

ST product characteristics and relationships with perceptions and behaviors among rural adolescent males: a qualitative study

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Abstract

Although smoking declines in the United States, the prevalence of male adolescent smokeless tobacco (ST; moist snuff and chewing tobacco) use remains unchanged. ST product characteristics, such as flavoring, packaging, and branding, could influence adolescents' ST initiation and continued use. This qualitative study examines the potential role of product characteristics in shaping ST-related perceptions and behaviors among rural adolescent males. Semi-structured individual interviews were conducted at three California rural high schools. ST users were asked about their experiences and perceptions related to product characteristics. Interviews were transcribed, coded, and analyzed using a general inductive approach. Participants associated flavored ST with appealing non-tobacco products, such as chewing gum and alcohol. Availability of different varieties and flavors stimulated interest and curiosity in sampling or switching between ST products. Time-limited promotional flavors and packaging also enhanced product appeal. Adolescent ST users preferred certain brands based on perceived brand features and perceived nicotine content, associating higher-strength brands as better suited for experienced ST users. Brand preferences frequently reflected perceived ST brand popularity within peer groups. Based on these

observations, potential ST regulation and health education campaigns to address misconceptions about ST characteristics could influence adolescents' ST-related perceptions and reduce ST use among this vulnerable population.

Introduction

Reducing the use of smokeless tobacco (ST) (moist snuff, chewing tobacco) among adolescents in the United States remains a public health priority. ST use is associated with oral and pharyngeal cancer, dental disease, hypertension, nicotine addiction and smoking initiation [1–4]. Despite these known health risks, ST use has remained relatively unchanged for more than a decade among adolescents in the United States [5, 6]. In 2015, past month ST use (11.9%) matched cigarette use (11.8%) among high school males [6]. Adolescent males living in rural areas are particularly vulnerable to ST initiation and continued use, with ST use prevalence double that of their urban counterparts [7, 8]. In addition, rural adolescent males participating in certain organized sports or activities, such as baseball or the National FFA Organization (student agriculture organization) are at a heightened risk of ST use [9–11]. Strong cultural ties [12], perceptions of lower health risks [13] and a relative paucity of comprehensive ST-specific anti-marketing campaigns [8] all contribute to these longstanding disparities in use among rural youth.

Additionally, manufacturing and targeted promotional strategies by the tobacco industry continue to influence ST initiation and use among adolescents [14–18]. For example, studies have suggested that lower-priced, lower-nicotine ST ‘starter products’ are used by the tobacco industry to target novice users. These users then ‘graduate’ to established use through a series of higher nicotine, premium-brand products [14, 15]. Flavored products have also been viewed as more appealing to both adolescent ST users and non-users [19]. Thus, product characteristics such as nicotine content and flavoring may be used to communicate certain product qualities to adolescent consumers, likely playing an important role in influencing their ST-related perceptions and behaviors.

In 2009, the Family Smoking Prevention and Tobacco Control Act granted the US Food and Drug Administration (FDA) authority to regulate the manufacture, marketing, packaging, and formulation of cigarettes and ST products [20]. Although regulations have banned characterizing flavors in cigarettes (excluding menthol), similar flavor restrictions have not been placed on ST. Currently, ST products are available in a growing variety of menthol and non-menthol flavors, including wintergreen, mint, spice, and fruit. From 2000 to 2006, the number of traditional ST sub-brands on the US market increased 140–250%, with most growth attributable to an increase in flavored offerings [21]. Soon after, sales of certain types of ST, namely snus and moist snuff, increased by 65.6% from 2005 to 2011 [22].

Adult and adolescent tobacco users view flavored tobacco products positively, and flavored products are more appealing to non-tobacco users [19]. Additionally, ST packaging elements, such as warning labels and branding, are associated with perceived health risks and appeal among adult and adolescent tobacco users and non-users [23, 24]. Although studies have demonstrated associations between certain product characteristics and risk perceptions and appeal, few studies [25, 26] have qualitatively explored adolescents’ perceptions and experiences with specific ST product characteristics during the time of initiation, product switching, and continued use. Such information is particularly

relevant as new local and federal regulations are considered to restrict certain ST characteristics, such as flavors, nitrosamine content, and packaging material [27, 28]. Therefore, this qualitative study aimed to expand our understanding of how specific ST product characteristics might influence perceptions and behaviors among rural adolescent males who use ST. Specifically, we asked:

- (i) What are rural adolescent male ST users’ perceptions of ST product characteristics, such as flavors, branding and packaging?
- (ii) How do these perceptions of product characteristics relate to their attitudes toward and experiences using different ST products?

This study focused on rural male adolescents who had already experimented with ST and were therefore at risk of further tobacco experimentation and long-term, established use [29]. Potential tobacco control efforts, such as product regulation and counter-marketing educational campaigns, will benefit from a more in-depth understanding of how specific ST product characteristics influence ST related perceptions and behaviors among this vulnerable population.

Materials and methods

Sample and procedures

The Institutional Review Board at the University of California San Francisco approved this study. This study was conducted as part of a larger study concerning adolescent tobacco users and never-users. Eligible participants, recruited from three rural high schools in Northern California, included male high school students (Grades 9–12), who played varsity football or were enrolled in agricultural classes. Researchers provided a short informational session about the study to potential participants at the beginning of class or practice, explaining the study purpose and allowing for questions. Potential participants were given a consent form to be signed by a parent or guardian (if under 18 years of age). Individuals over age 18 provided their own consent to participate. Additionally, all participants provided

written assent prior to commencing data collection. One-on-one individual interviews, lasting 30–45 minutes were conducted by four study researchers (E.T.C., B.W.C., E.D. and M.M.W) in private classrooms or offices at each school. Since it was impossible to determine participants' ST use prior to data collection, both users and non-users were recruited and interviewed. However, this paper only reports results from the 32 ST users identified. Each school was given a \$150 donation, and each participant received a \$20 gift-card to a major online retailer. Data collection occurred between October and December 2015.

Study setting

High schools were purposively chosen based on school administrative support, rural status [30] and football or agriculture classes offered (activities associated with a higher prevalence of ST use [10]). The three schools were located in California counties with a combined population that is 59.0% Hispanic/Latino and 83.3% White [cite: US Census]. In total, 22.9% of county residents live in poverty [31]. In an earlier survey of rural high schools in this region, 30% of male respondents played high school football, and 15% were members of the National FFA Organization [10].

Interview guide

The interview guide, developed by study researchers, included open-ended questions and specific prompts. Each interviewer began by defining ST as dip (moist snuff) or chewing tobacco and asked participants about their use. Based on their response, researchers classified participants who had used dip or chew into one of three categories: experimenters (those who tried ST, but reported only using once or twice in their lifetime), former-users (those who reported using ST regularly in the past, but not currently), and current-users (those who reported ST use on multiple occasions within the past month).

Those who reported never using ST were categorized as never-users and were interviewed using a separate interview guide with questions related to

the participant's ST awareness, future intentions, and perceptions of product appeal, social norms, health risks, and acceptability. The never-user interviews were not included in the present analysis. The interview guide used for participants who reported ST use included questions related to the participant's daily and past ST use experiences, as well as ST product characteristics, such as flavoring and packaging. The interview guide was pilot tested for feasibility and acceptability with four adolescent male ST users (two experimenters, one current-user and one former-user) who attended a high school in the San Francisco Bay Area.

Data management and analysis

Interviews were digitally recorded, transcribed, and imported into Atlas Ti (Version 7.5.12). Transcripts were analyzed using a general inductive approach [32], which allowed research findings to emerge from frequent, dominant, or inherent themes that were present in the raw text. The objective was to establish clear links between the research objectives and the summary findings that were both transparent and defensible. Analysis focused on transcripts from those participants who reported ST use because of their actual experiences and interactions with ST products. Three study researchers (E.T.C., B.W.C. and E.D.) individually performed open coding on three randomly selected transcripts. Researchers then met to discuss their findings and develop a codebook. Two researchers (E.T.C. and E.D.) then independently applied those codes to another subset of the data ('independent parallel coding') and met to discuss and compare similar or dissimilar codes and their meanings in context to achieve concurrence. Trustworthiness of the data analysis process was assessed through these consistency checks. The same researchers (E.T.C. and E.D.) then worked independently to code the remaining transcripts. Open codes relevant to the research objective were organized into theoretical categories ('axial coding'). These categories were then refined and conceptualized into broad themes, with interconnections between themes supported by the data. Discussion of alternative points of view helped to keep emerging

themes grounded in the data and added depth to analysis.

Results

A total of 55 adolescent males participated in this study. Of the 55 interviewed, 23 participants reported never using ST and were not included in data analysis. ST users ($n = 32$) had a mean age of 16.5 years (SD: 0.6, range: 14–18). Based on their described ST experiences, 56% ($n = 18$) were classified as current-users, 31% ($n = 10$) were experimenters and 13% ($n = 4$) were former-users. Most identified as White (69%), non-Hispanic (75%), and were in the 11th or 12th grade (94%). Data analysis produced five emergent themes: (i) Opportunistic initiation, (ii) Flavor associations, (iii) Product switching, (iv) Seasonality and special offers and (v) Perceived brand qualities. To aid interpretation, quotations in the text include each participant's identification number (labeled P1 through P32), ST use status (experimenter, former-user or current-user), and age in years.

Opportunistic initiation

Participants typically described their ST initiation experiences as spontaneous events, prompted by opportunity and curiosity. In most cases, participants initiated with an ST product provided by a male friend or family member. Although most participants could easily recall the sensations of their initiation experiences, such as physiological changes, taste and smell; some did not remember specifics about the brand or characterizing flavor of their first ST product. One participant said, 'It was a can. I don't know what flavor it was, but it was Red Man' (P20, current-user, age 16). Of those who could recall the brand, flavor or type of ST used, most did not describe a purposive choice to select a particular ST product at the time of initiation. Although specific product characteristics, such as flavors, did not arise unsolicited when recalling reasons for initiation, the availability of different forms and flavors of ST products was cited as stimulating interest and curiosity in trying ST again.

For example, when discussing his first few times using ST, one user stated:

It was Camel – like the little snus pouches. And then one of my friends, he had Copenhagen mint. That was the second time I tried it . . . And I just kind of – you know, I just wanted to try it (P12, experimenter, age 17).

Flavor associations

Participants often associated flavored ST with appealing non-tobacco products, such as chewing gum, fruit, candy, and alcohol. When discussing ST flavors, one user said, 'Like there's Skoal Peach, which smells like peach and tastes just like peach. And apple . . . Apple tastes just like apple, in a way' (P24, current-user, age 18). Many participants associated wintergreen and mint ST flavorings with chewing gum, often making statements such as, 'It tastes like spearmint gum' (P32, current-user, age 17) or 'It smelled good. So like, I thought, you know, maybe it will taste good, too. I mean, like I said, it was basically the same as gum' (P12, experimenter, age 17). Another user positively associated ST flavorings with breath mints and alcohol, 'I go for like the whiskey taste, but I'll chew other stuff. But I like the whiskey taste more. And then some people go for mint, because they say it's like a breath mint, which it does kind of work. It makes your breath minty' (P24, current-user, age 18).

Others had a more negative perception of ST flavors, viewing them as unnatural in comparison to 'regular' or 'straight' ST. They mentioned ST flavorings as an additive that did not belong in tobacco products. One user stated:

The flavored ones are nasty. Like, Skoal, all their chews are nasty. Like, grape shouldn't be in a chew. Berries shouldn't be in a chew. It should be like natural flavors (P30, current-user, age not reported).

The perception that unflavored ST was free from additives was noted by one participant who said:

Flavored [ST] is kind of weird to me, because it makes me feel like it's not real . . . The stuff

that I used the most when I was on it a lot was straight, because in my mind it was just straight tobacco. It didn't have all this other stuff in it (P1, former-user, age 16).

Product switching

Adolescent users described sampling various ST brands and flavors, often explaining changes in what they considered their 'usual' ST products as a way to stimulate and maintain interest. Availability of new flavors peaked users interest, with one participant who had reported using ST intermittently stating:

... my friend introduced me to the Copenhagen Wintergreen, and that was really what got me hooked on it. And then after that, mint came out and I started buying mint (P14, experimenter, age 17).

Many participants admitted that using the same ST product (flavored or unflavored) over time was somewhat monotonous and uninteresting. For example, one user stated:

You just get tired of the flavor. I'll get sick [of] the flavor. I'll just not want that one anymore and switch off. Kind of like the flavor just starts getting bland so you switch over to something else. (P25, current-user, age 17).

Another user said:

Yeah, a few times. I was getting bored of one flavor every single day. I just wanted to switch things up (P28, current-user, age 17).

Seasonality and special offers

Seasonal and special offers promoted by the tobacco industry appeared to stimulate interest in certain ST products. Many adolescent ST users discussed specific ST products that were only available during certain months of the year. One user mentioned following ST websites to stay up to date with ST products entering the market:

I follow a lot of pages that are dip-related. They keep me updated when like new flavors

are coming out or when they come back into season and stuff (P27, current-user, age 17).

The limited availability of seasonal products also created an urgency to purchase such products, with one user stating:

Some [friends] chew black [Copenhagen Black]. That's seasonal. But they'll get a lot of it so they can keep chewing it (P25, current-user, age 17).

Participants also discussed the appeal of seasonal changes in packaging of certain ST products. For example, the camouflage can or 'camo can' was reported as available for a limited time during hunting season. When discussing the 'camo can' one user stated:

I thought it looked cool. But that was my natural dip I did every day. So it didn't really bother me [to have] the cool can (P21, current-user, age 15).

Perceived brand qualities

Participants ascribed certain product qualities to specific ST brands, partly based on perceived flavor, taste and potency, as well as social influences. Users identified certain brands with positive characteristics: citing variety of available sub-brands, moisture content, flavor, and taste as their reasons for using one brand over another. Many users also expressed loyalty when discussing their usual brand. For example:

If there's a Copenhagen can that's not on a trial offer, I'll still buy it. I like Copenhagen more than any other brand. I'll only chew Grizzly or Skoal or something like that if I absolutely have to, if they don't have Copenhagen (P28, current-user, age 17).

There was a perception among participants that certain brands were the most popular and commonly used within their peer group, making statements like, 'I think most kids around here that I'm associated with chew Copenhagen' (P22, current-user,

age 16) or ‘Copenhagen. It’s just the most sought after’ (P9, experimenter, age 16).

Users perceived certain ST products to have higher nicotine content than others based on brand, type, or flavor. For example, one participant stated, ‘Copenhagen Wintergreen will give you a real big head rush. It will make you feel different than Copenhagen Straight’ (P1, former-user, age 16). Although another user stated:

If you like something really sweet, you should probably get like Skoal apple or Skoal peach. But if you like something a little more strong, you got like snuff or long cut. Or if you’re more like a mint kind of guy – like, I’m kind of more like a mint, so I chew wintergreen. But I like long cut too, because I like something a little stronger [than] snuff (P23, current-user, age 16).

Certain brands or flavors were also found to be appealing over other brands based on their perceived product strength, with one user stating:

... when I first started I tried Skoal as well. And that never did anything. And I mean there’s definitely something to do with the nicotine because it’s definitely here with Copenhagen not as there in others (P25, current-user, age 17).

Another user said, ‘The other ones are like Copenhagen and Kodiak ... those are stronger than the Levi’ (P32, current-user, age 17). Participants sometimes discussed social pressure associated with using certain ST products based on their perceived ‘strength’, and flavor, viewing certain brands and flavors as better suited for more experienced ST users, occasionally speaking disparagingly of those who used ‘weaker’ products.

Discussion

Results from this study suggest that product characteristics, such as brands, flavors, and packaging, may influence adolescent ST users’ perceptions of ST

and their willingness to continue ST use. Product characteristics, including some time-limited features, stimulated interest in ST and provided motivation to sample additional product offerings. Certain ST brands and flavors acted as signals of product strength, which helped adolescent ST users to develop a perceived product hierarchy from those products for ST novices to stronger, higher-nicotine products for established users. Such findings are consistent with tobacco industry strategy to position certain products for less experienced users [14, 15], as well as with internal tobacco industry research that found consumers associated specific ST flavors, such as wintergreen, with product strength [33].

Many participants reported having little agency in choosing the specific characteristics of the first ST product they tried, which was near universally offered by a peer or family member. However, it remains plausible that the characteristics of the product presented to them in that moment influenced their willingness to accept the offer to try. Product characteristics such as flavorings may create positive perceptions about the palatability of certain products, contributing to ST use [34]. Among a nationally representative sample of high school students, a majority of participants reported initiating ST use with a flavored ST product [35].

The availability of a variety of distinct flavors and sub-brands may also increase the willingness of novice ST users to try ST again, especially if a certain flavor or variety is perceived as having more appealing properties than a product tried previously. In this study, many participants reported that availability of different forms and flavors of ST products stimulated interest and curiosity in continuing ST experimentation, despite commonly reporting negative first experiences. Studies have shown that many first-time ST users experience immediate negative side effects including nausea, vomiting, dizziness and fatigue that can discourage users from trying again [15, 36]. For the tobacco industry, flavored, low-nicotine ST products intended for novice or inexperienced users mask ST harshness and reduce the likelihood of cessation after a negative first experience [14, 15]. Furthermore, market positioning of ‘starter’ products

simultaneously reinforces the positions of higher nicotine yield brands, which are often strategically marketed to more experienced and established ST users [36]. Adolescents who use ST may relate to such marketing and aim to progress to use of higher-nicotine brands in order to gain legitimacy among peers as a mature and experienced ST user.

The wide range of flavors and varieties, including seasonal offerings, provided young ST users a frequently updated set of product choices, potentially encouraging further experimentation and continued ST use. For some, this period of experimentation could give way to brand loyalty, as a way of expressing personal identity, and preferences [25]. For this population of adolescent males, the ability to project an image of maturity and independence was a major appeal of using ST [37]. The tobacco industry has historically promoted their products by using images that communicate freedom and autonomy. Pollay described the availability of various tobacco products as a way for users to employ the identity and personality of the brand [38]. Perceived superiority of particular brands likely reflected peer influences, reinforced by tobacco industry marketing and promotion. For example, tobacco packaging has been shown to facilitate brand recognition, consumer attention, and social identity [26, 39]. The use of seasonal or 'limited edition' packaging by the tobacco industry has also been perceived by adults to be more appealing and more likely to attract youth than 'plain' packaging [40].

In addition to tobacco packaging, availability of different ST flavors influenced participants' ST-related perceptions. Some participants viewed flavored and unflavored ST products in contrast, developing a perception that unflavored products were more 'natural' and free from chemical additives. Just as consumers may associate natural food additives with fewer health concerns [41], some ST users may attribute less risk to supposedly unflavored tobacco. However, many compounds, including high intensity sweeteners, are found at comparable levels in flavored and unflavored ST products [42, 43]. The level of nicotine, carcinogens, and other constituents in flavored and unflavored ST products vary greatly across brands [44], and are not necessarily lower in

unflavored products. A study of adolescents and young adults found that ST packaging that included a flavor descriptor was not associated with perceived health risks [23]. It is possible that some adolescents perceive flavored ST products to have equal health risks due to the artificial nature of the flavoring itself. Research evaluating flavored ST products and perceived health risks is needed to better understand how tobacco flavoring influences perceptions of harm among this population.

There are limitations of this study. Though the qualitative design allowed participants to express nuanced ST-related perceptions and experiences in their own terms, it did not allow for generalizable quantitative measurements, such as the prevalence of ST use among rural male adolescents. The qualitative design allowed researchers to understand in rich detail phenomena that are embedded in the local context of rural communities in California; however, the themes that emerged might not be representative of all rural communities. Similarly, this study sample might not exemplify the typical ST user in these schools. Finally, as with any qualitative study, analysis required subjective interpretation by the researchers. Several strategies were used to mitigate potential biases in interpretation, including independent coding and frequent critical discussions.

Findings from this study carry a number of regulatory and educational implications. First, the availability of flavors and seasonal offerings seemed to encourage experimentation and continued ST use among participants. These findings illustrate that restrictions on the flavoring ST products, not unlike the current ban on flavored cigarettes, has the potential to reduce ST appeal among adolescents. Second, seasonal promotions and time-limited offerings appeared to attract the adolescents' attention, stimulate interest in ST products, and generate urgency to purchase. This finding has not been widely reported and deserves further study, as potential regulation of special promotions and offers could prove effective in reducing youth ST susceptibility. Notably, some participants perceived ST flavorings to have 'unnatural' or 'artificial' ingredients. Messaging campaigns aimed at the misperceptions that ST is a 'natural' (and therefore 'safe') product could help

adolescents make more informed decisions about their ST use. In 2016, the FDA launched a new component of ‘The Real Cost Campaign’ focused on educating rural, white, male teenagers about the negative health consequences associated with all forms of ST [45]. In addition to information about the health risks associated with ST, the campaign highlights the presence of artificial additives found in ST. Similarly, public health workers, educators and health professionals in rural communities should talk to youth about their tobacco related perceptions and experiences in order to provide messages and interventions that appropriately address the specific needs of rural youth.

Conclusion

ST product characteristics may have specific roles in influencing adolescents’ ST-related perceptions and behaviors. Particular flavors, packaging and other product characteristics appeared to promote curiosity, experimentation and peer acceptance, and were associated with perceived levels of nicotine and additives contained in the products. Tobacco control and communication efforts aimed at such characteristics have the potential to improve the health of rural youth. For example, regulatory action banning the availability of flavored and seasonal ST products has the potential to positively influence ST related perceptions and behaviors. Additionally, health communication strategies aimed at accurately addressing adolescents’ perceptions about ST product characteristics may help reduce its appeal and use among this vulnerable population.

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Conflict of interest statement

None declared.

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