

# Adult cigarette smokers' expectations, reactions, and future intentions toward reduced nicotine content cigarettes

*Andrea Rae Vansickel, Jan Angel*  
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**Altria**

Altria Client Services

# Background and Introduction

- FDA is considering a cigarette nicotine standard to make them “minimally or nonaddictive.”
- To date, studies suggest potential unintended consequences of a nicotine standard, such as:
  - Misperceptions of risk and false beliefs about reduced nicotine cigarettes (e.g. Byron et al., 2019; O’Brien et al., 2017; Mercincavage et al. 2017).
  - Illicit trade/black market purchasing of normal nicotine cigarettes (e.g. Ribisl et al. 2019)
- Recent research by the CDC has reported public support for a nicotine standard by asking the question: *“Do you favor or oppose requiring cigarette makers to lower the nicotine levels in cigarettes so that they are less addictive?”* (Ali et al., 2019)
- The CDC study and other previous work lack relevant contextual aspects for respondents, such as the amount of nicotine reduction being considered (98%) for all U.S. cigarettes, corrective/factual statements on the harm of reduced nicotine cigarettes, or prototype usage within the context of a nicotine standard.



# Study Objectives

- To understand adult cigarette smokers' reactions to the concept of FDA's proposed nicotine standard prior to and after use of reduced nicotine prototype cigarettes including:
  - Perceptions of a proposed standard and future very low nicotine (VLN) cigarettes
  - Expectations of a VLN cigarette experience
  - Reactions to the smoking experience of reduced nicotine prototypes
- To characterize adult cigarette smokers' anticipated future behaviors if the FDA's proposed nicotine standard is enacted

# In-Context Research Method

- Combines ethnographic observation with individual interview and group discussion techniques in the context of naturalistic *ad libitum* smoking experience
  - The social environment simulates occasions in which adult smokers may typically choose to smoke
  - *Ad lib* smoking in this environment approximates a real-world experience
  - Discussions are facilitated by a trained moderator
  - Trained observers capture behavioral observations and verbatim quotes from participants throughout the session

# In-Context Research Setting and Flow

## Check-In and Rescreening

Participants are pre-recruited by a local research facility. Participants arrive at the venue, check in, and verify info.

## Introductions and Context Setting

Moderator gathers the group to explain the set up and asks intro questions then reads the context statement out loud



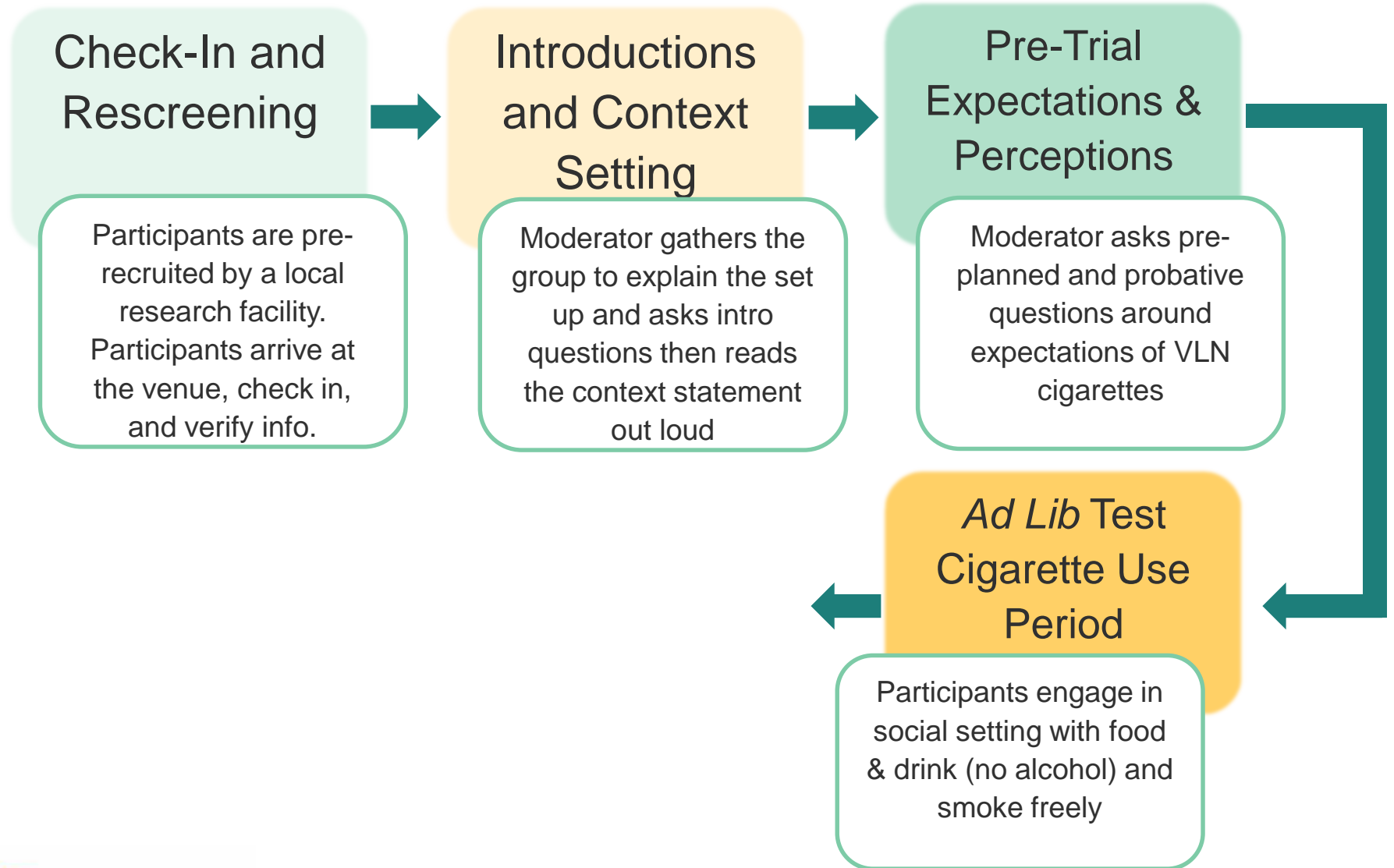
# In-Context Research Setting and Flow

Cigarettes contain nicotine. Nicotine is addictive.

The Food and Drug Administration (FDA) is an agency within the US government that sets rules for the tobacco industry. The FDA may require cigarette companies to lower the amount of nicotine in all brands of cigarettes. This would include your brand of cigarettes. The FDA could require a much lower nicotine level than what is in the cigarettes you smoke now. The level might even be 90-98% less than some cigarettes today.

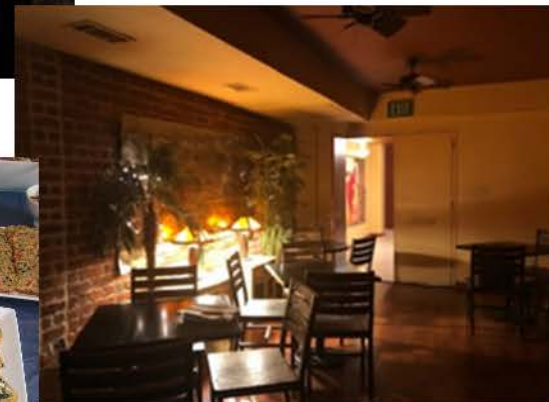
Many cigarette brands will still be available, but the product inside the pack would have a lower amount of nicotine. We do not know if FDA will make such a rule or when it might begin. If they make such a rule, you will not be able to buy cigarettes with the same amount of nicotine you smoke today. The cigarettes that you are about to try contain a lower level of nicotine than your current brand of cigarette

# In-Context Research Setting and Flow





# In-Context Research Setting and Flow





# In-Context Research Setting and Flow

Check-In and Rescreening

Introductions and Context Setting

Pre-Trial Expectations & Perceptions

*We would like to emphasize that in conducting this research, we were not trying to market, sell or promote a tobacco or nicotine product to you. Lower nicotine cigarettes should never be viewed as an alternative to quitting all tobacco products. Finally, there is no such thing as a safe tobacco product, including the ones you smoked and evaluated as part of this research.”*

Debrief and Departure

Post-Use Reactions and Perceptions

Ad Lib Test Cigarette Use Period

Moderator reads a debrief statement aloud, requests any questions, and participants are dismissed

Moderator gathers group to discuss reactions to the VLN cigarettes, perceptions, and potential future behaviors

Participants engage in social setting with food & drink (no alcohol) and smoke freely

## 231 Participants in 7 Geographically Disperse Locations

Location	Number of Participants
Wilmington, NC	N = 39, 4 groups
Chattanooga, TN	N = 59, 8 groups
Las Vegas, NV	N = 37, 4 groups
San Francisco, CA	N = 29, 4 groups
Chicago, IL	N = 23, 4 groups
Denver, CO	N = 24, 4 groups
Richmond, VA	N = 20, 4 groups



# Six Reduced Nicotine Cigarette Prototypes

- Prototype cigarettes: nicotine content reduced up to 90%
- 10 and 15 mg tar prototypes
- Three adult smoker populations
- 2 groups of cigarette smokers planning to quit in the next 30 days

## 10 mg Tar Prototypes

## 15 mg Tar Prototypes

Preferred Brand Tar Yield Group	1.3 mg/g Nicotine	2.4 mg/g Nicotine	5.2 mg/g Nicotine	2.4 mg/g Nicotine	4.0 mg/g Nicotine	5.2 mg/g Nicotine
A	0	0	0	N = 34	N = 25	N = 30
B	N = 19	N = 12	N = 16	N = 13	N = 18	N = 20
C	N = 12	N = 4	N = 6	N = 12	0	N = 9

Pre-Trial  
Expectations &  
Perceptions

## The VLN Concept is not well-received by the majority of adult cigarette consumers

- Expect a large sensory deficit in strength/impact
- Concerns of smoking more cigarettes
- Skepticism of why there would be such a standard

*“...like sucking air”*

*“They should make it a choice”*

*“I would have to smoke two, three times as much”*

*“We will all smoke more cigarettes, so the government will get more tax money”*

*“The tobacco companies are going to make a lot more money because we’ll buy a lot more cigarettes”*



Pre-Trial  
Expectations &  
Perceptions

## Many adult cigarette consumers perceive a VLN cigarette would be safer or healthier

*“The FDA is doing it  
because it’s healthier for  
us”*

*“Less nicotine means  
less harmful”*

*“I’ve been wanting to quit,  
this might push me there”*

*“It’s a healthier cigarette”*



## Observations During *Ad Lib* Usage Suggest Behavioral Disruption

- Many participants were observed puffing intensively or smoking cigarettes back to back
  - Adult smokers later corroborated observations, reporting usage of more cigarettes than they typically smoke in the given time or occasion
- Some participants who reported not usually finishing an entire cigarette were observed smoking the reduced nicotine prototypes down to the filter
- Some discontinued *ad lib* use after 1-2 cigarettes, later attributing the sensory deficit as rationale to wait and smoke a “real cigarette”
- Participants were observed trying to “make it work” by breaking off filters, smoking more cigarettes/puffs per cigarette/multiple cigarettes at one time to address a perceived dissatisfying smoking experience

## Most adult cigarette consumers expressed dissatisfaction with the test cigarettes

*“Not a lot of reward for the work you put into it”*

*“I smoked four and still don’t feel like I got anything”*

*“It’s like bad food – afterwards you’re full, but it doesn’t taste good”*

*“I felt like I was chasing the relief”*

*“It’s like a façade of smoking”*

*“It didn’t have a throat hit – I would’ve known something is missing but wouldn’t know it was nicotine”*

*“It’s boring and flavorless”*





Post-Use  
Reactions and  
Perceptions

**Probed for any positive aspect: adult cigarette consumers noted smoothness, “easy to smoke,” quality of taste, adequate if only option**

- Some retained prior concerns of increased consumption
- Others appear to accept lower impact/perceived smoothness

*“The more I smoked it, the more I liked it. I got acclimated to the taste”*

*“It had more flavor than I thought it would but I did smoke more because it wasn’t satisfying”*

*“It was smooth, not raspy”*

*“It has a light, smooth, low aftertaste, not much of a head rush.”*

*“I liked it, it was smooth; I would smoke them all day”*

*“If it was the only thing on the market I’d still smoke it.”*

*“Overall, it was solid, something I could get used to.”*

*“I’d smoke them if I was drinking, but I’d smoke the whole pack”*



Post-Use  
Reactions and  
Perceptions

## Adult cigarette consumers express a breadth of potential unintended consequences

- Concerns of youth appeal
- Implications of lower perceived sensory impact
- Preference for higher tar (perceived strength) prototypes

*“A new smoker would smoke these and like them; there’s no harshness, they wouldn’t cough”*

*“For the health reasons it’s a good enough product – I would switch to them”*

*“I don’t think I would need to quit” – Adult cigarette consumer planning to quit in the next 30 days – on plans to quit if these products become available*

*“I could chain-smoke these when I’m stressed without getting a headache”*

*“I was smoking more than I should in an hour”*



## Post-Use Reactions to a Potential Future VLN Scenario

- Initially some adult cigarette consumers say they may quit, and replace cigarettes with other tobacco or non-tobacco products
- Upon reflection, most adult smokers state that they would likely continue to smoke, would try to find the most acceptable cigarette, and hope to adapt to VLN cigarettes
  - Some felt that they might cut down the amount that they smoked
- Many believe that VLN cigarettes would increase their use of other tobacco/nicotine products (e.g., NRT, vapor, cigars, MST)
- Regional differences in likelihood and choices of alternative products to augment smoking
  - Social norms
  - Availability of sensorially acceptable alternative products



# Breadth of Potential Unintended Consequences

- Many adult smokers believe that lower nicotine = lower harm
- Some suggest that VLN cigarettes may serve as an entry point into the category for non-smokers
  - Misperceptions of risk
  - Perceived airiness
- There was considerable indication that many smokers would increase their cigarette consumption



# Breadth of Potential Unintended Consequences

- Intention to find the most acceptable cigarette included consideration of:
  - Illicit sources (e.g., internet, local sources, foreign countries, home grown)
  - Higher tar/different brand cigarettes
- Adult smokers expressed likelihood to continue to smoke in a VLN scenario, and augment with polycategory use
  - Other tobacco products (e.g., vapor, MST, cigars)
  - Non-tobacco products (e.g., NRT, cannabis, alcohol, caffeine)
- Adult cigarette consumers with quit intentions were divided:
  - Some felt that VLN cigarettes would be useful when they choose to quit smoking
  - Others felt VLN may deter them from quitting given their perceived lower risk

# Limitations of Study

- Qualitative
- Not nationally representative
- Intentions in response to a potential future scenario
- Based on prototype cigarettes
  - with nicotine content higher than 0.4 mg/g
  - with sensory deficits



# Summary and Conclusions

- The majority of participants experienced deficits in sensory performance and tobacco satisfaction, regardless of cigarette prototype
- Some adult smokers said that they may quit or cut down on cigarettes
  - but would likely supplement with alternative tobacco product usage
- Many adult smokers indicated they would continue to smoke
  - try to find the most acceptable cigarette available
  - raised concerns that they would smoke more cigarettes
- Numerous potential unintended consequences were indicated, including an illicit market, misperceptions of risk, increased smoking, and increases in other consumptive behaviors including cannabis, snacking, and coffee





# References

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