

Slot Task

●
○○○○○
○

Overview

Slot Task

Slot Task
① TR: $\text{TR} = \text{sec RTT}$
② DF and random? $\text{DF} = \text{RTT} - \text{RTT}_{\text{min}}$ that one!
③ 24 min 38 sec ≈ 25 ? ✓
④ Infusion when random? \rightarrow YES! ✓
⑤ Jitter? ≈ 15
⑥ What should be recorded
 1. TR
 2. event trigger
 3. event trigger
 4. Whole brain (using TTK)
 ITF machine
 machine & handle
 response (spin)
 infusion
 pins

Questions:

① what are the instructions?
② what do we do multiband?
 what coverage do we want?
③ Fixed / variable length of anticipation?
④ How should we randomize trials?
 Fixed distribution, varying by sub 3
⑤ What do they mean by T_{RTT} ?
 Fixed by sub 3
⑥ What should be recorded?
⑦ Time intervals for each step

LNCDB

DB Publishers
① login ✓
② transaction audit ✓
③ Server ✓ Starts on restart
 does not sleep
④ mdb → SQL
⑤ Nine Server ✓ $\text{http://192.168.1.1}$

Schedule Meetings with
will (Alice) ✓
Ran (Julia) ✓
Bilal (Rachel) ✓
Justin (Sara) ✓
Period

Questionnaire

① .Net v2?
② LINQ to SQL
③ Lncd.pitf色々
 Script curl/crontab

memories

MEC Pilot 1/10/30

VPR VAP

Slot Task



The Slot Task

Martin-Soelch Task

- Wait indefinitely for button push?

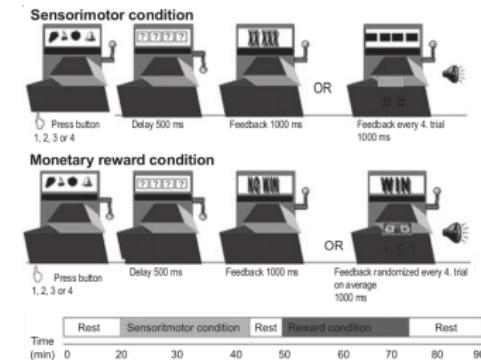


FIG. 1. Illustration of the experimental task. (A) Illustration of a sensorimotor and a rewarded trial. During each trial, subjects were presented with four distinct pictures (apple, grape, cherry, bell) presented in a 'slot-machine' motif. Subjects were asked to choose one of the four with a button press on a four-button response box using their right hand. This response was followed by a 500-msec delay. In the rewarded trials a one-dollar bill appeared for 1000 msec and subjects heard the characteristic sound of an opening cash-register drawer. These monetary gains were provided in a pseudo-randomized order with an average of one reward every fourth trial. In the sensorimotor control trials, subjects were presented instead with a meaningless symbol accompanied by a click sound on every fourth trial. After receiving the trial outcome, subjects were presented with their running total of earnings for 1000 msec. Displaying the actual balance account prevented rapid discounting of the rewards presented. At the end of each trial subjects viewed a blank screen for 1000 msec. During the reward task subjects were unaware of which trial or picture would lead to the receipt of a reward, except that the same picture could not provide a reward in two consecutive trials. Subjects thus were instructed not to select the same picture more than twice in a row (selection of the same picture twice in a row led to interruption of the task, and the task continued only after

Slot Task



The Slot Task

Martin-Soelch Task

- Wait indefinitely for button push?
- $.5\text{s} + 1\text{s} + 1\text{s} + 1\text{s}$ of black screen

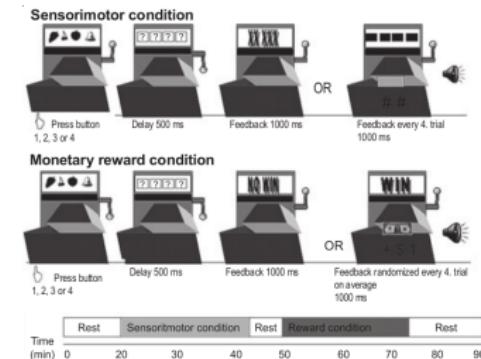


FIG. 1. Illustration of the experimental task. (A) Illustration of a sensorimotor and a rewarded trial. During each trial, subjects were presented with four distinct pictures (apple, grape, cherry, bell) presented in a 'slot-machine' motif. Subjects were asked to choose one of the four with a button press on a four-button response box using their right hand. This response was followed by a 500-msec delay. In the rewarded trials a one-dollar bill appeared for 1000 msec and subjects heard the characteristic sound of an opening cash-register drawer. These monetary gains were provided in a pseudo-randomized order with an average of one reward every fourth trial. In the sensorimotor control trials, subjects were presented instead with a meaningless symbol accompanied by a click sound on every fourth trial. After receiving the trial outcome, subjects were presented with their running total of earnings for 1000 msec. Displaying the actual balance account prevented rapid discounting of the rewards presented. At the end of each trial subjects viewed a blank screen for 1000 msec. During the reward task subjects were unaware of which trial or picture would lead to the receipt of a reward, except that the same picture could not provide a reward in two consecutive trials. Subjects thus were instructed not to select the same picture more than twice in a row (selection of the same picture twice in a row led to interruption of the task, and the task continued only after

Slot Task



The Slot Task

Martin-Soelch Task

- Wait indefinitely for button push?
- $.5\text{s} + 1\text{s} + 1\text{s} + 1\text{s}$ of black screen
- 8 one-minute breaks in each block?

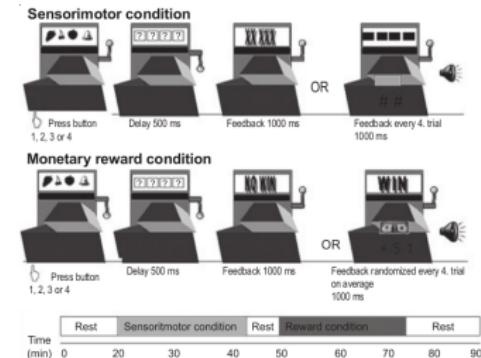
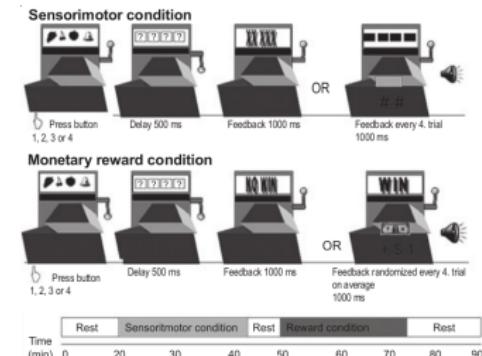


FIG. 1. Illustration of the experimental task. (A) Illustration of a sensorimotor and a rewarded trial. During each trial, subjects were presented with four distinct pictures (apple, grape, cherry, bell) presented in a 'slot-machine' motif. Subjects were asked to choose one of the four with a button press on a four-button response box using their right hand. This response was followed by a 500-msec delay. In the rewarded trials a one-dollar bill appeared for 1000 msec and subjects heard the characteristic sound of an opening cash-register drawer. These monetary gains were provided in a pseudo-randomized order with an average of one reward every fourth trial. In the sensorimotor control trials, subjects were presented instead with a meaningless symbol accompanied by a click sound on every fourth trial. After receiving the trial outcome, subjects were presented with their running total of earnings for 1000 msec. Displaying the actual balance account prevented rapid discounting of the rewards presented. At the end of each trial subjects viewed a blank screen for 1000 msec. During the reward task subjects were unaware of which trial or picture would lead to the receipt of a reward, except that the same picture could not provide a reward in two consecutive trials. Subjects thus were instructed not to select the same picture more than twice in a row (selection of the same picture twice in a row led to interruption of the task, and the task continued only after

scanning epochs described below. During the 24-min epochs that corresponded to each task condition, subjects alternated between 2-min periods in which they actively performed the task and 1-min periods when they rested to minimize fatigue. Each subject won a total

Martin-Soelch Task

- Wait indefinitely for button push?
- $.5\text{s} + 1\text{s} + 1\text{s} + 1\text{s}$ of black screen
- 8 one-minute breaks in each block?
- Shown score (WM)



scanning epochs described below. During the 24-min epochs that corresponded to each task condition, subjects alternated between 2-min periods in which they actively performed the task and 1-min periods when they rested to minimize fatigue. Each subject won a total

FIG. 1. Illustration of the experimental task. (A) Illustration of a sensorimotor and a rewarded trial. During each trial, subjects were presented with four distinct pictures (apple, grape, cherry, bell) presented in a 'slot-machine' motif. Subjects were asked to choose one of the four with a button press on a four-button response box using their right hand. This response was followed by a 500-msec delay. In the rewarded trials a one-dollar bill appeared for 1000 msec and subjects heard the characteristic sound of an opening cash-register drawer. These monetary gains were provided in a pseudo-randomized order with an average of one reward every fourth trial. In the sensorimotor control trials, subjects were presented instead with a meaningless symbol accompanied by a click sound on every fourth trial. After receiving the trial outcome, subjects were presented with their running total of earnings for 1000 msec. Displaying the actual balance account prevented rapid discounting of the rewards presented. At the end of each trial subjects viewed a blank screen for 1000 msec. During the reward task subjects were unaware of which trial or picture would lead to the receipt of a reward, except that the same picture could not provide a reward in two consecutive trials. Subjects thus were instructed not to select the same picture more than twice in a row (selection of the same picture twice in a row led to interruption of the task, and the task continued only after

Our (much prettier) Task



Your score is: (Do we want this?)



Length of anticipation stimulus

- Fixed, Variable (jittered at $TR * n$), how long?





Timing/Length of Trial events

- ① Cue and input
 - How long should each of these be?
- ② Anticipation
 - Where should we include jitter?
- ③ Outcome
 - Group by TR? What if cardiac gated?
- ④ "Fixation"



Low Hanging Fruit

Instructions

Do we tell participants:

- No pattern
- Can't choose same fruit twice in a row
- Win/lose independent of response
- Two blocks

Slot Task
○
○○○○
○●○○
○

Low Hanging Fruit

Behavioral recordings

For each trial, record

- Response
- Response time
- Reward

Is there anything else we should record?



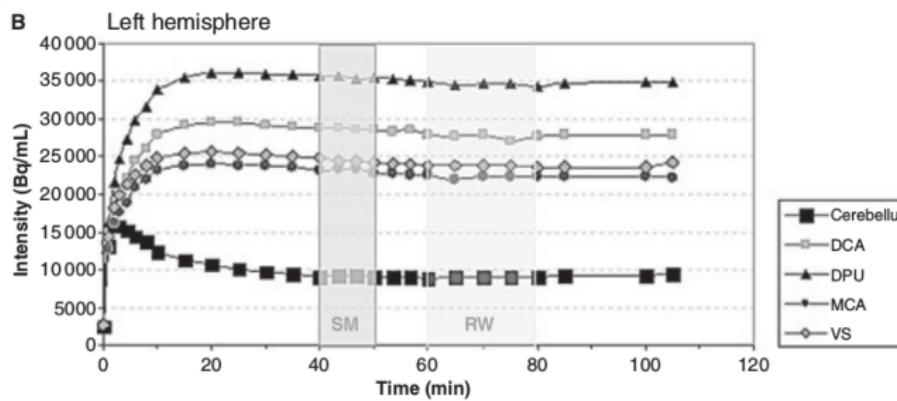
Low Hanging Fruit

Randomness

- Trials
 - Win half, at most 4 losses in a row?
- Runs (win/lose trial list)
 - Fixed distribution:
 - Varying by subject, OR
 - Fixed by subject
 - Pre-generated list
 - Totally random

[¹¹C]raclopride and SM task

- Martin-Soelch et al. used only 1/2 of SM block
- Could start collecting PET earlier? Collect less for SM condition?





Imaging and TR

- Whole brain coverage
- VTA only



Imaging and TR

- Whole brain coverage
 - Multiband ($TR=1$, $n.slices=60$)
 - Need to talk to Tae, might not be possible
 - Resolution is $\approx 3mm^3$
- VTA only



Imaging and TR

- Whole brain coverage
 - Multiband ($TR=1$, $n.slices=60$)
 - Need to talk to Tae, might not be possible
 - Resolution is $\approx 3mm^3$
- VTA only
 - Resolution is $\approx 1mm^3$
 - Requires
 - Acquisition synced to cardiac cycles (pulse-ox, trigger w/in 70ms)
 - Indeterminate acquisition time (no fixed TR)
 - Proton density imaging to find SN, to find VTA
 - Alternative alignment methods
 - Discard motion $> 1.5mm$ in any direction