The Cigarillo Purchase Task: A Qualitative Analysis

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Abstract

The cigarillo purchase task is a novel procedure modeled after the cigarette purchase task. This procedure can be used to assess the reinforcing value or the positive behavioral response to cigarillo products. Little research has used the cigarillo purchase task and the aim of the current study was to evaluate users' understanding of and thoughts about a cigarillo purchase task. A convenience sample of young adults ages 21-28 were recruited online to participate in semi-structured interviews about cigarillo and e-cigarette use. The analysis included responses from participants who were current users of cigarillos (n = 7) or cigarillos and e-cigarettes (n = 8). Audio-recorded interviews conducted remotely were coded by two researchers and thematic analysis was implemented. Emergent themes were related to purchasing price, budget, normal cigarillo usage, cigarillo pack size, and timeframe of use. Increased use was mentioned when products were free. When cigarillos were expensive, others introduced strategies to circumvent the 24-hour purchase period of the task. Comments also were made that budget is important and using a calculator during the task is helpful. Finally, some participants commented that selling in individual units was not realistic and made it more difficult to purchase. Results suggest modifications to the task, including depiction of cigarillo pack size and use of a budget calculator. These enhancements support usability and replicability of results when implementing this purchase task in health behavior and tobacco control research.

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Introduction

In the field of tobacco control, the cigarette purchase task is an often used approach, and results are correlated with cigarette smoking cessation (Murphy et al., 2017; Secades-Villa, Pericot-Valverde, & Weidberg, 2016), nicotine dependence, and number of cigarettes smoked per day (Gonzalez-Roz, Jackson, murphy, Rohsenow, & MacKillop, 2019). Similar purchase task procedures have been used to evaluate demand for a variety of psychoactive commodities including cigarettes, heroin, and alcohol (Strickland, Campbell, Lile, & Stoops, 2020; Zvorsky et al., 2019). The cigarillo purchase task is a novel procedure modeled after the cigarette purchase task and used to assess the demand or abuse liability or addictive potential of cigarillos among users of the product. The cigarillo purchase task specifically asks participants hypothetically to purchase cigarillos at prices ranging from free to expensive. This type of task provides data on the demand for nicotine and tobacco products, and is simple, straightforward, and takes little time for participants to complete.

Reed et al. (2020) indicate that the cigarette purchase task in the published literature contains a wide array of procedures and parameters hindering the replicability of

study results. Furthermore, little research specifically has used the cigarillo purchase task (Bono et al., 2022; Simuzingili et al., 2021) though one validation study in dual cigarette and cigar users has been published finding that purchase task indices of reinforcing value (i.e., addictive potential) were associated with nicotine dependence and number of cigars smoked per month and per day (Mead-Morse et al., 2022).

During 2013-2014, 7.5% of youth in a nationally representative sample used any cigar type in the past 30 days (Kasza et al., 2017) and 6.5% used cigarillos specifically. In a cohort study of college students, nearly 5% used cigar products (Loukas, Batanova, Fernandez, & Agarwal, 2015) demonstrating a need for policy driven approaches to decrease consumption, including research methods that forecast the effects of policy pre-implementation. One Advanced Notice of Proposed Rule Making by Food and Drug Administration targeting flavor availability in cigarette and cigar products (Hunt, 2021) underscores the importance of studying this timely and important task. The cigarillo purchase task is used to measure the addictive potential of cigarillos and can be used to study different policy scenarios that have been or may be implemented, including flavor availability. The task can be used to determine baseline levels of addictive potential among cigarillo users and determine if these levels can be changed with various reduction or cessation motivations and interventions (including policies) along with comparisons between certain demographic, tobacco use, and clinical variables.

A qualitative analysis of the perceptions and cognitive processes surrounding a cigarillo purchase task and associated explicit instructions could help researchers use understandable and uniform versions of the task to increase replication of results. Qualitative research can be useful for understanding the thoughts and actions of participants as they complete behavioral tools and methods. The aim of the current study was to evaluate understanding of and thoughts about a nine-price cigarillo purchase task using in-depth semi-structured interviews and to apply the findings to outline cigarillo purchase task components and features for future use.

Methods

We recruited a convenience sample of young adults ages 21-28 (n = 29) between May and July 2020 through online advertisements (such as Reddit, Craigslist, and institutional newspapers and listservs). The overall study sample included individuals who had never used any tobacco/nicotine products and current users of cigarillos and/or e-cigarettes, referred to as dual-users. Eligibility criteria for the present analysis included being a user of cigarillos (n = 7), defined as having smoked two or more cigarillos within the past week at the time of screening, or being a current user of both cigarillos and e-cigarettes (n = 8), defined as having smoked at least one cigarillo and one e-cigarette or vape cartridge, pod, or refill within the past week at the time of screening. These use criteria ensure that included participants are frequent users of the products as opposed to less frequent users. Inclusion criteria also included being 21-28 years of age. The final analytic sample included 15 current and dual-cigarillo-users. We did not include cigarette smokers as our research questions were not about cigarette products and were instead focused on cigarillo products and flavors.

Our participants provided verbal consent prior to the one-on-one semi-structured cognitive interviews about cigarillo and e-cigarette perceptions and limited demographic questions. Participants received the consent form ahead of time by email prior to the scheduled interview. Interviews were

Figure 1

The nine-price cigarillo purchase task including instructions.

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1. How many cigarillos would you buy and smoke in 24 hours if cigarillos were free?

2. How many cigarillos would you buy and smoke in 24 hours if cigarillos were $0.12 each?

3. How many cigarillos would you buy and smoke in 24 hours if cigarillos were $0.25 each?

4. How many cigarillos would you buy and smoke in 24 hours if cigarillos were $0.50 each?

5. How many cigarillos would you buy and smoke in 24 hours if cigarillos were $0.75 each?

6. How many cigarillos would you buy and smoke in 24 hours if cigarillos were $1.00 each?

7. How many cigarillos would you buy and smoke in 24 hours if cigarillos were $2.00 each?

8. How many cigarillos would you buy and smoke in 24 hours if cigarillos were $4.00 each?

9. How many cigarillos would you buy and smoke in 24 hours if cigarillos were $8.00 each?

Note.

Assume that:

● The available cigarillos are your usual brand and flavor.

● You have the same income/savings that you have now.

● You would consume the products that you request on that day (you cannot save or stockpile products for a later date).

● You have NO ACCESS to any other tobacco or nicotine products (e.g., e-cigarettes, cigarettes) other than the cigarillos offered at these prices.

conducted by video conference using Zoom software (Zoom Video Communications Inc., 2020) from May to July 2020. Interviews lasted 60-90 minutes and participants responded to questions regarding familiarity with and use of tobacco products, perceptions of, preferences for, and rankings of cigarillo and e-cigarette flavors, perceptions of the harms of tobacco products as well as cigarillo and e-cigarette flavors, purchase behaviors, COVID-19's impact on tobacco use and purchasing, exposure to tobacco advertisements, and motivations to quit smoking. The interview included a nine-price cigarillo purchase task (Figure 1) displayed on the screen in front of them. This task was modified from the cigarette purchase task often used in decision-making research (Reed et al., 2020). Participants verbally provided responses to the questions in the task, talked through their responses to the questions, and answered additional questions about the task including: "What were you thinking about when you selected the number of cigarillos you would purchase?" "What were you thinking about the price increases as you were asked these questions?" "What was hard about it?" and "What did you think about the assumptions that were listed before the questions?" The questions were not pilot-tested. Participants received a $50 gift card for their time.

Transcripts of the audio-recordings using Zoom software were reviewed by the research team to verify accuracy. An initial codebook was developed using inductive and deductive methods (Miles, Huberman, & Saldan, 2014). Using NVivo 12 (https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home/), two researchers coded five randomly selected transcripts. The researchers discussed and reconciled discrepancies and refined the codebook after each transcript until strong intercoder-reliability was achieved (overall kappa .84). All remaining transcripts were independently coded using the final codebook.

We used a thematic analysis to examine responses to the purchase task. Responses to the task were assessed both within and across cases. We also examined themes around purchasing and use from other sections of the interview in relation to the themes from the purchase task.

Results

Participants (n = 15) were 46.7% female with a mean age of 24.9 years; 46.7% self-identified as non-Hispanic Whites, and 33.3% self-identified as non-Hispanic Blacks. The majority (53.3%) held a bachelor's degree and were working as a paid employee (66.7%). Sixty percent reported one person smoking in the household, 33.3% reported two people, and 6.7% reported four people smoking in the household.

Themes that emerged from the qualitative cognitive interviews were related to purchasing price, access to other nicotine products, timeframe of use, normal cigarillo usage, budget, and cigarillo pack size. Table 1 includes themes and subthemes, including a description of each.

Purchasing Price

Overall, the purchase amounts for all 15 participants decreased as the price increased, with eleven decreasing to 0 purchases at the highest cigarillo price. Four individuals remarked that they would quit using cigarillos at the more expensive prices. For example, one participant noted: "But, if they doubled in price, I really don't think I would smoke" (ID 1, cigarillo-only sample, female). Although responses to the task followed the traditional decreasing purchasing pattern across increasing price, two participants

Table 1

Themes and descriptions from cognitive interviews regarding the cigarillo purchase task

Theme	Theme Description
Purchasing Price	
Decrease amount as prices increased	Answers to each price-related question of the nine-price cigarillo purchase task and the associated pattern of responding.
Purchase more in the free/lower prices than usual use	Quotes indicating that purchasing or use would be different (and generally far greater) if following the instructions of the task, in which cigarillos were free for one question.
Access to other nicotine products	Statements about how use of other nicotine products including access or lack of access would impact their answers on the nine-price cigarillo purchase task.
Time Frame of Use	
Limiting amount	Quotes regarding the 24-hour time frame of use, specifically concerning limiting amount of use.
Price for only 24 hours	Answers considering the task and associated prices (particularly high prices) and work arounds for purchasing given the 24-hour price.
Assumption of Stockpiling	Statements regarding the instructions of the task, specifically the assumption that there is no stockpiling allowed and this is not the way purchasing usually occurs.
Normal Cigarillo Use can Vary	Quotes asserting that participants usage may vary with psychosocial events, such as stress and social engagements.
Budget	Participant statements regarding the budget, how realistic it is when compared to their normal budget. Some participants calculated their normal use and extrapolated from there.
Pack Sizes	Quotes concerning the size of the pack generally purchased or seen when purchasing as compared to the individual unit in the nine-price cigarillo purchase task.

increased the number of products they would purchase after responding when cigarillos were free. One of those participants noted that their amount increased. The other participant commented after a probe from the interviewer regarding the increase: "Oh the last one was free…" (ID 13, cigarillo-only sample, female), and then went back to increase the amount they would purchase when cigarillos were free.

Although not all participants described their typical cigarillo purchase or use amounts, of those participants who did, most said they would consume a greater number of cigarillos when at low prices than their usual consumption. Four of the participants noted during the task that they would purchase a lot of cigarillos or more than they usually consume when they were free or at a lower price. One participant stated: "I mean, if it was free I'd probably smoke more than I smoke regularly" (ID 15, cigarillo-only sample, female).

Access to Other Nicotine Products

Some participants noted one of the task assumptions about not having access to other nicotine products. When discussing their responses to the task, two participants who were dual-users of both cigarillos and e-cigarettes mentioned taking this assumption into consideration. In addition to use of e-cigarettes, many participants used some amount (from occasional and social to regular use) of other tobacco and nicotine products such as cigarettes and hookah. One dual-user commented: "…trying to like judge like how many cigarillos would kind of fit the, my regular usage of the other tobacco products" (ID 5, dual-user sample, male).

Timeframe of Use

Participants also considered the 24-hour time-period in selecting the amount noting it was a factor that limited the amount a participant would purchase. "And then the fact that you have to consume the products, even on that day, obviously matters. I'm not gonna, like, for the free question, just because it's free, I'm not gonna, like, smoke a whole pack because that doesn't even sound enjoyable to me" (ID 8, cigarillo-only sample, female).The timeframe also was mentioned by three participants when the prices were more expensive, with the perception that the price was higher only for 24 hours or could change, noting either using less: "As the price increased, I think about is it worth it for me to buy multiple or just few and seeing if the price will reduce later on" (ID 7, dual-user sample, male). Another noted the ability to purchase more if the price was only for 24 hours: "But if it's only this price $8 for 24 hours, I can sacrifice just 24 hours and not get as much if it's that price for that, just that 24 hours" (ID 14, dual-user sample, female). Related to the timeframe, one participant commented on the assumptions noting that not allowing stockpiling during the task was not realistic stating: "I think the only one that didn't make sense would be the fact that you could only request it on the same day. You can save or stockpile because I think a lot of people do that. Well, at least I do that and that's what everybody else does but like if, they're, if they have like a full box of the honey Games or honey Backwoods or the honey flavored Swisher Sweets, I'll buy the whole box because then it saves me gas because I don't have to go back to the store, and I'd have a regular supply" (ID 13, cigarillo-only sample, female). Another participant presented the strategy of making the cigarillo last longer than usual when prices are more expensive.

Normal Cigarillo Use Varies

Observations that their normal cigarillo use varies came from four participants. One participant indicated that they use a single cigarillo over multiple use sessions and others said that urges are product or brand specific. One participant said: "I feel like if they were free, that wouldn't really, that wouldn't really change how many I smoke in 24 hours because it all varies really with stress levels and certain things" (ID 3, dual-user sample, male).

Budget

Others (two participants) commented on their budget and how much they can afford: "I know how much I can and want to spend on my smoking products. So, once it got past that threshold, like I already was kind of on autopilot like, all right, I can't afford anything past this amount of money per day to smoke so I kind of just fit it into my own situation" (ID 5, dual-user sample, male) was said by one participant. Another participant mentioned that doing the math to compare to their usual purchase price was difficult and mentioned using a calculator to do the math to calculate the price for an individual product: "So, that's what you divide it, why can't I do math right now. So that's 4.50 cents divided by three. I'm just going to do it on my phone because I never really thought about it quickly. So that's 37 cents a cigar" (ID 8, cigarillo-only sample, female).

Pack Size

A few participants asked for clarification of whether the amounts were for packs or one cigarillo, with one participant commenting on the purchase price being for an individual item, citing that you cannot buy cigarillos individually, but instead must buy in a pack. She stated: "Like you can't really buy a single cigarillo" (ID 11, cigarillo-only sample, female). Descriptions of pack size, though, did vary between participants who discussed it throughout the interview, with reported sizes ranging between 2 and 12 cigarillos in a pack.

Discussion

Results regarding the number of cigarillos participants reported they would purchase over increasing price are consistent with data from other purchase tasks showing decreased purchasing as price increased. Qualitative results suggest the use of pack size indicators, a more relatable timeframe, and budget calculation assistance would be beneficial for participant understanding and to be more consistent with typical use patterns for cigarillo products.

Based on these findings and consistent with recommendations for the cigarette purchase task (Reed et al., 2020), we recommend using pack size indicators along with individually-priced items to present the task using a realistic pack size, while staying with the status quo of collecting and analyzing individual unit data. More specifically, including the standard pack size and associated price directly beside the individual unit cost is beneficial and supported in the cigarette purchase task literature (Reed et al., 2020). Data on the e-cigarette purchase task suggest that preferred purchase units (i.e., puffs or mL's) depended on the type of device used (i.e., disposable, cartridge, tank systems) (Cassidy, Tidey, Colby, Long, & Higgins, 2017) and the mL purchase task included both per mL and 15 mL bottle prices (Cassidy, Long, Tidey, & Colby, 2020) consistent with suggestions for the cigarette purchase task and those presented here. Cigarillo pack size is not a product standard yet regulated by tobacco control policies, so this course of action requires additional input as demonstrated by

the three published studies using a cigar/cigarillo/little cigar purchase task (Bono et al., 2022; Simuzingili et al., 2021), including a validation study (Mead-Morse et al., 2022), that did not use this feature of the method. The most common pack size appears to be a two-pack (Delnevo, Giovenco, & Miller Lo, 2017), and therefore, may be the best for use in the cigarillo purchase task.

This study has limitations to note. First, our sample size was small which is characteristic of qualitative work, but limits generalizability of our findings. Second, we did not sample individuals who were not cigarillo users given the nature of the purchase task. That is, we were asking participants to buy (hypothetically) cigarillos and those that did not use cigarillos would be unlikely to purchase cigarillos under normal circumstances. Future work could verify this assumption, interviewing non-users of cigarillos to determine if their thought processes and patterns are similar to those of current users. Future research also could investigate different policy implications, including flavor availability. Using the cigarillo purchase task to evaluate purchasing of both flavored and unflavored cigarillos could be a method to inform stakeholders about the behavior of consumers under these varied scenarios.

Participants also presented workarounds for the 24-hour purchase and use time period, including making one cigarillo last longer, buying fewer over 24 hours, although one participant said if the price were expensive for one day only, then they could afford it. Timeframe of use for cigarillos may be different than for other nicotine and tobacco products. Given that they are sold in smaller packages and consumed less often than cigarettes, which is the most used purchase task, researchers may want to consider using an extended timeframe for this specific product. However, recommendations for other purchase tasks (Reed et al., 2020) do

include a 24-hour timeframe with the provisions outlined in the instructions in Figure 1 as do the other published studies using this task with cigar products (Bono et al., 2022; Mead-Morse et al., 2022; Simuzingili et al., 2021). Given that the prevalence of cigarillo use is high in both youth and adults (Kasza et al., 2017; Rostron, Cheng, Gardner, & Ambrose, 2020) and that nicotine product demand can change with varied experimental manipulations (e.g., stress, magnitude, interventions) (Acuff, Amlung, Dennhardt, MacKillop, & Murphy, 2020), it is imperative to have a standardized set of instructions and task features for commodity purchase tasks, including cigarillos. This is also important for replicability of results, and because the cigarillo purchase task is novel, presenting standardized universal structure including instructions and question format will be important for future work.

Implications for Health Behavior Research

Use of the cigarillo purchase task has increased in human decision-making research. Current literature using the tool reported different features in construction and implementation of the task. Replicability of results can be influenced by these characteristics; thus, evaluation is important for future work.

Discussion Questions

What is the cigarillo purchase task and what does it measure?

Which characteristics of the cigarillo purchase task were considered most important by participants?

What implications are there for future decision-making research?

Ethical Approval

The Institutional Review Board at Case Western Reserve University approved this study protocol. Participants completed a consent form.

Conflict of Interests

All authors report no conflicts of interest.

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