Mervar - Lab 4 (Pattern Recognition)

Alexander Mervar

2022-10-05

Provided Code

```
library(ez) #for doing the ANOVAs
library(dplyr) # great library for massaging data
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(ggplot2)

# I put the data file in a specific folder.  If you don't have the same folder structures as me, you'll
data<-read.table("featureSearchResults.csv", stringsAsFactors=TRUE,sep=',', header = TRUE)
data<-filter(data,trial_type=="visual-search-circle") # only include actual feature search trials, not
data<-droplevels(data) #eliminate NULLS left over from instructions.  Only include factor levels that a
sizes<-c(1,5,15,30) # create a list of the set sizes in their desired order
data$set_size<-factor(data$set_size, levels = sizes) #reorder the four levels of set_size so that they
table(data$subject_id) # make sure that everybody did the same number of trials
```

```
##
##            2000081652   abassard   abmapete   adecourc   afwaddle   agpanago
##       4800        400        400        400        400        400        400
##   airwheel    amervar      anafe   andbstew    anfreel  anikouli3     anykim
##        400        400        400        400        400        400        400
##     apiero   apmolina   arwingar       asm9   astilian   atimothy   axelrodb
##        400        400        400        400        400        400        400
##     beckad   beejones   behughey   billgree    bkwatts   brjoande    brownlk
##        400        400        400        400        400        400        400
##    bunnerj cadakinc (     cashew   caudrets   cfridman   chlmcnai      cisch
##        400        400        400        400        400        400        400
##       cphi   dahaggar   Dian Zhi    ebooras   efenogli    Eliwebs   emnpayne
##        400        400        400        400        400        400        400
##   episrael     escain     ggball   gghurley      gjude     gnbond   greeneaj
##        400        400        400        400        400        400        400
##   grifhall   gripatel    gwaldow    hahmann   halamerr    hcorbin   hkrasnow
##        400        400        400        400        400        400        400
##    howargr   igeorgia    isdbord   isherfic    islynch   jackmosk   jaenalex
```

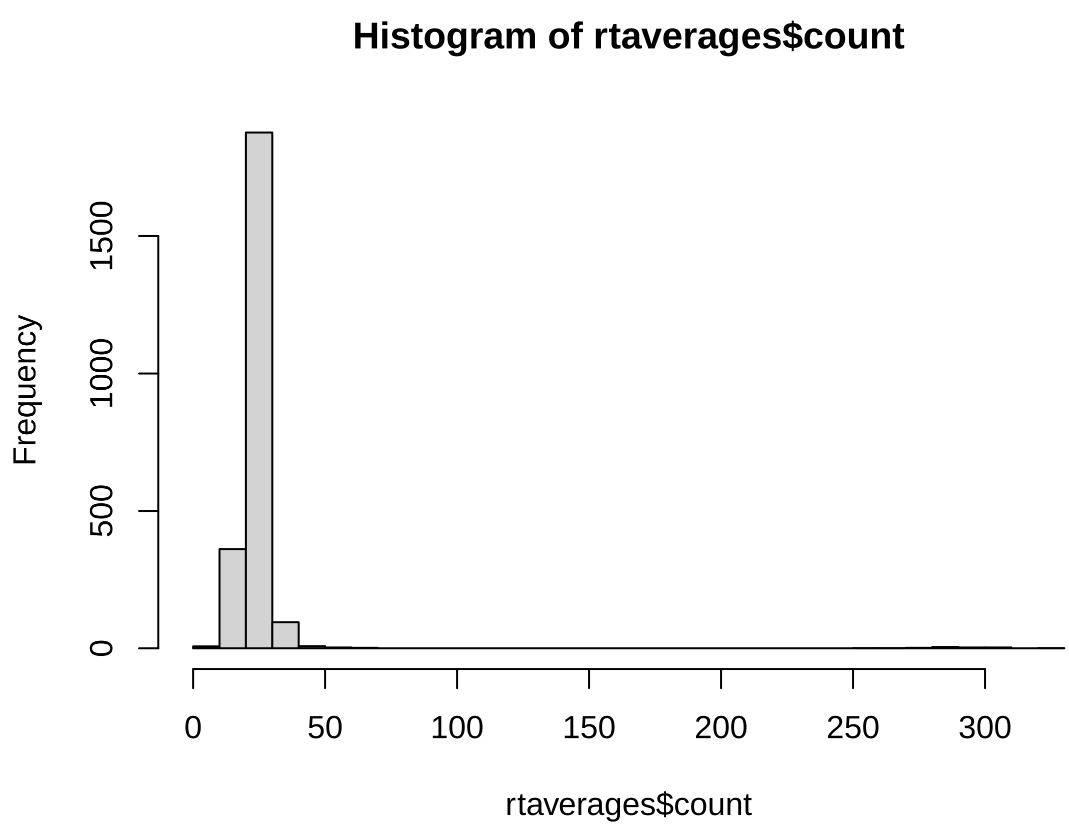
```
##        400        400        400        400        400        400        400
##   jakemage   jcworrel   jermaldo      jm122        Joe   johnpurc   josdougl
##        400        400        400        400        400        400        400
##   jotshiel   jowamajo   jsensanb   jstamets    jtadley         kb   kdobias
##        400        400        400        400        400        400        400
##    Keiland   khapatel   kjkunkle   knakajim    lcgress     lcwade   lekowals
##        400        400        400        400        400        400        400
##    lfaimon   lgholmes     liziyi Madison By   madvogel   marlshep2 Maxwell Va
##        400        400        400        400        400        400        800
##   MAYGATES   micsiler   mirshelt   mklutzke     mlemos   momamcgu moominpapa
##        400        400        400        400        400        400         10
## mrmornin2R   msmwakal   mvschnab   mzelenin      mzubi     natcho   nawhippo
##        400        400        400        400        400        400        400
##   ngperkin   nicgraha   nlepstei   novricha    nwmaeda   pauchamb   philljoe
##        400        400        400        400        400        400        400
##   pwsearle   rajulian   ramosjaa   revankap   rkellems   rodashby   ronnapie
##        400        400        400        400        400        400        400
##        rpw   rymfrase    sakgoel   samponde    sarodri    sdalmia     sdings
##        400        400        400        400        400        400        400
##   selzheng   sercolli    sidrath   snwoodar    spunday   stffrenc   sullisea
##        400        400        400        400        400        400        400
##   sydsearc      tdell   thgibson   tmdeckar    tnperez   tyforajt   tyoberbr
##        400        400        400        400        400        400        400
##   vtlanglo     weiyiy   wmanneri    yuhtang   zegraber   zhangjac   zpetroff
##        400        400        400        400        400        400        400
##   zrajwany   zsdaniel
##        400        400
```

```r
par(mar = c(4,4,4,4),mfrow=c(1, 1) )  # reset plots just in case it's necessary from whatever was being

#For looking at whether and how response time is influenced by the experimental variables
searchTimes<-filter(data, correct==1 ) # only include correct trials for response time analyses.
byseveral<-group_by(searchTimes,subject_id,target_presence,set_size,task) #break data down by subject,
rtaverages<-summarize(byseveral,count=n(),rt=mean(rt, trim=0.1),year=max(year)) #show averages for each
```

```
## `summarise()` has grouped output by 'subject_id', 'target_presence',
## 'set_size'. You can override using the `.groups` argument.
```

```r
# View(rtaverages) # if you want to see the whole frame with everybody's averages
hist(rtaverages$count,breaks=40) #make sure that there's enough correct data from each of the cells
```




```
rtaverages[rtaverages$count<5,] # report subject_id and condition in which low counts are found.  If ev
```

```
## # A tibble: 3 x 7
## # Groups:   subject_id, target_presence, set_size [3]
##   subject_id target_presence set_size task        count    rt  year
##   <fct>      <fct>           <fct>    <fct>       <int> <dbl> <int>
## 1 astilian   present         30       disjunctive     2 1094.  2016
## 2 moominpapa present         5        disjunctive     4 5142   2018
## 3 novricha   present         15       disjunctive     1 1762   2018
```

```
unique(rtaverages$subject_id) # tells us how many subjects we have
```

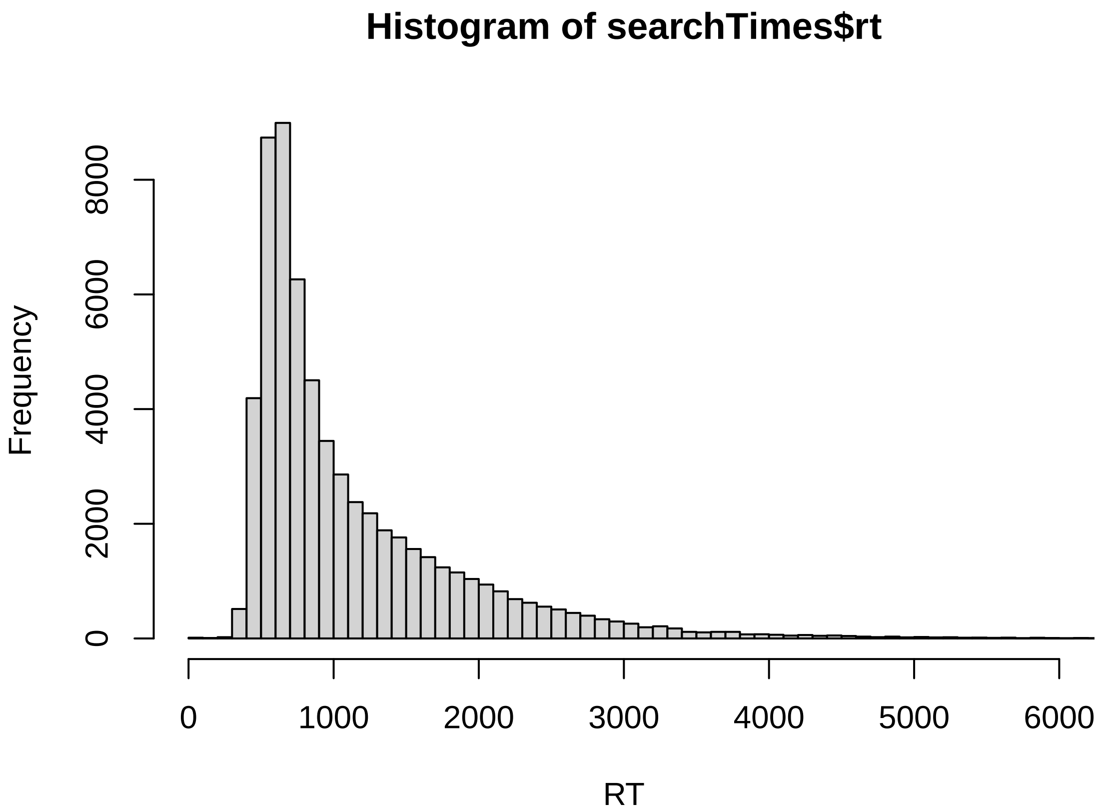
```
##   [1]            2000081652 abassard   abmapete   adecourc   afwaddle
##   [7] agpanago   airwheel   amervar    anafe      andbstew   anfreel
##  [13] anikouli3  anykim     apiero     apmolina   arwingar   asm9
##  [19] astilian   atimothy   axelrodb   beckad     beejones   behughey
##  [25] billgree   bkwatts    brjoande   brownlk    bunnerj    cadakinc (
##  [31] cashew     caudrets   cfridman   chlmcnai   cisch      cphi
##  [37] dahaggar   Dian Zhi   ebooras    efenogli   Eliwebs    emnpayne
##  [43] episrael   escain     ggball     gghurley   gjude      gnbond
##  [49] greeneaj   grifhall   gripatel   gwaldow    hahmann    halamerr
##  [55] hcorbin    hkrasnow   howargr    igeorgia   isdbord    isherfic
##  [61] islynch    jackmosk   jaenalex   jakemage   jcworrel   jermaldo
##  [67] jm122      Joe        johnpurc   josdougl   jotshiel   jowamajo
##  [73] jsensanb   jstamets   jtadley    kb         kdobias    Keiland
##  [79] khapatel   kjkunkle   knakajim   lcgress    lcwade     lekowals
##  [85] lfaimon    lgholmes   liziyi     Madison By madvogel   marlshep2
##  [91] Maxwell Va MAYGATES   micsiler   mirshelt   mklutzke   mlemos
##  [97] momamcgu   moominpapa mrmornin2R msmwakal   mvschnab   mzelenin
```

```
## [103] mzubi      natcho     nawhippo   ngperkin   nicgraha   nlepstei
## [109] novricha   nwmaeda    pauchamb   philljoe   pwsearle   rajulian
## [115] ramosjaa   revankap   rkellems   rodashby   ronnapie   rpw
## [121] rymfrase   sakgoel    samponde   sarodri    sdalmia    sdings
## [127] selzheng   sercolli   sidrath    snwoodar   spunday    stffrenc
## [133] sullisea   sydsearc   tdell      thgibson   tmdeckar   tnperez
## [139] tyforajt   tyoberbr   vtlanglo   weiyiy     wmanneri   yuhtang
## [145] zegraber   zhangjac   zpetroff   zrajwany   zsdaniel
## 149 Levels:  2000081652 abassard abmapete adecourc afwaddle ... zsdaniel
```

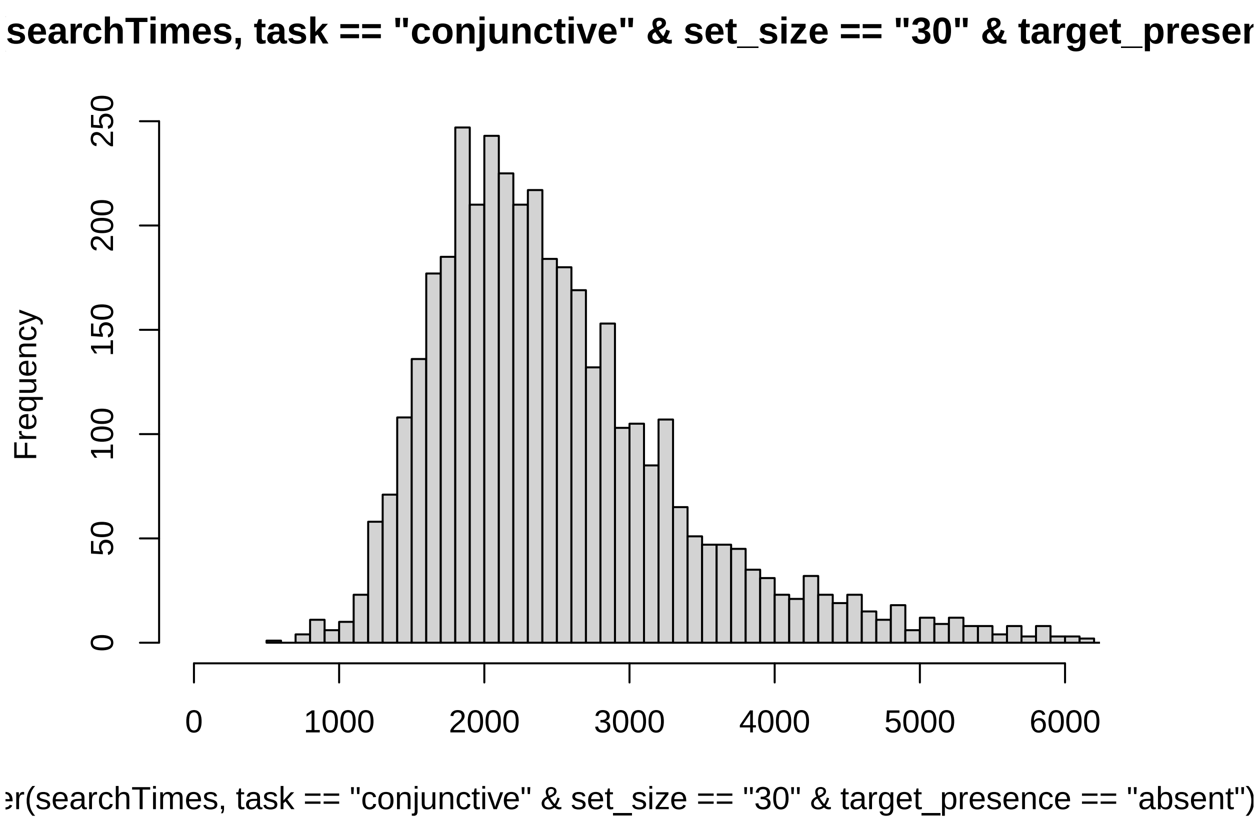
```
# cleaning of data - throw out "bad" subjects
unusualsubjects <- rtaverages$subject_id[rtaverages$count < 5 | rtaverages$count > 60 ] # make a list o
rtaverages <- filter(rtaverages,!(subject_id %in% unusualsubjects)) # only include data from good subje
rtaverages<-droplevels(rtaverages) #drops levels (subjects) that are no longer represented in data afte
unique(rtaverages$subject_id) # tells us how many remaining subjects we have
```

```
##   [1] 2000081652 abassard   abmapete   adecourc   afwaddle   agpanago
##   [7] airwheel   amervar    anafe      andbstew   anfreel    anikouli3
##  [13] anykim     apiero     apmolina   arwingar   asm9       atimothy
##  [19] axelrodb   beckad     beejones   behughey   billgree   bkwatts
##  [25] brjoande   brownlk    bunnerj    cadakinc ( cashew     caudrets
##  [31] cfridman   chlmcnai   cisch      cphi       dahaggar   Dian Zhi
##  [37] ebooras    efenogli   Eliwebs    emnpayne   episrael   escain
##  [43] ggball     gghurley   gjude      gnbond     greeneaj   grifhall
##  [49] gripatel   gwaldow    hahmann    halamerr   hcorbin    hkrasnow
##  [55] howargr    igeorgia   isdbord    isherfic   islynch    jackmosk
##  [61] jaenalex   jakemage   jcworrel   jermaldo   jm122      Joe
##  [67] johnpurc   josdougl   jotshiel   jowamajo   jsensanb   jstamets
##  [73] jtadley    kb         kdobias    Keiland    khapatel   kjkunkle
##  [79] knakajim   lcgress    lcwade     lekowals   lfaimon    lgholmes
##  [85] liziyi     Madison By madvogel   marlshep2  MAYGATES   micsiler
##  [91] mirshelt   mklutzke   mlemos     momamcgu   mrmornin2R msmwakal
##  [97] mvschnab   mzelenin   mzubi      natcho     nawhippo   ngperkin
## [103] nicgraha   nlepstei   nwmaeda    pauchamb   philljoe   pwsearle
## [109] rajulian   ramosjaa   revankap   rkellems   rodashby   ronnapie
## [115] rpw        rymfrase   sakgoel    samponde   sarodri    sdalmia
## [121] sdings     selzheng   sercolli   sidrath    snwoodar   spunday
## [127] stffrenc   sullisea   sydsearc   tdell      thgibson   tmdeckar
## [133] tnperez    tyforajt   tyoberbr   vtlanglo   weiyiy     wmanneri
## [139] yuhtang    zegraber   zhangjac   zpetroff   zrajwany   zsdaniel
## 144 Levels: 2000081652 abassard abmapete adecourc afwaddle agpanago ... zsdaniel
```

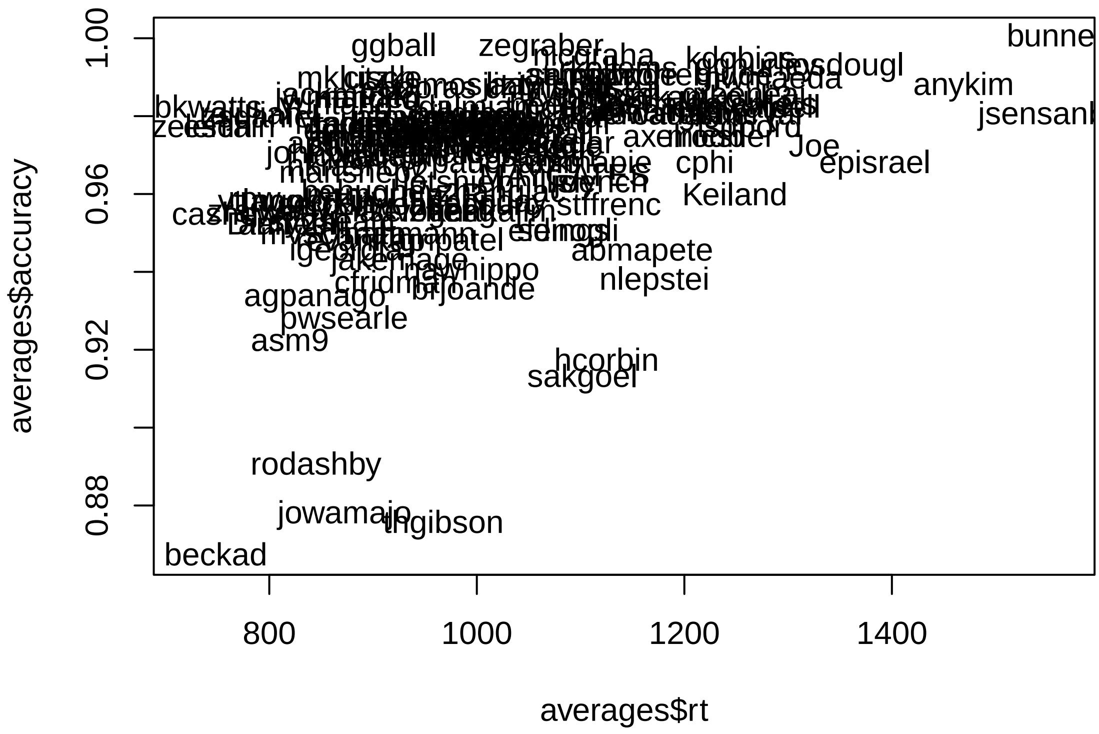
```
goodData<-filter(data,!(subject_id %in% unusualsubjects)) # make a data frame that only includes data f
goodData<-droplevels(goodData) #eliminate levels of dropped subjects
goodSearchTimes<-filter(goodData,correct==1) # for RT analysis, it is typical to only look at correct t
hist(searchTimes$rt,breaks=200,xlim=c(0,6000),xlab="RT",ylab="Frequency") # get an overall feel for the
```




```
hist(filter(searchTimes,task=="conjunctive" & set_size=="30" & target_presence=="absent")$rt,breaks=200
```



```r
# Below is code to look overall at speed and accuracy of each subject
bysubject<-group_by(goodData,subject_id) # break down data by subject - notice that we're using ALL dat
averages<-summarize(bysubject,rt=mean(rt,trim=0.1),accuracy=sum(correct=="1")/n(),year=max(year)) #for 
plot(averages$rt,averages$accuracy,type="n") # is there a speed-accuracy tradeoff?  As people get faste
text(averages$rt,averages$accuracy,averages$subject_id)
```



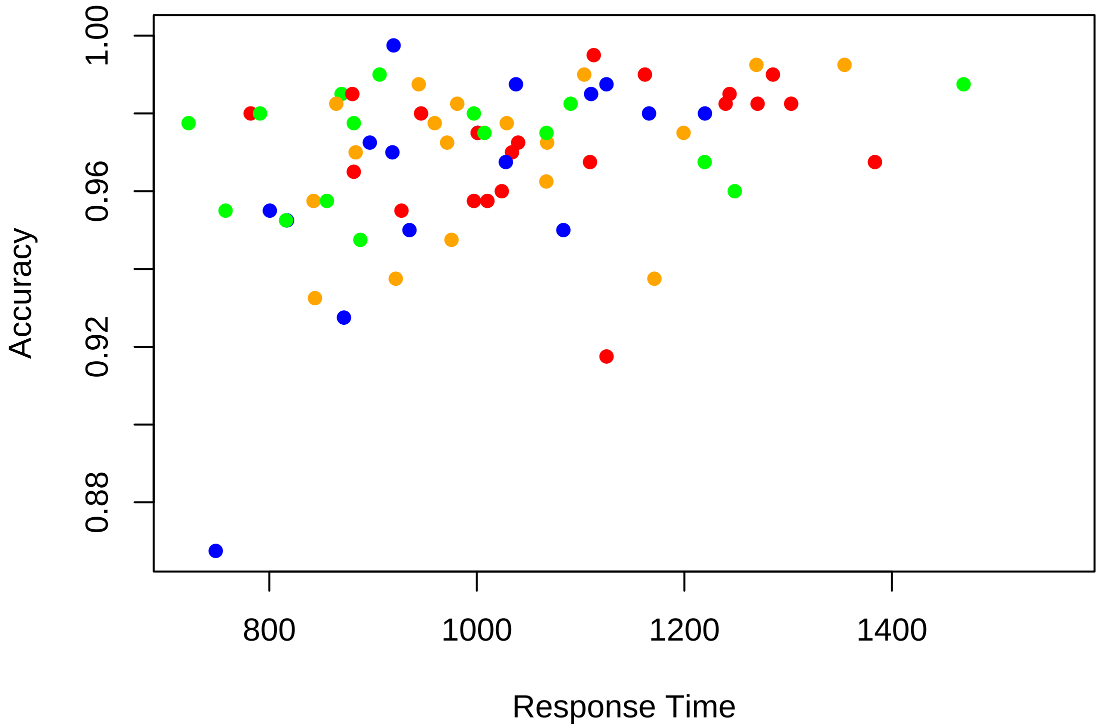
```r
cor.test(averages$rt,averages$accuracy) # is there a speed-accuracy tradeoff?  Tends to be positive - a
```

```
##
##  Pearson's product-moment correlation
##
## data:  averages$rt and averages$accuracy
## t = 4.3971, df = 142, p-value = 2.136e-05
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.1935670 0.4824387
## sample estimates:
##       cor
## 0.3461818
```

```r
averages$color<-recode(averages$year,"2016"="red","2017"="orange","2018"="green","2019"="blue") # Dplyr
```

```
## Warning: Unreplaced values treated as NA as `.x` is not compatible.
## Please specify replacements exhaustively or supply `.default`.
```

```r
plot(averages$rt,averages$accuracy,pch=16,col=averages$color,xlab="Response Time",ylab="Accuracy") # is
```




```
table1 <- tapply(X=rtaverages$rt,INDEX=list(rtaverages$set_size,rtaverages$target_presence,rtaverages$ta
# table1 # show means so that one can begin to interpret the data
group_by(goodSearchTimes,set_size,target_presence,task) %>% summarize(mean(rt,trim=0.1)) # an alternati
```

```
## `summarise()` has grouped output by 'set_size', 'target_presence'. You can
## override using the `.groups` argument.
```

```
## # A tibble: 16 x 4
## # Groups:   set_size, target_presence [8]
##    set_size target_presence task        `mean(rt, trim = 0.1)`
##    <fct>    <fct>           <fct>                        <dbl>
##  1 1        absent          conjunctive                   601.
##  2 1        absent          disjunctive                   633.
##  3 1        present         conjunctive                   544.
##  4 1        present         disjunctive                   613.
##  5 5        absent          conjunctive                   827.
##  6 5        absent          disjunctive                   897.
##  7 5        present         conjunctive                   703.
##  8 5        present         disjunctive                   688.
##  9 15       absent          conjunctive                  1529.
## 10 15       absent          disjunctive                  1637.
## 11 15       present         conjunctive                  1054.
## 12 15       present         disjunctive                   761.
## 13 30       absent          conjunctive                  2405.
## 14 30       absent          disjunctive                  2040.
## 15 30       present         conjunctive                  1519.
## 16 30       present         disjunctive                   847.
```

```
head(goodSearchTimes)
```

```
##   trial_index   rt subject_id          trial_type key_press set_size correct
## 1           2 1712    yuhtang visual-search-circle        70        1       1
```

```
## 2           3  741    yuhtang visual-search-circle       74        1       1
## 3           4  566    yuhtang visual-search-circle       74        1       1
## 4           5  998    yuhtang visual-search-circle       70        1       1
## 5           6  579    yuhtang visual-search-circle       70        1       1
## 6           7  803    yuhtang visual-search-circle       74        1       1
##   target_presence        task id year
## 1          absent conjunctive  3 2017
## 2         present conjunctive  4 2017
## 3         present conjunctive  5 2017
## 4          absent conjunctive  6 2017
## 5          absent conjunctive  7 2017
## 6         present conjunctive  8 2017
```

Fill in missing chunks

```
#Code to conduct actual ANOVA of the Response Times results
model<-ezANOVA(data=goodSearchTimes,dv=rt,within=c(set_size,target_presence,task),wid=subject_id) # You
```

```
## Warning: Collapsing data to cell means. *IF* the requested effects are a subset
## of the full design, you must use the "within_full" argument, else results may be
## inaccurate.
```

```
# could include year as a variable with "between=year".  Main effect maybe but would hope there wouldn'
model # show results of the ANOVA model
```

```
## $ANOVA
##                           Effect DFn DFd         F             p p<.05
## 2                       set_size   3 429 993.80568 1.160813e-192     *
## 3                target_presence   1 143 807.77887  1.077007e-60     *
## 4                           task   1 143 103.56653  1.233287e-18     *
## 5       set_size:target_presence   3 429 457.54124 3.036174e-133     *
## 6                  set_size:task   3 429 130.08584  6.200153e-60     *
## 7           target_presence:task   1 143  95.28818  1.451633e-17     *
## 8 set_size:target_presence:task   3 429  37.41166  1.705784e-21     *
##          ges
## 2 0.62857261
## 3 0.34080939
## 4 0.03547688
## 5 0.25421847
## 6 0.10306314
## 7 0.01564004
## 8 0.01233006
##
## $`Mauchly's Test for Sphericity`
##                           Effect         W            p p<.05
## 2                       set_size 0.1805621 2.255039e-50     *
## 5       set_size:target_presence 0.1246345 1.208254e-61     *
## 6                  set_size:task 0.2394771 8.327310e-42     *
## 8 set_size:target_presence:task 0.2863555 2.150772e-36     *
##
## $`Sphericity Corrections`
##                           Effect       GGe         p[GG] p[GG]<.05       HFe
## 2                       set_size 0.5578729 7.577823e-109         * 0.5637096
## 5       set_size:target_presence 0.5423290  1.197865e-73         * 0.5476909
## 6                  set_size:task 0.5674096  3.125745e-35         * 0.5735428
```

```
## 8 set_size:target_presence:task 0.6397745  1.200915e-14         * 0.6482876
##           p[HF] p[HF]<.05
## 2 5.924683e-110         *
## 5  2.397734e-74         *
## 6  1.394190e-35         *
## 8  8.266325e-15         *
```

```
table1 <-  list(rtaverages$set_size,rtaverages$task) #find breakdown just of setsize and task - less br
table1 #show means so that one can begin to interpret the data.  You'll break down rtaverages in differ
```

```
## [[1]]
##    [1] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##   [25] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##   [49] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##   [73] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##   [97] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [121] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [145] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [169] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [193] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [217] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [241] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [265] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [289] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [313] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [337] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [361] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [385] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [409] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [433] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [457] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [481] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [505] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [529] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [553] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [577] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [601] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [625] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [649] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [673] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [697] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [721] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [745] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [769] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [793] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [817] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [841] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [865] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [889] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [913] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [937] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [961] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [985] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1009] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1033] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
```

```
## [1057] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1081] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1105] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1129] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1153] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1177] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1201] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1225] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1249] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1273] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1297] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1321] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1345] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1369] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1393] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1417] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1441] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1465] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1489] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1513] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1537] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1561] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1585] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1609] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1633] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1657] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1681] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1705] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1729] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1753] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1777] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1801] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1825] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1849] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1873] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1897] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1921] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1945] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1969] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1993] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2017] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2041] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2065] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2089] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2113] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2137] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2161] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2185] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2209] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2233] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2257] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2281] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## Levels: 1 5 15 30
##
```

```
## [[2]]
##    [1] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##    [7] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [13] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [19] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [25] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [31] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [37] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [43] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [49] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [55] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [61] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [67] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [73] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [79] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [85] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [91] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [97] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [103] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [109] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [115] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [121] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [127] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [133] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [139] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [145] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [151] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [157] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [163] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [169] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [175] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [181] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [187] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [193] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [199] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [205] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [211] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [217] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [223] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [229] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [235] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [241] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [247] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [253] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [259] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [265] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [271] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [277] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [283] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [289] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [295] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [301] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [307] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [313] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
##  [319] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [325] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [331] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [337] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [343] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [349] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [355] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [361] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [367] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [373] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [379] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [385] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [391] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [397] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [403] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [409] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [415] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [421] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [427] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [433] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [439] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [445] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [451] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [457] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [463] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [469] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [475] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [481] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [487] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [493] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [499] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [505] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [511] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [517] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [523] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [529] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [535] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [541] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [547] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [553] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [559] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [565] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [571] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [577] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [583] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [589] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [595] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [601] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [607] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [613] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [619] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [625] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [631] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [637] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
##  [643] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [649] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [655] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [661] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [667] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [673] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [679] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [685] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [691] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [697] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [703] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [709] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [715] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [721] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [727] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [733] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [739] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [745] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [751] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [757] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [763] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [769] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [775] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [781] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [787] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [793] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [799] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [805] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [811] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [817] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [823] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [829] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [835] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [841] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [847] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [853] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [859] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [865] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [871] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [877] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [883] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [889] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [895] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [901] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [907] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [913] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [919] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [925] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [931] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [937] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [943] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [949] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [955] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [961] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
##  [967] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [973] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [979] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [985] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [991] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [997] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1003] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1009] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1015] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1021] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1027] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1033] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1039] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1045] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1051] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1057] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1063] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1069] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1075] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1081] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1087] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1093] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1099] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1105] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1111] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1117] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1123] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1129] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1135] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1141] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1147] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1153] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1159] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1165] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1171] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1177] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1183] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1189] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1195] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1201] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1207] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1213] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1219] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1225] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1231] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1237] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1243] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1249] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1255] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1261] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1267] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1273] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1279] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1285] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
## [1291] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1297] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1303] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1309] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1315] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1321] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1327] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1333] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1339] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1345] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1351] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1357] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1363] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1369] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1375] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1381] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1387] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1393] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1399] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1405] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1411] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1417] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1423] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1429] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1435] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1441] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1447] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1453] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1459] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1465] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1471] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1477] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1483] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1489] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1495] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1501] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1507] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1513] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1519] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1525] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1531] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1537] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1543] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1549] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1555] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1561] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1567] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1573] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1579] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1585] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1591] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1597] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1603] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1609] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
## [1615] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1621] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1627] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1633] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1639] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1645] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1651] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1657] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1663] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1669] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1675] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1681] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1687] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1693] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1699] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1705] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1711] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1717] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1723] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1729] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1735] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1741] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1747] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1753] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1759] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1765] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1771] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1777] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1783] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1789] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1795] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1801] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1807] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1813] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1819] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1825] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1831] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1837] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1843] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1849] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1855] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1861] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1867] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1873] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1879] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1885] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1891] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1897] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1903] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1909] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1915] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1921] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1927] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1933] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

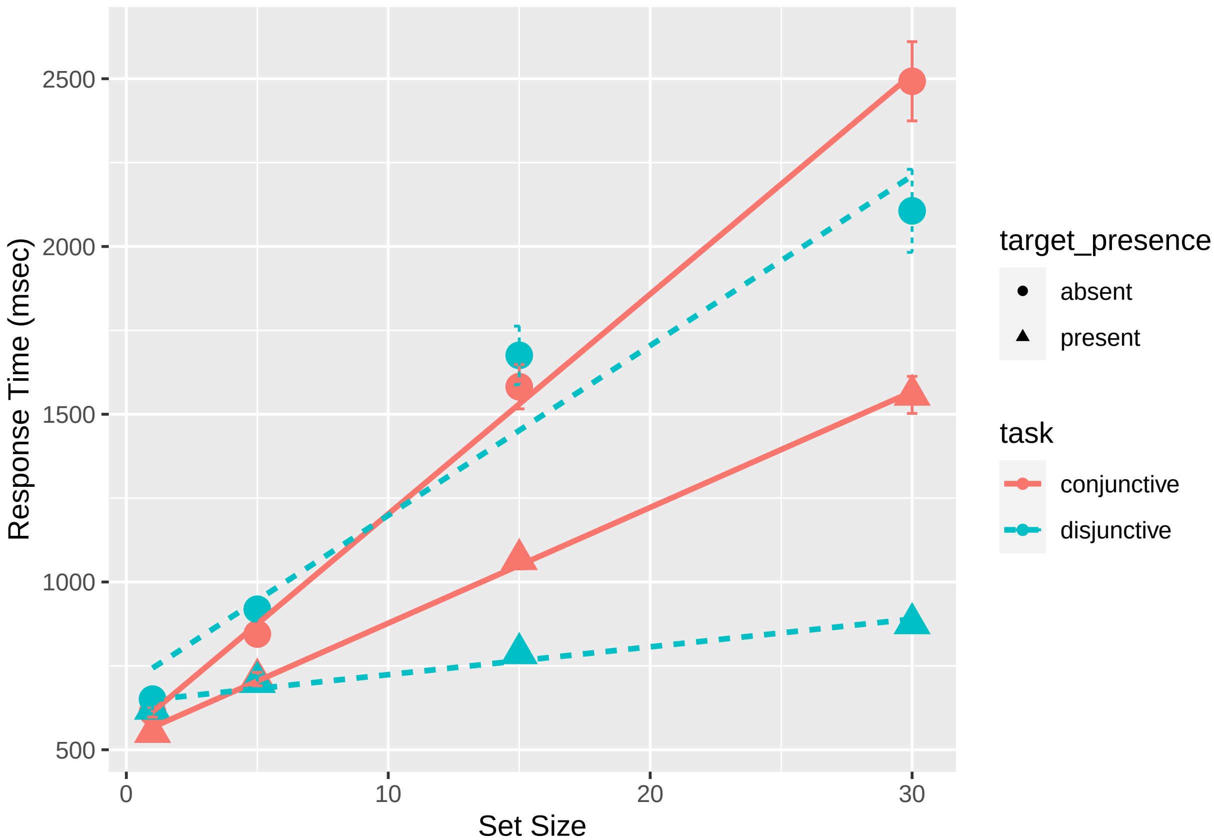
```
## [1939] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1945] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1951] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1957] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1963] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1969] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1975] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1981] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1987] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1993] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1999] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2005] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2011] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2017] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2023] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2029] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2035] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2041] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2047] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2053] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2059] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2065] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2071] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2077] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2083] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2089] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2095] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2101] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2107] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2113] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2119] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2125] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2131] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2137] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2143] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2149] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2155] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2161] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2167] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2173] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2179] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2185] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2191] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2197] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2203] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2209] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2215] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2221] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2227] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2233] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2239] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2245] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2251] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2257] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
## [2263] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2269] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2275] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2281] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2287] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2293] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2299] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## Levels: conjunctive disjunctive
```

```
# The next bit of code is to reproduce Treisman and Gelade's Figure 1, including best lines of fit
rtaverages$set_size_num<-sizes[rtaverages$set_size] # added a new column to rtaverage data frame which
# You need to fill in the XXXs in the ggplot below.  Think about what you want to appear on Y axes, and
ggplot(rtaverages,aes(x=set_size_num,y=rt,shape=target_presence,color=task, linetype=task))+ stat_summa
```

```
## Warning: `guides(<scale> = FALSE)` is deprecated. Please use `guides(<scale> =
## "none")` instead.
```

```
## `geom_smooth()` using formula 'y ~ x'
```




```
#stat_summary makes a summary of the points, first showing data as points, then adding line of best fit
ca<-lm(rt~set_size_num,data=filter(rtaverages,task=="conjunctive" & target_presence=="absent")) # if yo
# cp<-#Deleted piece of code to determine the slope and intercept of the best fitting line for the conj
cp <- lm(rt~set_size_num,data=filter(rtaverages,task=="conjunctive" & target_presence=="present"))
```

```
byseveral <- group_by(goodData,subject_id,target_presence,set_size,task)#Should be just like the analog
pcaverages<-summarize(byseveral,percentCorrect=sum(correct==1)/n()) #gives average accuracy broken down
```

```
## `summarise()` has grouped output by 'subject_id', 'target_presence',
## 'set_size'. You can override using the `.groups` argument.
```

```r
model <- ezANOVA(data=byseveral,dv=rt,within=c(set_size,target_presence,task),wid=subject_id) #conduct
```

```
## Warning: Collapsing data to cell means. *IF* the requested effects are a subset
## of the full design, you must use the "within_full" argument, else results may be
## inaccurate.
```

```r
model # show results of the ANOVA model
```

```
## $ANOVA
##                            Effect DFn DFd          F             p p<.05
## 2                        set_size   3 429 1023.37053 4.718545e-195     *
## 3                 target_presence   1 143  758.76353  4.762601e-59     *
## 4                            task   1 143  118.81909  1.625435e-20     *
## 5        set_size:target_presence   3 429  424.81652 4.991384e-128     *
## 6                   set_size:task   3 429  146.33061  2.644614e-65     *
## 7            target_presence:task   1 143  125.14903  2.905726e-21     *
## 8 set_size:target_presence:task   3 429   47.87046  1.053651e-26     *
##          ges
## 2 0.63650320
## 3 0.32704209
## 4 0.04056876
## 5 0.23773476
## 6 0.11390641
## 7 0.02034845
## 8 0.01572533
##
## $`Mauchly's Test for Sphericity`
##                            Effect         W            p p<.05
## 2                        set_size 0.1803983 2.116392e-50     *
## 5        set_size:target_presence 0.1194348 6.096605e-63     *
## 6                   set_size:task 0.2321395 9.492383e-43     *
## 8 set_size:target_presence:task 0.2838950 1.179251e-36     *
##
## $`Sphericity Corrections`
##                            Effect       GGe         p[GG] p[GG]<.05       HFe
## 2                        set_size 0.5569078 5.374592e-110         * 0.5627146
## 5        set_size:target_presence 0.5400024  1.591316e-70         * 0.5452941
## 6                   set_size:task 0.5646910  4.043705e-38         * 0.5707392
## 8 set_size:target_presence:task 0.6330863  7.575542e-18         * 0.6413698
##           p[HF] p[HF]<.05
## 2 4.123231e-111         *
## 5  3.466127e-71         *
## 6  1.693054e-38         *
## 8  4.776154e-18         *
```

```r
table1 <- list(pcaverages$set_size, pcaverages$task, pcaverages$percentCorrect) #apply mean function to
table1 # show means so that one can begin to interpret the data
```

```
## [[1]]
##    [1] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##   [25] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##   [49] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##   [73] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##   [97] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [121] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
```

```
##  [145] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [169] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [193] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [217] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [241] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [265] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [289] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [313] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [337] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [361] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [385] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [409] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [433] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [457] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [481] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [505] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [529] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [553] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [577] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [601] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [625] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [649] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [673] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [697] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [721] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [745] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [769] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [793] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [817] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [841] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [865] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [889] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [913] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [937] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [961] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
##  [985] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1009] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1033] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1057] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1081] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1105] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1129] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1153] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1177] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1201] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1225] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1249] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1273] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1297] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1321] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1345] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1369] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1393] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1417] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
```

```
## [1441] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1465] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1489] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1513] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1537] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1561] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1585] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1609] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1633] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1657] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1681] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1705] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1729] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1753] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1777] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1801] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1825] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1849] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1873] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1897] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1921] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1945] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1969] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [1993] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2017] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2041] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2065] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2089] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2113] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2137] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2161] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2185] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2209] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2233] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2257] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## [2281] 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30 1  1  5  5  15 15 30 30
## Levels: 1 5 15 30
##
## [[2]]
##    [1] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##    [7] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [13] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [19] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [25] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [31] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [37] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [43] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [49] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [55] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [61] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [67] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [73] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [79] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [85] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
##   [91] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##   [97] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [103] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [109] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [115] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [121] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [127] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [133] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [139] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [145] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [151] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [157] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [163] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [169] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [175] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [181] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [187] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [193] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [199] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [205] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [211] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [217] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [223] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [229] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [235] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [241] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [247] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [253] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [259] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [265] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [271] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [277] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [283] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [289] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [295] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [301] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [307] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [313] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [319] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [325] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [331] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [337] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [343] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [349] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [355] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [361] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [367] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [373] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [379] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [385] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [391] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [397] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [403] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [409] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
## [415] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [421] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [427] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [433] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [439] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [445] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [451] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [457] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [463] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [469] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [475] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [481] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [487] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [493] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [499] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [505] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [511] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [517] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [523] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [529] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [535] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [541] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [547] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [553] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [559] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [565] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [571] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [577] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [583] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [589] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [595] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [601] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [607] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [613] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [619] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [625] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [631] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [637] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [643] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [649] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [655] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [661] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [667] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [673] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [679] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [685] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [691] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [697] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [703] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [709] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [715] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [721] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [727] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [733] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
##  [739] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [745] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [751] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [757] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [763] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [769] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [775] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [781] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [787] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [793] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [799] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [805] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [811] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [817] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [823] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [829] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [835] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [841] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [847] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [853] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [859] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [865] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [871] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [877] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [883] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [889] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [895] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [901] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [907] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [913] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [919] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [925] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [931] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [937] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [943] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [949] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [955] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [961] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [967] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [973] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [979] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [985] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [991] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
##  [997] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1003] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1009] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1015] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1021] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1027] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1033] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1039] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1045] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1051] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1057] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
## [1063] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1069] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1075] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1081] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1087] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1093] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1099] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1105] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1111] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1117] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1123] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1129] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1135] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1141] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1147] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1153] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1159] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1165] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1171] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1177] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1183] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1189] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1195] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1201] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1207] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1213] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1219] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1225] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1231] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1237] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1243] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1249] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1255] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1261] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1267] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1273] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1279] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1285] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1291] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1297] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1303] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1309] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1315] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1321] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1327] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1333] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1339] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1345] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1351] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1357] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1363] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1369] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1375] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1381] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
## [1387] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1393] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1399] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1405] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1411] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1417] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1423] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1429] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1435] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1441] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1447] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1453] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1459] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1465] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1471] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1477] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1483] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1489] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1495] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1501] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1507] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1513] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1519] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1525] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1531] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1537] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1543] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1549] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1555] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1561] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1567] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1573] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1579] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1585] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1591] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1597] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1603] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1609] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1615] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1621] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1627] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1633] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1639] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1645] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1651] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1657] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1663] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1669] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1675] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1681] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1687] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1693] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1699] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1705] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
## [1711] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1717] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1723] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1729] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1735] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1741] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1747] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1753] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1759] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1765] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1771] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1777] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1783] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1789] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1795] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1801] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1807] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1813] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1819] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1825] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1831] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1837] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1843] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1849] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1855] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1861] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1867] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1873] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1879] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1885] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1891] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1897] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1903] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1909] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1915] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1921] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1927] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1933] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1939] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1945] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1951] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1957] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1963] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1969] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1975] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1981] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1987] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1993] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [1999] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2005] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2011] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2017] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2023] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2029] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
```

```
## [2035] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2041] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2047] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2053] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2059] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2065] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2071] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2077] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2083] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2089] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2095] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2101] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2107] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2113] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2119] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2125] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2131] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2137] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2143] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2149] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2155] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2161] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2167] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2173] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2179] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2185] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2191] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2197] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2203] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2209] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2215] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2221] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2227] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2233] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2239] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2245] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2251] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2257] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2263] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2269] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2275] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2281] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2287] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2293] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## [2299] conjunctive disjunctive conjunctive disjunctive conjunctive disjunctive
## Levels: conjunctive disjunctive
##
## [[3]]
##    [1] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9411765 1.0000000
##    [8] 1.0000000 1.0000000 0.9705882 0.9090909 0.9666667 0.9523810 0.9696970
##   [15] 0.8800000 1.0000000 1.0000000 0.9545455 0.9545455 1.0000000 1.0000000
##   [22] 1.0000000 1.0000000 1.0000000 1.0000000 0.9285714 0.9642857 1.0000000
##   [29] 0.9583333 1.0000000 0.9615385 0.9642857 0.8947368 1.0000000 1.0000000
##   [36] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9545455
```

```
##    [43] 1.0000000 0.9230769 0.9545455 0.9545455 0.3636364 0.9677419 1.0000000
##    [50] 0.9600000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
##    [57] 0.9629630 0.9600000 0.9130435 0.9444444 0.9310345 0.9677419 0.6666667
##    [64] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9655172 0.9655172
##    [71] 1.0000000 1.0000000 1.0000000 0.9600000 0.9629630 0.8965517 0.9523810
##    [78] 1.0000000 0.9615385 0.9200000 1.0000000 1.0000000 0.9354839 1.0000000
##    [85] 0.9615385 0.9615385 0.9600000 1.0000000 0.9600000 0.9565217 0.8421053
##    [92] 1.0000000 0.7916667 1.0000000 0.6800000 0.8709677 0.9666667 1.0000000
##    [99] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
##   [106] 0.9666667 1.0000000 1.0000000 0.9600000 1.0000000 0.8148148 1.0000000
##   [113] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
##   [120] 1.0000000 0.9600000 0.9629630 1.0000000 1.0000000 0.9130435 1.0000000
##   [127] 0.8181818 1.0000000 1.0000000 0.9677419 0.9666667 1.0000000 1.0000000
##   [134] 1.0000000 1.0000000 1.0000000 1.0000000 0.8947368 0.9500000 0.9473684
##   [141] 0.9473684 1.0000000 0.9333333 1.0000000 1.0000000 0.9687500 1.0000000
##   [148] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9444444
##   [155] 0.9583333 0.9629630 0.9615385 1.0000000 0.7826087 1.0000000 0.9629630
##   [162] 1.0000000 1.0000000 0.9500000 0.9629630 1.0000000 1.0000000 1.0000000
##   [169] 1.0000000 0.9000000 0.9629630 0.9333333 0.8260870 1.0000000 0.7083333
##   [176] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
##   [183] 1.0000000 1.0000000 1.0000000 0.9000000 0.9565217 0.9565217 1.0000000
##   [190] 1.0000000 0.9705882 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
##   [197] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9642857 1.0000000
##   [204] 1.0000000 0.8965517 1.0000000 0.9545455 1.0000000 1.0000000 1.0000000
##   [211] 0.9545455 1.0000000 0.9565217 1.0000000 0.9600000 1.0000000 1.0000000
##   [218] 0.9642857 1.0000000 1.0000000 1.0000000 0.9565217 0.9200000 0.9583333
##   [225] 0.9642857 1.0000000 0.9629630 1.0000000 0.9642857 1.0000000 0.9230769
##   [232] 1.0000000 1.0000000 0.9047619 1.0000000 0.9310345 1.0000000 0.9523810
##   [239] 1.0000000 0.9615385 0.9677419 0.9259259 1.0000000 1.0000000 0.9411765
##   [246] 1.0000000 1.0000000 1.0000000 1.0000000 0.9565217 1.0000000 1.0000000
##   [253] 0.9393939 0.9500000 0.9090909 1.0000000 0.8214286 0.9200000 1.0000000
##   [260] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9090909 0.8800000
##   [267] 0.9166667 0.9333333 0.9285714 0.8333333 0.7777778 0.9259259 1.0000000
##   [274] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9583333 1.0000000
##   [281] 1.0000000 1.0000000 1.0000000 1.0000000 0.9655172 1.0000000 0.9615385
##   [288] 0.9600000 0.9600000 0.9130435 1.0000000 1.0000000 1.0000000 1.0000000
##   [295] 1.0000000 1.0000000 1.0000000 1.0000000 0.9545455 1.0000000 0.9687500
##   [302] 1.0000000 0.8620690 0.9523810 0.9333333 0.7857143 0.9565217 0.9642857
##   [309] 0.9230769 0.9523810 0.9310345 1.0000000 0.9500000 0.8181818 0.8888889
##   [316] 0.7727273 0.7083333 0.8965517 0.4285714 0.9090909 1.0000000 1.0000000
##   [323] 0.9600000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
##   [330] 0.9642857 0.9600000 0.9000000 0.9615385 1.0000000 1.0000000 1.0000000
##   [337] 1.0000000 0.9230769 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
##   [344] 1.0000000 1.0000000 0.9583333 0.9285714 0.9259259 0.8260870 1.0000000
##   [351] 0.7894737 0.9565217 0.9565217 1.0000000 1.0000000 1.0000000 1.0000000
##   [358] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
##   [365] 0.9310345 0.9677419 0.8095238 1.0000000 0.9666667 1.0000000 1.0000000
##   [372] 1.0000000 1.0000000 1.0000000 0.9666667 1.0000000 1.0000000 1.0000000
##   [379] 1.0000000 1.0000000 0.9032258 1.0000000 0.9500000 0.9545455 0.9677419
##   [386] 1.0000000 0.9310345 1.0000000 0.9642857 1.0000000 0.9333333 1.0000000
##   [393] 0.8947368 0.8709677 0.9047619 0.9523810 1.0000000 1.0000000 0.8500000
##   [400] 0.7142857 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9655172
##   [407] 1.0000000 1.0000000 1.0000000 1.0000000 0.9545455 0.9583333 1.0000000
##   [414] 1.0000000 0.8846154 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
```

```
## [421] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [428] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9705882 1.0000000
## [435] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [442] 0.9047619 1.0000000 1.0000000 1.0000000 1.0000000 0.8214286 1.0000000
## [449] 0.9642857 0.9583333 1.0000000 0.9629630 1.0000000 1.0000000 1.0000000
## [456] 1.0000000 1.0000000 0.9615385 0.9200000 1.0000000 0.8800000 0.9310345
## [463] 0.8214286 0.9047619 1.0000000 1.0000000 1.0000000 1.0000000 0.9375000
## [470] 0.9677419 0.9473684 1.0000000 1.0000000 0.9545455 1.0000000 0.9615385
## [477] 0.9705882 0.9473684 0.9032258 0.9545455 0.9565217 0.9230769 1.0000000
## [484] 0.9600000 0.9629630 1.0000000 1.0000000 0.9600000 0.9629630 0.8750000
## [491] 0.9230769 0.7600000 0.9130435 0.9629630 0.9200000 0.9200000 0.9473684
## [498] 1.0000000 0.9600000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [505] 1.0000000 0.9583333 1.0000000 1.0000000 1.0000000 1.0000000 0.9090909
## [512] 1.0000000 0.9565217 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [519] 1.0000000 1.0000000 1.0000000 0.9615385 1.0000000 0.9545455 1.0000000
## [526] 1.0000000 0.9565217 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [533] 1.0000000 1.0000000 1.0000000 1.0000000 0.9523810 0.9200000 1.0000000
## [540] 0.9047619 0.9090909 0.8947368 0.8750000 0.9583333 1.0000000 1.0000000
## [547] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [554] 0.9642857 1.0000000 0.9285714 0.8800000 1.0000000 0.8214286 1.0000000
## [561] 0.9615385 0.9545455 1.0000000 0.9615385 0.9583333 1.0000000 0.9545455
## [568] 1.0000000 1.0000000 0.9285714 0.9545455 0.9166667 0.9230769 0.9615385
## [575] 0.7857143 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [582] 1.0000000 0.9473684 0.9655172 1.0000000 1.0000000 1.0000000 1.0000000
## [589] 1.0000000 1.0000000 0.9032258 1.0000000 0.8571429 1.0000000 1.0000000
## [596] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [603] 1.0000000 0.9600000 0.8800000 0.7600000 0.6500000 1.0000000 0.9629630
## [610] 0.8461538 1.0000000 0.9615385 1.0000000 1.0000000 1.0000000 0.9615385
## [617] 1.0000000 0.8750000 1.0000000 1.0000000 0.8750000 0.9655172 0.8846154
## [624] 1.0000000 0.9615385 1.0000000 1.0000000 1.0000000 1.0000000 0.9523810
## [631] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9090909 0.9130435
## [638] 1.0000000 0.9117647 0.9565217 1.0000000 0.9583333 1.0000000 1.0000000
## [645] 0.9259259 1.0000000 1.0000000 0.9666667 1.0000000 0.9615385 1.0000000
## [652] 1.0000000 0.9130435 0.9200000 0.8518519 1.0000000 1.0000000 0.9629630
## [659] 1.0000000 1.0000000 1.0000000 1.0000000 0.9666667 1.0000000 1.0000000
## [666] 0.9565217 0.9523810 0.9259259 0.9473684 1.0000000 0.9500000 0.9642857
## [673] 0.9642857 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [680] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [687] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [694] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9655172
## [701] 1.0000000 1.0000000 0.9166667 1.0000000 1.0000000 0.9629630 1.0000000
## [708] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [715] 1.0000000 1.0000000 1.0000000 0.9310345 0.9629630 1.0000000 0.9615385
## [722] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9600000 1.0000000
## [729] 1.0000000 0.9000000 0.9047619 0.9444444 0.9642857 1.0000000 0.9600000
## [736] 1.0000000 1.0000000 0.9500000 1.0000000 1.0000000 1.0000000 1.0000000
## [743] 1.0000000 1.0000000 1.0000000 0.9666667 1.0000000 1.0000000 1.0000000
## [750] 1.0000000 0.8620690 1.0000000 1.0000000 1.0000000 0.8571429 1.0000000
## [757] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [764] 0.8571429 0.9642857 0.9500000 1.0000000 1.0000000 0.9166667 0.9600000
## [771] 0.9642857 1.0000000 0.9333333 1.0000000 0.9677419 0.9629630 1.0000000
## [778] 0.8800000 0.8636364 0.8750000 0.9714286 0.9600000 0.8421053 1.0000000
## [785] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [792] 1.0000000 1.0000000 0.9333333 1.0000000 0.9523810 0.9600000 1.0000000
```

```
##  [799] 0.7037037 1.0000000 0.8823529 0.9565217 1.0000000 1.0000000 0.9629630
##  [806] 1.0000000 0.9629630 1.0000000 0.9696970 0.9629630 0.9615385 0.9600000
##  [813] 0.7826087 0.9259259 0.8260870 1.0000000 1.0000000 1.0000000 1.0000000
##  [820] 1.0000000 0.9629630 1.0000000 0.9047619 1.0000000 1.0000000 0.9565217
##  [827] 1.0000000 0.9615385 0.8695652 0.9642857 0.9310345 1.0000000 0.7692308
##  [834] 0.9285714 1.0000000 0.9545455 1.0000000 1.0000000 0.8620690 0.9600000
##  [841] 0.9166667 0.7727273 0.9677419 0.8571429 0.8965517 1.0000000 0.8095238
##  [848] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9642857 0.9615385
##  [855] 1.0000000 1.0000000 1.0000000 0.9259259 0.9375000 1.0000000 1.0000000
##  [862] 1.0000000 0.7083333 0.9642857 0.9130435 1.0000000 0.9629630 0.9565217
##  [869] 0.9629630 1.0000000 0.9583333 1.0000000 1.0000000 1.0000000 0.9565217
##  [876] 1.0000000 1.0000000 1.0000000 1.0000000 0.9411765 0.9333333 1.0000000
##  [883] 1.0000000 1.0000000 0.9666667 1.0000000 0.9629630 1.0000000 0.9500000
##  [890] 0.8965517 0.8571429 0.8695652 0.9500000 0.9565217 0.8695652 0.8965517
##  [897] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
##  [904] 1.0000000 1.0000000 1.0000000 0.9600000 1.0000000 0.8571429 1.0000000
##  [911] 0.8148148 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
##  [918] 1.0000000 1.0000000 1.0000000 1.0000000 0.9259259 0.9545455 0.9583333
##  [925] 0.9600000 0.9600000 0.8181818 1.0000000 1.0000000 1.0000000 1.0000000
##  [932] 1.0000000 0.9583333 1.0000000 1.0000000 1.0000000 0.9600000 1.0000000
##  [939] 0.9583333 0.9629630 0.9230769 1.0000000 0.6538462 1.0000000 1.0000000
##  [946] 1.0000000 0.9600000 1.0000000 0.9545455 1.0000000 1.0000000 1.0000000
##  [953] 1.0000000 1.0000000 0.9600000 1.0000000 1.0000000 1.0000000 0.9310345
##  [960] 0.9629630 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
##  [967] 1.0000000 1.0000000 0.9545455 1.0000000 0.9545455 1.0000000 0.9130435
##  [974] 1.0000000 0.9200000 0.9655172 0.8695652 1.0000000 1.0000000 1.0000000
##  [981] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.8518519 0.9166667
##  [988] 0.9428571 0.8000000 0.9600000 0.7500000 1.0000000 1.0000000 1.0000000
##  [995] 1.0000000 0.9583333 1.0000000 1.0000000 1.0000000 1.0000000 0.9545455
## [1002] 0.9600000 1.0000000 1.0000000 0.9500000 1.0000000 1.0000000 1.0000000
## [1009] 1.0000000 1.0000000 0.9615385 1.0000000 1.0000000 1.0000000 1.0000000
## [1016] 1.0000000 0.9583333 1.0000000 1.0000000 0.9642857 0.9677419 1.0000000
## [1023] 0.8400000 0.9583333 1.0000000 1.0000000 0.9615385 1.0000000 1.0000000
## [1030] 1.0000000 1.0000000 1.0000000 1.0000000 0.9473684 0.9583333 0.9166667
## [1037] 0.9666667 1.0000000 0.8000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1044] 1.0000000 0.9666667 0.9310345 1.0000000 1.0000000 1.0000000 0.9444444
## [1051] 0.9642857 1.0000000 0.9500000 0.9523810 0.8400000 1.0000000 0.9629630
## [1058] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9583333
## [1065] 0.9565217 1.0000000 1.0000000 0.9600000 0.9655172 0.9473684 0.7000000
## [1072] 1.0000000 1.0000000 0.9677419 1.0000000 1.0000000 1.0000000 1.0000000
## [1079] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1086] 0.9230769 1.0000000 1.0000000 0.8636364 1.0000000 1.0000000 1.0000000
## [1093] 1.0000000 1.0000000 1.0000000 1.0000000 0.9642857 0.7916667 1.0000000
## [1100] 0.9666667 0.9259259 1.0000000 0.9629630 0.9230769 0.9629630 1.0000000
## [1107] 0.6153846 0.9473684 1.0000000 0.9545455 0.9565217 0.9687500 1.0000000
## [1114] 0.9230769 0.6666667 0.9677419 0.6923077 0.9642857 0.5925926 0.8333333
## [1121] 1.0000000 1.0000000 1.0000000 0.9615385 1.0000000 1.0000000 0.9655172
## [1128] 1.0000000 0.9565217 0.9166667 1.0000000 0.9583333 1.0000000 0.9583333
## [1135] 0.9523810 1.0000000 0.9642857 1.0000000 1.0000000 1.0000000 1.0000000
## [1142] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9200000 1.0000000
## [1149] 0.9545455 0.9583333 0.8947368 1.0000000 0.9090909 0.9000000 1.0000000
## [1156] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1163] 1.0000000 0.9677419 1.0000000 0.9565217 0.8333333 1.0000000 0.9523810
## [1170] 1.0000000 1.0000000 0.9230769 0.9600000 1.0000000 1.0000000 0.9615385
```

```
## [1177] 0.9655172 0.9473684 0.9285714 0.9166667 1.0000000 0.9565217 1.0000000
## [1184] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1191] 1.0000000 1.0000000 1.0000000 0.9615385 1.0000000 1.0000000 1.0000000
## [1198] 1.0000000 0.9615385 1.0000000 0.9545455 1.0000000 0.9393939 1.0000000
## [1205] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9583333 0.9411765
## [1212] 0.8965517 0.9032258 0.9230769 0.8695652 1.0000000 0.9565217 1.0000000
## [1219] 1.0000000 1.0000000 0.9545455 1.0000000 1.0000000 1.0000000 1.0000000
## [1226] 0.9565217 1.0000000 0.9000000 0.9285714 0.9642857 0.9047619 1.0000000
## [1233] 0.9629630 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1240] 1.0000000 1.0000000 0.8095238 1.0000000 0.9600000 1.0000000 1.0000000
## [1247] 0.8181818 0.9565217 0.9545455 0.9200000 1.0000000 0.9666667 1.0000000
## [1254] 1.0000000 0.9230769 1.0000000 1.0000000 0.9200000 0.9523810 1.0000000
## [1261] 0.9130435 1.0000000 0.7500000 0.9583333 1.0000000 0.9629630 1.0000000
## [1268] 1.0000000 1.0000000 1.0000000 0.9230769 1.0000000 1.0000000 0.9130435
## [1275] 0.9310345 0.9666667 1.0000000 0.9285714 0.9583333 0.9583333 0.9090909
## [1282] 1.0000000 1.0000000 0.9615385 1.0000000 1.0000000 1.0000000 1.0000000
## [1289] 0.9642857 0.9200000 1.0000000 1.0000000 0.9259259 1.0000000 0.8620690
## [1296] 1.0000000 0.9615385 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1303] 1.0000000 1.0000000 1.0000000 0.9047619 0.9615385 1.0000000 0.9615385
## [1310] 1.0000000 0.9565217 0.9600000 0.9500000 0.9629630 1.0000000 1.0000000
## [1317] 0.9629630 1.0000000 1.0000000 1.0000000 1.0000000 0.9565217 1.0000000
## [1324] 0.9615385 0.9130435 0.9259259 0.9047619 0.9565217 0.9565217 1.0000000
## [1331] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9629630
## [1338] 0.9545455 1.0000000 1.0000000 0.9523810 1.0000000 0.8275862 0.9523810
## [1345] 0.9130435 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1352] 1.0000000 1.0000000 1.0000000 0.9615385 1.0000000 0.9629630 1.0000000
## [1359] 0.9642857 1.0000000 0.9523810 1.0000000 1.0000000 1.0000000 1.0000000
## [1366] 1.0000000 1.0000000 1.0000000 1.0000000 0.9615385 1.0000000 0.9545455
## [1373] 1.0000000 1.0000000 0.7826087 0.9500000 1.0000000 1.0000000 1.0000000
## [1380] 0.9310345 0.9565217 1.0000000 0.9200000 1.0000000 0.8695652 0.8888889
## [1387] 0.9130435 1.0000000 0.9629630 1.0000000 0.8800000 0.9500000 0.9047619
## [1394] 0.9655172 1.0000000 1.0000000 0.9666667 1.0000000 1.0000000 1.0000000
## [1401] 1.0000000 0.9523810 1.0000000 1.0000000 1.0000000 0.9629630 0.8750000
## [1408] 0.8333333 0.9500000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1415] 1.0000000 0.9583333 1.0000000 0.9142857 0.9333333 0.9629630 0.9642857
## [1422] 0.9285714 0.9428571 0.9615385 0.9642857 1.0000000 1.0000000 1.0000000
## [1429] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1436] 1.0000000 1.0000000 1.0000000 0.5714286 1.0000000 0.9545455 0.9696970
## [1443] 1.0000000 1.0000000 1.0000000 0.9259259 1.0000000 1.0000000 1.0000000
## [1450] 0.8823529 1.0000000 0.9666667 1.0000000 1.0000000 0.8636364 1.0000000
## [1457] 0.9600000 1.0000000 0.9500000 1.0000000 1.0000000 1.0000000 1.0000000
## [1464] 1.0000000 0.9600000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1471] 0.9714286 1.0000000 0.9615385 0.9565217 1.0000000 1.0000000 0.9600000
## [1478] 1.0000000 1.0000000 1.0000000 1.0000000 0.9259259 0.9200000 1.0000000
## [1485] 1.0000000 1.0000000 0.9375000 1.0000000 0.9600000 1.0000000 0.9677419
## [1492] 1.0000000 0.9565217 0.9545455 1.0000000 1.0000000 1.0000000 1.0000000
## [1499] 1.0000000 0.9473684 0.9629630 1.0000000 0.9583333 0.9565217 0.9677419
## [1506] 1.0000000 1.0000000 1.0000000 0.9655172 1.0000000 0.9615385 1.0000000
## [1513] 1.0000000 0.8750000 0.8928571 0.9615385 0.9523810 0.9615385 0.9166667
## [1520] 0.9130435 1.0000000 0.9642857 1.0000000 0.9642857 1.0000000 1.0000000
## [1527] 1.0000000 1.0000000 0.9600000 1.0000000 0.9545455 1.0000000 0.9285714
## [1534] 0.9600000 0.9523810 1.0000000 0.9615385 1.0000000 0.9285714 1.0000000
## [1541] 1.0000000 1.0000000 1.0000000 0.9600000 0.9583333 1.0000000 0.9545455
## [1548] 0.9523810 0.8518519 0.9642857 0.6956522 0.9600000 1.0000000 1.0000000
```

```
## [1555] 0.9687500 1.0000000 1.0000000 0.9500000 1.0000000 1.0000000 1.0000000
## [1562] 0.9200000 1.0000000 0.9230769 1.0000000 1.0000000 0.9130435 0.9666667
## [1569] 0.9166667 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9655172
## [1576] 1.0000000 1.0000000 0.9600000 0.9615385 0.9583333 0.9666667 0.9615385
## [1583] 0.9523810 0.9677419 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1590] 1.0000000 1.0000000 1.0000000 1.0000000 0.9615385 1.0000000 0.9230769
## [1597] 0.9642857 1.0000000 0.9259259 1.0000000 0.9523810 0.9166667 1.0000000
## [1604] 1.0000000 1.0000000 0.9333333 1.0000000 1.0000000 0.9310345 0.8076923
## [1611] 0.9259259 0.9642857 0.8461538 0.9500000 0.9285714 0.9259259 1.0000000
## [1618] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1625] 1.0000000 1.0000000 0.8800000 0.9642857 0.8750000 0.9285714 0.7857143
## [1632] 0.9310345 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1639] 1.0000000 1.0000000 1.0000000 0.9047619 1.0000000 1.0000000 1.0000000
## [1646] 1.0000000 1.0000000 1.0000000 0.9500000 0.9629630 1.0000000 1.0000000
## [1653] 1.0000000 1.0000000 0.9629630 1.0000000 1.0000000 0.8695652 1.0000000
## [1660] 1.0000000 0.8500000 0.8400000 0.5652174 0.9090909 1.0000000 1.0000000
## [1667] 1.0000000 1.0000000 0.9583333 1.0000000 0.9583333 1.0000000 1.0000000
## [1674] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9230769 1.0000000
## [1681] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9615385 1.0000000
## [1688] 1.0000000 1.0000000 0.8965517 1.0000000 0.9642857 0.9600000 0.9583333
## [1695] 0.7857143 1.0000000 0.9500000 0.9523810 1.0000000 1.0000000 1.0000000
## [1702] 0.9615385 0.9629630 0.8333333 1.0000000 0.9310345 1.0000000 0.9655172
## [1709] 0.9565217 0.9583333 0.9565217 1.0000000 0.9545455 1.0000000 1.0000000
## [1716] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9285714 0.9310345
## [1723] 0.9166667 1.0000000 0.7600000 1.0000000 0.4285714 1.0000000 1.0000000
## [1730] 1.0000000 1.0000000 0.9523810 1.0000000 1.0000000 0.9600000 1.0000000
## [1737] 0.9523810 1.0000000 1.0000000 0.9655172 0.9565217 1.0000000 0.9200000
## [1744] 0.9500000 1.0000000 1.0000000 0.9545455 1.0000000 1.0000000 1.0000000
## [1751] 1.0000000 1.0000000 1.0000000 0.9545455 1.0000000 1.0000000 1.0000000
## [1758] 1.0000000 0.8846154 1.0000000 0.9615385 0.9285714 0.8928571 0.9259259
## [1765] 1.0000000 1.0000000 0.9444444 0.9473684 1.0000000 0.9545455 1.0000000
## [1772] 0.9130435 0.8750000 0.9565217 0.9062500 0.9677419 1.0000000 1.0000000
## [1779] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1786] 0.9545455 1.0000000 1.0000000 0.9565217 1.0000000 0.9642857 1.0000000
## [1793] 0.7619048 0.9629630 1.0000000 0.9565217 1.0000000 0.8823529 1.0000000
## [1800] 1.0000000 0.8620690 0.8695652 0.8709677 1.0000000 0.8275862 1.0000000
## [1807] 0.2500000 0.9629630 0.9629630 1.0000000 1.0000000 0.9259259 1.0000000
## [1814] 1.0000000 1.0000000 1.0000000 1.0000000 0.9565217 1.0000000 1.0000000
## [1821] 0.8846154 0.9677419 0.8620690 0.9600000 1.0000000 1.0000000 0.9687500
## [1828] 1.0000000 0.9545455 0.9615385 0.9130435 1.0000000 1.0000000 0.9090909
## [1835] 1.0000000 0.9411765 0.9285714 0.9583333 0.8148148 0.9677419 1.0000000
## [1842] 1.0000000 0.9666667 0.9600000 1.0000000 1.0000000 1.0000000 1.0000000
## [1849] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9545455 0.9230769
## [1856] 0.9583333 0.9200000 1.0000000 0.9655172 1.0000000 1.0000000 0.9666667
## [1863] 1.0000000 1.0000000 0.9200000 0.9666667 0.8571429 0.9000000 0.8260870
## [1870] 0.9500000 0.4400000 0.8888889 1.0000000 0.9583333 1.0000000 1.0000000
## [1877] 1.0000000 1.0000000 1.0000000 1.0000000 0.9655172 0.9615385 0.9523810
## [1884] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9666667
## [1891] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9615385 1.0000000
## [1898] 1.0000000 0.9677419 1.0000000 0.9310345 1.0000000 0.8400000 1.0000000
## [1905] 0.9565217 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1912] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9523810 1.0000000
## [1919] 0.8461538 0.9687500 1.0000000 0.9615385 1.0000000 1.0000000 1.0000000
## [1926] 0.9473684 1.0000000 1.0000000 1.0000000 1.0000000 0.8148148 1.0000000
```

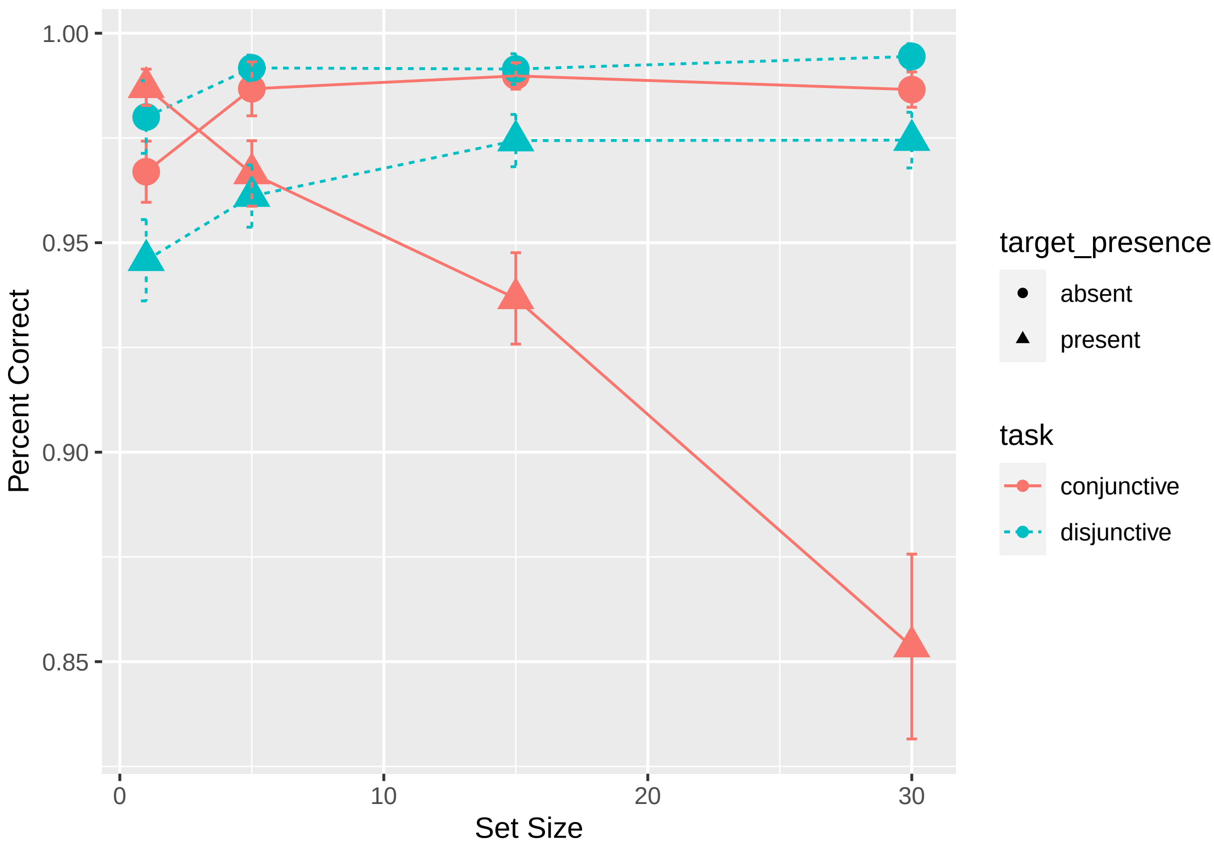
```
## [1933] 0.7083333 0.9354839 0.8461538 1.0000000 0.9629630 0.9615385 0.9629630
## [1940] 1.0000000 1.0000000 1.0000000 0.9629630 0.9523810 1.0000000 0.9166667
## [1947] 0.9565217 0.9259259 0.9130435 0.9166667 0.8695652 0.9655172 0.8421053
## [1954] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [1961] 0.9677419 0.9655172 0.9583333 0.8750000 0.9230769 1.0000000 0.7391304
## [1968] 1.0000000 1.0000000 0.9629630 1.0000000 0.9677419 1.0000000 1.0000000
## [1975] 1.0000000 1.0000000 1.0000000 0.9565217 0.9677419 0.9473684 1.0000000
## [1982] 0.9642857 0.8260870 0.9090909 1.0000000 1.0000000 1.0000000 1.0000000
## [1989] 0.9655172 1.0000000 1.0000000 1.0000000 1.0000000 0.9500000 1.0000000
## [1996] 0.9629630 0.9523810 0.9565217 0.9090909 0.9666667 0.9629630 1.0000000
## [2003] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9565217
## [2010] 0.9411765 0.9583333 0.9200000 0.8518519 1.0000000 0.7931034 0.9642857
## [2017] 0.9473684 1.0000000 1.0000000 0.9565217 1.0000000 0.9600000 0.9629630
## [2024] 1.0000000 1.0000000 0.8500000 0.9583333 0.9259259 0.8750000 1.0000000
## [2031] 0.8260870 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [2038] 1.0000000 0.9600000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [2045] 0.9565217 1.0000000 0.8800000 1.0000000 0.9047619 1.0000000 1.0000000
## [2052] 0.9583333 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9583333
## [2059] 1.0000000 0.9230769 0.9565217 0.9545455 0.6071429 1.0000000 0.9166667
## [2066] 0.9615385 0.9565217 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [2073] 0.9615385 1.0000000 1.0000000 0.9687500 1.0000000 1.0000000 0.9583333
## [2080] 1.0000000 1.0000000 0.4800000 1.0000000 0.9565217 0.9583333 0.8636364
## [2087] 0.9259259 0.9655172 1.0000000 0.5600000 1.0000000 0.8888889 0.8461538
## [2094] 0.8571429 0.6956522 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [2101] 0.9565217 1.0000000 1.0000000 1.0000000 1.0000000 0.9333333 1.0000000
## [2108] 0.9642857 1.0000000 0.9642857 0.9166667 1.0000000 0.9166667 1.0000000
## [2115] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [2122] 1.0000000 0.9166667 0.9600000 0.9545455 1.0000000 0.8888889 0.9583333
## [2129] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [2136] 1.0000000 1.0000000 0.9642857 0.9629630 0.9600000 1.0000000 1.0000000
## [2143] 0.9333333 0.9642857 1.0000000 1.0000000 0.8947368 1.0000000 1.0000000
## [2150] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.8695652
## [2157] 0.9545455 0.9565217 0.9047619 1.0000000 0.9565217 0.9333333 1.0000000
## [2164] 0.9629630 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [2171] 0.9583333 0.9565217 0.8846154 1.0000000 0.6923077 1.0000000 0.9565217
## [2178] 0.9600000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 0.9583333
## [2185] 1.0000000 0.9600000 0.9545455 1.0000000 0.9259259 1.0000000 0.9523810
## [2192] 0.9615385 0.9583333 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [2199] 1.0000000 1.0000000 1.0000000 0.9583333 0.9642857 0.9642857 1.0000000
## [2206] 1.0000000 0.9629630 0.9600000 1.0000000 1.0000000 0.9565217 1.0000000
## [2213] 1.0000000 0.9473684 0.9545455 1.0000000 1.0000000 0.9666667 1.0000000
## [2220] 1.0000000 0.9565217 0.9354839 1.0000000 1.0000000 1.0000000 1.0000000
## [2227] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [2234] 1.0000000 1.0000000 0.9655172 1.0000000 1.0000000 1.0000000 1.0000000
## [2241] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [2248] 1.0000000 1.0000000 0.9655172 1.0000000 0.9545455 0.7600000 1.0000000
## [2255] 0.7142857 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [2262] 1.0000000 1.0000000 1.0000000 1.0000000 0.9583333 1.0000000 1.0000000
## [2269] 0.8750000 0.9500000 0.8666667 1.0000000 0.9310345 1.0000000 0.9523810
## [2276] 1.0000000 1.0000000 1.0000000 0.9523810 1.0000000 1.0000000 0.8571429
## [2283] 0.9310345 0.8421053 0.9047619 1.0000000 0.8965517 0.9655172 0.9166667
## [2290] 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## [2297] 0.9615385 0.9655172 0.9615385 0.9642857 0.9200000 1.0000000 1.0000000
## [2304] 1.0000000
```

```
pcaverages$set_size_num<-sizes[pcaverages$set_size] # added a new column to rtaverage data frame which
# Plot the results (which turn out to be surprising) that mirror the response times results, but for ac
head(pcaverages)
```

```
## # A tibble: 6 x 6
## # Groups:   subject_id, target_presence, set_size [3]
##   subject_id target_presence set_size task        percentCorrect set_size_num
##   <fct>      <fct>           <fct>    <fct>                <dbl>        <dbl>
## 1 2000081652 absent          1        conjunctive          1                1
## 2 2000081652 absent          1        disjunctive          1                1
## 3 2000081652 absent          5        conjunctive          1                5
## 4 2000081652 absent          5        disjunctive          1                5
## 5 2000081652 absent          15       conjunctive          1               15
## 6 2000081652 absent          15       disjunctive          0.941           15
```

```
ggplot(pcaverages,aes(x=set_size_num,y=percentCorrect,shape=target_presence,color=task, linetype=task))+
```

```
## Warning: `guides(<scale> = FALSE)` is deprecated. Please use `guides(<scale> =
## "none")` instead.
```

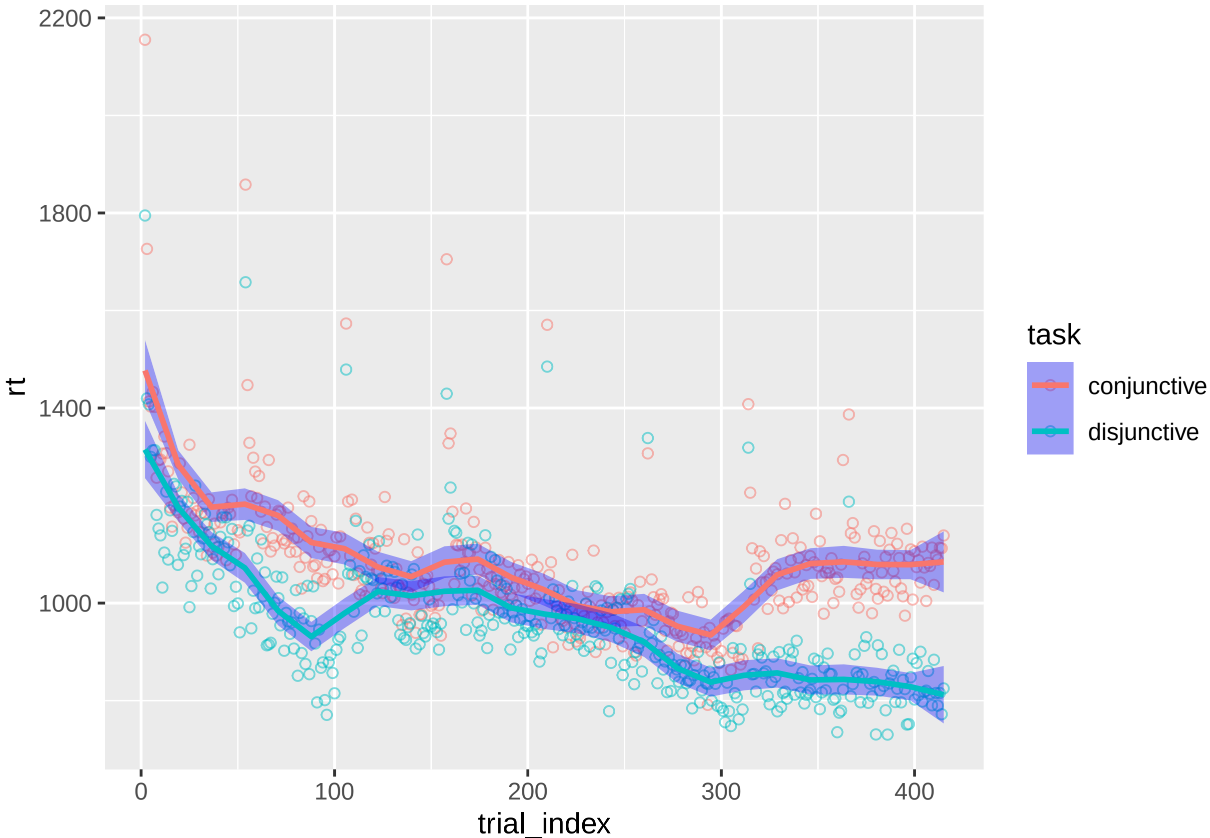



```
#The following analysis begins to look at learning effects.  Are there improvements over all trials wit
byseveral<-group_by(goodSearchTimes,task,trial_index) #break data down by task and which trial number.
averages<-summarize(byseveral,rt=mean(rt,trim=.1)) #show averages for each subject for each cell of the
```

```
## `summarise()` has grouped output by 'task'. You can override using the
## `.groups` argument.
```

```r
ggplot(averages,aes(x=trial_index,y=rt,colour=task))+geom_point(shape=1,alpha=1/2)+ geom_smooth(method=
```

```
## `geom_smooth()` using formula 'y ~ x'
```

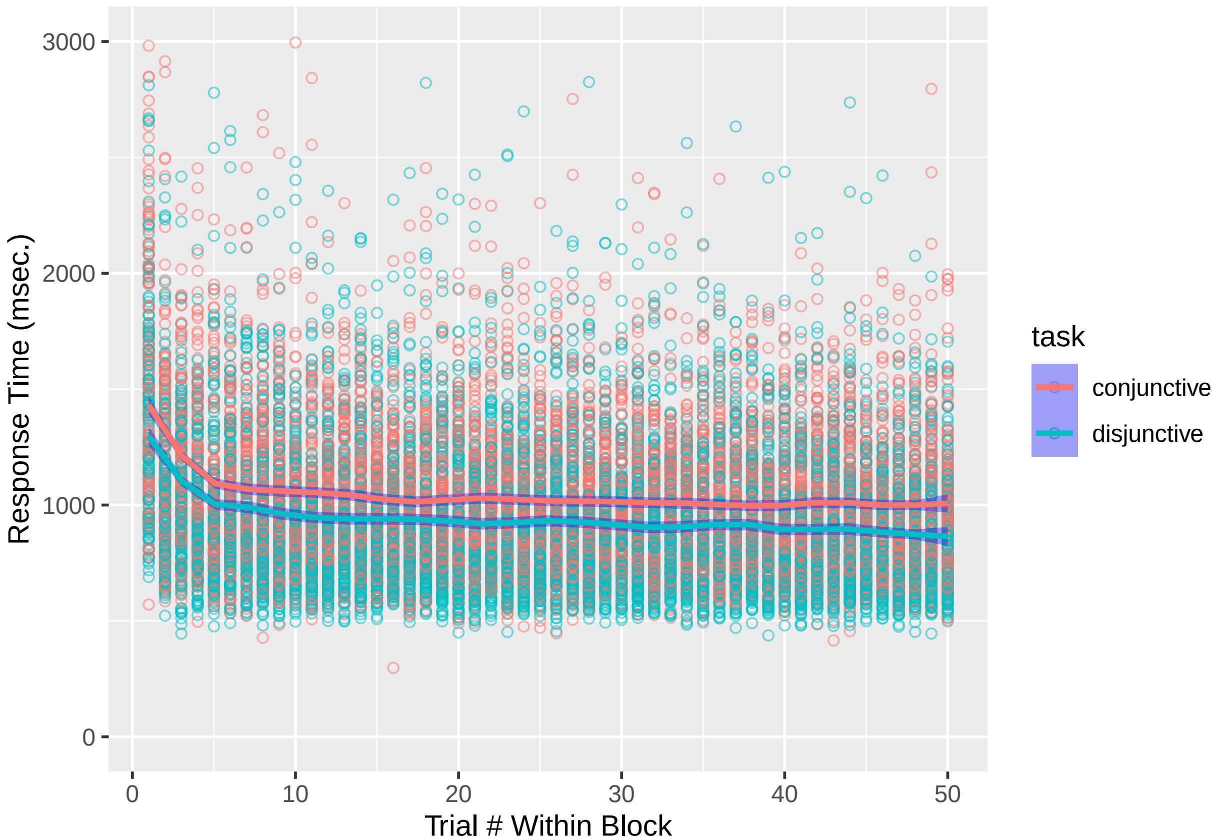



```r
#Are there improvements over trials within each block?
goodSearchTimes$trialInBlock<-(goodSearchTimes$trial_index-1) %% 52 # add another colums to describe wh
byseveral<-group_by(goodSearchTimes,subject_id,task,trialInBlock) #break data down by subject, schedule
averages<-summarize(byseveral,rt=mean(rt,trim=.3)) #show averages for each subject for each cell of the
```

```
## `summarise()` has grouped output by 'subject_id', 'task'. You can override
## using the `.groups` argument.
```

```r
ggplot(averages,aes(x=trialInBlock,y=rt,colour=task))+geom_point(shape=1,alpha=1/2)+ geom_smooth(method
```

```
## `geom_smooth()` using formula 'y ~ x'
## Warning: Removed 13 rows containing non-finite values (stat_smooth).
## Warning: Removed 13 rows containing missing values (geom_point).
```


3000
2000
1000
0
Response Time (msec.)
0
10
20
30
40
50
Trial # Within Block
task
conjunctive
disjunctive