

Supplementary Material

Results

The daily, non-daily, and non-smoker groups differed by demographic characteristics, particularly age (Table1); daily smokers were older than non-daily smokers, who were older than non-smokers. This would be unlikely to cause spurious delay reward discounting (DRD) effects, because previous results have found that age negatively correlates with discounting rate (1), and so this group age difference would likely decrease the relationship between smoking and DRD. In order to control for the effects of age and gender, the major analyses of the three methodological DRD differences were repeated with age and gender as covariates.

Using the 5953 respondents who reported their smoking behaviour, gender and age, a 3 x 3 between groups ANOVA was conducted to test whether the order that the items are presented in is related to delay discounting. Condition (ascending, descending, and randomized) and smoking status (daily smoker, N = 1073; non-daily smoker, N = 453; non-smoker, N = 4427) were the factors, age and gender were covariates, and $\log(k)$ was the dependent variable. A main effect of smoking status was found ($F(2,5942) = 58.72$, $MSE = .32$, $p < .001$). A main effect of condition was found ($F(2, 5942) = 9.27$, $MSE = .32$, $p < .001$). However, no interaction was found between smoking status and condition ($F(4, 5942) = .67$, $MSE = .32$, $p = .61$). Both gender ($F(1, 5942) = 6.19$, $MSE = .32$, $p = .013$) and age ($F(1, 5942) = 36.27$, $MSE = .32$, $p < .001$) were significant predictors.

To find out whether there were differences in the estimated DRD parameters at different delay lengths, and whether any differences were different for the three smoking statuses, a 3x3x6 mixed ANOVA was conducted with condition (ascending, descending, and randomized) and smoking status (daily smoker, non-daily smoker, non-smoker) as the between groups factors, delay length (1 week, 2 weeks, 1 month, 6 months, 1 year, 5 years) as the within groups factor, and the covariates of age and gender. There was a strong effect of delay length ($F(5, 29710) = 179.48$, $MSE = .20$, $p < .001$), such that shorter delays led to a steeper discounting parameter being estimated. The three-way

interaction was not significant ($F(20, 29710) = .76$, $MSE = .20$, $p = .77$), but there was an interaction between delay length and smoking status ($F(10, 29710) = 2.80$, $MSE = .20$, $p = .002$).

In order to investigate the effects of differing delayed rewards, the DRD parameters for \$1000 in 1 month were compared to the parameters for \$100 in 1 month. A 3 x 2 mixed ANOVA with smoking status (daily smoker, non-daily smoker, and non-smoker) as the between-groups factor, delayed amount (\$100, \$1000) as the within-subjects factor, and age and gender as covariates found a main effect of delayed amount ($F(1, 5847) = 61.11$, $MSE = .17$, $p < .001$), but no interaction ($F(2, 5847) = 1.28$, $MSE = .17$, $p = .28$).

Overall, when controlling for age and gender the pattern of results replicated the findings in the main analysis.

References

1. Green L, Myerson J, O'Staszewski P. Discounting of delayed rewards across the life span: age differences in individual discounting functions. *Behavioural Processes*. 1999;46(1):89-96.

Table 1 – Demographic characteristics of smoking groups

| Smoking Group | % Male | Mean Age (SD) |
|-------------------|--------|---------------|
| Daily Smokers | 36% | 28.3 (9.5) |
| Non-Daily Smokers | 41% | 23.6 (8.2) |
| Non-Smokers | 38% | 21.8 (8.6) |