Cuban American women, respectively, these rates of consumption were 40.1%, 40.7%, and 43.4%. Although not as high, significant numbers of Hispanic men also consumed mentholated cigarettes; for Mexican American, Puerto Rican, and Cuban American men, respectively, these rates were 24.5%, 33.8%, and 26.3%. Thus, based on the HHANES study conducted during the early 1980s, significant percentages of Hispanic men and women smoked menthol cigarettes.

Carpenter, Jarvik, Morgenstern, McCarthy, and London (1999) examined the possible association between menthol cigarette smoking and lung cancer risk amongst Black men. These investigators noted that the consumption of mentholated cigarettes may contribute to the higher rates of lung cancer in Black males relative to White males, despite the fact that Black males smoke fewer cigarettes per day. They also noted that mentholation in cigarettes adds carcinogenic components and increases retention times for cigarette smoke within the lungs.

Carpenter et al. (1999) conducted a case-control study of 731 control subjects, 473 Whites, and 258 Blacks, to examine the relationship of menthol cigarette smoking to the higher lung cancer rates among Blacks men. They found no differences in the adjusted odds ratios for lung cancer occurrence between exclusive menthol smokers and nonmenthol smokers. Similarly, they found no differences in the adjusted odds ratios for lung cancer occurrence for Blacks who smoked menthol cigarettes (\( OR=0.90, 95\% CI=0.38–2.12 \)) and for Whites (\( OR=1.06, 95\% CI=0.47–2.36 \)). Thus, the results of this study did not support the hypothesis that higher lung cancer rates among Black men are attributable to their consumption of menthol cigarettes. In summary, these studies indicate that large proportions of Blacks and Hispanics are consumers of menthol cigarettes, although an association between the use of menthol cigarettes and rates of lung cancer is not evident.

Major factors affecting menthol cigarette consumption

Physiological and pharmacological influences

Do Black and Hispanic cigarette smokers prefer menthol cigarettes because they respond more favorably to the oral stimulation from menthol cigarettes?

Menthol has been shown in laboratory experiments to produce certain sensory stimulation effects (Ahijevych & Garrett, 2004). An important question is whether these effects may produce different metabolic responses based on the genetic or racial characteristics or the ethnic identity of the participant (P. I. Clark, Gautam, & Gerson, 1996), and whether these genetic or ethnic differences in menthol’s reinforcing effects may prompt higher rates of consumption of menthol cigarettes among Black or Hispanic consumers, relative to White nonminority consumers.

Repeated applications of menthol taken orally have been shown to produce desensitization, that is, a reduction in sensation. In a group of 15 adult subjects, the “burning” and “stinging” sensation reported for menthol was observed to decrease with continued applications of menthol, indicating that continued application produces desensitization (Cliff & Green, 1996). In a study of the effects of menthol on oral sensitization and desensitization on the tongue, menthol reduced irritation (it produced desensitization) from exposure to nicotine (Dessirier, O’Mahony, & Carstens, 2001). This desensitization effect also was observed upon irritation with capsaicin, the active ingredient that produces the sensation of heat in chili peppers (B. G. Green & McAuliffe, 2000). In human participants, menthol has been observed to decrease
the perception of warmth but to increase the perception of cold when applied to the lip (B. G. Green, 1985, 1986).

Wiseman and McMillan (1998) found that, among cocaine users, cigarette smoking induced a sedating and calming effect that reduced cocaine-induced paranoia. Also, cigarette smokers identified the stimulating effects of menthol cigarettes as reasons for a preference for menthol cigarettes over non-menthol cigarettes. Furthermore, the reported stimulating effects of menthol were described as “anesthetic,” “cooling,” and “decongestant.” The results of these studies suggest that the sensory effects of menthol may be reinforcing, although menthol concentrations and individual differences in consumer preferences for the taste of menthol have not been clarified as related to the higher rates of menthol cigarette consumption among Black and Hispanic consumers.

Some studies of racial differences in metabolism from menthol cigarette use have shown differences related to the effect of menthol use. In a study of cigarette smoking among Black and White women who smoked menthol or nonmenthol cigarettes, the Black women exhibited a higher mean level of carbon monoxide (CO) boost, whereas White nonmenthol smokers exhibited a higher CO boost compared with the women who regularly used menthol cigarettes (Ahijevych, Gillespe, Demirci, & Jagadeesh, 1996). These investigators concluded that menthol was not a contributor to elevated smoke constituent exposure in these female smokers. By contrast, Miller and colleagues (1994) found that exhaled CO levels increased with increasing menthol consumption, and regarded the greater amounts of menthol as increasing the toxicity of cigarette smoke by raising CO levels.

Similarly, another study by Caskey and colleagues (1993) did not find racial differences related to menthol in cigarettes on CO levels or increases in heart rate and systolic and diastolic blood pressure. Furthermore, a subsequent study by this research group did not find racial differences but did find an effect for menthol under a rapid smoking paradigm in which the menthol smokers took fewer puffs and had lower mean puff volumes (McCarthy et al., 1995). Similarly, in a group of 179 methadone maintenance treatment patients, of which 92% were current smokers, the female Black smokers (a) consumed fewer cigarettes per day, (b) had lower expired CO levels, but (c) had higher levels of urinary cotinine, and (d) were more likely to smoke menthol cigarettes, relative to White female smokers (Clemmery, Brooner, Chutuape, Kidorf, & Stitzer, 1997).

In a 2×2 study design involving race (Black vs. White) and type of cigarette (menthol vs. non-menthol), Ahijevych and Parsley (1999) examined biological, behavioral, and attitudinal indicators of cigarette smoking. They tested the possible interaction effect of menthol cigarettes and race, to see if Black women would be more adversely affected by menthol, as indicated by higher toxic or addictive effects. They found a main effect for menthol, whereby menthol cigarette smokers exhibited significantly larger puff volumes, higher cotinine levels, and shorter time to first cigarette used per day, all suggestive of higher toxic and addictive effects associated with menthol cigarettes. They observed a race effect in which, relative to the White women, the Black women smoked significantly fewer cigarettes per day yet exhibited higher cotinine levels.

In summary, in studies of sensory stimulation and pharmacological effects for Black and White smokers of menthol or nonmenthol cigarettes, menthol has been observed to exert specific desensitizing and soothing-cooling effects as reported by cigarette smokers (Ahijevych, Gillespe, Metin, & Jagadeesh, 1996; Cliff & Green, 1996; Dessirier et al., 2001; B. G. Green, 1985, 1986; B. G. Green & McAuliffe, 2000; Miller et al., 1994). However, these laboratory studies have yielded mixed results regarding racial differences in physiological and behavioral responses of Blacks relative to Whites in the response to menthol cigarette smoking (Ahijevych & Parsley, 1999; Caskey et al., 1993; McCarthy et al., 1995; Pickworth, Moolchan, Berlin, & Murty, 2002).

**Psychological influences**

Do Black and Hispanic cigarette smokers prefer menthol cigarettes because they identify with menthol cigarette brand images that depict the user of menthol cigarettes as being “really cool?”

The development of a mature ethnic identity constitutes an important developmental challenge for Black and Hispanic youth. Among racial or ethnic consumers, the image of the self as a cigarette smoker or nonsmoker constitutes one aspect of a total racial or ethnic identity. Core aspects of ethnic minority identity development include (a) clarifying one’s own ethnic self-identification, (b) establishing a sense of belonging, (c) developing specific attitudes toward one’s own racial or ethnic group, and (d) participating in the social and cultural activities of one’s own racial or ethnic group (Phinney, 1990). Among Black and Hispanic adolescents, self-concept and self-esteem serve as aspects of personal identity and may affect how cigarette smoking is incorporated into one’s own racial or ethnic identity.

In a study of cigarette smokers and peer-group identification, Sussman and collaborators (1990) observed that “dirts” (problem-prone youth) were the most likely to be current cigarette smokers relative to other peer groups: “regulars” (average youth), “hot-shots” (good social or academic performers), “jocks” (athletes), or “skaters” (skateboarders or surfers). This study highlights the influences of a
particular peer-group identity with the likelihood of smoking cigarettes. It is unclear, however, how race or ethnicity would covary with each of these peer-group identities, although Black and Hispanic youth would be more likely to belong to certain of these groups (e.g., the jocks for Black males) and not to other groups. Also, these peer affiliation choices may affect the likelihood of cigarette use.

Mermelstein (1999) used focus groups to identify thematic content regarding cigarette smoking among youth aged 11 to 19 years and found significant ethnic and gender differences as related to not smoking. A total of 178 focus groups were conducted across 11 states, examining youth views from five racial or ethnic groups: Whites, Blacks, Hispanics, Asian Americans, and Native Americans. Black females viewed not smoking as a positive aspect of their identity, whereas Asian American females reported strong mandates from their families not to smoke. Generally, the Black, Hispanic, and Asian American youth received strong antismoking messages from their families. These findings showed a consistency across geographic regions. Although this study did not explicitly examine the role of menthol in cigarettes on identity development and peer-group affiliations, it does suggest that strong family norms may influence a youth’s identity and acceptable peer-group affiliations, which can affect the likelihood of smoking cigarettes, both regular and menthol. In summary, these studies suggest that adolescent self-image and peer affiliations are influenced by parental messages about the acceptability of cigarette use and that these factors appear to affect the likelihood of youth cigarette consumption.

**Social and environmental influences**

**Do Black and Hispanic cigarette smokers prefer menthol cigarettes because menthol cigarette smoking helps them relax in the face of stressful life events? Also, do Black and Hispanic cigarette smokers prefer menthol cigarettes based on their receptivity to tobacco social marketing?**

**Environmental stressors.** For many Blacks, racial discrimination is a significant life issue (Locke, 1998). From a stress-coping perspective, Blacks may smoke menthol cigarettes as one way of coping with stress, coupled with coping with discrimination by affiliating with and seeking the social support of other Blacks who smoke menthol cigarettes (Gardiner, 2001). Thus, under this process, for some Blacks, perceived discrimination (racial discrimination) could operate as a culturally specific cue to initiate and maintain menthol cigarette smoking, a pattern of coping not evident among White non-Hispanic adolescents and adults. Although not likely a complete explanation for observed racial differences in rates of menthol cigarette consumption between Black and White cigarette smokers, this process of coping with discrimination could be one of several factors that contribute to these differences.

R. Clark, Anderson, Clark, and Williams (1999) noted that racism involves “beliefs, attitudes, institutional arrangements, and acts that tends to denigrate individuals or groups because of their phenotypic characteristics or ethnic group affiliations.” They emphasized that racism may be introduced by persons outside the ethnic group (intergroup racism) or by persons inside the group (intragroup racism). Efforts to cope with perceived racism and racial discrimination can include avoidance of a stressor as one type of coping, although coping responses also may be culturally specific. Utsey, Adams, and Bolden (2000) identified four ways of coping that they described as African-centered: (a) cognitive-emotional debriefing (e.g., hoping for things to get better), (b) spiritual-centered coping (e.g., praying that things will work themselves out), (c) collective coping (e.g., sharing feelings with a friend or a family member), and (d) ritual-centered coping (e.g., burning incense for strength or guidance in dealing with a problem). Thus, traditional Blacks, who hold a more African-centered world view, and traditional or low-acculturated Hispanics might engage in stress-reduction rituals or affiliate with other cigarette smokers as a way of coping with various stressors including racial discrimination. Menthol cigarette smoking, if conferring greater relaxation, could occur more frequently among racial and ethnic minority persons exposed to racial discrimination.

**Media advertising and marketing.** Social marketing is an approach that promotes voluntary behavior change in a target audience by offering the benefits of a product, while reducing barriers to its acquisition, and by using market segmentation and marketing research to identify specific needs and preferences of that target group in order to “package” a product in an attractive manner (Maibach, Rothschild, & Novelli, 2002). For years, the tobacco industry has been effective in marketing glamorized social and cultural images to racial and ethnic adolescents. Alluring social images include those that communicate that smoking menthol cigarettes makes the smoker cool, suave, and sophisticated. The tobacco industry has specifically targeted Black youth by using these “cool” images (Gardiner, 2001; Robinson, 2002).

Botvin, Goldberg, Botvin, and Dusenbury (1993) examined the relationship between exposure to cigarette advertising and being a cigarette smoker among 7th and 8th graders. They noted that cigarettes are the
most heavily promoted product in the United States; in the early 1990s about US$352 million was spent annually on advertising cigarettes in magazines and periodicals. Moreover, the tobacco industry is described as aggressively in need of recruiting 5,000 children and adolescents daily in order to maintain the size of the cigarette smoking population. Further, although tobacco ads are not permitted in the electronic media, they appear prominently in sporting events, billboards, and promotional products for young people and in ads presenting images that downplay health concerns and associate smoking with positive attributes such as beauty and youth.

In their study of 603 students from four suburban middle class schools, Botvin et al. (1993) found that exposure to cigarette advertising and having friends who smoke were significant predictors of current smoking status. Among several findings, the number of cigarettes smoked per day was significantly correlated with level of exposure to cigarette advertising \( r = .50, p < .0001 \). Also, youth with the highest level of cigarette smoking, over a pack a week, reported the highest levels of cigarette ads read within magazines. Finally, a strong association was observed between exposure to cigarette smoking and smoking by the subject's friends \( r = .28, p < .0001 \). Adolescents who reported a high level of exposure to cigarette advertising were 1.44–1.93 times more likely to be cigarette smokers, and they were 1.5 times more likely to indicate that they intended to smoke in the future. This study showed cigarette advertising to have a significant influence on youth cigarette smoking behavior and on the intentions of youth to smoke in the future.

In a large study of 20,332 California youth aged 12 to 17, Chen, Cruz, Schuster, Unger, and Johnson (2002) examined youth receptivity, that is, their positive reactions to protobacco media messages. Message receptivity is the product of exposure, intent, willingness to accept, and readiness to internalize the protobacco message. In this study, receptivity was measured by youth endorsement of (a) having favorite tobacco brand ads, (b) having ever received tobacco promotional items, (c) being willing to use promotional items, and (d) having a cigarette brand preference. Chen et al. (2002) found that White youth exhibited the highest receptivity to protobacco ads, with progressively lower levels of receptivity in sequence for Hispanic, Black, and Asian American youth. A dose-response relationship was found between protobacco receptivity and 30-day cigarette smoking across all ethnic groups. This study underscores the remarkable influence of protobacco advertising on adolescents.

Cigarette advertising aimed at adolescents has shown that adolescents aged 12 to 17 years, especially smokers, will respond favorably to "youth brands" that depict cigarette smoking in a fashionable manner. One study examined the reactions of 400 adolescents who were presented with two ads for each of five youth-identified "super" brands: Marlboro, Newport, Camel, Kool, and Winston (Arnett, 2001). In this study, the nonmenthol brand ads (Marlboro, Camel, and Winston) that contained youth-oriented content were rated as especially attractive. By contrast, the adolescents responded less favorably to adult-oriented ads and indicated that these ads did not make smoking appealing (Arnett).

It has been asserted that social marketing also has been directed to adult Blacks (Robinson, 2002), leading to established community preferences for menthol cigarettes. In a group of 179 methadone maintenance treatment patients, of which 92% were current smokers, it was observed that Black smokers, relative to White smokers, consumed fewer cigarettes per day but also were more likely to smoke menthol cigarettes (Clemmery et al., 1997).

In summary, cigarette advertising is a significant source of social influence that prompts cigarette smoking among adolescents and adults. A relationship between discrimination stress-coping and menthol cigarette use can be postulated, but evidence is not available to support or refute this point. Targeted advertising appears to be effective in reaching specific market segments by appealing to their specific needs and preferences. The large California study indicated that minority youth are less responsive to youth-oriented protobacco media messages (Chen et al., 2002). Nonetheless, the noted effectiveness of social marketing is strongly implicated in the disproportionate use of menthol cigarettes among adult Blacks and Hispanics. Furthermore, although ethnic differences have been observed involving lower receptivity among minority youth, relative to White youth, culturally tailored protobacco ads could potentially change these differences, unless ethnic youth receive culturally tailored tobacco resistance education.

**Cultural influences**

Do Black and Hispanic cigarette smokers prefer menthol cigarettes because they have certain cultural health-related beliefs about the healthy effects of menthol, thus perceiving menthol cigarettes as healthier or less toxic relative to regular, nonmenthol cigarettes? Furthermore, are their menthol preferences reinforced by other similar cultural beliefs involving menthol cigarette smoking as an expression of belonging to their ethnic group?

Research in medical anthropology and in sociology has identified certain sources of cultural beliefs and behaviors about health and illness within racial or ethnic communities (Spector, 1979). Ethnic groups have been described as collectivities of people who have common origins, share a common sense of identity, and share certain beliefs and social standards...
for behavior (Harwood, 1981), such as shared social norms regarding the appropriate and inappropriate use of cigarettes, alcohol, and drugs. Conceptions of health and illness are shaped by cultural factors that include cultural beliefs and expectations and cultural norms regarding the etiology, description, and appropriate treatment for a given health problem (Molina, Zambrana, & Aguirre-Molina, 1994). These common world views include ethnic-related conceptions of health and illness, and certain folk beliefs and home remedies used to prevent or treat various illnesses (Spector, 1979).

Subjective norms and values

Traditional African-centered norms and values. Cultural norms from an African-centered world view emphasize collective values and a holistic view of the environment (Parham, White, & Ajamu, 1999). This sense of “we-ness” offers collective comfort that comes from belonging to the group (McGoldrick & Giordano, 1996). Given the diversity among the Black population in the United States, a challenge exists regarding the identification of core traditional Black cultural norms. The heterogeneous U.S. Black population can be homogenized further via stratification by social class and other factors. That is, the world view of members of this population is not easily described by a single set of social or cultural norms. One set of norms for Blacks appears in the behavior and attitudes of Southern-born, working-class, ghetto-dwelling Black people, a set of “ghetto-centric” norms. However, these norms are perhaps biased against middle class Blacks who do not fit this stereotype (Parham et al., 1999). Black scholars have identified certain cultural themes that reflect an African-centered world view. These themes capture traditional Black culture and the experience of being Black in White America. This Black world view emphasizes (a) collectivity and sharing rather than individualism and self-centeredness, (b) emotional expression rather than cold rationality, (c) oral expression rather than written expression, (d) a present rather than a future time orientation, (e) harmony with nature rather than efforts to control and manipulate things and people, and (f) reverence for elders rather than an idealization of youth (Parham et al.).

Traditional Hispanic norms and values. Given the diversity observed within the Hispanic population of the United States, it also is difficult to identify a single set of social norms that depicts core aspects of the Hispanic culture. However, based on the role of Catholicism as the main religious system of beliefs introduced by Spain in its conquest of the New World, certain core subjective norms exist among traditional Hispanic families and communities (Cuellar, Arnold & Gonzalez, 1995). The general concept of traditionalism refers to a set of beliefs, attitudes, and values that reflect conservative and often agrarian life views. As with Blacks, this sharing of common history, beliefs, and norms gives Hispanics a sense of kinship, affiliation, belonging, and identity that binds them with other Hispanics, particularly when facing discrimination from other groups. Traditional Hispanic cultural norms and values include (a) distinct gender role definitions, (b) strong family orientation and loyalty, (c) value of family over individualism, (d) strong sense of community, (e) strong past and present time orientation relative to a future time orientation, (f) reverence for elders, (g) value of traditions and ceremonies, (h) subservience and deference to authority, and (i) spirituality and religiousness (Castro & Gutierres, 1997; Ramirez, 1999). Thus, religiosity and devotion, particularly among women, belief in family loyalty, loyalty to church and the community, and gender role expectations including such concepts as machismo and marianismo (Gil & Vazquez, 1996) are among the most prominent cultural norms observed among Hispanics.

Health-related beliefs

Traditional health beliefs in Black communities. Among traditional Blacks, concepts of illness include the view that illness is the result of one’s disharmony with nature (Utsey et al., 2000). An African health belief system involving voodoo beliefs and practices was introduced into the New World by slaves who were imported from West Africa in the early 18th century. This folk-medical system of beliefs emphasizes the role of ceremonies and rituals as integrated elements of the healing process (Harwood, 1981; Spector, 1979). Regarding this system of health beliefs, Snow (1974) suggested that low-income Blacks have a holistic view that deemphasizes the distinction between science and religion. Relative to younger and more affluent Blacks, older, less educated, and rural Blacks are regarded as more likely to endorse these folk concepts regarding health and illness and their related folk remedies. These lower-class Blacks also are more likely to consult “root workers” or faith healers. Jackson (1981) has asserted that low-income Southern Blacks appear to constitute a health culture of their own, one that endorses these conceptions of health and illness. However, Jackson’s observation can be generalized to other poor populations.

Today, surviving aspects of this archaic system of beliefs and rituals regarding health and illness emphasize the importance of religious faith and prayer as contributors to the healing process. Among such folk beliefs and home remedies, cod
liver oil is believed to be effective for preventing colds, and hot tea with honey, lemon, peppermint, and a dash of brandy or other alcohol may be used to treat a cold (Spector, 1979). Similarly, Vicks VapoRub, which contains menthol, may be swallowed in order to treat colds, and garlic may be placed over an ill person, or in the ill person’s room, to remove evil spirits that have caused an illness (Spector). A related question is whether lower-income Blacks constitute a sector of the Black population that would be more responsive to the consumption of menthol cigarettes, based on their traditional world view and their specific system of health-related beliefs and rituals.

Klonoff and Landrine (1999) examined the effects of several elements of acculturation as these may affect cigarette smoking amongst Blacks. They found that, for Blacks, a high traditional cultural orientation (low acculturation to the White mainstream culture) was associated with a higher prevalence of cigarette smoking. The Black cigarette smokers (a) exhibited more traditional Black childhood experiences, (b) prepared and consumed traditional Black cultural foods, and (c) more strongly endorsed cultural beliefs regarded by some as superstitions. Thus, this study showed an association between greater identification and involvement with a traditional Black culture and a greater likelihood of smoking cigarettes.

In summary, the dual influence of preexisting culturally based beliefs along with targeted social marketing may interact to produce a higher prevalence of menthol cigarette smoking among members of these low-income, low-acculturated racial or ethnic populations. Thus, traditional health beliefs that are prevalent and salient among certain sectors of these populations may serve as predisposing factors (L. W. Green & Kreuter, 1992) that promote the use of menthol cigarettes when prompted by protobacco media advertising.

**Traditional health beliefs in Hispanic communities.**

The hot-cold theory of illness and various aspects of this orientation influence in varying degrees the health beliefs and behaviors of many Hispanics today. This system of belief was brought to the New World by Spanish priests, and these beliefs were integrated with existing Aztec and other indigenous beliefs (Spector, 1979). The hot-cold theory asserts that bodily imbalances are caused by excessive exposure to hot or to cold and thus can lead to illness (Schreiber & Homiak, 1981). Under this system of belief, the treatment of an illness is based on the principle of neutralization, whereby a cold illness (a cold imbalance) is treated by neutralizing it with a hot substance (Harwood, 1971).

Thus, to treat a cold illness (e.g., a cold, arthritis, or joint pain), the relevant hot treatment would include alcoholic beverages, chili peppers, coffee, or tobacco. Among Mexican Americans, level of belief and endorsement of folk beliefs and remedies is complex and depends on the specific folk syndrome examined (Castro, Furth, & Karlo, 1984). The acceptance of such health beliefs has been shown to increase inversely with level of acculturation; that is, folk beliefs are most strongly endorsed by the lowest-acculturated Mexicans and Mexican Americans. Nonetheless, some level of endorsement of such beliefs has been observed among high-acculturated Mexican Americans (Castro et al., 1984). In addition, many of these practices are taught from elders to children as culturally based health advice that often is accepted implicitly as a family custom and because the health practice is perceived to work.

Based on the strong influence of Catholicism within the various Hispanic cultures, many Hispanics will engage in certain religious rituals to prevent illness or to cope with it. These rituals can involve making promises and offering prayers (Castro & Wagner, 1979). Among Mexican Americans, a folk healer known as a *curandero* or *curandera* may be consulted to help treat an illness, whereas among Puerto Ricans, similar healers are known as a *santero* or *santera*. These religious persons provide spiritual guidance and engage in rituals aimed at diagnosing and treating certain health problems.

Regarding the use of folk healers, Higginbotham, Trevino, and Ray (1990) found that only 4.2% of 3,623 Mexican Americans aged 18 to 74 years who participated in the HHANES consulted a *curandero*, a herbalist, or any other folk medicine practitioner within the past year. However, the lifetime prevalence for the use of such healers was not examined, and this prevalence rate could range from 5% to over 10%. Data from the HHANES also revealed that the variables most predictive of *curandero* utilization were (a) adherence to a Mexican cultural orientation, as indicated by a preference for being interviewed in Spanish, and (b) a dissatisfaction with available medical care. Despite the notion that only poor and low-educated Hispanics will seek help from a spiritual healer, contemporary psychology is taking a serious look at the role of spirituality within minority communities (Sue, Bingham, Porche-Burke, & Vazquez, 1999), at the health effects of positive mental imagery (Zeitel, Lawrence, & Wodarski, 2002), and at the potential health effects of positive subjective experiences (Seligman & Csikszentmihalyi, 2000).

In relation to traditional health beliefs and customs and the use of menthol, Harwood (1981) noted that Vicks VapoRub “approaches the status of a panacea for Puerto Ricans. It can be used for a far wider range of ailments than recommended on the label.” “It may also be taken internally, either alone or in a tea for a ‘congested’ (apretado) chest” (Harwood, 1981, p. 443). Thus, the menthol within VapoRub produces a
stimulating sensation that may prompt beliefs or expectations that it is a medicinal substance with curative effects. Based on these conceptions, certain Hispanic consumers may be motivated to treat a wide variety of ailments including muscle pain, headaches, and asthmatic attacks by using the menthol in VapoRub. Thus, as related to the use of menthol cigarettes, cultural beliefs and expectations regarding the curative properties of menthol could motivate the expectation that menthol cigarettes are indeed healthier than regular cigarettes.

In summary, certain health-related beliefs prominent among low-income or low-acculturated Blacks and Hispanics associate menthol with medicinal properties. To the extent that these beliefs create an association that menthol cigarettes are healthier, this culturally traditional sector of Blacks and Hispanics may respond more favorably to the use of menthol cigarettes.

**Moderation and mediation models of cigarette use**

Given the complex and interactive effects of physiological, psychological, social, and cultural factors as potential determinants of menthol cigarette use among Blacks and Hispanics, it is useful to propose a model or models that can offer an integrated framework to aid in understanding these complex but interrelated effects.

**Overview of models**

Simple direct effect models of the determinants of any health-related behavior, such as cigarette smoking, are seldom accurate predictors of such health-related behaviors within community settings. More complex, interactive models including those that describe moderation or mediation effects typically offer greater explanatory power. Figures 1 and 2 present two logic models—a moderation logic model and a mediation logic model—as these may describe the interactive (moderating) or sequential (mediating) effects of certain variables that may influence the use of menthol cigarettes. Based on the previously reviewed literature, these models are used here to illustrate plausible relationships that could be tested empirically in future research.

**Moderation logic model.** Moderation involves effect modification. Two or more conditions (levels of a moderator variable) can have differing effects on the relationship between a predictor variable on an outcome variable (e.g., menthol cigarette use) (Baron & Kenny, 1986). A moderator variable is defined as an “independent variable that interacts with another independent variable in predicting Y [the dependent variable]. The effect of each can be said to be conditional on the other” (Cohen, Cohen, West, & Aiken, 2003, p. 676). A moderation effect can be synergistic (augmenting the predictor-outcome

---

**Figure 1.** Logic model of moderator effect on menthol cigarette smoking.
relationship) or dampening (reducing the predictor-outcome relationship) (Figure 1). For example, Black males of lower socioeconomic status (L-SES), but not Black males of higher socioeconomic status (H-SES), may respond favorably to cigarettes with higher menthol content (greater menthol level in cigarettes), as indicated by a higher consumption of menthol cigarettes (a greater frequency of menthol cigarettes smoked). This effect on the outcome variable, frequency of menthol cigarettes smoked, is illustrated in the insert at the upper right section of Figure 1. This insert illustrates that increasing menthol levels in cigarettes (or simply progressing from the consumption of nonmenthol to menthol cigarettes smoked) has no effect on menthol cigarette consumption for Black males of H-SES but does have a significant effect for Black males of L-SES. Thus, this example illustrates that something about the cultural ecology and context of being a Black male living in a low-income environment would produce a favorable consumer response to menthol cigarettes, whereas this consumer response does not occur within the cultural ecology and context of higher-income Black males. In such models, the effect of a cultural moderator variable (m) on a pharmacological variable (p) is testable by variable centering (Aiken & West, 1991), followed by constructing the $p \times m$ interaction term and testing this interaction effect in a multiple regression analysis for significance as a predictor of the outcome variable, frequency of menthol cigarette smoking (Cohen et al., 2003).

Mediation logic model. The effect of mediation involves the influence of an intermediate variable, one that occurs in a temporal chain of events that progresses from predictor to mediator to outcome (MacKinnon, Krull, & Lockwood, 2000; MacKinnon, Taborga, & Morgan-Lopez, 2002) (Figure 2). A mediator variable is defined as a variable that can “stand causally between a predictor and some variable on which it has an effect, and that account[s] in whole or in part, for that effect” (Cohen et al., 2003). In this sequence of events, a mediator variable can have an augmenting effect, when the predictor operates through that mediator resulting in an increase in the outcome variable (see Figure 2).

As an example, it is expected that if menthol has reinforcing sensory properties, then increasing levels of menthol in cigarettes will lead to increased frequency of menthol cigarettes smoked (path c in Figure 2, a direct effect). Moreover, as an example with adult Mexican American women (Case 1, Figure 2), an increase in menthol level in cigarettes (or use of menthol cigarettes relative to nonmenthol cigarettes) would lead to an increase in frequency of menthol cigarette smoking (path q in Figure 2, an indirect effect).
cigarettes) when followed with moderation by a belief that menthol cigarettes contain *Vaporu* (the menthol in Vicks VapoRub) and thus are safer to smoke than regular cigarettes, would yield an increase in frequency of menthol cigarettes smoked (as indicated by the a and b coefficients in Figure 2). Under this total moderator effect (MacKinnon et al., 2000), the joint sequential influence of the greater menthol level in cigarettes, coupled with the belief that menthol cigarettes are safer to smoke, would yield a stronger total effect than the direct effect alone (path c) on the outcome variable: frequency of menthol cigarettes smoked (MacKinnon et al., 2001; MacKinnon et al., 2002). The result of this interaction would be a greater frequency of menthol cigarette consumption when the availability of menthol cigarettes is coupled with the belief that menthol makes cigarettes safer to smoke.

Conversely, a mediator variable can exert a buffering effect, when a predictor operates through the mediator to decrease the outcome variable. Accordingly, for these adult Mexican American women (Case 2, Figure 2), a belief that menthol cigarettes are *venenosos* (poisonous) would be expected to result in a reduction in frequency of menthol cigarettes smoked, as indicated by a b path coefficient in the moderator-outcome pathway, and likely also in a reduction in the direct effect (the c pathway coefficient) of the predictor-outcome relationship. Similar analyses can be conducted for the effects of a psychological predictor variable such as discrimination stress, as well as for a social and environmental variable such as exposure to media cigarette advertising, both as direct effects (paths r and z, respectively), and as mediation effects (paths p–q and x–y, respectively).

**Cultural variables as moderators or mediators**

The often weak effects of a general and nonspecific variable such as race or ethnicity may be examined in greater depth and differentiation when examining cultural aspects of such variables as moderators or mediators of effect within models such as those described above. The set of cultural variables that may operate as moderators of effect in these models may include socioeconomic status, level of acculturation, African-centricity, ethnic pride, traditionalism (Castro & Hernandez-Alarcon, 2001), and peer-group identification (Sussman et al., 1990). Similarly, mediators of effect in such models may include specific health-related beliefs about the health effects of menthol, receptivity to protobacco ads (Chen et al., 2002), and specific coping responses such as ritual-centered coping (Utsey et al., 2000).

**Summary of Major Findings**

This article has reviewed evidence from the physiological, psychological, social, and cultural domains as potential determinants of menthol cigarette consumption among Black and Hispanic populations. These studies provide a few notable findings. Epidemiological data do not support the existence of a relationship between menthol cigarette smoking and higher cancer rates among Blacks. Studies on the physiological and pharmacological effects of menthol consumption indicate that menthol consumption is associated with higher levels of CO and higher levels of cotinine, although results are mixed regarding racial differences in the physiological effects of menthol among Black women relative to White women.

Social cues, especially protobacco media messages and other forms of social marketing, appear to be salient and significant sources that prompt tobacco use among adolescents and adults. Targeted social marketing by the tobacco industry is strongly implicated in the disproportionate use of mental cigarettes observed among Black and Hispanic consumers. Health-related beliefs prominent among lower-income and lower-acculturated Blacks and Hispanics appear consistent with associating menthol with medicinal properties. To the extent that these beliefs view menthol cigarettes as less toxic or addictive than regular cigarettes, such beliefs could contribute to the higher rates of menthol cigarette consumption among Blacks and Hispanics.

**Future research on sociocultural determinants of menthol cigarette use**

**Study of interactive effects**

Based on the four domains of potential predictors of menthol cigarette use among Blacks and Hispanics, a few specific lines of research can be conducted that would examine interactions between specific predictors from these dimensions. We know that media advertising influences the consumer behavior of Blacks and Hispanics, although we know less about how much the sensory effects of menthol may motivate menthol cigarette consumption among Blacks and Hispanics. For example, given that many Hispanics consume chili peppers, are these Hispanics more responsive to the stimulating effects of menthol in cigarettes?

Regarding the effects of identity development and tobacco use, we need to know more about certain aspects of ethnic identity, such as ethnic pride, because these may be protective against the use of menthol cigarettes (Castro & Hernandez-Alarcon, 2001). From the research reviewed, traditional social norms appear to be a risk condition for menthol cigarette smoking among Blacks (Klonoff & Landrine, 1999), although we do not have empirical data regarding other forms
of traditional cultural norms, such as devout Catholicism or strong spirituality, that may be protective against tobacco use (Bachman et al., 2002). Similarly, certain potent cultural beliefs, such as strong convictions about the benefits or health liabilities of menthol cigarette consumption, may exert potent risk-inducing or protective effects on the use of menthol cigarettes. More research on such cultural mediator effects would be helpful.

Finally, the interactive effects of two or more of these factors may yield a combination of effects that may increase risk synergistically and exponentially, or that may predict heavy menthol cigarette consumption; in other words, the outcome is much greater than the sum of the two independent effects. For example, a minority consumer who craves the taste of menthol, who is receptive to “cool” protobacco ads, and who believes that menthol cigarettes are safe may exhibit an especially high risk of becoming a heavy consumer of menthol cigarettes. The model-driven study of these types of interactive effects to identify potent risk and protective factors that relate to menthol cigarette consumption among Blacks and Hispanics may yield valuable new knowledge on the motivational determinants of menthol cigarette consumption (Morgan-Lopez, Castro, Chassin, & MacKinnon, 2001).

Deconstructing race and ethnicity

Our knowledge and understanding of cultural effects on menthol cigarette consumption has been limited by the use of weak indicators of ethnicity and racial background. Prior research with Blacks and Hispanics has used race and ethnicity as a categorical and direct effect predictor variable for predicting cigarette use and other health-related outcomes. Race and ethnicity, as measured in this superficial manner, operate as coarse, simplistic, and nonspecific indicators of the complex construct of race and ethnicity, and of the rich cultural experiences that accompany being a person of color (Collins, 1995; Resnikow, Soler, Braithwaite, Ahluwalia, & Butler, 2000), as manifested today within the large and diverse populations of Blacks and Hispanics in the United States. As a result, some investigators will conclude that race and ethnicity are not related to a specific health outcome (Howard, La Veist, & McCaughrin, 1996).

Along these lines, a central aim in improved studies would be to deconstruct the broad categorical variables of race and ethnicity, by identifying relevant moderators of within-group heterogeneity. Regarding this aim, Wallace and collaborators (2002) have indicated that treating an ethnic group such as Blacks or Hispanics as homogeneous masks important differences within and between groups, so that ideally more refined measures can be used to take into account these within-group differences.

Needed are better conceptualized and theory-driven minority research studies that use more ecologically valid indicators of race and of ethnicity. This can be accomplished by the identification of more homogeneous subgroups within these racial and ethnic categories (as in market segmentation) or by the use of more specific dimensions or indicators of race and ethnicity, such as Africentrism (Baldwin & Bell, 1985), and level of acculturation (Cuellar, Arnold, & Maldonado, 1995; Klonoff & Landrine, 1999, 2000; Marin & Gamboa, 1996), traditionalism (Castro & Gutierres, 1997; Ramirez, 1999), ethnic pride, or the like.

The use of moderator variable models such as those illustrated here also can help in enhanced testing of within-group differences that may occur in a large and diverse population, and these models can provide stronger and more specific tests of potential cultural effects on health outcomes such as menthol cigarette smoking. Thus, culturally rich research can be designed by using well-operationlized cultural variables (Castro & Hernandez-Alarcon, 2001) and by using scientific methodologies with larger and more representative samples. Thus, explicitly designed studies may examine cultural factors as moderators of menthol cigarette smoking via the analysis of moderator effects involving subgroups of Blacks (e.g., traditional vs. nontraditional, high African-centered vs. assimilated).

Further study is needed to identify culturally specific risk factors for the initiation of regular and menthol cigarette use because these may differ for Blacks and Hispanics as compared with White non-Hispanics. For example, Gardiner (2001) has noted that White adolescent females may smoke cigarettes to maintain an ideal weight, based on subjective cultural norms that emphasize a European standard of beauty. By contrast, Black adolescent females appear to have different subjective norms that do not motivate their attainment of this ideal of thinness; thus, Black adolescent females do not smoke cigarettes for the purpose of weight management. These observations suggest the need for research designed explicitly to examine these culturally specific factors, in that they may provide additional explanatory power for understanding the various determinants of cigarette smoking between and within U.S. racial and ethnic populations (Baezconde-Garbanati, 2001).

Along these lines, new research may be conducted to examine level of endorsement of folk and traditional health beliefs, among lower class, less acculturated, or more traditional Blacks and Hispanics because these beliefs may increase their preference for smoking menthol cigarettes. In the future, a longitudinal study of this type could help clarify the direction of certain effects: (a) whether elements of Black cultural traditionalism prompt menthol cigarette...
smoking, or conversely, (b) whether tobacco industry cultural marketing that exploits traditional cultural ideals motivates menthol cigarette smoking.

Resiliency and vulnerability effects

Certain cultural variables may be protective against menthol cigarette smoking, thus exerting a buffering effect despite a given level of environmental exposure (e.g., to protobacco cigarette advertising). Among Mexican Americans it has been observed that level of acculturation appears to operate as a potential moderator of cigarette smoking. Moreover, the use of menthol cigarettes may be studied in greater detail as moderated by various types of ethnic identification (i.e., assimilated vs. acculturated, traditional, bicultural, marginalized). Studies of cultural moderators of menthol cigarette use may help identify the specific subgroup or a subculture of Blacks or of Hispanics who are at highest or lowest risk for cigarette use.

Cultural studies of menthol use in other minority populations

Finally, given the high rates of cigarette smoking observed among Native American youth and adults (Ghodes et al., 2002), how are these high levels of cigarette smoking related to the consumption of menthol cigarettes by Native Americans? Among Native Americans, are rates of menthol cigarette smoking significantly lower or higher than those for Blacks? If so, could the apparent lack of menthol cigarette advertising explicitly targeting Native Americans operate as a significant factor influencing such low rates? Conversely, if rates of menthol cigarette consumption are higher for Native Americans, could traditional cultural beliefs about the spiritual significance of tobacco or the greater availability of lower-cost tobacco products on the reservation contribute to such higher rates? Study of these questions among Blacks, Hispanics, and in other special populations such as Native Americans, can provide culturally rich opportunities to understand the physiological, psychological, social, and cultural aspects of menthol cigarette use among members of these populations.

References


