

Smokers' perceptions of incentivised smoking cessation programmes: Examining how  
payment thresholds change with income

Rachel J. Breen, BPsych<sup>1</sup>, Stuart G. Ferguson, PhD<sup>1</sup>, Matthew A. Palmer, PhD<sup>1</sup>

<sup>1</sup> College of Health and Medicine, University of Tasmania, Tasmania, Australia

**Corresponding Author:** Rachel Breen

Email: [rachel.breen@utas.edu.au](mailto:rachel.breen@utas.edu.au)

Mailing: College of Health and Medicine, Psychology

University of Tasmania

Locked Bag 1342

Launceston, Tasmania, 7250

## ABSTRACT

**Introduction:** Studies demonstrate that financial incentive programmes increase smoking cessation. However, there is little guidance on which incentive magnitudes will ensure optimal enrolment and motivation levels. This study investigates current smokers' perceptions of varying incentive magnitudes to identify whether there is evidence for optimal amount(s), and whether perceptions differ by income group.

**Methods:** Studies 1 (N = 56) and 2 (N = 147) were conducted online via Prolific.co. Current smokers were randomly shown multiple hypothetical incentive programmes which differed only in the incentive amount offered. For each programme, smokers rated its appeal, their likelihood of enrolling, and predicted their motivation to quit if enrolled. Growth models were used to investigate the relationship between perspectives and the incentive amount.

**Results:** An increasing quadratic trend in smokers' perceptions of programmes as the incentive amount increased was identified. Incentive amounts beyond approximately £50-75/week (£500 to £750 total) did not significantly alter perceptions of programmes. In Study 2, high-income smokers found programmes significantly less appealing and motivating than low-income smokers, although no significant between-group differences were observed in the likelihood of enrolment. No significant differences were observed between low- and middle-income smokers.

**Conclusions:** Increasing the incentive amount increased smoker's perceptions of programmes. This relationship was curvilinear, meaning there may be a point beyond which further increasing the amount will not improve enrolment or motivation levels. Incentives appear equally appealing to low- and middle-income smokers; the population among whom smoking is most prevalent. Future research could explore other elements of programme design, and whether findings hold under real-world conditions.

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## IMPLICATIONS

While acknowledging that they work, policymakers frequently request information about the monetary amount needed for incentive programmes to be effective, and if this differs by income level. We investigated these questions using smokers' perceptions of hypothetical cessation programmes which differed in the amount offered. An increasing quadratic trend in perceptions of programmes by the amount and potential cut-points were observed, suggesting a point may exist beyond which increasing the incentive will not improve perceptions of programmes or enrolment levels. High-income smokers may not perceive incentives to be as appealing as other income groups, but appear equally willing to enrol.

## INTRODUCTION

Smoking remains a leading preventable risk factor of morbidity and mortality, accounting for over seven million deaths per annum worldwide.<sup>1,2</sup> To address this issue, financial incentive (FI) programmes have been investigated as a method of motivating quit attempts and smoking cessation. Within such programmes, participants are required to demonstrate abstinence at various time points, and receive financial rewards when they do so (e.g., Etter and Schmid<sup>3</sup>). These programmes have been shown to increase smoking cessation rates in the short- to medium-term,<sup>4</sup> with recent literature suggesting the effects are maintained long-term.<sup>3,5</sup>

The design of FI programmes used in previous studies has varied greatly, including differing session schedules (e.g., weekly, monthly, or once-off), types of incentives (e.g., vouchers or cash), and FI amounts.<sup>6,7</sup> When comparing across these various designs, evidence suggests incentives are associated with increased cessation rates.<sup>5</sup> However, while policymakers should be confident that FIs can work, these wide variations mean there is little guidance on how to best structure programmes. Given the centrality of the rewards in these programmes, it is particularly imperative to consider the magnitude of the FI; specifically, how much the incentive should be for to ensure optimal enrolment levels and motivation. We focus here on the relationship between amounts and motivation as it is suggested the effectiveness of FIs may relate to the impact on smoker's motivation.<sup>8</sup> This includes FIs increasing behaviour initiation, thereby motivating quit attempts, or encouraging sustained attempts. How individuals attempt to quit is often secondary, as is reflected by many previous programmes providing pharmacotherapy or additional supports.<sup>5</sup> Gaining information on the association between amounts and enrolment levels and motivation would help address the concerns of policymakers and potential programme providers, who desire greater information on viable FI amounts before they consider implementing these programmes.<sup>9</sup>

Should an association between FI magnitude and the motivation it provides exist, it may not be linear. Within microeconomic theories, it is proposed individuals will modify their behaviour if the subjective benefits of change outweigh the associated “costs”. From this perspective, it is unlikely very small FI amounts will outweigh the costs of change. However, motivation to change may increase comparatively to the amount, until a ceiling is reached beyond which further increases will not better procure outcomes. It is therefore plausible that the relationship between FI amounts and motivational potential may best resemble a cubic trend. If this is the case, it would potentially allow policymakers to optimise FI programmes, offer just enough incentive to motivate change. Doing so would make FI programmes more appealing, and free up funds for addition programmes (e.g., subsidising treatments).

Although FI programmes have been used in a variety of populations,<sup>5</sup> it has been commonly believed that programmes may be more effective among low-income smokers.<sup>10</sup> As a result, policymakers are also interested in whether FI programmes are applicable to all smokers or simply a subset of them, and whether the FI amount used should differ between populations. Theoretically, population-based differences are plausible. Again, economic theories suggest the satisfaction (utility) of an additionally unit of money decreases as the individual’s current amount is higher.<sup>11</sup> Hence, compared to higher income smokers, lower income smokers may be more motivated by smaller FIs, as the amount provides comparatively greater utility.<sup>12,13</sup> However, evidence for this idea from incentives studies is limited and mixed. While some research<sup>10,14</sup> considering FI-based substance abuse programmes has reported no association between income and FI effectiveness, other studies reviewing multiple health behaviours have reported higher programme effectiveness for low-income participants when considering long-term

effects<sup>15</sup> and some programme designs.<sup>16</sup> Clarification of whether the FI amount results in different motivation levels within different populations is hence needed.

Varying the FI amount has been shown to differentially affect outcomes including short-term cigarette usage. For example, research<sup>17</sup> has shown smokers may become more willing to accept small monetary amounts over a puff of a cigarette as the monetary amount increases. Additionally, some trials have manipulated the FI magnitude, finding greater rates of smoking cessation<sup>18</sup> and cocaine abstinence<sup>19,20</sup> when higher amounts are provided. However, such trials typically only compare two or three values, and often provide little justification for why the selected amounts should be more viable than higher or lower amounts. Hence, while such research demonstrates the amount affects programme outcomes, little guidance is provided on which values might best promote programme engagement or be most desirable to smokers.

Currently, reviews likewise provide little evidence for optimal or desirable FI amounts. While some reviews<sup>21</sup> comparing across multiple substance use disorders suggests programmes with higher amounts have larger effect sizes, other smoking-specific reviews<sup>5</sup> do not reveal an association. However, these null findings may reflect difficulties in the use of review methodologies to address this question, as they typically compare across variable programme designs, target populations, and geographical locations. Hence, optimal amounts may not be determinable through review methods, or indeed current evidence. Given the above factors, laboratory or survey-based studies – wherein a wider range of values can be considered for a smaller cost – may be the most practical way to narrow the range of amounts worth further investigation. Thus, we here sought to acquire smoker's valuations of different FI amounts. The aim of this study was to use this information to investigate two key policy-relevant questions: whether there is evidence for an optimal amount which should be offered, and whether perceptions of FI programmes differs by income groups. To explore these

research questions, we ran two online surveys of UK-based smokers. Both studies utilised similar designs, however Study 2 included additional items to gather information about why smokers may consider enrolling in FI programmes. Recruitment occurred online through Prolific.co<sup>22</sup> in September 2019 (Study 1) and December 2019 (Study 2).

## STUDY 1

### Method

#### *Participants*

To be eligible, interested individuals had to have reported being a current adult smoker and a resident of the United Kingdom (as the value of different FI amounts presented was shown in pound sterling). We recruited 60 participants. To test differences between income levels, recruitment was approximately equally stratified by income group (low-, middle-, and high-income) based on the income participants reported to Prolific.co during their pre-screening. In line with OECD guidelines<sup>23</sup> and income estimates for 2019,<sup>24</sup> low-income was defined as households earning below 75% of the median national average (< £20,000). Middle-income was defined as households earning between 75% and 200% (£20,000 – £59,999), and high-income as earning above 200% (> £60,000) of the median national average. The study was approved by the Tasmanian Social Science Human Research Ethics Committee (H0017964).

#### *Procedure*

The entire study was conducted online and during a single session lasting approximately 10 minutes. Participants were first asked sociodemographic and smoking history questions, including their number of quit attempts in the past year, intentions to quit (whether they were seriously considering quitting within the next



“30 days”, “three months”, “six months”, “one year”, or “not at all”), and the Heaviness of Smoking Index (HSI).<sup>25</sup>

Participants were then shown eight descriptions of hypothetical FI programmes in a randomised order (see Supplementary Materials). All programmes included the offered of a gift voucher weekly if the individual was abstinent during that week. The hypothetical programmes lasted 10 weeks and differed only in the FI amount available. The lower and upper amounts were drawn from previous FI programmes<sup>3,26</sup> and presented as both the per week and the total amount obtainable for abstinence throughout the entire programme (totals: £50, £100, £200, £350, £500, £750, £1,000). We also included an extreme amount (£10,000) as a manipulation check; responses to this programme were not used in our analyses.

For each description, participants were first asked how appealing the programme was from “0” (not at all appealing) to “100” (extremely appealing). Next, participants indicated how likely they would be to enrol if the programme were available (responses: “very likely”, “somewhat likely”, “somewhat unlikely” or “very unlikely”). Finally, participants were asked how motivated they would be to quit during this programme from “0” (not at all motivated) to “100” (extremely motivated). The next programme description (containing a different FI amount) was then presented. It was not possible to return to previous descriptions.

Participants were not informed of the number of descriptions or the maximum FI amount they would view. Raw data and code are available from the University of Tasmania’s data portal (note: URL will be added post-acceptance).

Sixty participants completed the study. However, four participants who would not enrol for even the £10,000 amount were deemed non-responders and excluded from analyses, resulting in an eligible sample of 56 participants.

This study was designed to investigate whether there is evidence for an optimal incentive amount, and whether the perceptions of programmes differ between income groups. To explore the presence of optimal FI amounts, we assessed the change in the three outcome measures (programme appeal, likelihood of enrolment, and predicted motivation to quit) across amounts using growth models. For the likelihood of enrolment question, selecting either “very” or “somewhat likely” was assumed to indicate the participant would enrol in the programme.

Growth models were constructed using the lme4<sup>27</sup> and nmle<sup>28</sup> packages in R and maximum likelihood estimation. In the final model, FI amounts were a repeated measures variable and nested within participants as the random effect. To consider the effect of income, income group was included as a fixed effect, with low-income used as the reference group. We tested for an interaction between amounts and income group. This interaction was not significant and therefore has not been presented here. As quit intentions and nicotine dependence have also been suggested<sup>29</sup> to influence perceptions of incentives, intention to quit was included as a binary variable, defined as either being high (seriously considering quitting within the next 30 days, three months, or six months; reference group) or low intentions (considering quitting within the next 12 months or not considering quitting).<sup>30</sup> This was included in models as a fixed effect. Responses to the HSI were used to categorise participants as having low, moderate, or high nicotine dependence.<sup>25</sup> However, HSI was not

included in models due to the small sample. Polynomial terms were included to test for non-linear trends across amounts.

As the results of all three outcome measures (programme appeal, likelihood of enrolling, and predicted motivation to quit) were broadly similar, only the likelihood of enrolling outcome is presented here. Results for the other two outcomes are presented in the Supplementary Materials.

## Results

Participants were on average 36 years old ( $SD = 11.18$ ), evenly divided between genders (53.57% female), and had been smoking for 17 years. In total, 44.64% of participants intended to quit smoking within the next six months, and 60.71% had made a quit attempt in the past year. Across the sample, 32.14% of participants were classified as having low nicotine dependence, 50.01% had moderate dependence, and 17.85% had high dependence. An approximately equal number of low- ( $n = 17$ ), middle- ( $n = 21$ ), and high-income ( $n = 18$ ) participants were included. Demographic and smoking variables by income group can be found in the Supplementary Materials.

### *Differences between income groups*

Differences between income groups are presented in Figure 1, and the fixed effects from the growth model are presented in Table 1. Income group did not predict likelihood of enrolment (all  $p > .05$ ). Similarly, intention to quit did not predict likelihood of enrolment ( $p = .155$ ).

[Insert Table 1 around here]

### *Diminishing returns of incentive amounts*

As displayed in Figure 1, there appeared to be a concave quadratic trend in participant's likelihood to enrol as the amount increased. The presence of this trend was supported by the growth model results, within which the quadratic term was significant (see Table 1). The model which included the quadratic term also provided a significantly better fit for these data than the model with only the linear term ( $\chi^2(2) = 8.81, p = .012$ ); this suggests an eventual levelling off to the increasing likelihood of enrolment over amounts.

[Insert Figure 1 around here]

Based on visual inspection of data, it appeared the quadratic trends in the relationship between FI amounts and outcomes had two linear sections linked by an inflection/break point. This break point could indicate a ceiling amount at which the increasing likelihood of enrolment levels off. Using Singer and Willett's<sup>31</sup> equation for identifying the peak of a quadratic curve, this point was identified to be at £91.33 per week (£913.30 total) for appeal, and £89.65 per week (£896.50 total) for motivation. This break point was similar for the other two outcome measures; see Supplementary Materials. Using a similar method to Fidler et al.<sup>32</sup>, data was divided into two sections; the first contained FI amounts up to the closest value available below these peak points (£75), and the second contained amounts from this point onwards. Growth models using these points were undertaken to examine the potential linear phases. We then tested whether the pattern of results held when data was divided into linear section at lower amounts.

The lowest amount at which the pattern of effects held was £50, for which approximately 87.5% of participants indicated they would be willing to enrol. There was an increasing linear trend in the likelihood of enrolment comparative to the FI amount up to £50 per week ( $p < .001$ ). However further increases in the amount beyond £50 were not significantly associated with changes in likelihood of enrolment ( $p = .220$ ). This suggests that

likelihood of enrolment reached a ceiling near £50 per week, beyond which increasing the amount further did not alter predicted enrolment.

## **Discussion**

In Study 1, all three outcomes (programme appeal, likelihood of enrolling, and predicted motivation to quit during the programme) increased as the FI amount increased. The shapes of these trends were quadratic, with analyses suggesting an inflection point at £50 per week (£500 throughout the programme), beyond which further increases in the amount did not affect how participants viewed programmes. Interestingly, no significant differences between income groups were observed. This differs from what was initially predicted based on economic theory, but is consistent with some previous research<sup>10,14</sup> which found no differences in FI programme effectiveness by income. However, this initial investigation was likely underpowered and further work is needed.

## **STUDY 2**

Study 2 extended on Study 1 in several ways. First, we aimed to test the finding that smoker's perceptions of FI programmes do not differ by income group using a larger sample. Second, given the null findings regarding income, it is possible the subjective utility the FI provides may not be the primary reason smokers are interested in FI programmes. Hence, we sought preliminary information on the reasons why smokers may consider enrolling.

## Method

### *Participants and recruitment*

Recruitment occurred online through Prolific.co using the same eligibility criteria as Study 1. We recruited 155 participants, approximately stratified by income group. Participants who completed Study 1 were unable to complete Study 2.

### *Procedure*

The procedure for Study 2 was almost identical to Study 1. In Study 2, participants were additionally asked why smokers might consider enrolling in a FI programme. This question was asked after all programme descriptions. Response options were “being paid would compensate how hard it will be to quit”, “the money itself would have a meaningful impact on their life”, “being paid to quit would let a smoker know just how much others want them to quit”, or “other – please specify”. Raw data and code for Study 2 are available from the University of Tasmania’s data portal (note: URL will be added post acceptance).

### *Data Reduction and Statistical Analysis Plan*

One hundred fifty-five smokers completed the study. However, five participants who would not enrol for even the £10,000 programme were deemed non-responders and excluded from analyses. Three further participants were excluded as they provided inconsistent demographic information, suggesting they had not completed questions honestly; this resulted in an eligible sample of 147 participants. The analytical plan was almost identical to Study 1. Within Study 2, HSI was additionally included in growth models as a fixed effect. However, as HSI did not significantly influence results for any outcome, models without HSI have been presented here. Similarly, we tested whether there was an interaction between amounts and income group. This interaction was not significant. Additionally, reasons

for considering enrolling in FI programmes were reported using descriptive statistics, with differences between income groups compared using a Pearson's chi-square test.

## Results

On average, participants were 37 years old ( $SD = 11.95$ ), evenly divided between genders (53.06% female), and had been smoking an average of 16 years. Approximately 53% of participants intended to quit smoking in the next six months, with 60.54% of participants having made a quit attempt in the past year. Across the sample, 32.65% were classified as having low nicotine dependence, 53.06% had moderate dependence, and 14.29% had high dependence. Unequal numbers of low- ( $n = 43$ ), middle- ( $n = 70$ ), and high-income ( $n = 34$ ) participants were included. Demographic and smoking variables by income group are displayed in the Supplementary Materials.

### *Differences between income groups*

The fixed effects from the growth models of all outcome measures are presented in Table 2. Differences between income groups are also presented in Figure 2. Income group did not predict likelihood of enrolment (all  $p > .05$ ). However, differences between income groups were observed regarding programme appeal and motivation to quit; although the perspectives of low- and middle-income participants did not differ significantly, high-income participants found all programmes less appealing, and were less likely to predict they would be motivated to quit within programmes than low-income participants (see Table 2 and Figure 2). Additionally, high intentions to quit (cf. low) was associated with higher ratings of programme appeal, likelihood of enrolling, and motivation to attempt to quit (all  $p > .05$ ).

[Insert Table 2 around here]

[Insert Figure 2 around here]

### *Diminishing returns of incentive amounts*

As displayed in Figure 2, there appeared to be concave quadratic trends in all three outcome measures as the amount increased. However, growth model results only supported the presence of quadratic trends for the appeal and motivation to quit outcomes, within which the quadratic terms were significant (see Table 2). For these two outcomes, the models which included the quadratic term also provided a significantly better fit for the data than models with only the linear term (appeal:  $\chi^2(1) = 74.78, p < .001$ ; motivation:  $\chi^2(1) = 108.99, p < .001$ ). This suggests an eventual levelling off to the increasing programme appeal and predicted motivation to quit over FI amounts. For the likelihood of enrolment outcome, the quadratic term was no longer significant once random slopes were accounted for ( $p = .607$ ). Random slopes improved model fit ( $\chi^2(2) = 10.29, p = .006$ ), so were retained in the final model.

Based on visual inspection of data, it appeared the quadratic trends in the relationship between FI amounts and appeal/motivation had two linear sections linked by an inflection point. This point could indicate a ceiling amount at which the increases in these outcomes by FI amount level off. As in Study 1, we used Singer and Willett's<sup>31</sup> equation for identifying the peak of a quadratic curve; this point was identified to be at £91.33 per week (£913.30 total) for the appeal outcome, and £89.65 per week (£896.50 total) for the motivation outcome. Using the same method as Study 1, data was divided into two sections; for the appeal and motivation outcomes, the first section contained FI amounts up to the closest value available below these points (£75), and the second contained amounts from this point onwards. Growth models based on these break points were undertaken to examine the potential linear phases.

The appeal of programmes increased linearly comparative to the FI amount up to £75 ( $p < .001$ ). Further increases to the amount significantly but minutely altered appeal ( $p = .035$ ), with the mean appeal increasing by approximately four points between £75 and £100.



Motivation to quit increased linearly comparative to the FI amount up £75 ( $p < .001$ ), beyond which further increases in the amount did not significantly altered motivation ( $p = .228$ ). This suggests a ceiling was reached near £75 per week, beyond which further increasing the amount did not alter predicted motivation. This pattern of effects was not observed when the break points were at lower amounts.

Although the quadratic term in the model comparing FI amounts to likelihood of enrolling was non-significant after accounting for random slopes, visual inspection of data (see Figure 2) did suggest the increasing trend in the percent of participants willing to enrol slowed after approximately £50 per week (£500 total); an amount for which 87.07% of participant suggested they would enrol. Increasing the FI amount to £75 or £100 per week increased the percent of participants willing to enrol negligibly (to 91.8% and 92.5% respectively).

#### *Reasons to enrol in incentive programmes*

The most common reason participants would consider enrolling was because the money would impact the individual's life (43.54%), followed by the money compensating how hard it would be to quit (32.65%), and being paid signalling the importance of quitting (14.97%). Remaining participants (8.84%) supplied various other reasons. A Pearson's chi-square test revealed non-significant differences between income groups in their reasons for considering enrolling,  $\chi^2(6) = 2.44$ ,  $p = .875$ .

## **GENERAL DISCUSSION**

Both studies demonstrate current smoker's opinions of incentivised smoking cessation programmes are associated with the FI amount offered. Across studies, smokers largely reported increasing quadratic trends in the likelihood of enrolling, appeal of programmes, and predicted motivation to quit during programmes as the FI amount increased. The results of both studies suggest increasing the FI amount beyond approximately

£50 to £75 per week does not meaningfully increase ratings of programmes. As highlighted in Study 2, although the shape of this relationship was consistent across income groups, high-income earners rated the appeal and motivation afforded by programmes less favourably but were equally likely to enrol.

The results of this work support theory<sup>12</sup> and some previous research<sup>18,20</sup> which suggests higher FI amounts may more effectively promote smoking cessation. Our work extends upon this by demonstrating the relationship between smoker's perceptions of programmes and the amount offered may be curvilinear, meaning there might be an "optimal" point beyond which further increases to the amount will not meaningfully benefit programme enrolments or the motivation afforded. In our studies, £50 to £75 per week (£500 to £750 across the whole programme) was the point at which increasing the FI amount no longer increased perceptions of programmes, although some differences were observed between Studies 1 and 2. Differences may be because the money itself is not the sole motivation; other reasons, including that the offer of FIs implies others care about your quitting, could explain willingness to enrol. However, direct evidence for this was not observed within our data. Although further investigation is necessary, this may have implications for policymakers and researchers as it suggests focus should be given to amounts around or below this.

Our results help address policymaker's questions about whether FI programmes are applicable to smokers from all income groups, for which current evidence is mixed.<sup>14-16</sup> Results from Study 2 suggest high-income smokers may not perceive FI programmes to be as appealing or motivating as other income groups. Failure to observe this in Study 1 is likely due to it being underpowered. As most smokers in developed countries have lower incomes,<sup>33</sup> finding that low-income

smokers are willing to enrol in these programmes adds support for the use of FIs in practice. Our study suggests middle-income smokers' views of incentives do not differ from those of low-income smokers, indicating FI programmes could be equally viable in these groups. Further, the ratings provided by high-income smokers were still high, the shape of the outcome-amount relationships did not differ by income, and no differences between income groups were observed regarding individual's likelihood to enrol. Hence, the amount desired by low- and middle-income smokers may also be viable for use in high-income populations.

There are several limitations to these studies. We have here considered the lowest point at which increasing the FI amount no longer increases perceptions of programmes. Yet programmes were hypothetical, and participants were required to predict future behaviours; an assessment at which people are commonly overly optimistic. It is hence plausible alternative FI amounts could be sufficient in real-world settings. Yet should revealed preference methods like RCTs have been used, little literature exists to guide which amounts should be tested, and there are methodological and cost complications associated with testing a wide range of amounts. The current design was therefore believed to allow collection of valuable preliminary information to help narrow the range of amounts for future studies, and to guide research which considers FI magnitude effectiveness and cost-effectiveness.

Neither study presented here considered the various additional supports (e.g., nicotine replacement therapy or counselling) previously included in FI programmes.<sup>5</sup> Similarly, the design of programmes including overall length, session frequency/duration, travel to programmes, and payment forms (e.g., cash versus vouchers) were not considered. While such factors contribute to the overall appeal of a given programme, only the FI amount was investigated here as this is the core feature of these programmes. The influence of other design characteristics will be important for fully understanding the appeal and potential

enrolment in FI programmes. Informed by this study, future research utilising behaviour economic methods like discrete choice experiments could consider these questions.

As studies were conducted online, smoking status could not be objectively verified. Although, Prolific.co's pre-screening facility was utilised to only offer surveys to individuals who had stated that they smoked when signing up to Prolific and responses to demographic and smoking history questions were checked for consistency, current smoking could not be ensured. The sample was also relatively small and diverse, and participant characteristics other than income were not the primary focus of this work. These other characteristics, including nicotine dependence or intentions to quit, could differentially influence perceptions of programmes<sup>29</sup> or desired FI amounts. While those intending to quit sooner generally rated programmes more favourably within our studies, nicotine dependence did not influence outcomes. Further, findings may not be generalisable across geographical locations as, for example, purchasing power may differ. Hence, subsequent research should also test the generalisability of findings to other populations. Consideration of what policymakers or potential treatment providers would be willing to pay is also needed.

In conclusion, our results indicate an increasing quadratic relationship may exist between participants perceptions of FI programmes and the monetary amount offered. Although FIs may be more appealing and motivating to low- and middle-income smokers, high-income smokers were also motivated by the FI and were equally willing to enrol. Further, at the cut-points, interest in the programmes was high among all income groups, suggesting the amounts desired by lower income smokers may also be viable for use in high-income populations. Although there are limitations to using hypothetical questions, this work does provide valuable

preliminary information to guide future research. Further research will be important to determine whether other programme elements (e.g., programme length or payment forms) or recipient characteristics influence the absolute FI amount desired, and to consider the real-world effectiveness and cost-effectiveness of the identified amounts in promoting smoking cessation.

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## **DECLARATION OF INTERESTS**

SGF has worked as a consultant to various pharmaceutical companies on matters relating to smoking cessation and harm minimisation, and has received researcher-initiated project grant funding from Pfizer (through the GRAND initiative). Through his work at Pinney Associates, SGF also provides consulting services to JUUL Labs, Inc. (JLI). These organizations were not involved in the current study in any way. RJB and MAP have no conflicts to declare.

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**Table1:** Fixed effects of growth models for likelihood of enrolling (Study 1)

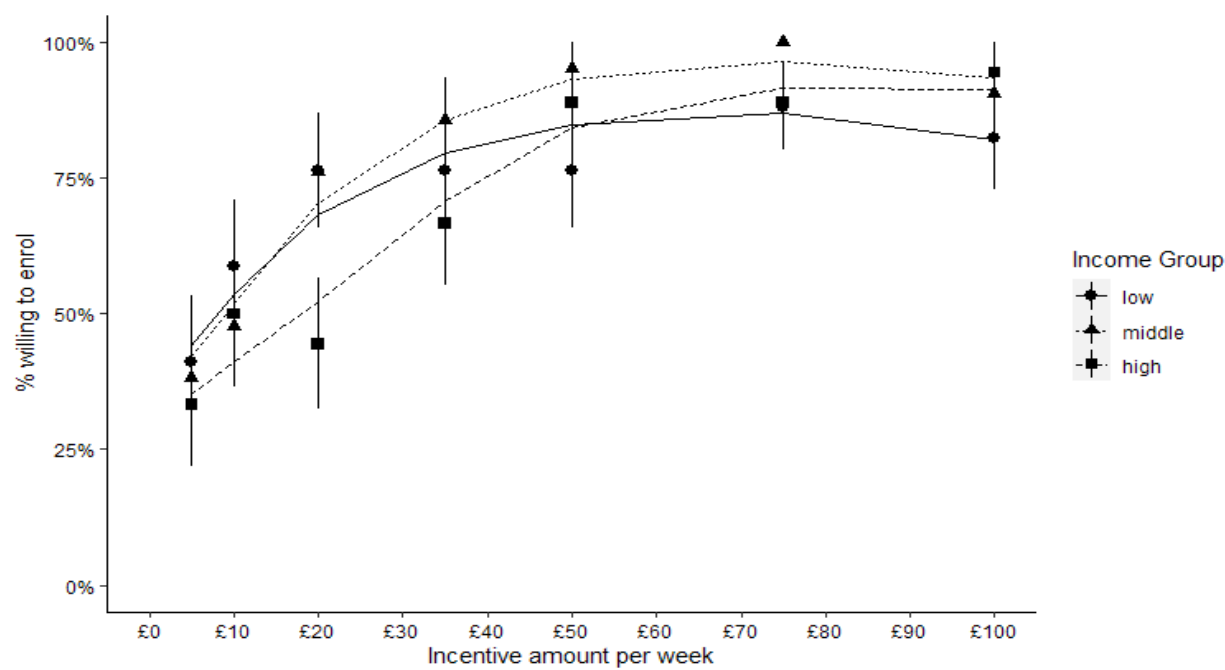
Parameter	Estimate	SE	<i>z</i>	<i>p</i>
Intercept	-2.59	1.22	-2.12	.034
Amount (linear)	0.18	0.03	5.42	< .001
Amount (quadratic)	- 0.001	0.003	-3.42	< .001
Middle income	0.22	1.40	0.15	.877
High income	- 0.85	1.44	-0.59	.554
High intention to quit	1.66	1.17	1.42	.155

*Note:* SE = standard error; df = degrees of freedom.

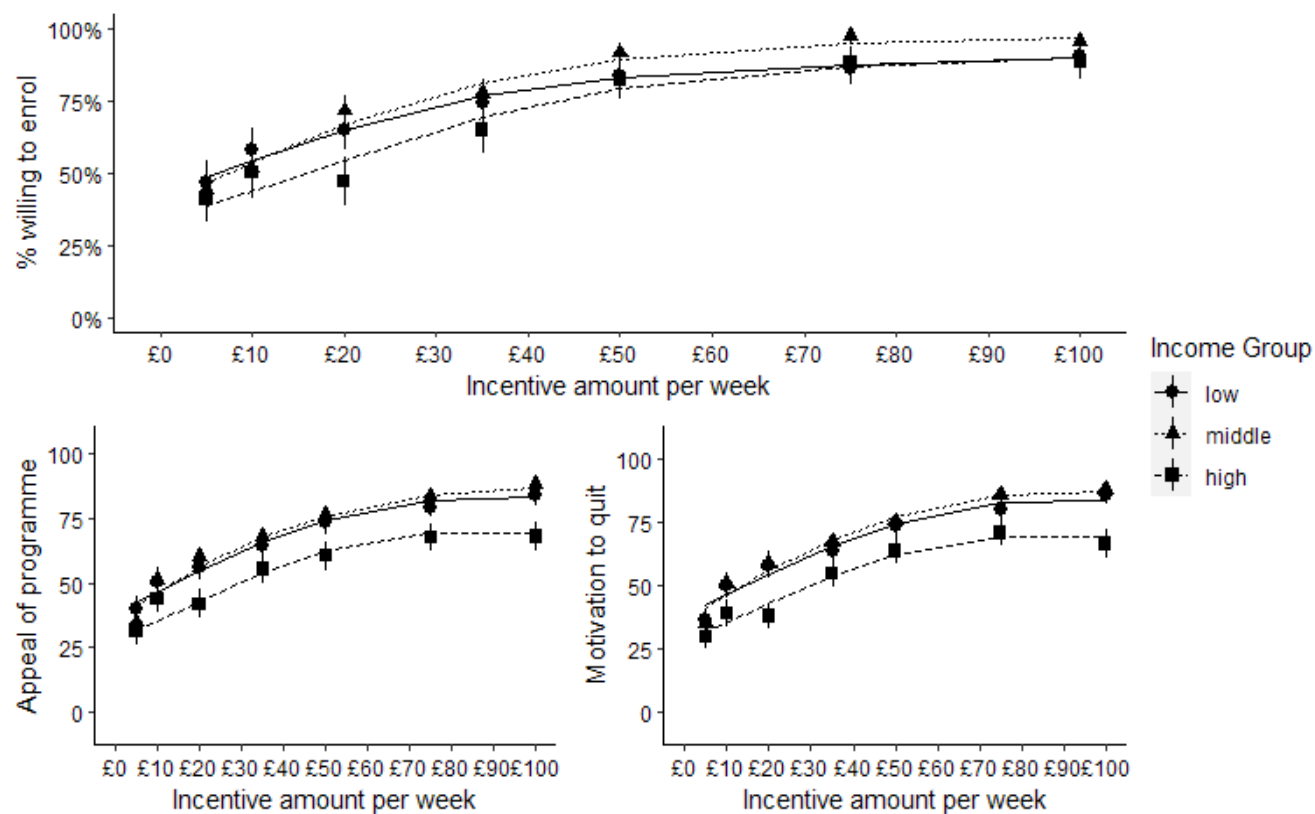
**Table 2:** Fixed effects of Growth models (Study 2)

	Likelihood of enrolling			Appeal				Motivation			
	Estimate (SE)	<i>z</i>	<i>p</i>	Estimate (SE)	df	<i>t</i>	<i>p</i>	Estimate (SE)	df	<i>t</i>	<i>p</i>
Intercept	-1.55 (0.69)	-2.25	.024	32.72 (3.97)	880	8.25	< .001	30.96 (3.96)	880	7.83	< .001
Amount (linear)	0.11 (0.02)	5.36	< .001	1.03 (0.07)	880	14.72	< .001	1.12 (0.06)	880	17.45	< .001
Amount (quadratic)	-0.001 (0.002)	-0.33	.740	-0.006 (0.001)	880	-8.89	< .001	-0.006 (0.001)	880	-10.95	< .001
Middle income	-1.09 (0.84)	-1.30	.193	-1.93 (4.57)	143	-0.42	.674	-1.87 (4.54)	143	-0.41	.682
High income	-0.99 (0.92)	-1.08	.279	-14.03 (5.05)	143	-2.78	.006	-14.57 (5.02)	143	-2.90	.004
High intention to quit	2.30 (0.71)	3.22	.001	12.39 (3.93)	143	3.16	.002	11.19 (3.91)	143	2.87	.005

*Note:* SE = standard error; df = degrees of freedom.



**Figure 1:** Differences in likelihood of enrolling between income groups in Study 1



**Figure 2:** Differences between income groups within Study 2