Psych 251 Comprehension Pilot A: Gick (1983)

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November 25th, 2018

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This is pilot A is a pilot of my study with non-naive participants. In this document, you will find:

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# load packages  
library(tidyverse) # for data munging

## ── Attaching packages ─────────────────────────────────────────────────────── tidyverse 1.2.1 ──

## ✔ ggplot2 3.1.0 ✔ purrr 0.2.5  
## ✔ tibble 1.4.2 ✔ dplyr 0.7.7  
## ✔ tidyr 0.8.2 ✔ stringr 1.3.1  
## ✔ readr 1.1.1 ✔ forcats 0.3.0

## ── Conflicts ────────────────────────────────────────────────────────── tidyverse\_conflicts() ──  
## ✖ dplyr::filter() masks stats::filter()  
## ✖ dplyr::lag() masks stats::lag()

library(knitr) # for kable table formating  
library(haven) # import and export 'SPSS', 'Stata' and 'SAS' Files  
library(readxl) # import excel files  
library(CARPSreports) # custom report functions  
  
library('dplyr') # for data manipulation  
library('tidyr') # for reshaping data  
library(plyr)

## -------------------------------------------------------------------------

## You have loaded plyr after dplyr - this is likely to cause problems.  
## If you need functions from both plyr and dplyr, please load plyr first, then dplyr:  
## library(plyr); library(dplyr)

## -------------------------------------------------------------------------

##   
## Attaching package: 'plyr'

## The following objects are masked from 'package:dplyr':  
##   
## arrange, count, desc, failwith, id, mutate, rename, summarise,  
## summarize

## The following object is masked from 'package:purrr':  
##   
## compact

library('ggplot2') # plotting data  
library('scales') # for scale\_y\_continuous(label = percent)

##   
## Attaching package: 'scales'

## The following object is masked from 'package:purrr':  
##   
## discard

## The following object is masked from 'package:readr':  
##   
## col\_factor

library('ggthemes') # for scale\_fill\_few('medium')  
knitr::opts\_chunk$set(comment = NA)  
options(ztable.type = 'html')  
#install.packages("ez") #Uncomment and run this line if you do not have "ez" installed  
library(ez)  
library(lsr) #for ANOVA effect size calculations

1. First, let’s look at the “data” collected from me and my friends to guarantee that the data is logging correctly. This was my first attempt to raw data that I collected with three samples in total. The data was logging in correctly, but I have more information than needed it for this experiment.

library(readr)  
rawdata <- read\_csv("~/Desktop/PhD Stanford /PSYCH-251 Experimental Methods/Final Project /PilotA/Trial 2\_PilotA/Data\_Trial2\_PilotA.csv")

Parsed with column specification:  
cols(  
 .default = col\_character()  
)

See spec(...) for full column specifications.

head(rawdata)

# A tibble: 4 x 24  
 StartDate EndDate Progress `Duration (in s… RecordedDate ResponseId Q1   
 <chr> <chr> <chr> <chr> <chr> <chr> <chr>  
1 Start Da… End Da… Progress Duration (in se… Recorded Da… Response … Gend…  
2 11/25/18… 11/25/… 100 137 11/25/18 17… R\_u8KIu3Y… Pref…  
3 11/25/18… 11/25/… 100 35 11/25/18 17… R\_2AMWJ5p… Pref…  
4 11/25/18… 11/25/… 100 387 11/25/18 17… R\_2Xb76xN… Fema…  
# ... with 17 more variables: Q1\_3\_TEXT <chr>, Q2 <chr>, Q3 <chr>,  
# Q24 <chr>, Q22 <chr>, Q26 <chr>, Q27 <chr>, Q28 <chr>, Q29\_1 <chr>,  
# Q54 <chr>, Q55 <chr>, Q58 <chr>, Q59 <chr>, Q60 <chr>, Q61\_1 <chr>,  
# Q47 <chr>, Q41 <chr>

1. The feedback on the paradigm that I got by running it several times. After running the paradigm several times, the users advised me to put a break page between the stories and allow for users to click on continue when they have finished with their stories. Please see below the clean data based on the raw data presented on the previous section.

d <- read\_csv("~/Desktop/PhD Stanford /PSYCH-251 Experimental Methods/Final Project /PilotA/Trial 2\_PilotA/Table A\_Data\_Trial2\_PilotA.csv")

Parsed with column specification:  
cols(  
 Subject = col\_integer(),  
 Condition = col\_integer(),  
 BeforeHint = col\_integer(),  
 AfterHint = col\_integer(),  
 Comprenhensibility = col\_character()  
)

head(d)

# A tibble: 3 x 5  
 Subject Condition BeforeHint AfterHint Comprenhensibility  
 <int> <int> <int> <int> <chr>   
1 111 1 0 1 Good   
2 112 1 1 1 Poor   
3 113 2 1 1 Intermediate

1. The code for my planned analyses and 4. The confirmation that I can run the code on my data.

#Total With Principle condition  
Total\_WP = sum(with(d, Condition==1))  
Total\_WP

[1] 2

#Total Without Principle   
Total\_WOP = sum(with(d, Condition==2))  
Total\_WOP

[1] 1

# Frequency of convergence solution with principle before hint   
ds <- d %>%  
 filter(Condition==1 & BeforeHint==1)  
y = count(ds, 'BeforeHint')  
#Percentage of convergence solution with principle before hint   
mutate (y, PY=((y$freq/Total\_WP)\*100))

BeforeHint freq PY  
1 1 1 50

# Frequency of convergence solution with principle after hint   
dt <- d %>%  
 filter(Condition==1 & AfterHint==1)  
x = count(dt, 'AfterHint')-y  
#Percentage of convergence solution with principle before hint   
mutate (x, PX=((x$freq/Total\_WP)\*100))

AfterHint freq PX  
1 0 1 50

# Frequency of convergence solution without principle before hint   
dv <- d %>%  
 filter(Condition==2 & BeforeHint==1)  
z = count(dv, 'BeforeHint')  
#Percentage of convergence solution Without principle before hint   
mutate (z, PZ=((z$freq/Total\_WOP)\*100))

BeforeHint freq PZ  
1 1 1 100

# Frequency of convergence solution without principle after hint   
dw <- d %>%  
 filter(Condition==2 & AfterHint==1)  
a = count(dw, 'AfterHint')-z  
#Percentage of convergence solution Without principle before hint   
mutate (a, PA=((a$freq/Total\_WOP)\*100))

AfterHint freq PA  
1 0 0 0

1. The repository folder > [Replication report could be found in folder “PilotA\_V2”](https://github.com/greses/gick1983.git)

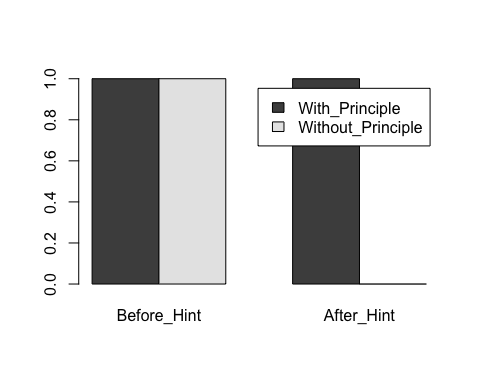
5.b The rendered replication report. >[Rendered replication report](http://rpubs.com/Greses88/442889)

1. The link to my paradigm. > {r} [link to paradigm or survey data collection instrument](https://stanforduniversity.qualtrics.com/jfe/form/SV_ezc7nSOpcZjrgC9)
2. The limited data that I collected analyzed via the confirmatory analyses.

TAB <-matrix(c(1,1,1,0),ncol = 2, byrow = TRUE)  
colnames(TAB) <- c("Before\_Hint","After\_Hint")  
rownames(TAB) <- c("With\_Principle", "Without\_Principle")  
TAB <- as.table(TAB)  
TAB

Before\_Hint After\_Hint  
With\_Principle 1 1  
Without\_Principle 1 0

barplot(TAB, beside = TRUE, legend=TRUE)



CHI = chisq.test(TAB, correct = T)

Warning in chisq.test(TAB, correct = T): Chi-squared approximation may be  
incorrect

CHI

Pearson's Chi-squared test with Yates' continuity correction  
  
data: TAB  
X-squared = 4.6222e-32, df = 1, p-value = 1

attributes(CHI)

$names  
[1] "statistic" "parameter" "p.value" "method" "data.name" "observed"   
[7] "expected" "residuals" "stdres"   
  
$class  
[1] "htest"

1. The different conditions included in the paradigm. > There are two conditions included in the paradigm: with principle and without principle condition. A principle is a statement at the end of the stories that makes explicit the solution to the problem. In both conditions, participants are asked to solve the “Radiation Problem”, first without a hint and later with a hint.