
DOI: 10.1503/jpn.120181

Copyright © 2013, Canadian Medical Association or its licensors.

**Experimental session**

![Timeline of Experimental Test Session](image)

**Fig. S1**: Timeline of Experimental Test Session. POMS = profile of mood states; AA Mixture = amino acid mixture; FER = facial emotion recognition; PR = progressive ratio; NMI = negative mood induction.

**Progressive ratio task pilot study**

**Methods**

**Aim**

To examine the willingness of participants to button press in progressively increasing increments for units of monetary reward; more specifically, the willingness to work harder for higher versus lower values of reward ($1 v. $2 v. $5).

**Participants**

Twenty-one healthy women between the ages of 18-40 and with no current or past history of any Axis I disorders as determined by the Structured Clinical Interview for DSM–IV.

**Experimental design**

The participants completed 2 experimental sessions, conducted on 2 separate days, during which they completed 2 versions of a progressive ratio breakpoint task. The participants were randomly assigned to 1 of 3 reward conditions where they had the opportunity to work for 3 different monetary rewards. Participants were given the opportunity to button press for $1, $2, or $5 units of reward (3 groups of 7 participants). The parameters of the task were set to increase by a factor of 2.3 to prevent the estimation of the button pressing pattern.

During their first trial, participants performed the task either to the point where they were no longer interested in continuing, or until a time limit of 1 hour (unknown to the participants) was reached. During their second trial, the participants were given the additional option of discontinuing the task partway through a ratio value to earn half the value of a single monetary unit, in addition to what they had already earned (i.e. the participants were given the opportunity to earn a smaller reward without having to reach the required number of presses for that breakpoint).
Statistical analysis

The dependent variables of final breakpoint and total number of presses executed over the entire course of the task were examined using repeated measures, 2-way analysis of variance (ANOVA) models. The reward condition ($1$, $2$, or $5$) was an independent, between-groups factor and day was a within-subjects factor. All variables were screened for normality using the Shapiro–Wilk test and equality of variance was ased using the Levene test. These analyses indicated that both variables required a Log_{10} transformation to satisfy the assumption of normality required for parametric analyses. All analyses were performed on SPSS v. 19.0 for Macintosh.

Results

The ANOVAs yielded main effects of reward condition (breakpoint: $F_{2,18}=5.07, p = 0.02$; total presses: $F_{2,18} = 6.47, p = 0.01$), but not effects of day (breakpoint: $F_{1,18} = 2.03, p = 0.17$; total presses: $F_{1,18} = 1.33, p = 0.26$) or day × reward condition interactions (breakpoint: $F_{2,18} = 1.05, p = 0.37$; total presses: $F_{2,18} = 0.14, p = 0.87$). Post-hoc analyses using pairwise comparisons with a Bonferroni adjustment showed that for final breakpoint and total presses, this was primarily due to a significant increase in both measures by the $5$ group as compared to the $1$ group (breakpoint: $p = 0.02$; total presses: $p = 0.01$); see Supplemental Figure S2 for final breakpoint results (nontransformed data shown), data not shown for total presses. Performance on the 2 test sessions was consistent and positively correlated (breakpoint $r = 0.80, p = 0.01$; total presses $r = 0.43, p = 0.05$).

Conclusion

Participants worked significantly harder for the highest dollar amount than for the lowest, supporting the proposition that effort exerted reflected perceived value. To avoid floor effects in the acute phenylalanine/tyrosine depletion study, we used the higher dollar value. Since performance on the modified PR task (day 2) did not differ from day 1, the standard version of the task was used.

![Figure S2](image-url)

**Fig. S2:** Final average breakpoint value for the $1$, $2$, and $5$ reward conditions. Nontransformed data. To satisfy the requirements for parametric statistics, all analyses were done using Log_{10} transformed data and the $p$ values represent results from these analyses. There was a significant main effect of reward condition ($p = 0.018$), and a significant increase in the $5$ condition as compared to the $1$ condition ($p = 0.016$). The mean (SD) for Log_{10} transformed breakpoint data on day 1 and day 2 ($1$: $3.03 [0.44]$ & $2.98 [0.46]$; $2$: $3.34 [0.34]$ & $3.14 [0.33]$; $5$: $3.55 [0.27]$ & $3.55 [0.18]$).