

Promotional Materials for a Novel Heated Tobacco Capsule System Do Not Alter Risk Perceptions

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Introduction

The growing consensus among public health authorities is that tobacco products exist on a continuum of risk. The use of combustible tobacco products, such as conventional cigarettes, carries the highest level of risk, while the use of noncombustible tobacco products, such as heated tobacco products (HTP), is associated with lower risks.^{1,2} HTPs may offer a reduced-risk alternative to adults 21+ who smoke cigarettes and are unable or unwilling to quit. To demonstrate that a novel HTP is appropriate for the protection of public health, the FDA requires information on how tobacco users and nonusers perceive the risk of the product based on label, labeling and advertising, with emphasis on youth and young adults. We conducted an online quantitative experimental study evaluating the effects of promotional materials on behavioral intentions and risk perceptions for a novel heated tobacco capsule system (HTC) among adults who use and do not use tobacco.

Methods

Study Objectives:

- Evaluate the effect of promotional materials on risk perceptions associated with HTC relative to those associated with using other tobacco products, nicotine replacement therapies, and quitting all tobacco
- Evaluate the effect of promotional materials on risk perceptions of general and specific tobacco-related disease states associated with using HTC

Participants:

The study included 4,511 U.S. adults (adults who smoke cigarettes [AS], adults who use other tobacco products [OTP], or adult nonusers [NU] who do not currently use any tobacco). The study oversampled for ages 21-24 and included a separate cohort of underage (to purchase tobacco products) adults, ages 18-20. Participants were recruited from a probability-based consumer panel via email invitation and online advertisements and via in-person intercept, with demographic quotas based on the 2020 National Health Interview Study (NHIS) for gender, age, race/ethnicity, education, and US region.

Table 1.
Demographics

| | AS | OTP | NU | Age 18-20 Total |
|---------------------------|------|------|------|-----------------|
| N | 1186 | 609 | 1174 | 615 |
| Sex | | | | |
| Male, % | 52.5 | 75.4 | 45.6 | 49.8 |
| Age | | | | |
| 18-20, % | - | - | - | 100 |
| 21-24, % | 6.0 | 13.1 | 6.0 | - |
| 25+, % | 94.0 | 86.9 | 94.0 | - |
| Race/Ethnicity | | | | |
| White Non-Hispanic, % | 69.1 | 75.4 | 65.9 | 53.7 |
| Black Non-Hispanic, % | 13.5 | 8.9 | 9.8 | 13.2 |
| Other Non-Hispanic, % | 7.8 | 7.6 | 8.6 | 9.8 |
| Hispanic, % | 9.6 | 8.2 | 15.7 | 23.3 |
| U.S. Region | | | | |
| North East, % | 14.8 | 16.7 | 18.3 | 14.0 |
| Midwest, % | 25.0 | 22.3 | 21.1 | 21.1 |
| South, % | 44.1 | 41.1 | 38.0 | 38.4 |
| West, % | 16.1 | 19.9 | 22.6 | 26.3 |
| Education | | | | |
| Less than College, % | 57.8 | 35.0 | 33.4 | 63.1 |
| Some/Graduated College, % | 42.2 | 65.0 | 66.6 | 36.9 |

Notes:
Only select subgroups from the overall study are presented here.

Age 18-20 Total group comprises those who smoke or use other types of tobacco, as well as those who do not currently use tobacco. NU group includes both former and never tobacco users.

Study Design:

Participants were randomized to one of two study conditions:

- Control (n=2253)** viewed the HTC product concept only
- Test (n=2258)** viewed the HTC product concept as well as a suite of promotional materials (ads, website banners, direct mail, product line-up, and packaging)

The study instrument contained questions about socio-demographics and prior and current tobacco use behavior, followed by the presentation of study stimuli and post-exposure questions, described under Results.

Results

Figure 1. Relative Risk Perceptions

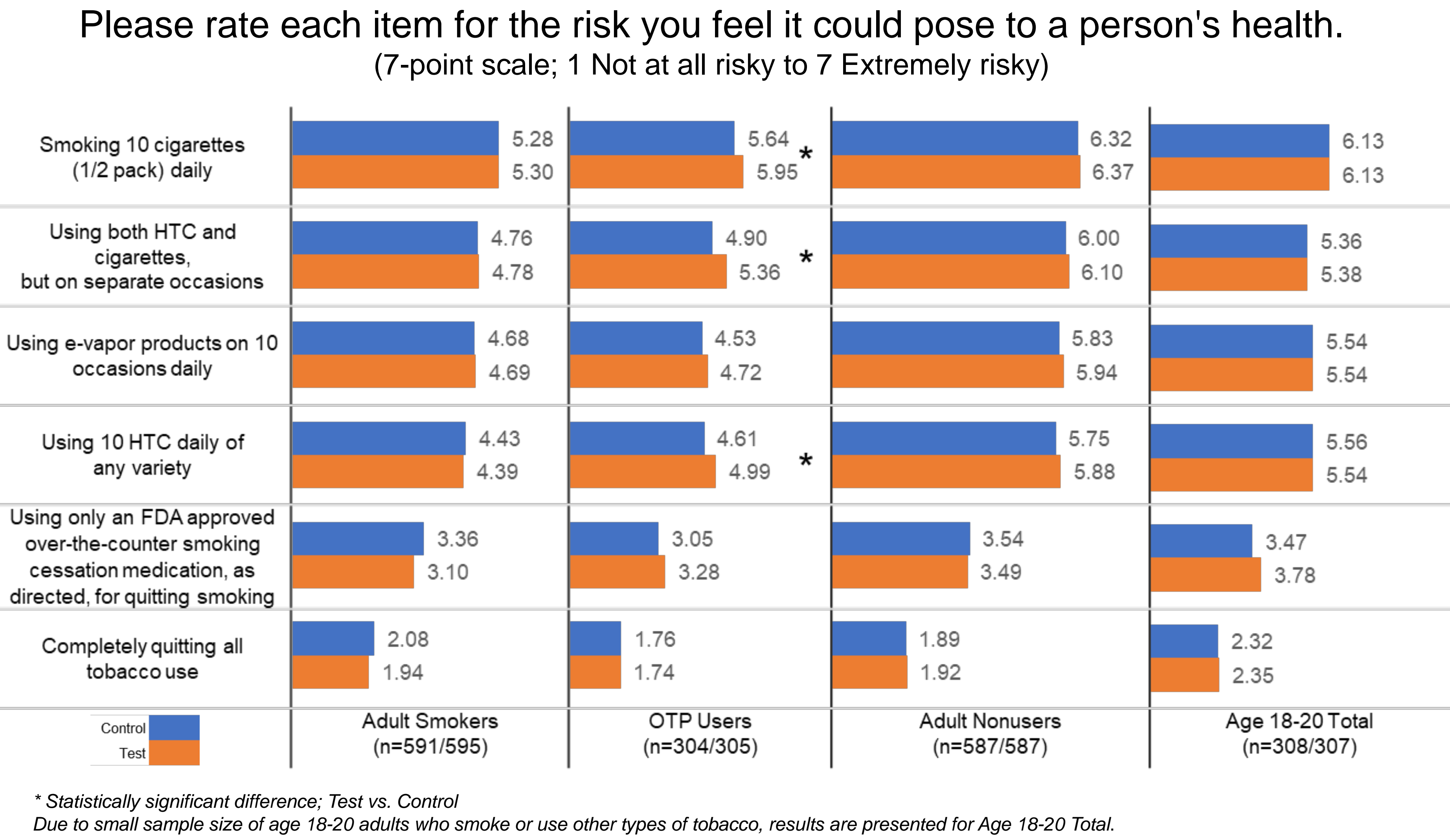


Figure 2. Risk Perceptions for Tobacco-Related Health Outcomes

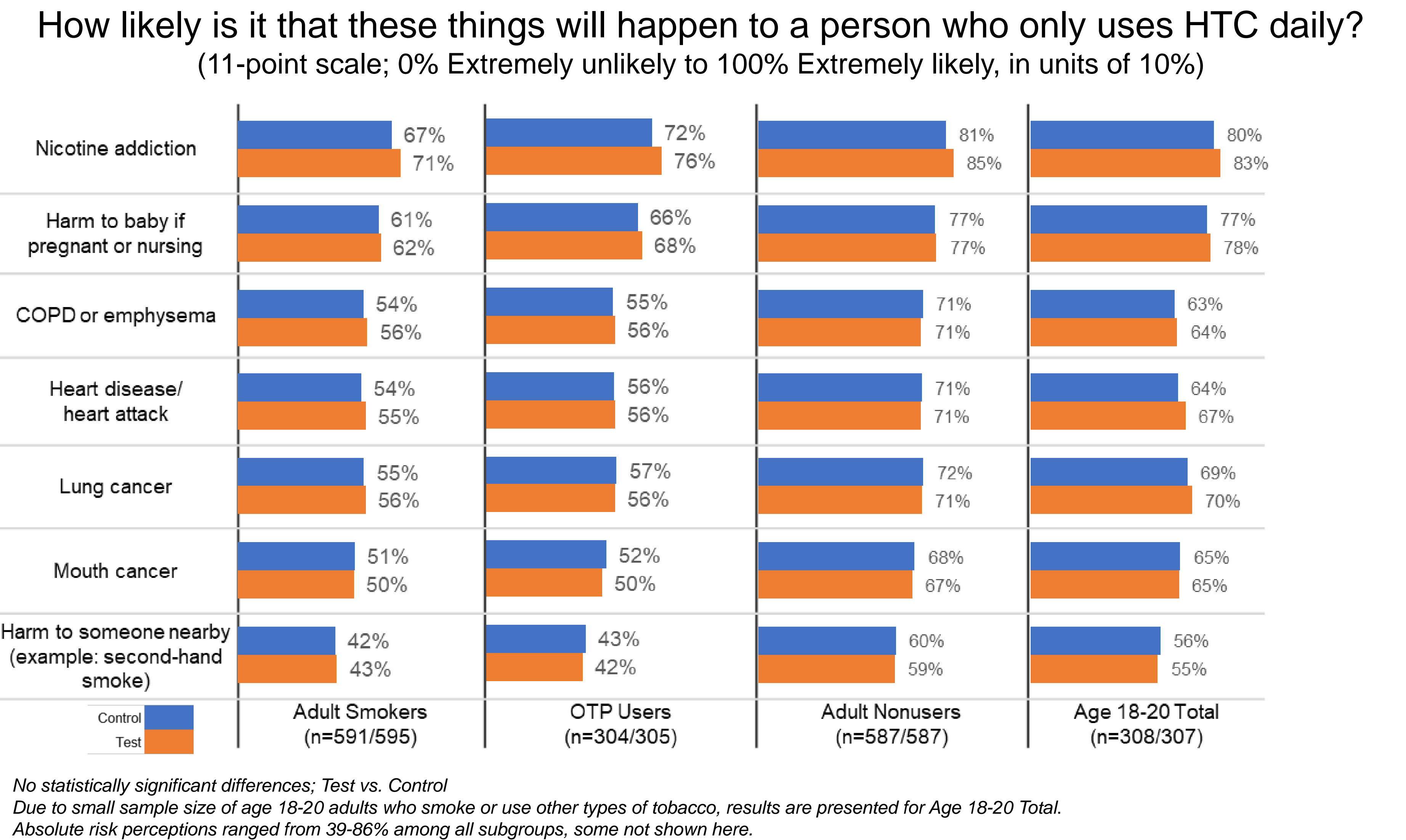
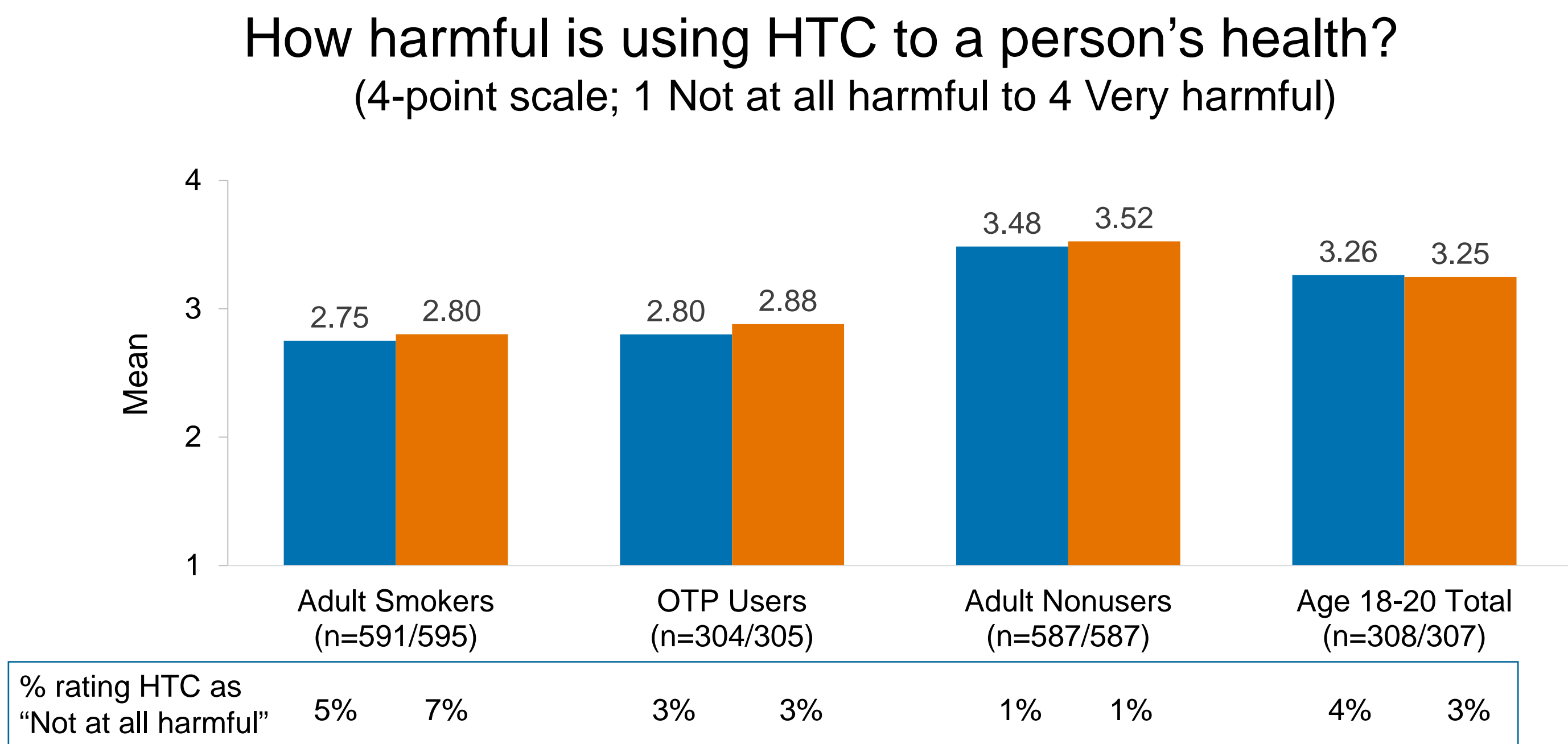


Figure 3. Perceptions of General Harm



Conclusions

The study results suggest that, in the context of the proposed promotional materials, tobacco users and NU appropriately perceive that the novel HTC is not risk-free and AS perceive using HTC as less risky compared to using cigarettes or dual use. Appropriate understanding of risks may facilitate the transition of AS 21+ to HTC, leading towards a smoke-free future.

- AS and NU, as well as adults aged 18-20, perceived using HTC as less risky than using cigarettes or dual-use, similar to e-vapor use, and riskier than using an FDA-approved cessation medication or quitting tobacco use altogether.
- Exposure to promotional materials (Test) did not significantly affect relative risk perceptions, except in the OTP group, where risk perceptions were higher after viewing promotional materials.
- Across seven tobacco-related health outcomes related to tobacco use, "nicotine addiction" and "harm to baby if pregnant or nursing" were perceived as most likely with daily use of HTC.
- NU had higher perceptions of risk associated with HTC use.
- Risk perceptions for tobacco-related health outcomes were unaffected by exposure to the promotional materials.
- Few participants believed that HTC was not at all harmful.

Limitations:

- A portion of the sample (11.1%, primarily young adults) was recruited through mall intercept using a non-probabilistic method due to difficulty in recruitment online, and therefore findings from these participants should be regarded as illustrative but not strictly representative of the general population.
- However, quota-based sampling techniques resulted in a sample representative of the U.S. adult population in terms of basic socio-demographic characteristics. The large sample size provided adequate statistical power for all analyses.

References

- Murkett R, Rugh M and Ding B. Nicotine products relative risk assessment: an updated systematic review and meta-analysis. F1000Research 2022, 9:1225 (<https://doi.org/10.12688/f1000research.26762.2>)
- Gottlieb S, Zeller M. A Nicotine-Focused Framework for Public Health. N Engl J Med. 2017; 377(12):1111-1114.

