Smokers' curiosity for tobacco-related trivia aids memory of tobacco-related information

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Abstract

Curiosity promotes learning. Two open questions concern the extent to which tobacco smokers exhibit curiosity about smoking-related health information and whether this curiosity can facilitate recall of this information. Participants (*n*=324 smokers; *n*=280 non-smokers) performed a Trivia Guessing Task wherein participants guessed the answers to general trivia and smoking-related trivia questions and provided ratings of their curiosity prior to viewing the answers to the questions. A subset of participants (*n*=121 smokers; *n*=97 non-smokers) completed a surprise Trivia Memory Task one-week later and answered the previously-viewed questions. Results indicate that smokers are no less curious about smoking-related trivia than they are about general trivia and that curiosity about the answer to smoking-related trivia is associated with more accurate recall of smoking-related trivia answers one week later. Findings suggest that engendering states of curiosity for smoking-related information may facilitate retention of that information in smokers.

Keywords: curiosity; memory; health communication; tobacco

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Curiosity is an epistemic emotion characterized by a desire to fill the knowledge gap between what one knows and what one wants to know (Berlyne, 1954; Loewenstein, 1994). The field of health communication is cognizant of the powerful motivational force of curiosity and its ability to impact health behaviors such as cigarette smoking. In the vein of historical themes of curiosity placing individuals at risk for poor outcomes (e.g., killing the cat, opening Pandora's box, Lot's wife), health communication efforts aim to quench youths' curiosity about smoking through warnings about the risks and harms of smoking, often in attempts to counter curiosity-eliciting tobacco product advertising (Portnoy et al., 2014). This approach is warranted in the light of longitudinal studies indicating that curiosity about smoking is a risk factor for smoking experimentation and initiation (Guo et al., 2013; Nodora et al., 2014; Pierce et al., 2005) and that curiosity about smoking is among the most common reasons people retrospectively report for beginning smoking in the first place (Sarason et al., 1992).

In contrast to the investigation of curiosity as a risk factor for smoking initiation, the role for curiosity at the dependence end of the tobacco-dependence time course has received little attention. Models of health behavior change view beliefs about a behavior as important influences on intentions for behavior change and eventually behavior change itself (Ajzen, 1991; Fishbein & Cappella, 2006). The more one believes that smoking cessation will lead to positive outcomes and prevent negative outcomes, the more likely one will adopt a favorable attitude to performing the behavior. A common goal of health communication efforts designed to promote smoking cessation, then, is to create, change, or reinforce beliefs about the risks associated with smoking and the benefits of smoking cessation by disseminating information (Wakefield et al., 2010). In the ideal scenario, information from health communication efforts is retained beyond

the immediate exposure, allowing it to inform future decisions to engage in or disengage from smoking behavior.

States of curiosity are associated with better learning and may play a role in the desired retention of health information in health communication interventions. Across a range of studies, trivia questions that induce curiosity about the answer are better recalled up to 2 weeks later than trivia questions that are associated with lower levels of self-reported curiosity (Fandakova & Gruber, 2021; Galli et al., 2018; Wade & Kidd, 2019). Mechanisms underlying this learning effect of curiosity have been interpreted from the perspective that the information one is curious about is valued. Indeed, individuals will wait and pay for information about which they are curious and that has no immediate instrumental value (Bennett et al., 2016; Cabrero et al., 2019). This value attached to information is thought to enhance subsequent memory for information, just as other incentives such as money enhance memory, via activity and interactions between the substantia nigra/ventral tegmental area and hippocampus (Adcock et al., 2006; Gruber et al., 2019; Kang et al., 2009).

However, smoking-related information may have special significance for smokers relative to non-smokers in a way that could undermine efforts to target curiosity to enhance memory for smoking-related facts. Learning about the negative outcomes associated with cigarette smoking can induce an unpleasant tension in smokers resulting from holding beliefs that are inconsistent with their smoking behaviors (i.e., cognitive dissonance; Festinger, 1957; Fotuhi et al., 2013). It is possible that the anticipation of this tension may undermine smokers' curiosity to resolve smoking-related knowledge gaps. However, individuals are motivated to close information gaps even if satisfying this curiosity comes with negative outcomes, such as

exposure to electric shocks (Hsee & Ruan, 2016; King et al., 2020) and information likely to promote negative affect (Kruger & Evans, 2009; Oosterwijk, 2017).

This sometimes costly desire to fill a knowledge gap is thought to reflect motivational mechanisms of incentive salience (FitzGibbon et al., 2020; Litman, 2019). Incentive salience refers to a motivational feeling of 'wanting' in anticipation of an outcome that is separate from the hedonic response of 'liking' (Berridge, 2012; Berridge, 2007). Thus, although smoking-related trivia may be unpleasant to smokers, the role wanting plays in the motivation one experiences to seek out information in order to overcome the feeling of being deprived of knowledge (Kobayahi & Hsu, 2019; Lau et al., 2020; Shin & Kim, 2019) suggests that smokers will still experience curiosity to resolve smoking-related knowledge gaps.

The Present Study

The present study tests the extent to which the memory-enhancing effects of curiosity for trivia extends from non-smokers and general trivia questions to smokers and smoking-related trivia. We present smokers and non-smokers with both general and smoking-related trivia questions, asking them how curious they are to know the answer. After collecting pre-answer curiosity ratings, we then show participants the answer. A week later, we present participants with the same trivia questions and ask them to provide the answers in a memory task. We hypothesize that smokers will show greater memory during this memory task for both general trivia and smoking-related trivia questions about which they report they were curious to know the answer in the trivia guessing task they undertook in the previous week.

Method

We used data from the Curiosity And Tobacco (CAT) Study. All data reported on in present study is available at the Open Science Foundation: https://osf.io/cx7uq/. All research was conducted in accordance with the institutional review board at the University of Pennsylvania.

Participants

Participants were recruited through Qualtrics. Individuals were eligible if they were aged 21 years or older. Participants reporting smoking 100 or more cigarettes in their lifetime and smoking greater than 1 day per week in a typical week were identified as smokers. If participants reported not smoking 100 cigarettes in their lives, never smoking in their lives, or reporting smoking 0 days per week, they were classed as non-smokers. Non-smoker (*n*=280) and smoker (*n*=324) demographic characteristics, including age, gender, and race/ethnicity, are shown in Table 1.

Procedure

The protocol began with a consent form. After consenting, participants completed a Trivia Guessing Task. After completing the task, participants completed scales to collect demographic information and information about their smoking behavior. One week following completion of the Trivia Guessing Task, participants were sent a Trivia Memory Task.

Measures

We used participants' reports of demographic characteristics, smoking behavior, and data from the Trivia Guessing Task and the Trivia Memory Task.

Trivia Guessing Task. Participants completed an adaptation of an existing trivia task (Fastrich et al., 2018). After providing consent, participants completed a practice trial of the task. After this practice trial, 30 trivia questions were presented to participants; 15 were general trivia

questions and 15 were tobacco-related questions (see supplement for the questions used). Trivia questions were presented in a random order for each participant. On each trial (Figure 1), a trivia question was presented, and participants typed a guess of the answer to the question in a text box. Participants were encouraged to report their best guess but were told that they could leave the field blank if they could not come up with any answer. Once participants pressed the next page button (or after 15 seconds had passed), they were asked to rate their confidence in their answer ("Rate your confidence in your guess") and their pre-answer curiosity about the question's answer ("Rate your curiosity about the answer") on scales from 1 to 10 ("not at all", "extremely"). After these ratings, participants were shown the correct answer for 5 seconds after which participants indicated their level of interest in the answer ("Rate your interest in the provided answer") on a scale from 1 to 10 ("not at all interested", "extremely interested"). The trivia question was displayed throughout the trial to ensure that participants correctly remembered the trivia question when they provided an answer or ratings.

Trivia Memory Task. Participants completed a Trivia Memory Task (Fastrich et al., 2018) one week after the first session. During this second session, participants were presented with the same questions they had rated in the first session and were asked to recall the answer to the question within 15 seconds (Figure 1). The questions were presented in randomized order. The consent form indicated that participants would be recontacted to complete a second session one week following their first session, but they were not told that the second session would be a memory test.

Data Cleaning and Analysis

The accuracy of participants' guesses in both the Trivia Guessing Task and the Trivia Memory Task was manually determined by the second through fifth authors. Responses were scored as correct or incorrect.

Trivia Guessing Task. As a first step, we tested the extent to which guess accuracy, pre-answer curiosity, pre-answer confidence, and post-answer interest were associated with smoking status (smoker vs. non-smoker), trivial type (general trivia vs. smoking trivia), and an interaction between smoking status and trivia type. We used multilevel models to accommodate the nested nature of the data (30 trivia questions nested in 604 participants). At level 1 (trial-level variables) the formal model equation (using pre-answer curiosity as an example) was constructed as:

$$Curiosity_{it} = \beta_{0i} + \beta_{1i} TriviaType_{it} + e_{it}, \quad (1)$$

where $Curiosity_{it}$ is pre-answer curiosity for person *i* on trial *t*; β_{0i} indicates the expected curiosity on a general trivia trial (trivia type was dummy coded such that general trivia was the reference category) for a non-smoker (smoking status was dummy coded such that non-smoker was the reference category); β_{1i} tests for within-person differences in pre-answer curiosity associated with trivia type; and e_{it} are trial-specific residuals.

Person-specific intercepts and associations (from Level 1) were specified (at Level 2) as:

$$\beta_{0i} = \gamma_{00} + \gamma_{01} SmokingStatus_i + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11} SmokingStatus_i + u_{1i}, \quad (2)$$

where γ denotes a sample-level parameter and u denotes residual between-person differences that may be correlated but are uncorrelated with e_{it}. Parameter γ_{01} tests for between-person differences in pre-answer curiosity based on smoking status and γ_{11} tests for an interaction between smoking status and trivia type. Non-significant interactions were trimmed from final models. Similar multilevel models were constructed for pre-answer confidence and post-answer

interest as outcome variables. For accuracy, a multilevel logistic regression was used due to the binary nature (0=inaccurate; 1=accurate) of the outcome.

Trivia Memory Task. The outcome variable in the Trivia Memory Task was trial-level accuracy (i.e., whether they provided the accurate answer for the current trial or not in the trivia guessing task). Using a logistic multilevel model, we tested the extent to which pre-answer curiosity on the Trivia Guessing Task was associated with trivia question accuracy and the extent to which this association differed depending on smoking status, trivia type, and the interaction between smoking status and trivia type. To allow a focus on within-person associations (i.e., a participant remembers the answer to a question if they rated being more curious than usual about that question), trial level pre-answer curiosity was within-person standardized. On these standardized variables, values of 0 indicated a usual level of curiosity for that participant, values below 0 indicated lower curiosity than usual for that participant, and values above 0 indicated higher than usual curiosity for that participant. We then tested the extent to which curiosity was independently associated with memory, by controlling for pre-answer confidence and post-answer interest in additional models. To account for differences in accuracy, we also controlled for both trial-level accuracy and the proportion of correct responses during the trivia guessing task as a whole. This is important given findings that prior knowledge is a predictor of memory test accuracy (Wade & Kidd, 2019). In additional models, we controlled for age and gender to account for differences across the smoker and non-smoker groups. Inclusion of age and gender did not affect the observed curiosity-recall associations. As such, we present the more parsimonious models below. Cohen's *D* is presented as the effect size estimate and was calculated using the EMAtools package (Kleiman, 2017). Models were fit using nlme (Pinheiro et al., 2020) except for multilevel logistic models which were fit using lme4 (Bates et al., 2015).

Results

We first present results from the Trivia Guessing Task before turning to the Trivia Memory Task. The follow-up task was completed by 218 participants (36.09% of the sample completing the Trivia Guessing Task) consisting of 97 non-smokers and 121 smokers (see Table S1 for demographics of this follow-up sample). Correlations between main variables are shown in Table 2.

Trivia Guessing Task

For pre-answer curiosity (Fig. 2A), no significant interaction emerged between smoking status and trivia type, b=-0.06, p=0.51. As such, the interaction was trimmed from the model. We present the final multilevel model in Table 3. Trivia type was not associated with curiosity, b=0.02, p=0.60. Smokers reported higher pre-answer curiosity relative to non-smokers, b=1.37, p<0.001, d=0.48.

For confidence about their guess (Fig. 2B), no significant interaction emerged between smoking status and trivia type, b=0.07, p=0.35. As such, the interaction was trimmed from the model. We present the final multilevel model in Table 3. Trivia type was significantly associated with confidence, b=0.20 p<0.001, such that participants were more confident about their guesses to smoking relative to general trivia. Smokers reported being more confident about their guesses relative to non-smokers, b=1.74, p<0.001, d=0.66.

For post-answer interest (Fig. 2C), no significant interaction emerged between smoking status and trivia type, b=-0.09, p=0.32. As such, the interaction was trimmed from the model. We present the final multilevel model in Table 3. Trivia type was not associated with interest, b=0.02, p=0.65. Smokers reported more post-answer interest relative to non-smokers, b =1.21, p<0.001, d=0.44.

For accuracy (Fig. 2D), no significant interaction emerged between smoking status and trivia type, b=-0.03, p=0.73. As such, the interaction was trimmed from the model. We present the final multilevel model in Table 3. Trivia type was not significantly associated with accuracy, b=0.13, p=0.05. Smokers were less accurate in their guesses to trivia question answers than non-smokers, b=-0.27, p<0.001, d=-0.24.

Trivial Memory Task

Participants were more likely to accurately answer trivia questions in the Trivia Memory Task when they reported higher than usual pre-answer curiosity for that question in the Trivia Guessing Task, b=0.28, p<0.001 (Fig 3B). This association between curiosity and accuracy remained significant, b=0.11, p=0.02, when covariates (pre-answer confidence, accuracy from the Trivia Guessing Task), trivia type, and smoking status were added to the model (Table 4). Pre-answer confidence was not significantly associated with accuracy on the Trivia Memory Task, b=0.05, p=0.28. Post-answer interest was positively associated with accuracy, b=0.15, p<0.001, such that participants were more likely to provide an accurate answer during the Trivia Memory Task for trials where they expressed higher than usual interest on the Trivia Guessing Task. If participants accurately guessed the answer for a trial during the Trivia Guessing Task, they were more likely to provide an accurate answer during the Trivia Memory Task, b=2.27, p<0.001, and participants who were more accurate on average during the Trivia Guessing Task were also more accurate during the Trivia Memory Task, b=6.28, p<0.001. Smokers were less accurate during the Trivia Memory Task than non-smokers, b=-0.35, p=0.02, and participants were less likely to provide accurate responses to smoking relative to general trivia questions, b=-1.02, p<0.001. There was no evidence that trivia type or smoking status moderated associations

between curiosity and accuracy on the Trivia Memory Task (all *p*-values testing interactions >0.42; see also Figure S1).

Discussion

We examined a potential role for curiosity in the extent to which states of curiosity may facilitate recall of tobacco-related information in adult smokers. Replicating previous studies showing a role for curiosity in aiding the recall of general trivia questions (Fandakova & Gruber, 2021; Galli et al., 2018; Wade & Kidd, 2019), we find that when participants reported being more curious about the answer to a trivia question, they were more likely to recall the correct answer to that question in a surprise recall task a week later. We extended these previous findings by including smoking-related trivia in addition to general trivia and find that states of curiosity were associated with better recall of smoking-related information of the sort often contained in health communication efforts designed to create, change, or reinforce beliefs about the risks associated with smoking and the benefits of smoking cessation information (Wakefield et al., 2010). Notably, both smokers and non-smokers showed evidence of curiosity-facilitated recall of smoking-related information.

The finding that smokers benefited from states of curiosity in their recall of smoking-related information has important implications for health communication efforts. A common goal of health communication interventions is to disseminate information in order to elicit smoking behavior change (Ajzen, 1991; Fishbein & Cappella, 2006; Wakefield et al., 2010). In the ideal scenario, information from health communication efforts is remembered beyond immediate exposure and informs future smoking decisions. In finding that smokers better recall smoking-related information about which they report being curious, the present study suggests that health

communication efforts designed to increase curiosity in viewers may be the most successful in facilitating message recall.

There was no evidence that curiosity-facilitated recall differed across general or smoking-related trivia types or across smokers and non-smokers. This is perhaps surprising given that the smoking-related trivia contained content that might trigger cognitive dissonance in smokers (Festinger, 1957; e.g., "Approximately 1 in 5 deaths in the United States is caused by smoking") with the potential to undermine smokers' curiosity about smoking-related information. However, consistent with the present findings, the broader literature on curiosity indicates that people are motivated to close information gaps even when satisfying their curiosity in this way comes with negative outcomes (Hsee & Ruan, 2016; King et al., 2020). Curiosity in the face of potential negative consequences (e.g., the unpleasant experience of cognitive dissonance) may reflect motivational mechanisms of incentive salience in resolving knowledge gaps (FitzGibbon et al., 2020; Litman, 2019).

The main interest of the present study was to examine potential differences across trivia type and smoking status in the within-person association between pre-answer curiosity and accurate recall. However, there were a number of other findings of interest, including that smokers reported being more curious, more confident they knew the answer, and more interested in the answers to both general and smoking-related trivia questions than non-smokers during the Trivia Guessing Task. This may suggest that the increased curiosity that places youth at risk to begin smoking in the first place may reflect a tendency to experience curiosity more generally that extends into adulthood. This possibility will require longitudinal research to articulate but suggests that curiosity is a character strength of smokers that health communication efforts may leverage (Park et al., 2004). Despite being more curious, more confident that they knew the

correct answer, and more interested in the trivia relative to non-smokers, smokers were less accurate than non-smokers in both the Trivia Guessing Task and the Trivia Memory Task.

The findings should be considered in light of study strengths and limitations. The sample was a convenience sample making generalizability to the general population difficult. Approximately one-third of the sample completed the one-week follow-up Trivia Memory Task. Despite the difficulty of retention in the one-week follow-up, the relatively large temporal gap between the Trivia Guess Task and the Trivia Memory Task allowed the consideration of recall over a timescale more relevant to health communication efforts than same-session recall tasks (e.g., Wage & Kidd, 2019).

Conclusion

In summary, the present study finds that states of curiosity facilitate memory for smoking-related information, even in adult smokers. The findings suggest that health communication efforts that engender states of curiosity for the information they disseminate in order to encourage behavior change may benefit from curiosity-facilitated message recall.

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Table 1.

Demographic characteristics of smokers and non-smokers

	Smokers (*n*=324)	**Non-smokers (*n*=280)**
Age	*Mean*=54.58, *Standard deviation*=14.54	*Mean*=64.15, *Standard deviation*=11.23
Gender	Man=210 (64.81%); trans man=1 (0.31%); woman=101 (31.17%); multiple=10 (3.09%); prefer not to disclose=2 (0.62%)	Agender=1 (0.36%); genderfluid=1 (0.36%); man=156 (55.71%); non-binary=1 (0.36%); woman=119 (42.50%); prefer not to disclose=2 (0.71%)
Race/ethnicity	African American/Black=9; Asian=8; Hispanic/Latino/a=4; Native American/American Indian=1; Pacific Islander=1; white=294; white/Black=1; white/Hispanic/Latino/a=3; white/Native American/American Indian=2; Other=1	African American/Black=4; Asian=8; Asian American=2; Hispanic/Latino/a=3; white=256; white/Asian=1; Other=6
Sexual orientation	Asexual=8 (2.47%); Bisexual=21 (6.48%); Gay=11 (3.40%); Lesbian=1 (0.31%); Straight (heterosexual)=277 (85.49%); multiple=1 (0.31%); other=1 (0.31%); Prefer not to disclose=4 (1.23%)	Asexual=3 (1.07%); Bisexual=3 (1.07%); Gay=12 (4.29%); Lesbian=1 (0.36%); Pansexual=1 (0.36%); Straight (heterosexual)=254 (90.71%); Other=2 (0.71%); Prefer not to disclose=4 (1.43%)
Modal family income	$100,000 through $149,999	$75,000 through $99,999
Modal Education	Bachelor's degree	Bachelor's degree
FTCD	*Mean*=4.26, *Standard Deviation*=2.32	-
Readiness to change	*Mean*=5.24, *Standard deviation*=2.95	-

Notes: FTCD=Fageström Test for Cigarette Dependence (Heatherton et al., 1991); Readiness to change=readiness ruler (Chung et al., 2011)

Table 2.

Descriptive statistics and correlations of key trivia task variables

Variables	**1**	**2**	**3**
1. Pre-answer curiosity	-	0.43***	0.45***
2. Pre-answer confidence	0.64***	-	0.23***
3. Post-answer interest	0.91***	0.67***	-
Mean	5.95	4.50	5.95
Standard Deviation	2.91	2.76	2.83

Notes: ***$p<0.001$; lower diagonal shows between-person associations using the intraindividual mean of participants' reports across all 30 trivia questions; upper diagonal (gray shading) shows within-person associations via repeated measures correlations (Bakdash & Marusich, 2017). Curiosity, confidence, and interest were rated on a scale ranging from 1 ("not at all") to 10 ("extremely").

Table 3.

Results of multilevel models examining associations between trivia type, smoking status, and pre-answer curiosity, pre-answer curiosity, post-answer interest, and accuracy

	Curiosity			**Confidence**			**Interest**			**Accuracy**		
	Est.	*SE*	*p*	*Est.*	*SE*	*p*	*Est.*	*SE*	*p*	*Est.*	*SE*	*p*
Intercept	5.21	0.17	<0.001	3.47	0.16	<0.001	5.29	0.17	<0.001	-2.29	0.08	<0.001
Trivia Type	0.02	0.04	0.60	0.20	0.04	<0.001	0.02	0.05	0.65	0.13	0.07	0.05
Smoking Status	1.37	0.23	<0.001	1.74	0.21	<0.001	1.21	0.23	<0.001	-0.27	0.0	<0.001

Notes: *Est.*=estimate; *SE*=standard error; *p*= *p*-value; *N*=18120 trials nested in 604 participants. Non-smoker was the reference category for Smoking Status and general trivia questions was the reference category for Trivia Type.

Table 4.

Results of multilevel models examining association between pre-answer curiosity and accuracy on the Memory Task

	Memory Task Accuracy		
	Est.	*SE*	*p*
Intercept	-1.76	0.16	<0.001
Trivia Type	-1.02	0.08	<0.001
Smoking Status	-0.35	0.14	0.02
Correct Response in Guessing Task (trial-level)	2.27	0.12	<0.001
Proportion Correct in Guessing Task (person-level)	6.28	0.92	<0.001
Pre-answer Curiosity	0.11	0.05	0.02
Pre-answer confidence	0.05	0.04	0.28
Post-answer interest	0.15	0.04	<0.001

Notes: *Est.*=estimate; *SE*=standard error; *p*=p-value; *N*=5250 trials nested in 175 participants (note that participants with no variance in pre-answer curiosity, pre-answer confidence, and post-answer interest are removed following within-person standardization). Reference category for trivia type was general trivia and reference category for smoking status was non-smoker.

Figure Captions

Figure 1. Experimental procedure. In their first session, participants completed an initial, trivia guessing task (top). Each trial consisted of a 15-second guessing phase during which participants viewed a trivia question and were prompted to type their guess of the answer. Next, participants rated their confidence in their guess and their curiosity about the answer. Participants were then shown the answer for 5 seconds before rating their interest in the provided answer. The question associated with the trial was visible during each part of the trial to ensure participants knew which trivia question they were responding to. Fifteen questions were general trivia and 15 were smoking-related trivia. One week later, participants completed a trivia memory task (bottom). During this task, the same 30 questions participants encountered during the initial task were presented again. This time participants were given 15 seconds to type the answer to the questions. In both the initial and one-week follow-up tasks the order of the trivia questions was randomized.

Figure 2. Trivia Guessing Task Data. Boxplots of each participant's average pre-answer curiosity (A), pre-answer confidence (B), post-answer interest (C), and proportion correct (D) from the trivia guessing task are shown by smoking status (x-axis) and trivia type (general versus smoking).

Figure 3. Trivia memory task data and results. A boxplot (A) of each participant's proportion correct answers on the trivia memory task by smoking status (x-axis) and trivia type (general versus smoking). Results from the multilevel model indicate that as pre-answer curiosity as

reported on during the Trivia Guessing Task increases (x-axis), the probability of an accurate answer for that trial on the Trivia Memory Task increases (y-axis).

Figure 1.

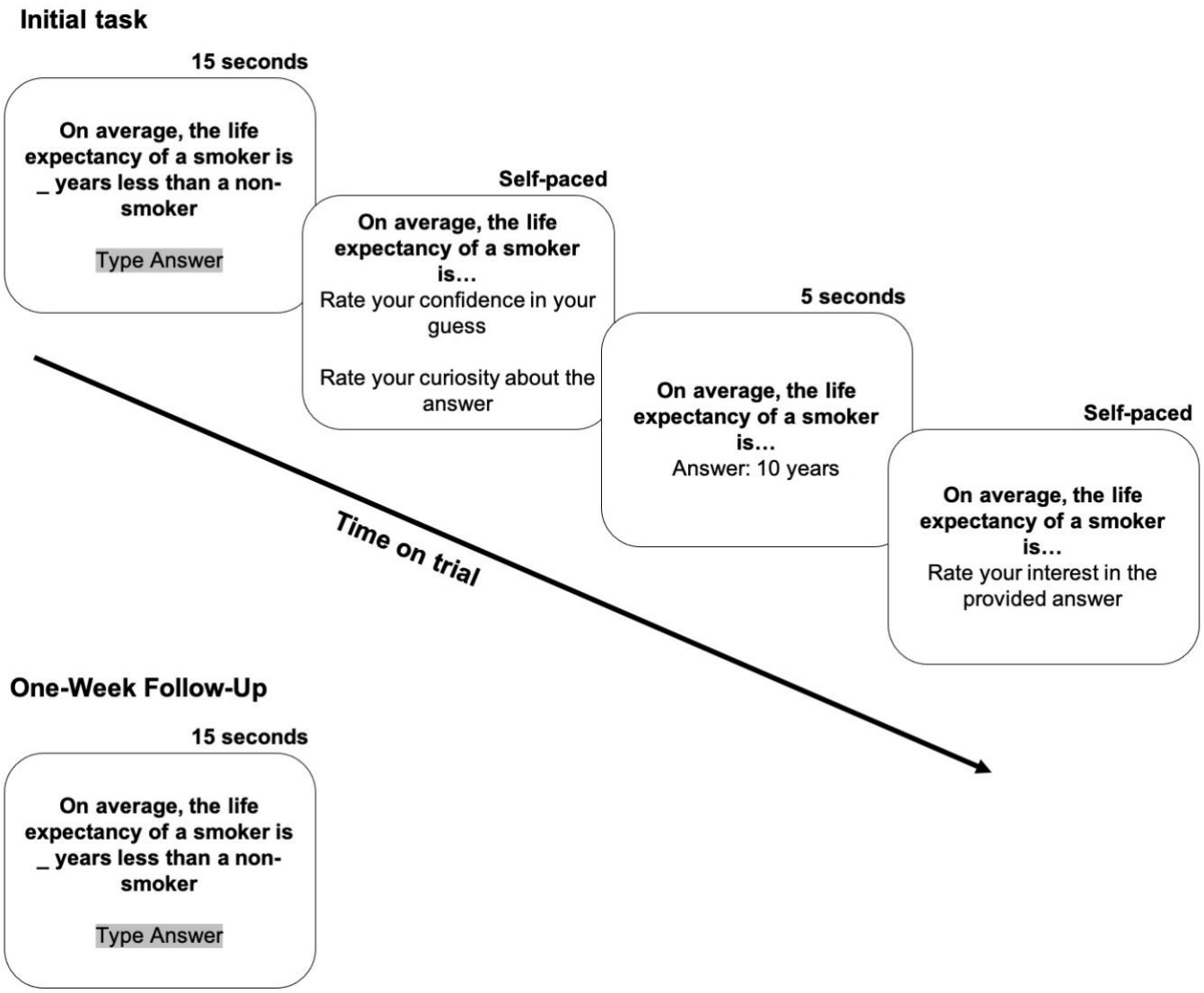

Initial task
15 seconds
On average, the life expectancy of a smoker is _ years less than a non-smoker
Type Answer
Self-paced
On average, the life expectancy of a smoker is…
Rate your confidence in your guess
Rate your curiosity about the answer
5 seconds
On average, the life expectancy of a smoker is…
Answer: 10 years
Self-paced
On average, the life expectancy of a smoker is…
Rate your interest in the provided answer
Time on trial
One-Week Follow-Up
15 seconds
On average, the life expectancy of a smoker is _ years less than a non-smoker
Type Answer

Figure 2.

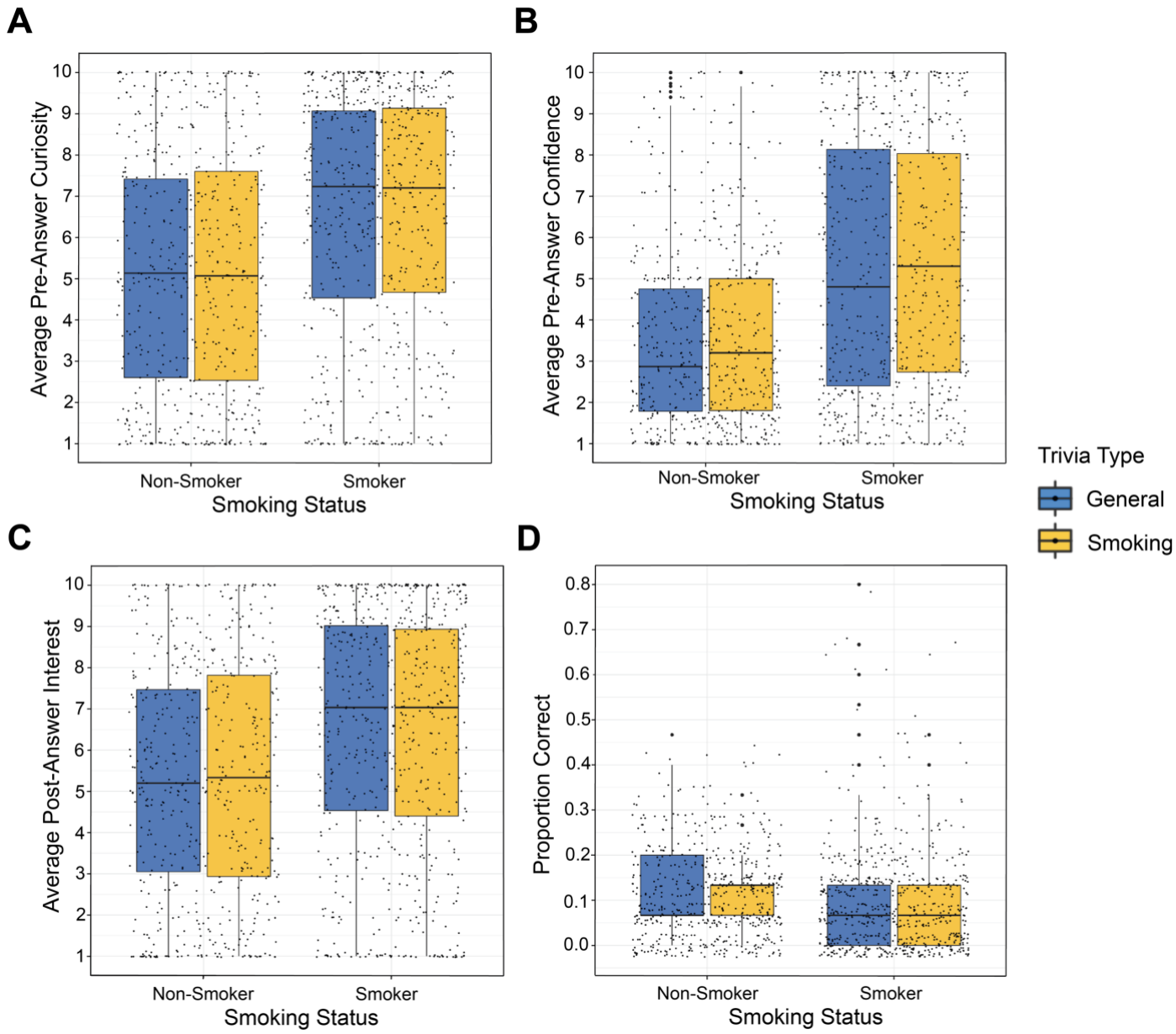
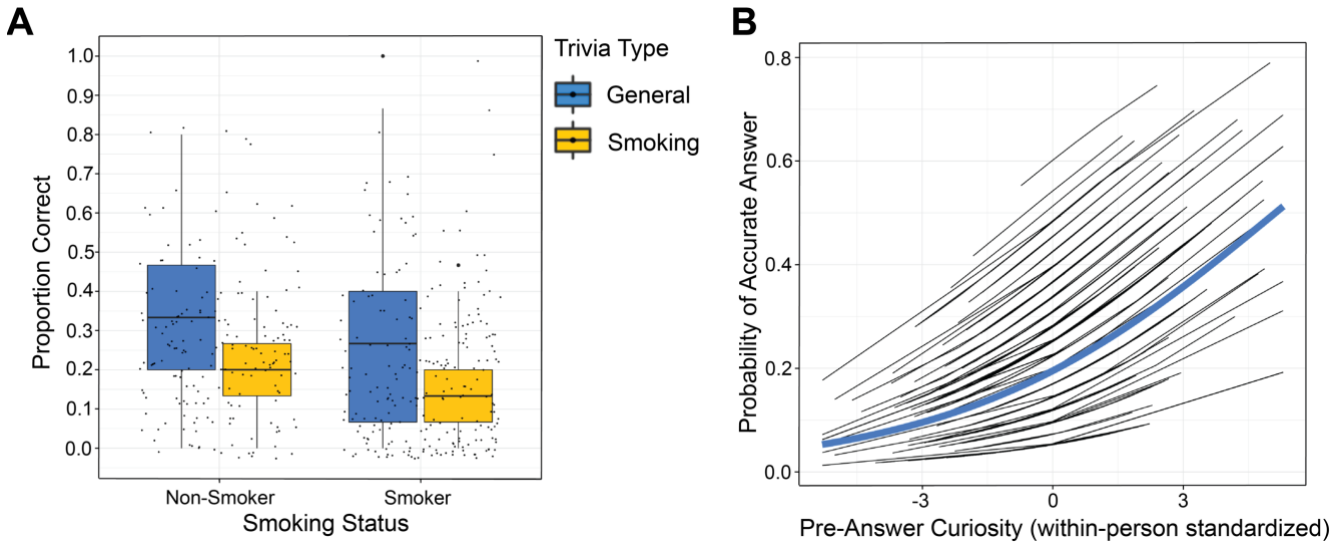

A
Average Pre-Answer Curiosity
Non-Smoker
Smoker
Smoking Status
B
Average Pre-Answer Confidence
Non-Smoker
Smoker
Smoking Status
Trivia Type
General
Smoking
C
Average Post-Answer Interest
Non-Smoker
Smoker
Smoking Status
D
Proportion Correct
Non-Smoker
Smoker
Smoking Status

Figure 3.


A
Proportion Correct
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Non-Smoker
Smoker
Smoking Status
Trivia Type
General
Smoking
B
Probability of Accurate Answer
0.8
0.6
0.4
0.2
0.0
-3
0
3
Pre-Answer Curiosity (within-person standardized)