

Right-Left Confusion and effects of Priming.

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SE367 Introduction to Cognitive Science

Motivation, Status and Execution

- Childhood (Band classes)!
- Ongoing.
Data for 12 Subjects available
(not all that reliable!).
- FLXLab 2.5 to measure response time.
(a program for conducting computer-based
experiments in psychology and related fields.)

Literature NeuroScience

- Auer, Tibor, et al.
(Right–left discrimination is related to the right hemisphere, 2008)
RLD requires activation of the parieto-temporo-occipital junction as well as the visual system including cuneus, precuneus, and gyrus lingualis.
- Brandt, Jason, and William Mackavey.
(Left-right confusion and the perception of bilateral symmetry, 1981)

Literature Experimental

- R Rigal

(Right-left orientation: Development of correct use of right and left terms, Perceptual and motor skills, 1994)

- Thomas J. Snyder

(Self-rated right-left confusability and objectively measured right-left Discrimination, 1991)

Expectations from Priming

- With +/-
The real Axis
- With Color
(Red and Blue)

Subjects (till now)

12 =(6 M, 6 F) = (11 R, 1 L)

In search for left-handed people,
and also sportsmen.

Experiment 1

Font- Lucida Console

db, qp - Lateral Symmetry (w.r.t y axis)

pb, qd - Symmetry w.r.t x axis

pd, qb - Rotational Symmetry

Subjects were shown 10 chars of the given pair.
They read aloud the string and the response
time was measured.

d d b d d b b d d b

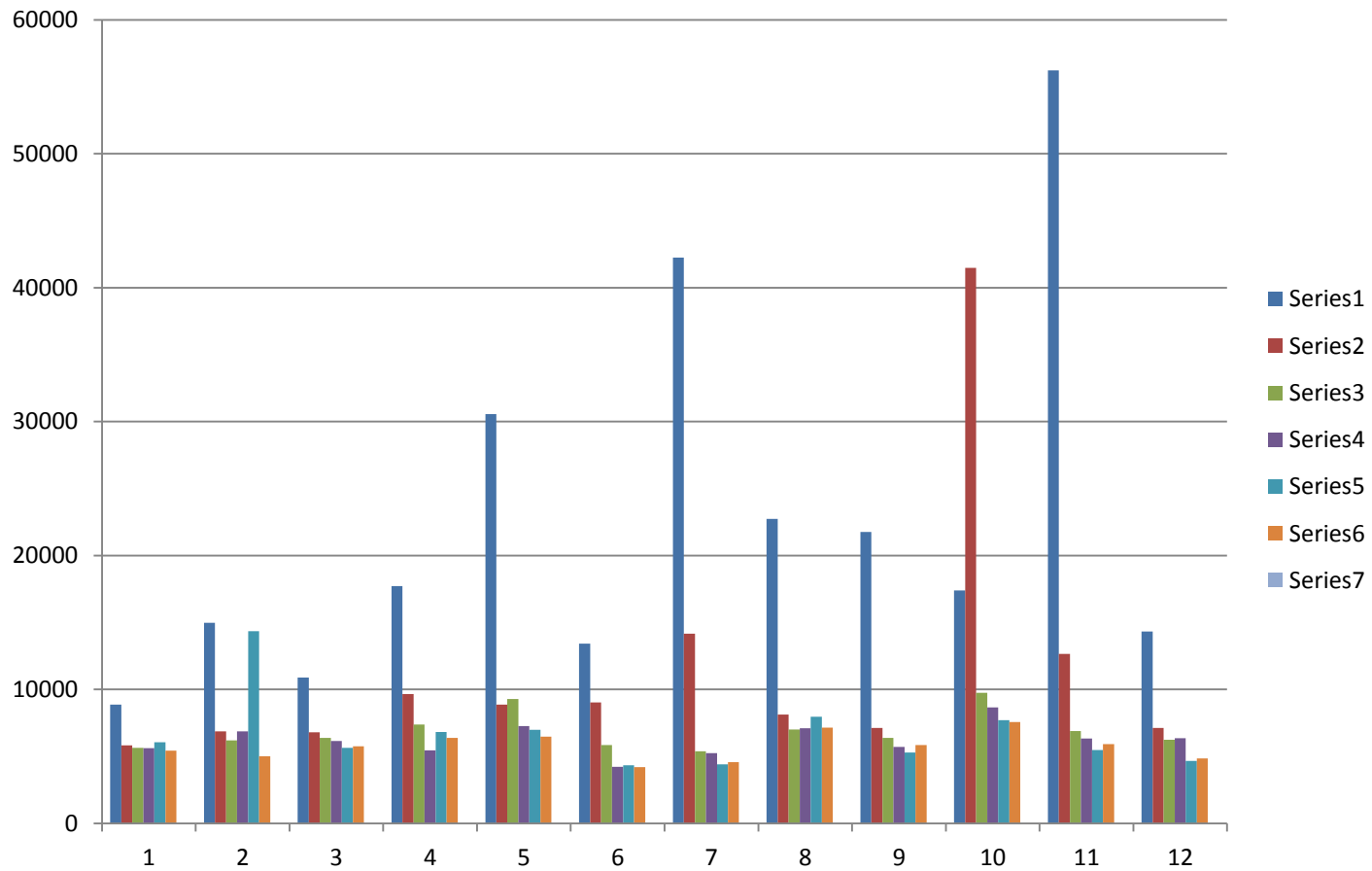
p q q p p q p q p p

p b b p p p b b p b

d q q d q d d q q d

p d d p p p d d p d

q b b q b q q b q b



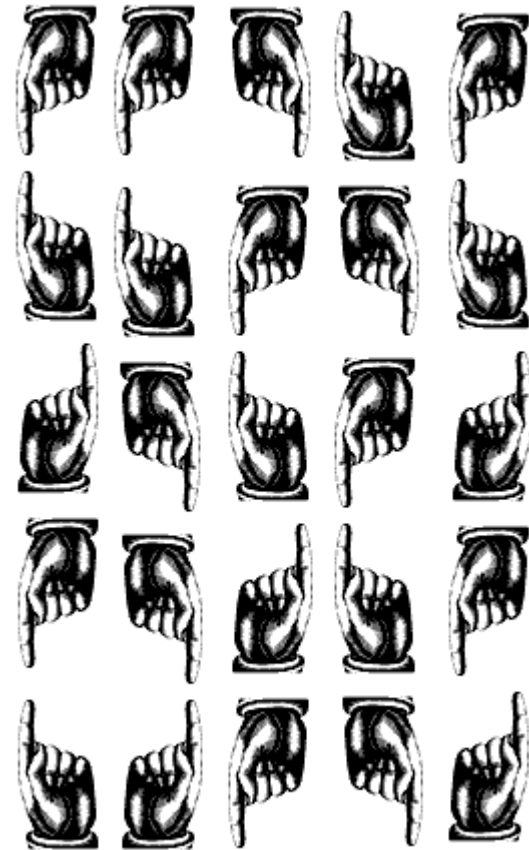
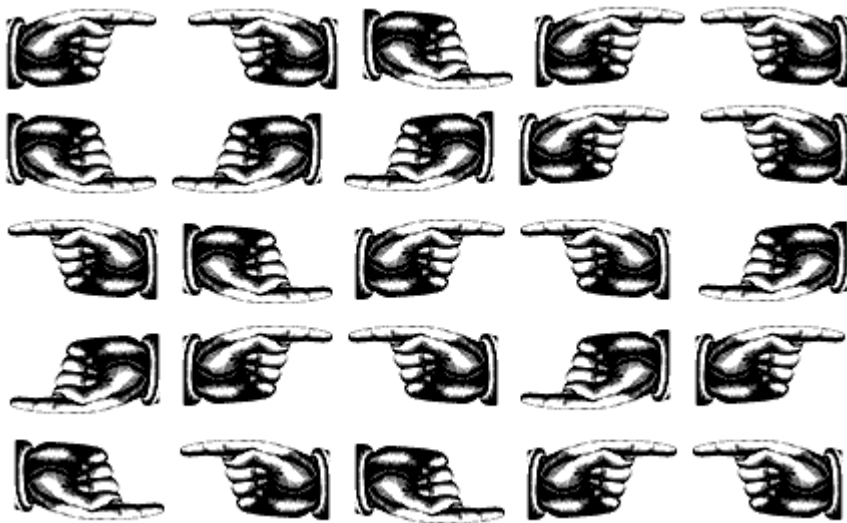
Series (1 to 6) = db,qp / pb,qd / pd,qb
 Scale arbitrary here

Limitations, Arguments and Trends

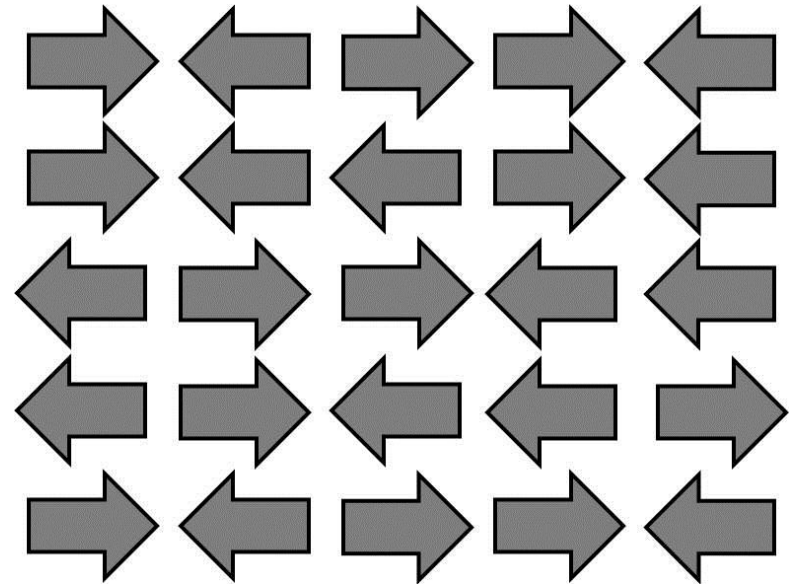
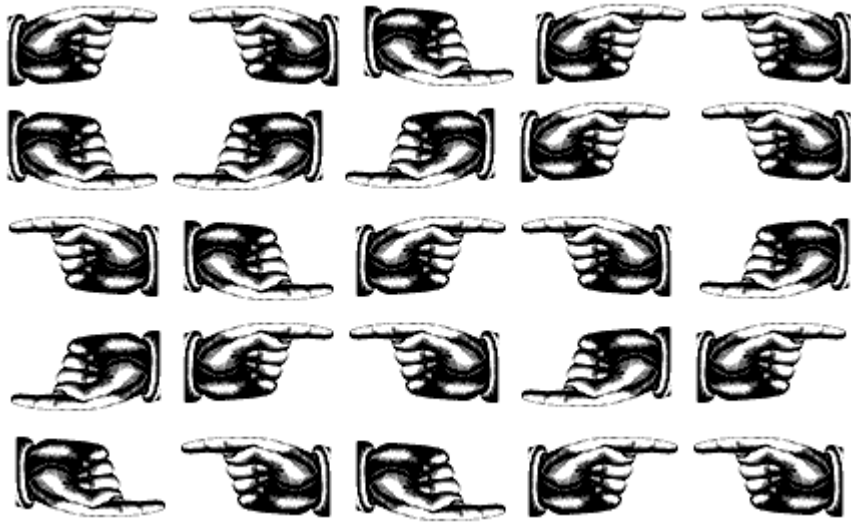
- Strings with lateral symmetry had a higher response time versus other pairs.
- Amongst db and pq though, db on an average had a higher response time.
This may be due to effect of language and reading.
(pq seldom come together and q is often followed by u.
On the other hand db come in words more often.)
- Limitation- Due to familiarity with setup the response time was higher for subjects for initial pair the experiment was done in same order of pair exposure db before qp.
- Error in response times too (two laptop setup!)

Experiment 2(a)

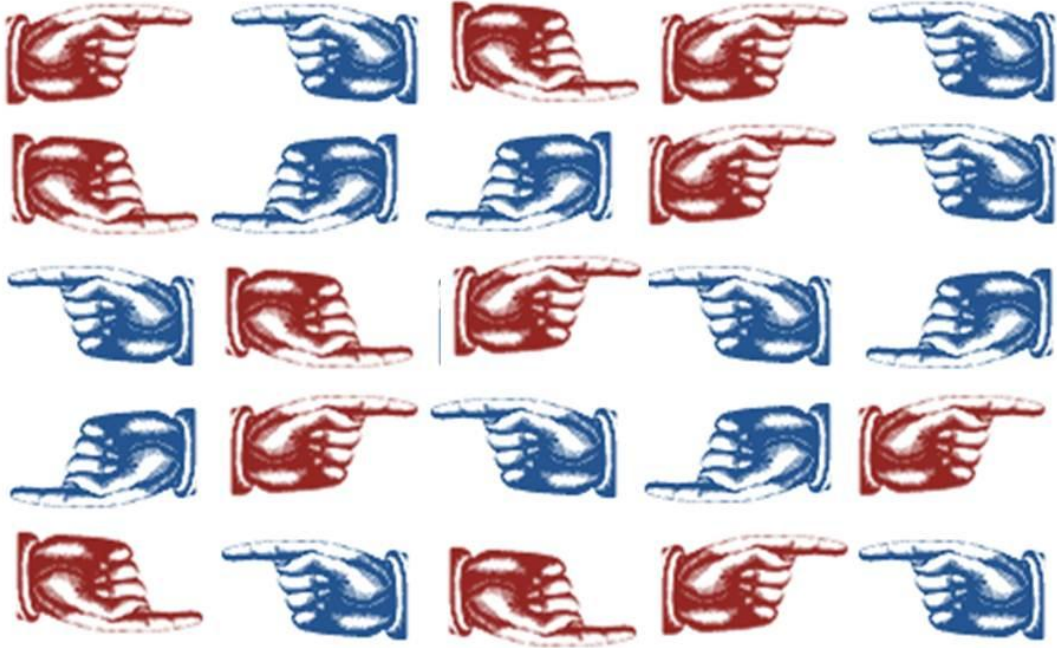
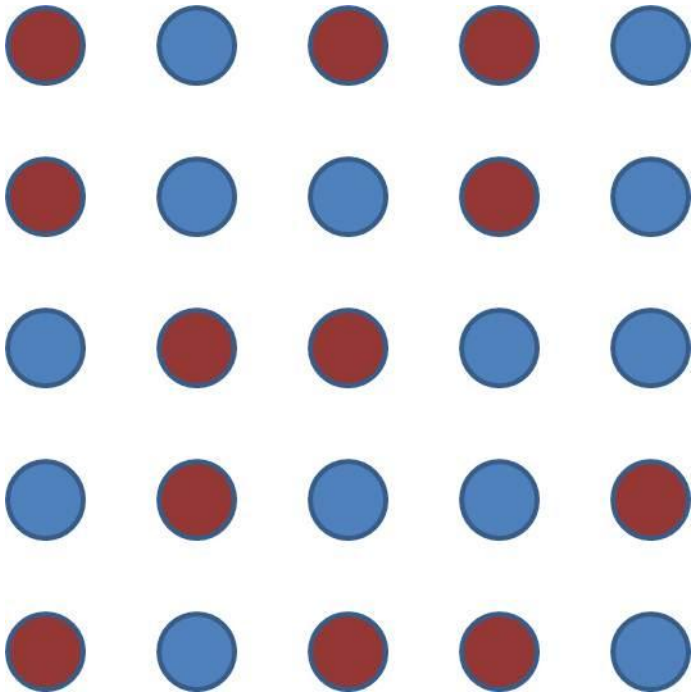
- Source-faculty.washington.edu/chudler/java/hands1.html



Experiment 2(b): Priming with +/-



Experiment 2(c): Priming with Colour



Limitations, Arguments and Trends

Language effects will creep in.

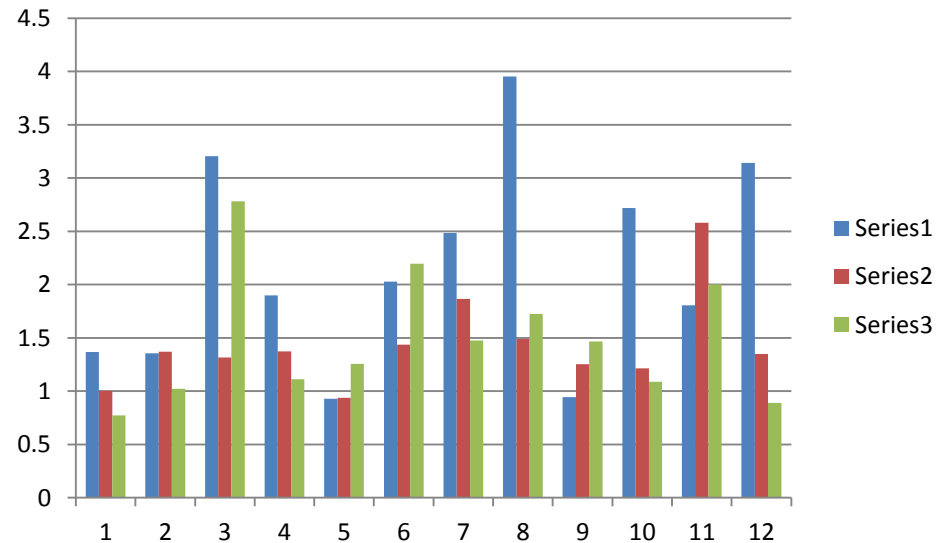
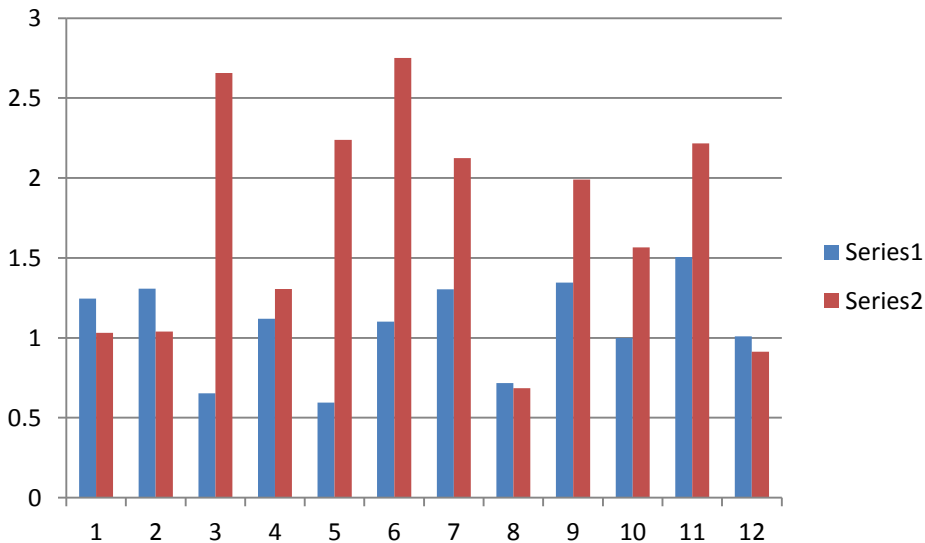
RL/UD \sim 0.93 to 3.95, Mean: 2.15

+-/UD \sim 0.94 to 2.58, Mean: 1.43

Color/UD \sim 0.7 to 2.78, Mean: 1.48

Plus_rl/plus,color_rl/color;

rl/ud,+-/ud, color/ud



Limitations, Arguments and Trends

- Gender Issues

Females consistently showed more RL confusion despite claims by Snyder. May be due to the demography (or lack of).

Females to Males-

- RL/UD ~ Mean: 2.51, 1.80
- +/-UD ~ Mean: 1.62, 1.24
- Color/UD ~ Mean: 1.52, 1.44
- Not enough data for handedness issues

Questions raised on the far horizon

Priming is dependent on person.

For some both works, while only one works for other given $rl/ud > 1$

Having known some of the subjects, it seems right brained subjects primed well with color and left brained primed well with +/-.

Can RL Discrimination be better understood by understanding its relation to left brain, right brain?



References

- [1] Auer, Tibor, et al. "Right–left discrimination is related to the right hemisphere." *Laterality* 13.5 (2008): 427-438.
- [2] Brandt, Jason, and William Mackavey. "Left-right confusion and the perception of bilateral symmetry." *International Journal of Neuroscience* 12.2 (1981): 87-94.
- [3] Rigal, Robert. "Right-left orientation: Development of correct use of right and left terms." *Perceptual and motor skills* 79.3 (1994): 1259-1278.
- [4] Snyder, Thomas J. "Self-rated right-left confusability and objectively measured right-left discrimination." *Developmental neuropsychology* 7.2 (1991): 219-230.

Code Makedo

```
# DelayEvent sec 1000  
WaitEvent wait1 "until key any"  
ResetDateTime  
TextEvent on "on"
```

```
WaitEvent wait2 "until key any"
```

```
DataEvent rt  
DataColumn $time
```

```
JoinStrings datafile "rl_dat.txt"  
UseDataFile $datafile
```

```
TrialEvent rl  
# AddEvent sec  
AddEvent wait1  
AddEvent on  
AddEvent wait2  
AddEvent rt
```

```
BlockEvent exp  
AddEvent rl  
AddEvent rl  
AddEvent rl  
AddEvent rl  
AddEvent rl  
AddEvent rl
```

```
Start exp
```

Code Fail

http://home.iitk.ac.in/~nitica/se367/project/code_f.txt