Scatter

2025-03-03

Plot of IFOF with Word Classes

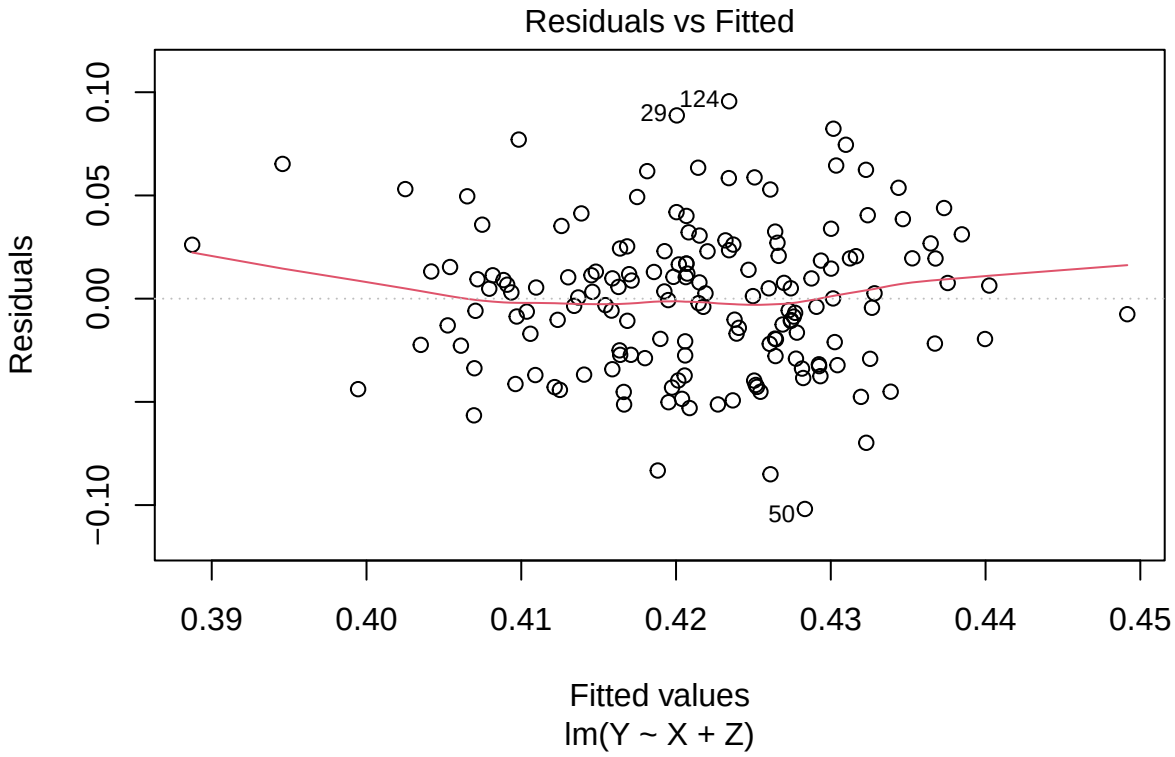
```
# Load the CSV file
data <- read.csv("/Volumes/jbooth-lab/BDL/AM/ELP_DTI/Results_ses7/Scatter_ses7_IFOF.csv")

# Z - control, Y - mean FA of IFOF cluster, X - word classes raw score
Z <- cbind(data$Age, data$KBIT_Nonverbal_StS, data$CTOPP.2_EL_Raw)
Y <- data$Cluster.Mean_FA_IFOF
X <- data$CELF_WC_Raw

# Check normality
shapiro.test(X) # X fails normality, so spearman correlation is chosen
```

```
##
##  Shapiro-Wilk normality test
##
## data:  X
## W = 0.97898, p-value = 0.0135
```

```
shapiro.test(Y)
```

```
##
##  Shapiro-Wilk normality test
##
## data:  Y
## W = 0.99396, p-value = 0.7348
```

```
# Fit a linear model
model <- lm(Y ~ X + Z)

# Check linearity assumption
plot(model, which = 1)  # Residuals vs Fitted plot
```




```
# Compute the partial correlation and get the confidence interval
partial_cor <- pcor.test(Y, X, Z, method = c("spearman"))
print(partial_cor)
```

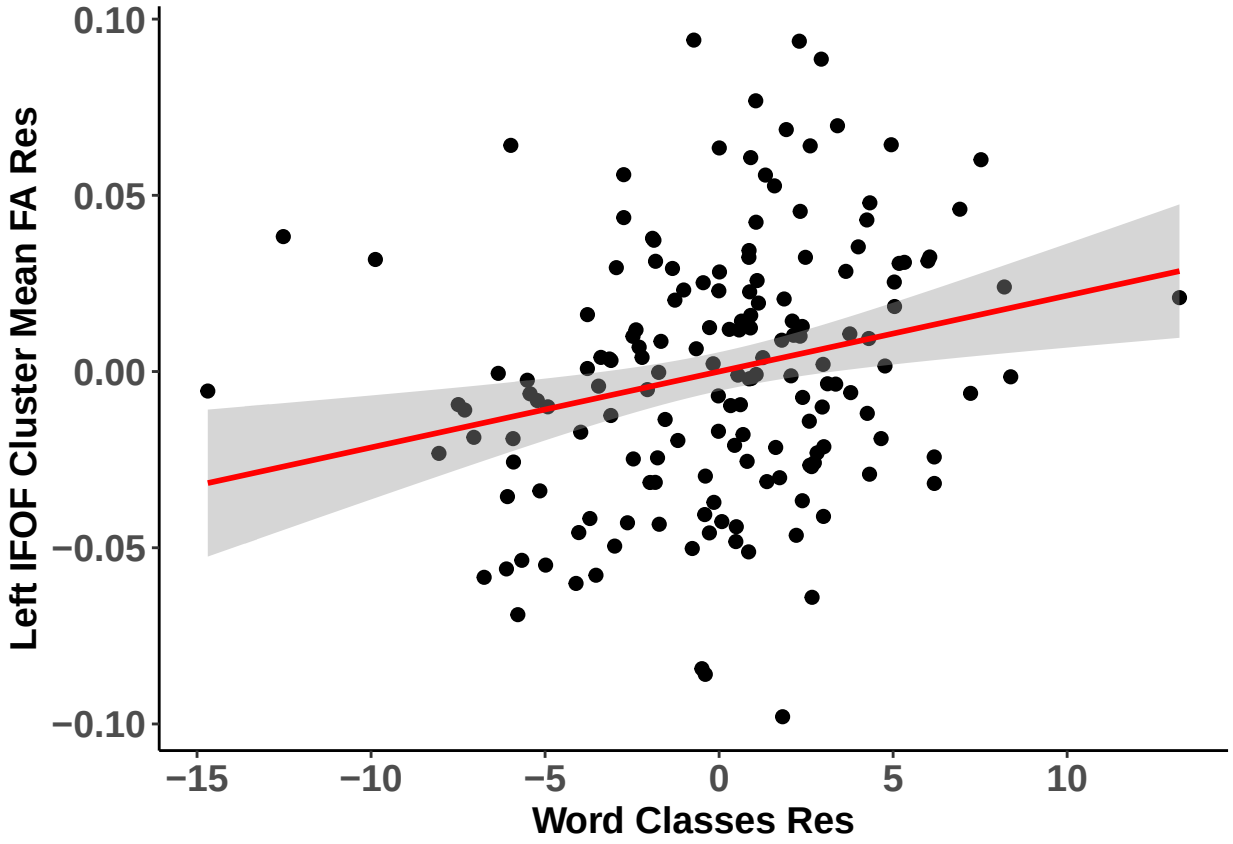
```
##    estimate     p.value statistic   n gp   Method
## 1 0.2333357 0.002893233  3.025773 164  3 spearman
```

```
Y_resid <- residuals(lm(Y ~ Z))
X_resid <- residuals(lm(X ~ Z))

ci <- cor.test(X_resid, Y_resid)
print(ci$conf.int)
```

```
## [1] 0.08696973 0.37662729
## attr(,"conf.level")
## [1] 0.95
```

```
m<-ggplot(data, aes(x=X_resid, y=Y_resid)) +
geom_point(shape = 21, size = 2, fill = "black") +
labs(x="Word Classes Res", y = "Left IFOF Cluster Mean FA Res")+
scale_size_manual(values=c(15))+
theme_classic() +
theme(axis.text = element_text(size = 14, face = "bold"),
      axis.title = element_text(size = 14, face = "bold"))
m +  geom_smooth(method=lm, color = "red")
```

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



Plot of ILF with WID

```
# Load the CSV file
data <- read.csv("/Volumes/jbooth-lab/BDL/AM/ELP_DTI/Results_ses7/Scatter_ses7_ILF.csv") # 17 subjects

# Z - control, Y - mean FA of ILF cluster, X - word classes raw score
Z1 <- cbind(data$Age, data$KBIT_Nonverbal_StS)
Y1 <- data$Cluster.Mean_FA_ILF
X1 <- data$WJ.III_WordID_Raw

# Check normality
shapiro.test(X1) # X fails normality, so spearman correlation is chosen
```

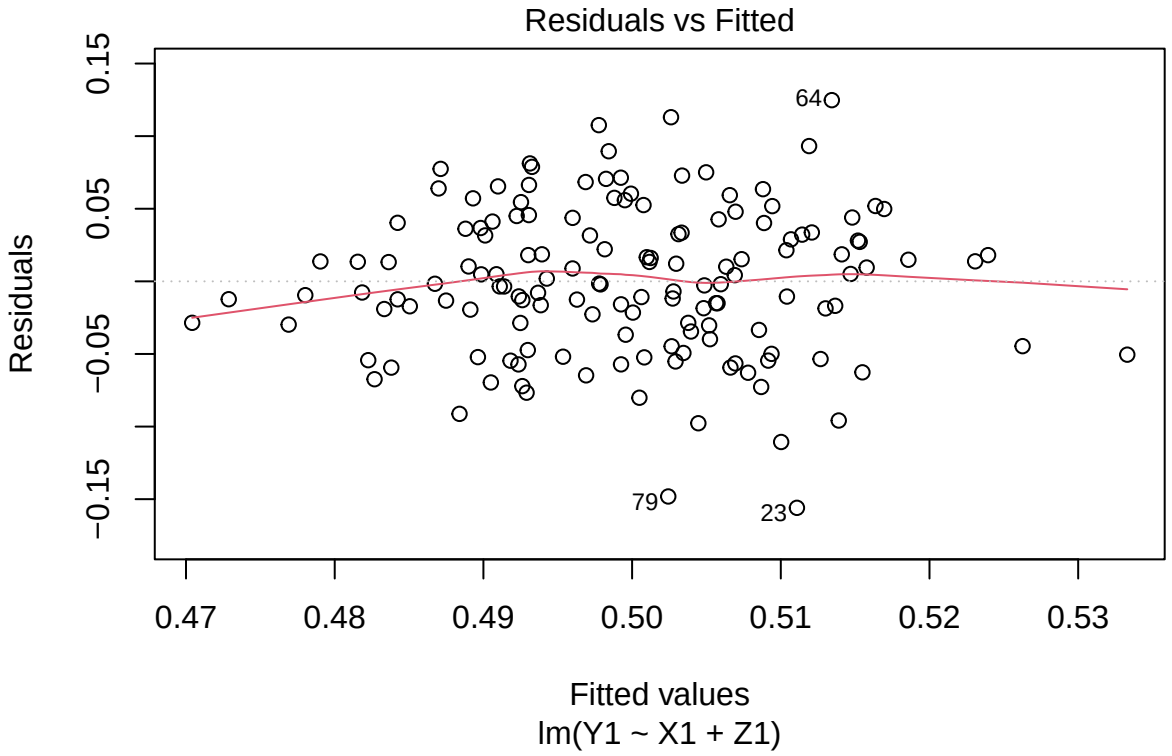
```
##
##  Shapiro-Wilk normality test
##
## data:  X1
## W = 0.99127, p-value = 0.5018
```

```
shapiro.test(Y1) #Y fails normality, so spearman correlation is chosen
```

```
##
##  Shapiro-Wilk normality test
##
## data:  Y1
## W = 0.9929, p-value = 0.6812
```

```
# Fit a linear model
model <- lm(Y1 ~ X1 + Z1)
```

```r
# Check linearity assumption
plot(model, which = 1)  # Residuals vs Fitted plot
```




```r
# Compute the partial correlation and get the confidence interval
partial_cor <- pcor.test(Y1, X1, Z1, method = c("spearman"))
print(partial_cor)
```

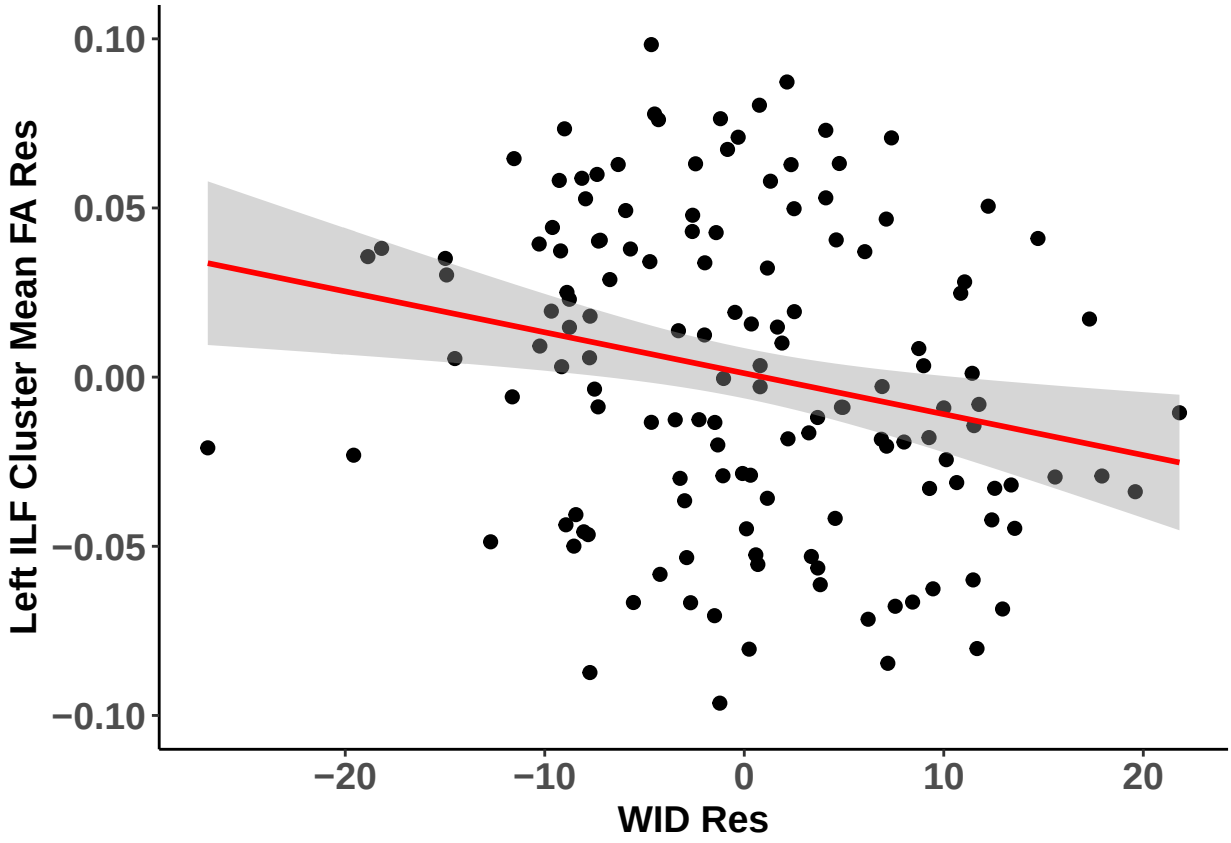
```
##     estimate     p.value statistic   n gp   Method
## 1 -0.2217385 0.007352806 -2.719301 147  2 spearman
```

```r
Y_resid <- residuals(lm(Y1 ~ Z1))
X_resid <- residuals(lm(X1 ~ Z1))

ci <- cor.test(X_resid, Y_resid)
print(ci$conf.int)
```

```
## [1] -0.33564132 -0.02250787
## attr(,"conf.level")
## [1] 0.95
```

```r
m<-ggplot(data, aes(x=X_resid, y=Y_resid)) +
geom_point(shape = 21, size = 2, fill = "black") +
labs(x="WID Res", y = "Left ILF Cluster Mean FA Res")+
scale_size_manual(values=c(15))+
theme_classic() +
theme(axis.text = element_text(size = 14, face = "bold"),
      axis.title = element_text(size = 14, face = "bold"))+
ylim(-0.10, 0.10)

m+geom_smooth(method=lm, color = "red")
```

```
## `geom_smooth()` using formula = 'y ~ x'
## Warning: Removed 7 rows containing non-finite values (`stat_smooth()`).
## Warning: Removed 7 rows containing missing values (`geom_point()`).
```



Plot of AF with Elision

```
# Load the CSV file
data <- read.csv("/Volumes/jbooth-lab/BDL/AM/ELP_DTI/Results_ses5/Scatter_ses5_AF_Elision_WID.csv") # 2

# Z - control, Y - mean FA of ILF cluster, X - word classes raw score
Z1 <- cbind(data$Age, data$KBIT_Nonverbal_StS)
Y1 <- data$Cluster.Mean_FA_AF_Elision
X1 <- data$CTOPP.2_EL_Raw

# Check normality
shapiro.test(X1) #
```

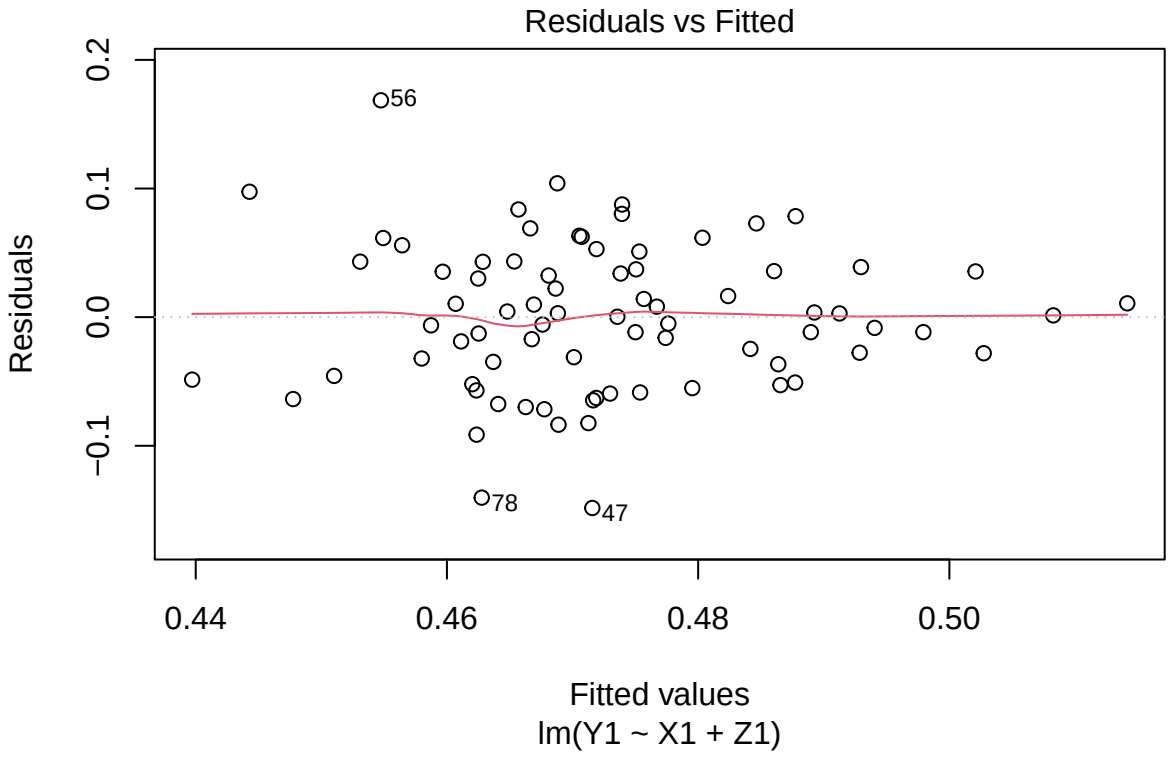
```
##
##  Shapiro-Wilk normality test
##
## data:  X1
## W = 0.9522, p-value = 0.005322
```

```
shapiro.test(Y1) #Y fails normality, so spearman correlation is chosen
```

```
##
```

```
##  Shapiro-Wilk normality test
##
## data:  Y1
## W = 0.98763, p-value = 0.6569
```

```
# Fit a linear model
model <- lm(Y1 ~ X1 + Z1)

# Check linearity assumption
plot(model, which = 1)  # Residuals vs Fitted plot
```




```
# Compute the partial correlation and get the confidence interval
partial_cor <- pcor.test(Y1, X1, Z1, method = c("spearman"))
print(partial_cor)
```

```
##    estimate   p.value statistic  n gp   Method
## 1 0.2651206 0.0206377  2.365295 78  2 spearman
```

```
Y_resid <- residuals(lm(Y1 ~ Z1))
X_resid <- residuals(lm(X1 ~ Z1))

ci <- cor.test(X_resid, Y_resid)
print(ci$conf.int)
```

```
## [1] 0.008161206 0.430732491
## attr(,"conf.level")
## [1] 0.95
```

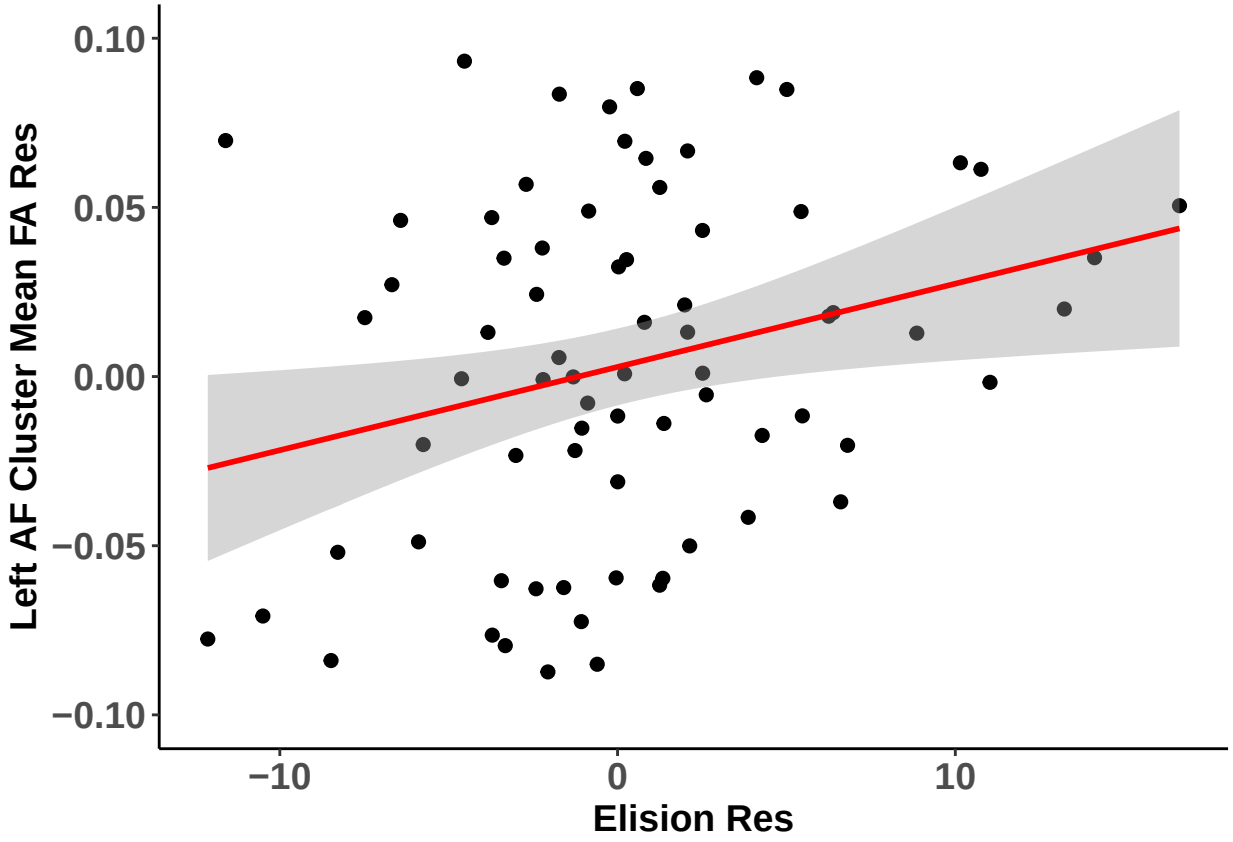
```
m<-ggplot(data, aes(x=X_resid, y=Y_resid)) +
geom_point(shape = 21, size = 2, fill = "black") +
labs(x="Elision Res", y = "Left AF Cluster Mean FA Res")+
scale_size_manual(values=c(15))+
```

```
theme_classic() +
theme(axis.text = element_text(size = 14, face = "bold"),
      axis.title = element_text(size = 14, face = "bold"))+
ylim(-0.10, 0.10)

m+geom_smooth(method=lm, color = "red")
```

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

```
## Warning: Removed 4 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: Removed 4 rows containing missing values (`geom_point()`).
```



Plot of AF with WID

```
# Load the CSV file
data <- read.csv("/Volumes/jbooth-lab/BDL/AM/ELP_DTI/Results_ses5/Scatter_ses5_AF_Elision_WID.csv") # 2

# Z - control, Y - mean FA of ILF cluster, X - word classes raw score
Z1 <- cbind(data$Age, data$KBIT_Nonverbal_StS)
Y1 <- data$Cluster.Mean_FA_AF_WID
X1 <- data$WJ.III_WordID_Raw

# Check normality
shapiro.test(X1) #
```

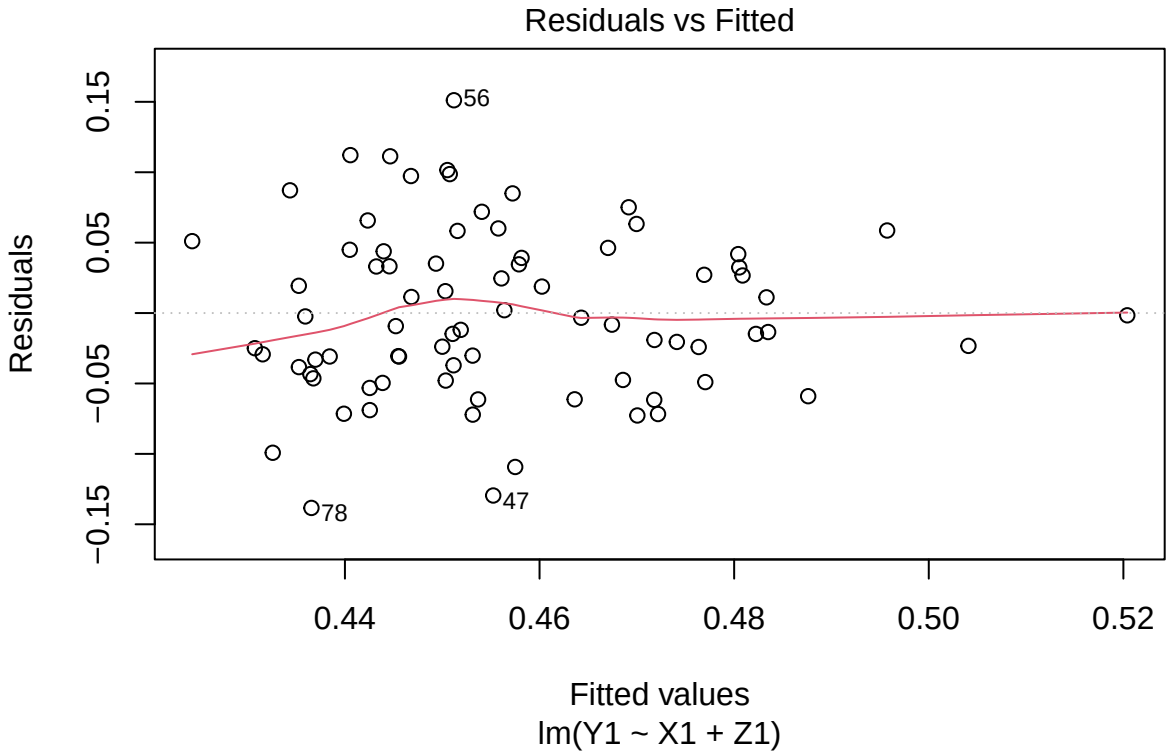
```
##
##  Shapiro-Wilk normality test
##
## data:  X1
```

```
## W = 0.959, p-value = 0.01326
```

```
shapiro.test(Y1) #Y fails normality, so spearman correlation is chosen
```

```
##
##  Shapiro-Wilk normality test
##
## data:  Y1
## W = 0.98625, p-value = 0.5683
```

```
# Fit a linear model
model <- lm(Y1 ~ X1 + Z1)

# Check linearity assumption
plot(model, which = 1)  # Residuals vs Fitted plot
```




```
# Compute the partial correlation and get the confidence interval
partial_cor <- pcor.test(Y1, X1, Z1, method = c("spearman"))
print(partial_cor)
```

```
##    estimate   p.value statistic  n gp   Method
## 1 0.2701747 0.0182567    2.4139 78  2 spearman
```

```
Y_resid <- residuals(lm(Y1 ~ Z1))
X_resid <- residuals(lm(X1 ~ Z1))

ci <- cor.test(X_resid, Y_resid)
print(ci$conf.int)
```

```
## [1] 0.04302363 0.45871648
## attr(,"conf.level")
## [1] 0.95
```

```r
m<-ggplot(data, aes(x=X_resid, y=Y_resid)) +
geom_point(shape = 21, size = 2, fill = "black") +
labs(x="WID Res", y = "Left AF Cluster Mean FA Res")+
scale_size_manual(values=c(15))+
theme_classic() +
theme(axis.text = element_text(size = 14, face = "bold"),
      axis.title = element_text(size = 14, face = "bold"))+
ylim(-0.10, 0.10)

m+geom_smooth(method=lm, color = "red")
```

```
## `geom_smooth()` using formula = 'y ~ x'
## Warning: Removed 7 rows containing non-finite values (`stat_smooth()`).
## Warning: Removed 7 rows containing missing values (`geom_point()`).
```