Analysis of merged questionnaires

Anna Quaglieri & Riccardo Amorati

03/09/2017

```
library(readr)
library(tidyverse)
```

```
## + ggplot2 2.2.1        Date: 2017-09-03
## + tibble  1.3.4           R: 3.4.1
## + tidyr   0.7.0          OS: macOS Sierra 10.12.6
## + readr   1.1.1         GUI: X11
## + purrr   0.2.3      Locale: en_AU.UTF-8
## + dplyr   0.7.2          TZ: Australia/Melbourne
## + stringr 1.2.0
## + forcats 0.2.0
```

```
## Conflicts ----------------------------------------------------------------
```

```
## * filter(),  from dplyr, masks stats::filter()
## * lag(),     from dplyr, masks stats::lag()
```

```
library(reshape2)
```

```
##
## Attaching package: 'reshape2'
```

```
## The following object is masked from 'package:tidyr':
##
##     smiths
```

```
library(corrplot)
# Chunk options
knitr::opts_chunk$set(echo = TRUE, prompt = TRUE,cache = TRUE)
```

Read in data

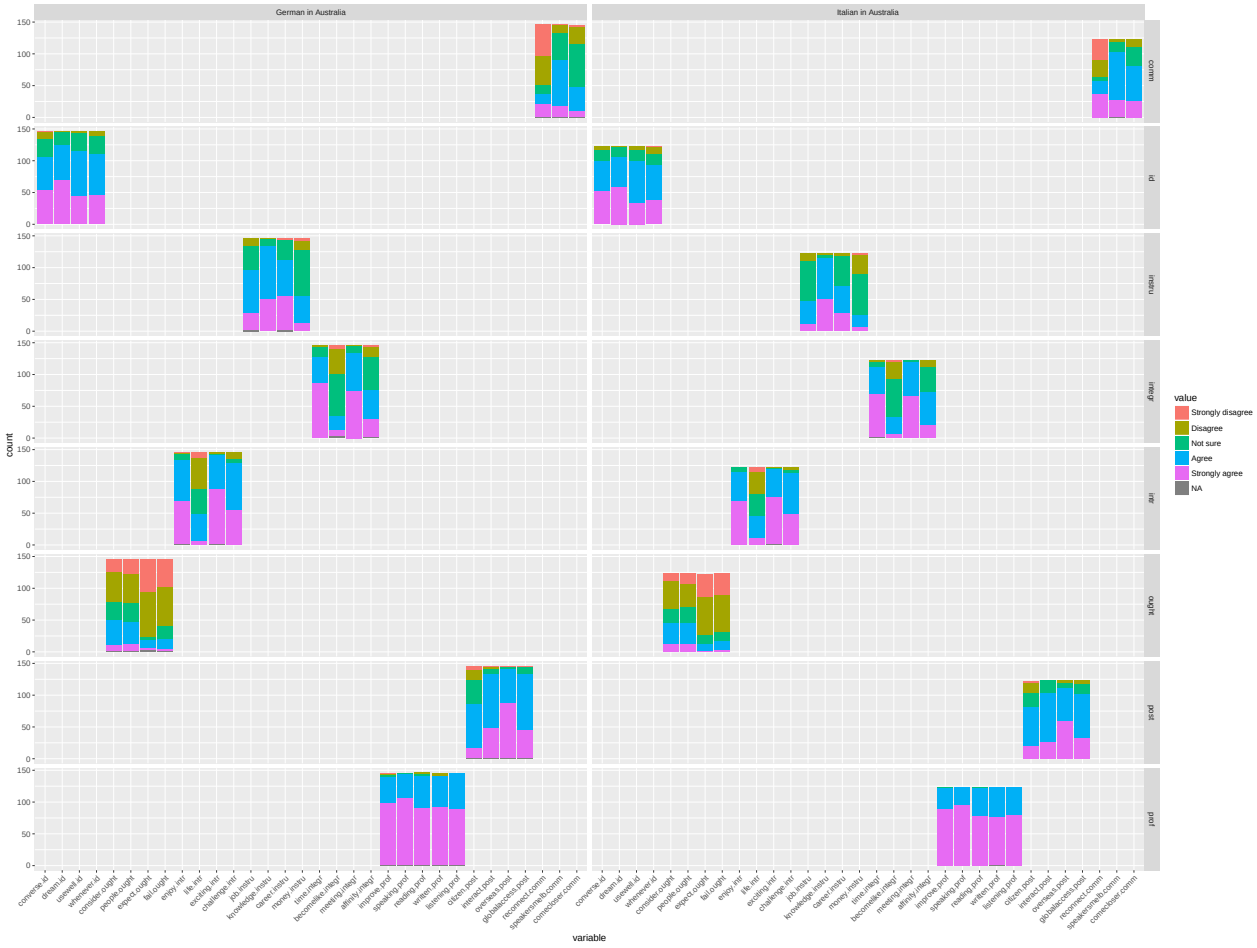
```
> european <- read_csv("european.csv")
> australian <- read_csv("australian.csv")
>
> all <- merge(european,australian,all = TRUE)
```

Convert Likert scales to numbers

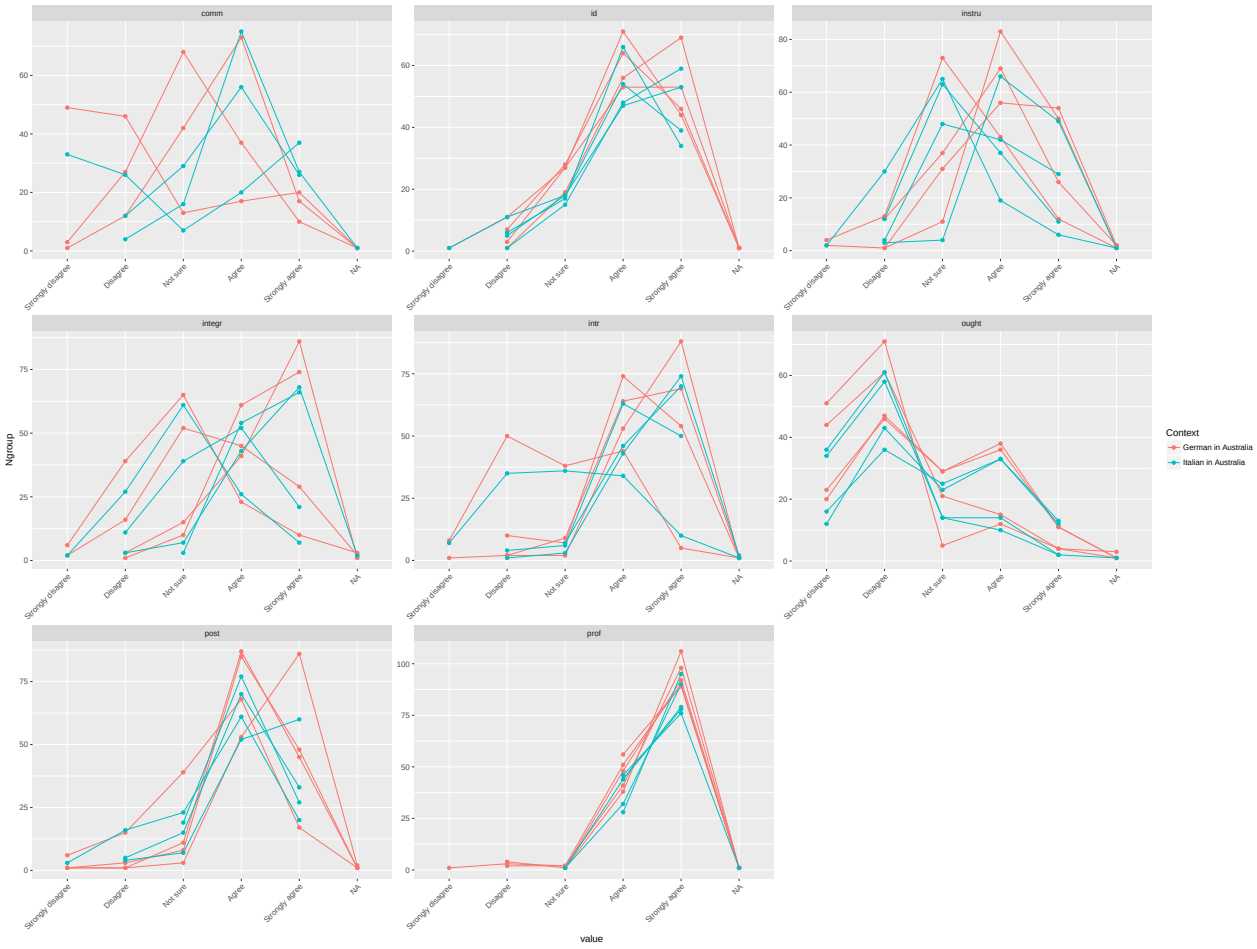
- barplot of items

```
> australian_melt <- melt(australian,id.vars = c("Resp.ID","Gender","Age","prof","Context","uni1.year")
+                         measure.vars = likert_variables)
>
> australian_melt$value <- factor(australian_melt$value,levels=c("Strongly disagree","Disagree","Not su
>
```

```
> australian_melt <- australian_melt %>% separate(variable,into=c("item","type"),sep="\\.",remove=FALSE)
> ggplot(australian_melt,aes(x=variable,fill=value)) + geom_bar(position = "stack") +
+   facet_grid(type~Context,scales = "free")+theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

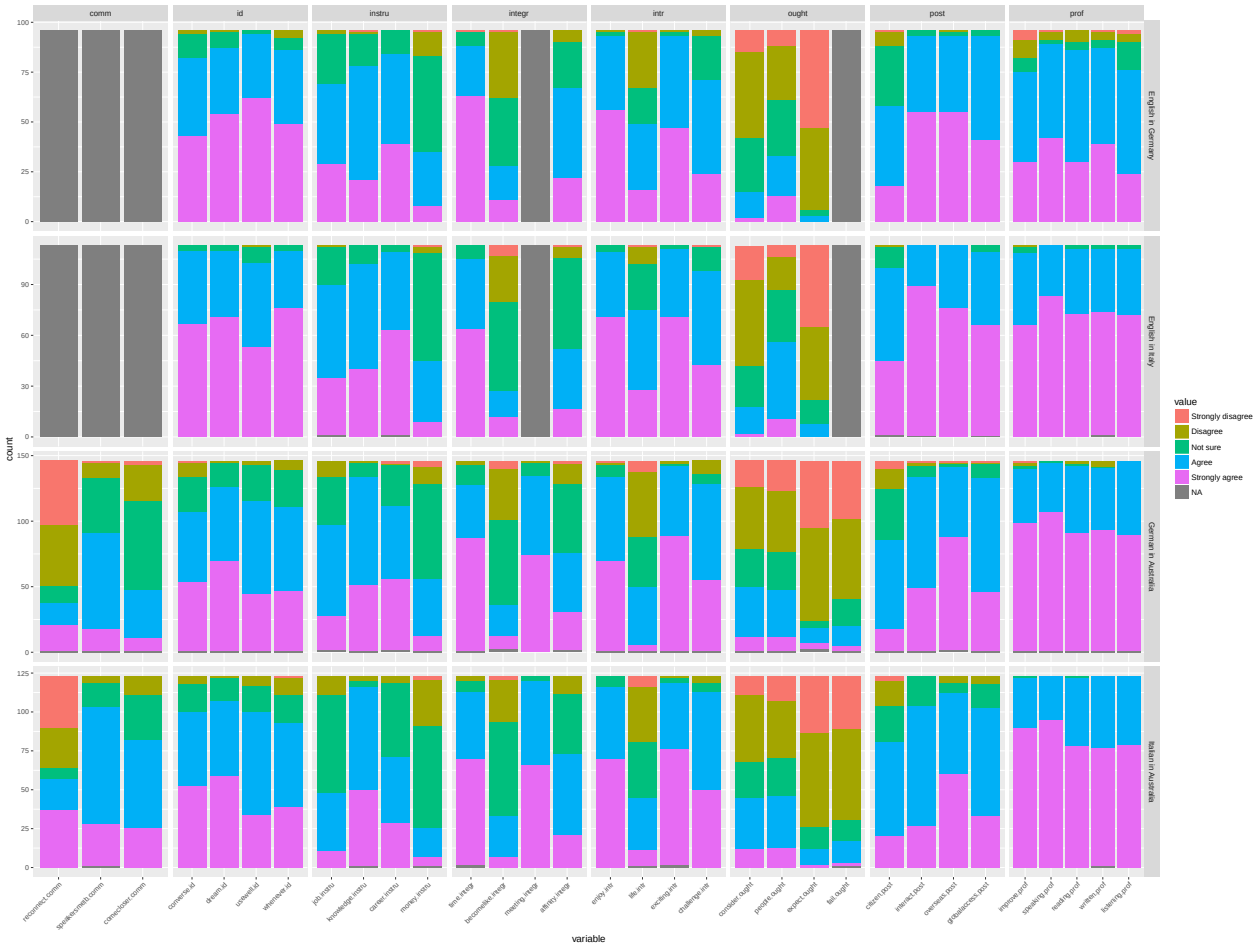



```
> australian_sum <- australian_melt %>% group_by(Context,variable,type,value) %>% dplyr::summarise(Ngrou
> ggplot(australian_sum,aes(x=value,y=Ngroup,colour=Context,group=interaction(variable, Context))) + geo
```

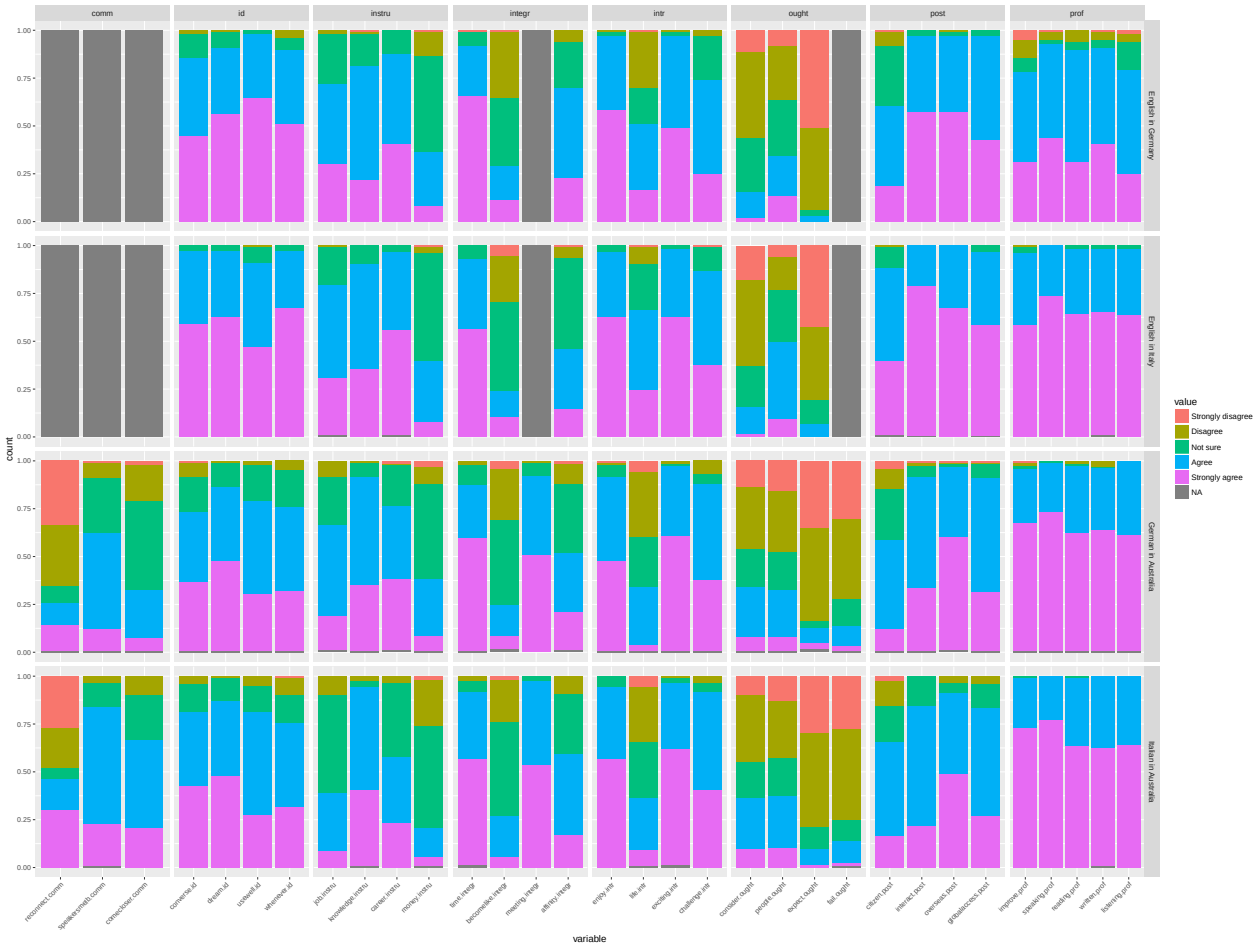


- all merged

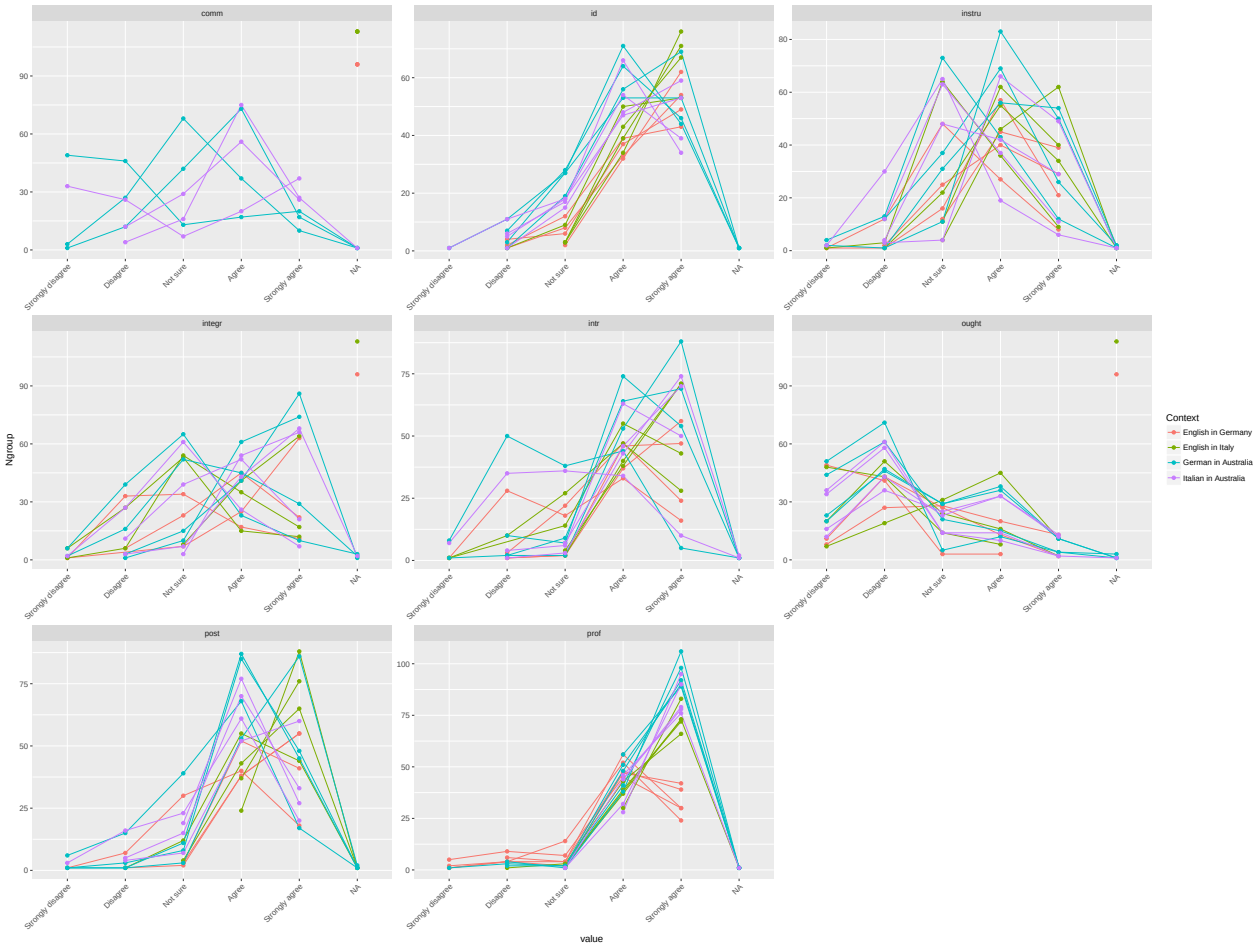
```
> all_melt <- melt(all,id.vars = c("Resp.ID","Gender","Age","prof","Context","uni1.year"),
+                          measure.vars = likert_variables)
>
> all_melt$value <- factor(all_melt$value,levels=c("Strongly disagree","Disagree","Not sure","Agree","S
>
> all_melt <- all_melt %>% separate(variable,into=c("item","type"),sep="\\.",remove=FALSE)
> ggplot(all_melt,aes(x=variable,fill=value)) + geom_bar(position = "stack") +
+   facet_grid(Context~type,scales = "free")+theme(axis.text.x = element_text(angle = 45, hjust = 1),ax
```




```
> ggplot(all_melt,aes(x=variable,fill=value)) + geom_bar(position = "fill") +
+   facet_grid(Context~type,scales = "free")+theme(axis.text.x = element_text(angle = 45, hjust = 1),axi
```




```
> all_sum <- all_melt %>% group_by(Context,variable,type,value) %>% dplyr::summarise(Ngroup=length(valu
> ggplot(all_sum,aes(x=value,y=Ngroup,colour=Context,group=interaction(variable, Context))) + geom_line
```



- correlation plot of items

```
> # conversion df
>
> convertToNumber <- function(column){
+   column <- factor(column,levels = c("Strongly disagree","Disagree","Not sure","Agree","Strongly agree
+   column_number <- as.numeric(column)
+   return(column_number)
+ }
>
> convert_number <- apply(australian[,likert_variables],2,convertToNumber)
> colnames(convert_number) <- paste0(colnames(convert_number),"1")
>
> likert_variables1 <- paste0(likert_variables,"1")
>
> australian_conv <- cbind(australian,convert_number)
>
> table(australian_conv[,likert_variables[1]],australian_conv[,likert_variables1[1]],useNA = "always")
```

```
##
##                      1   2   3   4   5 <NA>
##   Agree              0   0   0 100   0    0
##   Disagree           0  16   0   0   0    0
##   Not sure           0   0  45   0   0    0
##   Strongly agree     0   0   0   0 106    0
```

```
##   Strongly disagree   1   0   0   0   0   0
##   <NA>                0   0   0   0   0   1
```

```
> corrplot(cor(australian_conv[,likert_variables1],method = "pearson",use="complete.obs"),
+          method="color",is.corr = TRUE,order = "hclust",tl.col = "black",mar = c(1, 0,1, 0),tl.cex=0.8
```