CMM_R1-The good and bad of Economy analysis - Krippendorff's Alpha with R

Function for intercoder reliability

Source: Zapf, A., Castell, S., Morawietz, L., & Karch, A. (2016). Measuring inter-rater reliability for nominal data – which coefficients and confidence intervals are appropriate? BMC Medical Research Methodology, 16(1), 93. https://doi.org/10.1186/s12874-016-0200-9

```
# input:
# ratings_t = data set
# alpha_q = two-sided type one error, default = 0.05
# nboot = number of Bootstrap samples, defaul=1000
# scaling = measurement scale ("nominal", "ordinal", "interval", "ratio"), default="nominal"

k_alpha=function(ratings_t, alpha_q=0.05, nboot=1000, scaling="nominal"){

            # functions for Fleiss' K and Krippendorff's alpha
            # function for the estimation of Fleiss' K
                  k_func=function(N,n,k,ratings,categ){
                      # n_ij = number of raters who classed subject i in category j
                      n_ij=matrix(ncol=k,nrow=N)
                      step=1
                      for (j in categ){
                          for (i in 1:N){
                              n_ij[i,step]=sum(as.numeric(ratings[i,]==j))
                          }
                          step=step+1
                      }
                      # estimation of K_j
                      p_j=apply(n_ij,2,sum)/(N*n)
                      q_j=1-p_j
                      k_j=1-apply(n_ij*(n-n_ij),2,sum)/(N*n*(n-1)*p_j*q_j)
                      # estimation of the overall K
                      k_t=sum(p_j*q_j*k_j)/sum(p_j*q_j)
                      return(list(k_t,p_j,q_j))
                   }

             # Function for the estimation of alpha
             alpha_func=function(k,n,N,ratings,categ){
                   # conicidence matrix
                   CM=matrix(ncol=k,nrow=k,0)
                   vn <- function(datavec) sum(!is.na(datavec))
                   if (any(is.na(ratings)))  mc=apply(ratings, 1, vn) - 1    else mc=rep(n-1, N)
                   for (i in 1:N){
                       for (j in 1:(n-1)){
                           for (jt in (j+1):n){
                               if (!is.na(ratings[i,j]) && !is.na(ratings[i,jt])){
                                  index1=which(categ == ratings[i,j])
                                  index2=which(categ == ratings[i,jt])
                                  CM[index1,index2]=CM[index1,index2]+(1+(index1==index2))/mc[i]
```

```
                if (index1!=index2){
                   CM[index2,index1]=CM[index1,index2]
                }
             }
          }
       }
}
nmv <- sum(apply(CM, 2, sum))
nc=apply(CM,1,sum)
ncnk=matrix(0,nrow=k,ncol=k)

# matrix of expected disagreement
D_e=matrix(0,ncol=k,nrow=k)
for (C in 1:k) {
    for (Ct in 1:k) {
        if (C==Ct){
           D_e[C,Ct]=nc[C]*(nc[Ct]-1)/(nmv-1)
        }
        if (C!=Ct){
           D_e[C,Ct]=nc[C]*nc[Ct]/(nmv-1)
        }
        ncnk[C,Ct]=nc[C]*nc[Ct]
        ncnk[Ct,C]=ncnk[C,Ct]
    }
 }

 # matrix of metric differences
 diff2=matrix(0,nrow=k,ncol=k)
 # nominal
 if (match(scaling[1], "nominal", 0)){
    diff2=matrix(1,ncol=k,nrow=k)
    diag(diff2)=0
 }
 # ordinal
 if (match(scaling[1], "ordinal", 0)) {
    for (C in 1:k){
        for (Ct in 1:k){
            if (C!=Ct){
               tmp=nc[C:Ct]
               diff2[C,Ct]=(sum(tmp)-nc[C]/2-nc[Ct]/2)^2
               diff2[Ct,C]=diff2[C,Ct]
            }
         }
     }
 }
 # interval
 if (match(scaling[1], "interval", 0)){
    for (C in 1:k){
        for (Ct in 1:k){
            if (C!=Ct){
               diff2[C,Ct]=(as.numeric(categ)[C]-as.numeric(categ)[Ct])^2
               diff2[Ct,C]=diff2[C,Ct]
            }
```

```
                    }
                }
            }
            # ratio
            if (match(scaling[1], "ratio", 0)){
                for (C in 1:k){
                    for (Ct in 1:k){
                        if (C!=Ct){
                            diff2[C,Ct]=((as.numeric(categ)[C]-as.numeric(categ)[Ct])/
                                        (as.numeric(categ)[C]+as.numeric(categ)[Ct]))^2
                            diff2[Ct,C]=diff2[C,Ct]
                        }
                    }
                }
            }
            # point estimator of Krippendorff's alpha
            tmp=diff2*CM
            num=sum(tmp)
            tmp=diff2*D_e
            den=sum(tmp)
            if (den>0){
                alpha_boot=1-num/den
            }
            if (den<=0){
                    alpha_est=NA
              }
            return(alpha_boot)
        }


##################################################
############ Fleiss' K ######################
##################################################

# check, if measurement scale is nominal
if (match(scaling[1], "nominal", 0)){
   # deleting all subjects with missing values
   ratings_c <- as.matrix(na.omit(ratings_t))
   # N = number of subjects, n = number of raters, k = number of categories
   N_c=nrow(ratings_c)

   v=function(dat){min(dat)==max(dat)}
   agr_k=sum(apply(ratings_c,1,v))/N_c

   # check, if there are at least two individuals without missing values
   if (N_c<2){
      print("There are less than two subjects withour missing values. Therefore, Fleiss' K
   }
   if (N_c>=2){
      n_c=ncol(ratings_c)
      categ_c=levels(as.factor(ratings_c))
      k_c=length(categ_c)
```

```
  # point estimator of Fleiss` K
  k_=k_func(N_c,n_c,k_c,ratings_c,categ_c)
  k_est=k_[[1]]
  p_j=k_[[2]]
  q_j=k_[[3]]

  ############ asymptotic confidence interval ######################
  # estimation of the standard error
  se_k=(sqrt(2)/(sum(p_j*q_j)*sqrt(N_c*n_c*(n_c-1))))*sqrt(sum(p_j*q_j)^2-sum(p_j*q_j*(
  # asymptotic confidence interval for Fleiss' K
  CI_asymp_k=k_est+c(-1,1)*qnorm(1-alpha_q/2)*se_k
  }
}

############################################################
############ Krippendorff's alpha ######################
############################################################

# deleting all subject with less than two ratings
f=function(x)sum(!is.na(x))
# deleting all subjects with only one rating
ratings=as.matrix(ratings_t[apply(ratings_t,1,f)>1,])
# N = number of subjects, n = number of raters, k = number of categories
N_kr=nrow(ratings)

v=function(dat){min(dat,na.rm=TRUE)==max(dat,na.rm=TRUE)}
agr_alpha=sum(apply(ratings,1,v))/N_kr

n_kr=ncol(ratings)
categ=levels(as.factor(ratings))
k_kr=length(categ)
# point estimator of Krippendorff's alpha
alpha_est=alpha_func(k_kr,n_kr,N_kr,ratings,categ)



  ######################################################################
  ########## Bootstrap confidence intervals ########################
  ######################################################################

  # K and alpha in each Bootstrap sample
  k_boot=0
  alpha_boot=0
  for (iboot in 1:nboot){
     if (match(scaling[1], "nominal", 0)){
        index.new=sample(seq(1,N_c,1),N_c,replace=TRUE)
        ratings_b=ratings_c[index.new,]
        n=ncol(ratings_b)
        categ=levels(as.factor(ratings_b))
        k=length(categ)
        k.b<-k_func(N_c,n,k,ratings_b,categ)[[1]]
        k_boot=c(k_boot,k.b)
     }
```

```
      f=function(x)sum(!is.na(x))
      # deleting all subjects with only one rating
      index.new=sample(seq(1,N_kr,1),N_kr,replace=TRUE)
      ratings_b=ratings[index.new,]
      n=ncol(ratings)
      categ=levels(as.factor(ratings))
      k=length(categ)
      alpha_b=alpha_func(k,n,N_kr,ratings_b,categ)
      alpha_boot=c(alpha_boot,alpha_b)
    }
    # confidence interval using the percentiles from the Bootstrap samples
    if (match(scaling[1], "nominal", 0)){
    CI_boot_k=quantile(k_boot[-1],probs=c(alpha_q/2,1-alpha_q/2), na.rm=TRUE)
    }
    # confidence interval using the percentiles from the Bootstrap samples
   CI_boot_alpha=quantile(alpha_boot[-1],probs=c(alpha_q/2,1-alpha_q/2), na.rm=TRUE)


    ##########################################
    ############# Output #####################
    ##########################################

    print(paste("The measurement scale is ",scaling,"."))
    print("###### Fleiss' K ######")
    if (!match(scaling[1], "nominal", 0)){
      print(paste("Fleiss' K cannot be calculated, because it is only appropriate for nor
    }
    if (match(scaling[1], "nominal", 0)){
      print(paste("The observed agreement in all complete cases is ",round(agr_k*100,1),
      print(paste("N (number of subjects without missing values) =", N_c))
      print(paste("n (number of ratings) =", n_c))
      print(paste("k (number of categories) = ", k_c))
      print(paste("Point estimator of Fleiss' K =", round(k_est,4)))
      print(paste("Asymptotic two-sided ", (1-alpha_q)*100,"% confidence interval for Fl
      print(paste("Two-sided ", (1-alpha_q)*100,"% Bootstrap confidence interval for Fle
    }

    print("###### Krippendorff's alpha ######")
    print(paste("The observed agreement in all cases with at least two ratings is ",round
    print(paste("N (number of subjects with two or more ratings) =", N_kr))
    print(paste("n (number of ratings) =", n_kr))
    print(paste("k (number of categories) = ", k_kr))
    print(paste("Point estimator of Krippendorff's alpha =", round(alpha_est,4)))
    print(paste("Two-sided ", (1-alpha_q)*100,"% Bootstrap confidence interval for Krippen

    if (match(scaling[1], "nominal", 0)){
              return(invisible(list(obs.agr.k=agr_k,est.k=k_est,ci.asympt.k=CI_asymp_k,ci
obs.agr.alpha=agr_alpha,est.alpha=alpha_est,ci.boot.alpha=CI_boot_alpha)))
    }
    if (!match(scaling[1], "nominal", 0)){
      return(invisible(list(obs.agr.alpha=agr_alpha,est.alpha=alpha_est,ci.boot.alpha=CI_
    }
```

```
}


# input:
# ratings_t = data set (rows = individuals, columns = raters), missing values coded by NA
# alpha_q = two-sided type one error, default = 0.05
# nboot = number of Bootstrap samples, default=1000
# scaling = measurement scale ("nominal", "ordinal", "interval", "ratio"), default="nominal"

# output:
# observed agreement for the complete cases and for all cases with at least two ratings (obs.agr.k, obs
# point estimators: est.k, est.alpha
# confidence intervals: ci.asympt_k, ci.boot,k, ci.boot.alpha
```

Running test case to confirm the same results appear

```
ratings_t<-matrix(ncol=3,nrow=10,c(5,5,5,3,5,5,1,4,4,3,3,3,4,4,5,1,3,4,3,3,3,1,1,3,2,2,5,3,3,4),byrow=T
test<-k_alpha (ratings_t, alpha_q=0.05, nboot=1000, scaling="nominal")
```

```
## [1] "The measurement scale is  nominal ."
## [1] "###### Fleiss' K ######"
## [1] "The observed agreement in all complete cases is  30 %."
## [1] "N (number of subjects without missing values) = 10"
## [1] "n (number of ratings) = 3"
## [1] "k (number of categories) =  5"
## [1] "Point estimator of Fleiss' K = 0.3323"
## [1] "Asymptotic two-sided  95 % confidence interval for Fleiss' K: 0.136  ;  0.5287"
## [1] "Two-sided  95 % Bootstrap confidence interval for Fleiss' K: 0.0226  ;  0.5605"
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  30 %."
## [1] "N (number of subjects with two or more ratings) = 10"
## [1] "n (number of ratings) = 3"
## [1] "k (number of categories) =  5"
## [1] "Point estimator of Krippendorff's alpha = 0.3546"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.084  ;  0.5634"
```

Loading data for titles

```
setwd(".")

dataset_title <- read.csv(file = 'kalpha_results_r1/title_for_intercoder.csv', header = TRUE, stringsAs
dataset_text <- read.csv(file = 'kalpha_results_r1/text_for_intercoder.csv', header = TRUE, stringsAsFa
```

```
results_df <- data.frame()
```

```
results_df = data.frame()
```

text

recessie

```
ratings <- dataset_text[,c("text_recessie_gold","text_recessie")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  9.8 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = -0.0236"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.046  ;  -0.0024"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_recessie_gold"
test_df["Y"] <- "text_recessie"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes

```
ratings <- dataset_text[,c("text_boukes_gold","text_boukes")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  29.3 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2471"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2012  ;  0.2877"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_boukes_gold"
test_df["Y"] <- "text_boukes"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

LIWC

```
ratings <- dataset_text[,c("text_LIWC_gold","text_LIWC")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  42.7 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.3492"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.3069  ;  0.3932"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_LIWC_gold"
test_df["Y"] <- "text_LIWC"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

sentistrength

```
ratings <- dataset_text[,c("text_sentistrength_gold","text_sentistrength")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  37.4 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.1545"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.1039  ;  0.204"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_sentistrength_gold"
test_df["Y"] <- "text_sentistrength"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

pattern

```
ratings <- dataset_text[,c("text_pattern_gold","text_pattern")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  33.1 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
```

```
## [1] "Point estimator of Krippendorff's alpha = 0.0866"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.0344  ;  0.138"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_pattern_gold"
test_df["Y"] <- "text_pattern"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

polyglot

```
ratings <- dataset_text[,c("text_polyglot_gold","text_polyglot")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  39.8 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2579"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2087  ;  0.3033"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_polyglot_gold"
test_df["Y"] <- "text_polyglot"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

DANEW

```
ratings <- dataset_text[,c("text_DANEW_gold","text_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  36.5 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.1536"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.0995  ;  0.2"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_DANEW_gold"
test_df["Y"] <- "text_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

top4

```
ratings <- dataset_text[,c("text_top4_gold","text_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  42.4 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.3153"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.268  ;  0.36"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_top4_gold"
test_df["Y"] <- "text_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

title

recessie

```
ratings <- dataset_title[,c("title_recessie_gold","title_recessie")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  43.3 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = -0.0105"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0171  ;  -0.0054"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_recessie_gold"
test_df["Y"] <- "title_recessie"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes

```
ratings <- dataset_title[,c("title_boukes_gold","title_boukes")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  44.8 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.0731"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.0545  ;  0.0937"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_boukes_gold"
test_df["Y"] <- "title_boukes"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

LIWC

```
ratings <- dataset_title[,c("title_LIWC_gold","title_LIWC")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  48.2 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2259"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.1989  ;  0.2506"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_LIWC_gold"
test_df["Y"] <- "title_LIWC"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

sentistrength

```
ratings <- dataset_title[,c("title_sentistrength_gold","title_sentistrength")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  45.2 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
```

```
## [1] "Point estimator of Krippendorff's alpha = 0.1789"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.15  ;  0.2047"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_sentistrength_gold"
test_df["Y"] <- "title_sentistrength"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

pattern

```
ratings <- dataset_title[,c("title_pattern_gold","title_pattern")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  44.9 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.1687"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.142  ;  0.197"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_pattern_gold"
test_df["Y"] <- "title_pattern"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

polyglot

```
ratings <- dataset_title[,c("title_polyglot_gold","title_polyglot")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  43.5 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2497"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2216  ;  0.2756"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_polyglot_gold"
test_df["Y"] <- "title_polyglot"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

DANEW

```
ratings <- dataset_title[,c("title_DANEW_gold","title_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  44.7 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.218"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.1911  ;  0.2456"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_DANEW_gold"
test_df["Y"] <- "title_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

top4

```
ratings <- dataset_title[,c("title_top4_gold","title_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  46.1 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.298"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2703  ;  0.3244"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_top4_gold"
test_df["Y"] <- "title_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

text

recessie - boukes

```
ratings <- dataset_text[,c("text_recessie","text_boukes")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  63.6 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = -0.0467"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0818  ;  -0.0082"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_recessie"
test_df["Y"] <- "text_boukes"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

recessie - LIWC

```
ratings <- dataset_text[,c("text_recessie","text_LIWC")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  43.2 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.0088"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0115  ;  0.0285"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_recessie"
test_df["Y"] <- "text_LIWC"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

recessie - sentistrength

```
ratings <- dataset_text[,c("text_recessie","text_sentistrength")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  39 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
```

```
## [1] "Point estimator of Krippendorff's alpha = -0.0745"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.103  ;  -0.0465"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_recessie"
test_df["Y"] <- "text_sentistrength"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

recessie - pattern

```
ratings <- dataset_text[,c("text_recessie","text_pattern")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  43.5 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = -0.0067"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0356  ;  0.0191"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_recessie"
test_df["Y"] <- "text_pattern"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

recessie - polyglot

```
ratings <- dataset_text[,c("text_recessie","text_polyglot")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  42.4 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.027"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.0035  ;  0.051"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_recessie"
test_df["Y"] <- "text_polyglot"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

recessie - DANEW

```
ratings <- dataset_text[,c("text_recessie","text_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  42 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.0213"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0033  ;  0.0452"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_recessie"
test_df["Y"] <- "text_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

recessie - top4

```
ratings <- dataset_text[,c("text_recessie","text_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  40.5 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.019"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.003  ;  0.0415"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_recessie"
test_df["Y"] <- "text_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes - LIWC

```
ratings <- dataset_text[,c("text_boukes","text_LIWC")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
```

```
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  46.6 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2727"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2239  ;  0.317"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_boukes"
test_df["Y"] <- "text_LIWC"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes - sentistrength

```
ratings <- dataset_text[,c("text_boukes","text_sentistrength")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  39.5 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.1388"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.0899  ;  0.1856"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_boukes"
test_df["Y"] <- "text_sentistrength"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes - pattern

```
ratings <- dataset_text[,c("text_boukes","text_pattern")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  37.2 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.0337"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0159  ;  0.0827"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_boukes"
test_df["Y"] <- "text_pattern"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes - polyglot

```
ratings <- dataset_text[,c("text_boukes","text_polyglot")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  41.4 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.1992"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.1503  ;  0.2453"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_boukes"
test_df["Y"] <- "text_polyglot"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes - DANEW

```
ratings <- dataset_text[,c("text_boukes","text_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  37.1 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.0775"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.0265  ;  0.127"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_boukes"
test_df["Y"] <- "text_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes - top4

```
ratings <- dataset_text[,c("text_boukes","text_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  43 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.238"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.19  ;  0.2795"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_boukes"
test_df["Y"] <- "text_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

LIWC - sentistrength

```
ratings <- dataset_text[,c("text_LIWC","text_sentistrength")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  40.5 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.1675"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.1188  ;  0.2213"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_LIWC"
test_df["Y"] <- "text_sentistrength"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

LIWC - pattern

```
ratings <- dataset_text[,c("text_LIWC","text_pattern")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
```

```
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  43 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2369"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.1861  ;  0.2862"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_LIWC"
test_df["Y"] <- "text_pattern"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

LIWC - polyglot

```
ratings <- dataset_text[,c("text_LIWC","text_polyglot")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  47.8 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.3599"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.3145  ;  0.4056"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_LIWC"
test_df["Y"] <- "text_polyglot"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

LIWC - DANEW

```
ratings <- dataset_text[,c("text_LIWC","text_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  46.1 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.3246"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2748  ;  0.3691"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_LIWC"
test_df["Y"] <- "text_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

LIWC - top4

```
ratings <- dataset_text[,c("text_LIWC","text_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  62.3 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.6187"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.5848  ;  0.6502"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_LIWC"
test_df["Y"] <- "text_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

sentistrength - pattern

```
ratings <- dataset_text[,c("text_sentistrength","text_pattern")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  36.9 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.0753"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.0221  ;  0.129"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_sentistrength"
test_df["Y"] <- "text_pattern"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

sentistrength - polyglot

```
ratings <- dataset_text[,c("text_sentistrength","text_polyglot")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  38.7 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.1551"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.1041  ;  0.2013"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_sentistrength"
test_df["Y"] <- "text_polyglot"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

sentistrength - DANEW

```
ratings <- dataset_text[,c("text_sentistrength","text_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  39.8 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.1508"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.0966  ;  0.1991"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_sentistrength"
test_df["Y"] <- "text_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

sentistrength - top4

```
ratings <- dataset_text[,c("text_sentistrength","text_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
```

```
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  52.8 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.492"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.451  ;  0.53"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_sentistrength"
test_df["Y"] <- "text_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

pattern - polyglot

```
ratings <- dataset_text[,c("text_pattern","text_polyglot")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  46 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2642"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2153  ;  0.3125"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_pattern"
test_df["Y"] <- "text_polyglot"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

pattern - DANEW

```
ratings <- dataset_text[,c("text_pattern","text_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  45.5 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2779"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2269  ;  0.3292"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_pattern"
test_df["Y"] <- "text_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

pattern - top4

```
ratings <- dataset_text[,c("text_pattern","text_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  47.1 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.3005"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2506  ;  0.3466"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_pattern"
test_df["Y"] <- "text_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

polyglot - DANEW

```
ratings <- dataset_text[,c("text_polyglot","text_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  46.6 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.3011"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2548  ;  0.3507"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_polyglot"
test_df["Y"] <- "text_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

polyglot - top4

```
ratings <- dataset_text[,c("text_polyglot","text_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  59.5 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.6097"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.5753  ;  0.6427"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_polyglot"
test_df["Y"] <- "text_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

DANEW - top4

```
ratings <- dataset_text[,c("text_DANEW","text_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  61.2 %."
## [1] "N (number of subjects with two or more ratings) = 1426"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.5947"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.5539  ;  0.6296"
```

```
test_df <- data.frame(test)
test_df["X"] <- "text_DANEW"
test_df["Y"] <- "text_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

title

recessie - boukes

```
ratings <- dataset_title[,c("title_recessie","title_boukes")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  94 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = -0.0018"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0041  ;  -5e-04"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_recessie"
test_df["Y"] <- "title_boukes"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

recessie - LIWC

```
ratings <- dataset_title[,c("title_recessie","title_LIWC")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  80.7 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = -0.0026"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0075  ;  1e-04"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_recessie"
test_df["Y"] <- "title_LIWC"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

recessie - sentistrength

```
ratings <- dataset_title[,c("title_recessie","title_sentistrength")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  66.9 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
```

```
## [1] "Point estimator of Krippendorff's alpha = -0.0455"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0558  ;  -0.0358"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_recessie"
test_df["Y"] <- "title_sentistrength"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

recessie - pattern

```
ratings <- dataset_title[,c("title_recessie","title_pattern")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  70.2 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = -0.0028"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0077  ;  1e-04"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_recessie"
test_df["Y"] <- "title_pattern"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

recessie - polyglot

```
ratings <- dataset_title[,c("title_recessie","title_polyglot")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  48 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.0013"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0011  ;  0.0039"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_recessie"
test_df["Y"] <- "title_polyglot"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

recessie - DANEW

```
ratings <- dataset_title[,c("title_recessie","title_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  59.9 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = -9e-04"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0065  ;  0.0043"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_recessie"
test_df["Y"] <- "title_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

recessie - top4

```
ratings <- dataset_title[,c("title_recessie","title_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  46.2 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = -1e-04"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0044  ;  0.0039"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_recessie"
test_df["Y"] <- "title_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes - LIWC

```
ratings <- dataset_title[,c("title_boukes","title_LIWC")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
```

```
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  80.3 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.1804"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.1449  ;  0.2159"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_boukes"
test_df["Y"] <- "title_LIWC"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes - sentistrength

```
ratings <- dataset_title[,c("title_boukes","title_sentistrength")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  65.4 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.021"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0027  ;  0.0448"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_boukes"
test_df["Y"] <- "title_sentistrength"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes - pattern

```
ratings <- dataset_title[,c("title_boukes","title_pattern")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  67.1 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.0179"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: -0.0038  ;  0.0388"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_boukes"
test_df["Y"] <- "title_pattern"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes - polyglot

```
ratings <- dataset_title[,c("title_boukes","title_polyglot")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  49.2 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.0864"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.0679  ;  0.106"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_boukes"
test_df["Y"] <- "title_polyglot"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes - DANEW

```
ratings <- dataset_title[,c("title_boukes","title_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  58.3 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.0471"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.0271  ;  0.0696"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_boukes"
test_df["Y"] <- "title_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

boukes - top4

```
ratings <- dataset_title[,c("title_boukes","title_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  48 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.0949"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.0755  ;  0.1153"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_boukes"
test_df["Y"] <- "title_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

LIWC - sentistrength

```
ratings <- dataset_title[,c("title_LIWC","title_sentistrength")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  65.3 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.1871"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.1551  ;  0.2183"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_LIWC"
test_df["Y"] <- "title_sentistrength"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

LIWC - pattern

```
ratings <- dataset_title[,c("title_LIWC","title_pattern")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
```

```
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  68.7 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2684"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2341  ;  0.2977"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_LIWC"
test_df["Y"] <- "title_pattern"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

LIWC - polyglot

```
ratings <- dataset_title[,c("title_LIWC","title_polyglot")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  53.4 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.283"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2586  ;  0.3055"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_LIWC"
test_df["Y"] <- "title_polyglot"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

LIWC - DANEW

```
ratings <- dataset_title[,c("title_LIWC","title_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  63.6 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.3341"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.307  ;  0.3596"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_LIWC"
test_df["Y"] <- "title_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

LIWC - top4

```
ratings <- dataset_title[,c("title_LIWC","title_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  60 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.4373"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.4157  ;  0.4587"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_LIWC"
test_df["Y"] <- "title_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

sentistrength - pattern

```
ratings <- dataset_title[,c("title_sentistrength","title_pattern")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  56.5 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.0874"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.0574  ;  0.118"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_sentistrength"
test_df["Y"] <- "title_pattern"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

sentistrength - polyglot

```
ratings <- dataset_title[,c("title_sentistrength","title_polyglot")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  50.5 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2537"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2251  ;  0.2802"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_sentistrength"
test_df["Y"] <- "title_polyglot"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

sentistrength - DANEW

```
ratings <- dataset_title[,c("title_sentistrength","title_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  57.9 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2247"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.1932  ;  0.2543"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_sentistrength"
test_df["Y"] <- "title_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

sentistrength - top4

```
ratings <- dataset_title[,c("title_sentistrength","title_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
```

```
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  59.3 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.4947"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.4718  ;  0.5167"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_sentistrength"
test_df["Y"] <- "title_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

pattern - polyglot

```
ratings <- dataset_title[,c("title_pattern","title_polyglot")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  50.7 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2289"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2001  ;  0.2562"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_pattern"
test_df["Y"] <- "title_polyglot"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

pattern - DANEW

```
ratings <- dataset_title[,c("title_pattern","title_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  57.2 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2269"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.1976  ;  0.2555"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_pattern"
test_df["Y"] <- "title_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

pattern - top4

```
ratings <- dataset_title[,c("title_pattern","title_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  49.6 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.2444"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.2173  ;  0.2712"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_pattern"
test_df["Y"] <- "title_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

polyglot - DANEW

```
ratings <- dataset_title[,c("title_polyglot","title_DANEW")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  52.1 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.3439"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.3174  ;  0.3704"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_polyglot"
test_df["Y"] <- "title_DANEW"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

polyglot - top4

```
ratings <- dataset_title[,c("title_polyglot","title_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  76.6 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.7617"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.7474  ;  0.776"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_polyglot"
test_df["Y"] <- "title_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```

DANEW - top4

```
ratings <- dataset_title[,c("title_DANEW","title_top4")]
test<-k_alpha (ratings, alpha_q=0.05, nboot=1000, scaling="ordinal")
```

```
## [1] "The measurement scale is  ordinal ."
## [1] "###### Fleiss' K ######"
## [1] "Fleiss' K cannot be calculated, because it is only appropriate for nominal data."
## [1] "###### Krippendorff's alpha ######"
## [1] "The observed agreement in all cases with at least two ratings is  61.7 %."
## [1] "N (number of subjects with two or more ratings) = 4640"
## [1] "n (number of ratings) = 2"
## [1] "k (number of categories) =  3"
## [1] "Point estimator of Krippendorff's alpha = 0.5491"
## [1] "Two-sided  95 % Bootstrap confidence interval for Krippendorff's alpha: 0.5277  ;  0.5698"
```

```
test_df <- data.frame(test)
test_df["X"] <- "title_DANEW"
test_df["Y"] <- "title_top4"
results_df <- rbind(results_df,test_df )
write.csv(results_df, file = "results_kalpha.csv")
```