### E-LIQUID FLAVOURING AND CIGARETTE CRAVING

#### Supplementary Information

**Supplementary Table S1. Constituents of the e-liquids.**

| Flavour   | Ingredient list                                                                 |
|-----------|---------------------------------------------------------------------------------|
| Blackcurrant | Propylene Glycol, Vegetable Glycerine, Water, Nicotine, Vanillin, Raspberry Ketone, Ethyl Acetate, Ethyl Butyrate, Acetic Acid |
| Strawberry | Propylene Glycol, Vegetable Glycerine, Water, Nicotine, Ethyl Acetoacetate, 2 Methyl Butyric Acid, Ethyl Butyrate, Cis-3-Hexenol |
| Vanilla   | Propylene Glycol, Vegetable Glycerine, Water, Nicotine, Vanillin                 |
| Caramel   | Propylene Glycol, Vegetable Glycerine, Water, Nicotine, Vanillin, Butyric Acid   |
| Unflavoured | Propylene Glycol, Vegetable Glycerine, Water, Nicotine                           |
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Supplementary Table S2. E-liquid quantities and dose provided for participants.

| Reported cigarettes per day | Number of 10ml bottles for low dose (1.0%; 10mg/ml) | Number of 10ml bottles for high dose (1.8%; 18mg/ml) |
|----------------------------|---------------------------------------------------|-----------------------------------------------------|
| At the start of the study (from 01/07/2020) | | |
| 5-14                       | 12 (120 ml, 15 ml per day)                         |                                                     |
| 15-19                      | 16 (160 ml, 20 ml per day)                         |                                                     |
| 20-24                      | 16 (160 ml, 20 ml per day)                         | 16 (160 ml, 20 ml per day)                         |
| 25+                        | 20 (200 ml, 25 ml per day)                         |                                                     |
| After monitoring participant use (from 31/07/2020) | | |
| 5-14                       | 10 (120 ml, 15 ml per day)                         |                                                     |
| 15-19                      | 14 (160 ml, 20 ml per day)                         |                                                     |
| 20-24                      | 14 (160 ml, 20 ml per day)                         |                                                     |
| 25+                        | 18 (200 ml, 25 ml per day)                         |                                                     |

Note: We initially provided participants with 12, 16 or 20 10ml bottles of e-liquid, depending on their reported cigarettes per day before the study. After monitoring use for the first month of data collection, this was decreased to 10, 14, or 18 10ml bottles (depending on reported cigarettes per day), because we learned that we were oversupplying participants to a higher degree than necessary. Participants in the flavoured condition received 50% of the total bottles in each of their chosen two flavours.
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**Supplementary Table S3. Results of the pilot survey with ex-smoking current e-cigarette users to determine e-liquid supply.**

| Reported cigarettes per day (previously) | Number of bottles we will send (total ml, nicotine %) | Reported ml/day: N (%) | Based on survey, approx. N (%) who will be over- or undersupplied |
|----------------------------------------|-------------------------------------------------|------------------------|---------------------------------------------------------------|
|                                        | ≥10                                             | 11-20                  | 21+                                                            | Oversupplied | Correct amount or undersupplied |
| 5-14                                   | 12 (120 ml, 15 ml/day, 1.0%)                   | 15 (88%)               | 1 (6%)                                                         | 15 (88%)     | 2 (12%)                        |
| 15-19                                  | 16 (160 ml, 20 ml/day, 1.0%)                   | 9 (60%)                | 5 (33%)                                                        | 9 (60%)      | 6 (40%)                        |
| 20-24                                  | 16 (160 ml, 20 ml/day, 1.8%)                   | 17 (63%)               | 9 (33%)                                                        | 17 (63%)     | 10 (37%)                       |
| 25+                                    | 20 (200 ml, 25 ml/day, 1.8%)                   | 13 (52%)               | 7 (28%)                                                        | 20 (80%)     | 5 (20%)                        |

Note: N = 84. Table excludes survey respondents who reported smoking 1-4 cigarettes per day (n = 4) and ‘other’ (n = 5).

We conducted a survey of ex-smokers who were currently vapers (n=93) to identify how much e-liquid that they use daily, at which dosage and how much they used to smoke. As expected, vaping amount and nicotine dosage increased with previous cigarettes per day, which justifies our graded increase with smoking heaviness. The table shows the amount we planned to send, survey outcomes and estimated proportion with potential surplus. E-liquid use was highly variable, and we erred towards upper end of estimates (rather than using the average for example) as we needed to measure natural behaviour. We did not want participants to ration their vaping for example if e-liquid supply was running low.
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Supplementary Figure S1. CONSORT flow diagram.

Recruitment
Total email inquires = 165

Pending Recruitment
On hold (screening to book) = 12
Contacted (no response) = 52
Declined to participate = 1

Phone Screening
Total phone screens = 100

Excluded
Not eligible / withdrew = 15

Physical Screening
Total physical screens = 85

Randomised (Enrolled)
Total randomised = 85

Allocated to Unflavoured Condition
Total = 42

Allocated to Flavoured Condition
Total = 43

*Excluded/Replaced
Data quality = 1
(Incorrect e-cigarette set-up by participant)

*One additional participant was randomised to the flavoured condition to replace a participant who completed the study, but whose data was unusable. The final sample therefore consisted of 42 participants in each flavour condition.
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Supplementary Table S4. Raw outcome data, by flavour condition.

| Outcome                                | Unflavoured Mean (Standard Deviation) | Flavoured Mean (Standard Deviation) |
|----------------------------------------|---------------------------------------|-------------------------------------|
| Cigarette craving (average)            | 4.6 (1.3)                             | 4.8 (1.6)                           |
| Cigarette craving (peak)               | 6.2 (0.8)                             | 6.1 (1.3)                           |
| Cue-elicited cigarette craving         | 7.4 (9.3)                             | 7.2 (7.4)                           |
| Enjoyment of e-cigarette               | 3.1 (0.9)                             | 3.4 (0.9)                           |
| Ease of transitioning to using e-cigarette | 3.4 (1.0)                         | 3.2 (1.1)                           |
| Intentions to continue using e-cigarette | 4.0 (1.1)                         | 3.8 (0.9)                           |
| Intentions to quit smoking             | 3.5 (1.1)                             | 3.7 (1.2)                           |
| Motivation to quit smoking             | 6.9 (2.0)                             | 7.0 (1.9)                           |
| Sweet food craving (average)           | 3.4 (1.4)                             | 3.8 (1.1)                           |
| Sweet food craving (peak)              | 4.9 (1.6)                             | 5.5 (1.0)                           |
| Savoury food craving (average)         | 4.3 (1.3)                             | 4.2 (1.0)                           |
| Savoury food craving (peak)            | 5.7 (1.1)                             | 5.6 (0.9)                           |

‘Yes’ N (%)

| Outcome                                | N (%)     |
|----------------------------------------|-----------|
| Smoking lapse occurrence               | 7 (16.7)  |
| Return to smoking                      | 32 (76.2) |
| Continuation of use (past week)        | 39 (92.9) |
| Continuation of use (future)           | 38 (90.5) |

Note: N = 84. Condition code: unflavoured = 0, flavoured = 1. Primary measures: Cigarette craving (average) = mean average daily cigarette craving score (0 ‘strongly disagree’ to 7 ‘strongly agree’). Cigarette craving (peak) = highest daily cigarette craving score. Cue-elicited cigarette craving = Questionnaire of Smoking Urges-Brief change scores (post- minus pre-task). Secondary measures: enjoyment of e-cigarette (1 ‘not at all’ to 5 ‘a great deal’), ease of transitioning to using e-cigarette (1 ‘very difficult’ to 5 ‘very easy’), intentions to continue using e-cigarette and intentions to quit smoking (1 ‘definitely not’ to 5 ‘definitely’), motivation to quit smoking (Readiness to Quit Ladder), and sweet and savoury food cravings (1 ‘strongly disagree’ to 7 ‘strongly agree’).
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**Supplementary Table S5. Effect of e-liquid flavouring on primary outcomes (if no smoking lapse and no attention check failures).**

| Outcome                              | Unadjusted |               | Adjusted |               |
|--------------------------------------|------------|---------------|----------|---------------|
|                                      | b (95% CI) | p          | N        | b (95% CI)    | p          | N        |
| Cigarette craving (average)          |            |            |          |              |            |          |
| No lapse                             | 0.12       | .716       | 71       | 0.09         | .802       | 71       |
|                                      | (-0.55 to 0.80) |          |          | (-0.64 to 0.83) |          |          |
| Audio check passed                   | 0.17       | .589       | 83       | 0.17         | .590       | 83       |
|                                      | (-0.45 to 0.79) |          |          | (-0.46 to 0.81) |          |          |
| Image check passed                   | -0.10      | .830       | 46       | -0.03        | .952       | 46       |
|                                      | (-1.03 to 0.83) |          |          | (-0.94 to 0.89) |          |          |
| Cigarette craving (peak)             |            |            |          |              |            |          |
| No lapse                             | -0.14      | .594       | 71       | 0.01         | .968       | 71       |
|                                      | (-0.68 to 0.39) |          |          | (-0.56 to 0.58) |          |          |
| Audio check passed                   | -0.14      | .557       | 83       | -0.04        | .881       | 83       |
|                                      | (-0.61 to 0.33) |          |          | (-0.51 to 0.44) |          |          |
| Image check passed                   | -0.35      | .342       | 46       | -0.32        | .365       | 46       |
|                                      | (-1.08 to 0.38) |          |          | (-1.01 to 0.38) |          |          |
| Cue-elicited cigarette craving       |            |            |          |              |            |          |
| No lapse                             | -0.79      | .689       | 71       | 1.21         | .574       | 71       |
|                                      | (-4.73 to 3.14) |          |          | (-3.06 to 5.48) |          |          |
| Audio check passed                   | -0.33      | .858       | 83       | 0.62         | .748       | 83       |
|                                      | (-4.01 to 3.35) |          |          | (-3.19 to 4.42) |          |          |
| Image check passed                   | 1.70       | .540       | 46       | 1.84         | .540       | 46       |
|                                      | (-3.86 to 7.27) |          |          | (-4.19 to 7.88) |          |          |

Condition code: unflavoured = 0, flavoured = 1. Unstandardised b coefficients. Adjusted = adjusted for age, gender, cigarettes per day, cigarette dependence, quit motivation (baseline characteristics). Cigarette craving (average) = mean average daily cigarette craving score (0 'strongly disagree' to 7 'strongly agree'). Cigarette craving (peak) = highest daily cigarette craving score. Cue-elicited cigarette craving = Questionnaire of Smoking Urges-Brief change scores (post- minus pre-task).
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Unplanned Post-hoc Analyses

Unplanned exploratory analyses also showed that there was no clear evidence of an effect of e-liquid flavouring on cigarettes per day during the study week (mean difference 0.03, 95% CI -0.30 to 0.35, \( p = .87 \)), or at one week follow up (mean difference -0.05, 95% CI -1.72 to 1.62, \( p = .96 \)).