Linear models: Schizotypy and self-reported Alexithymia

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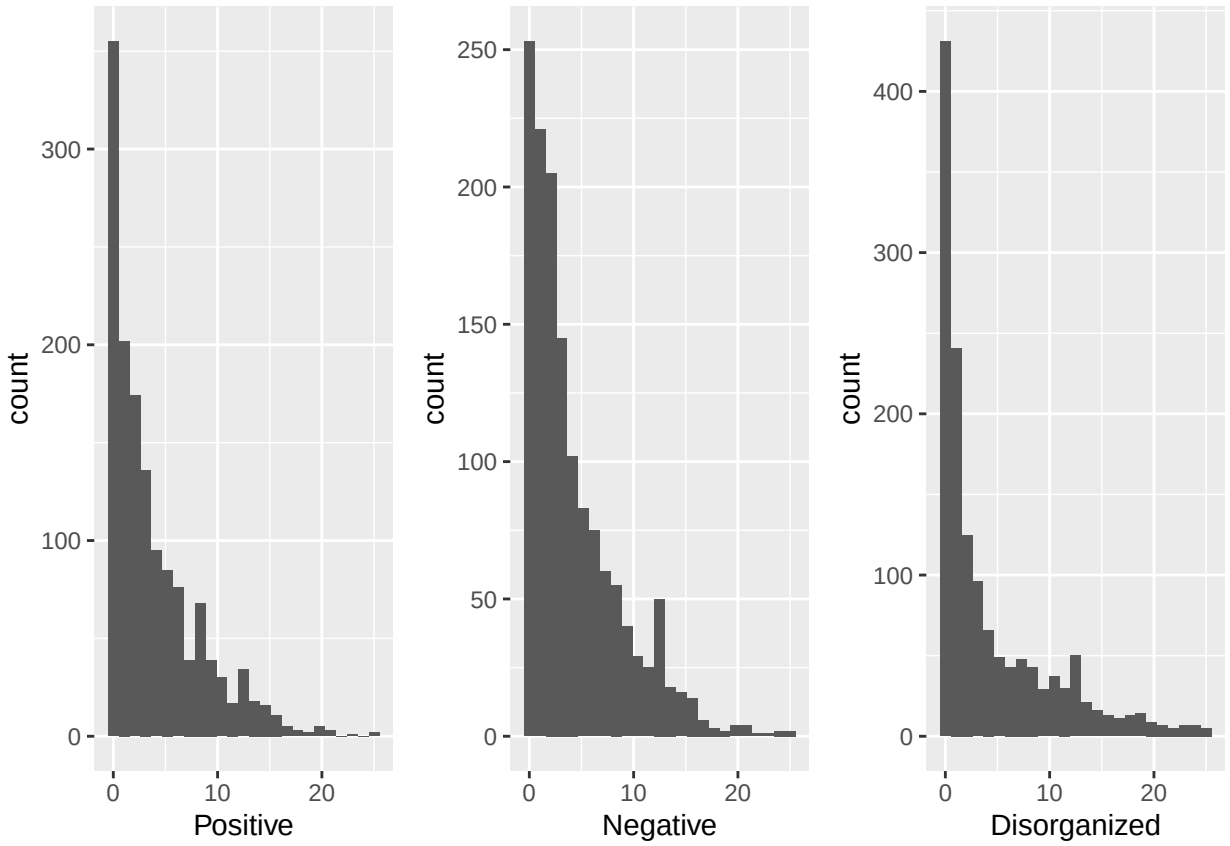
The primary purpose of this analysis is to examine the complex relationship between 3 schizotypy factors—positive, negative, and disorganized schizotypy—and 2 factors of alexithymia: cognitive and affective alexithymia. Cognitive alexithymia consists of 3 subfactors—difficulty in identifying, analyzing and verbalizing emotions—while affective alexithymia is defined as diminished emotionalizing and fantasizing.

Hypotheses:

Per the SEAS research prospectus, it was hypothesized that:
1. Positive schizotypy will be positively correlated with cognitive alexithymia and negatively correlated with affective alexithymia.
2. Negative schizotypy will be positively correlated with cognitive alexithymia and affective alexithymia.
3. Disorganized schizotypy will be positively correlated with cognitive alexithymia.

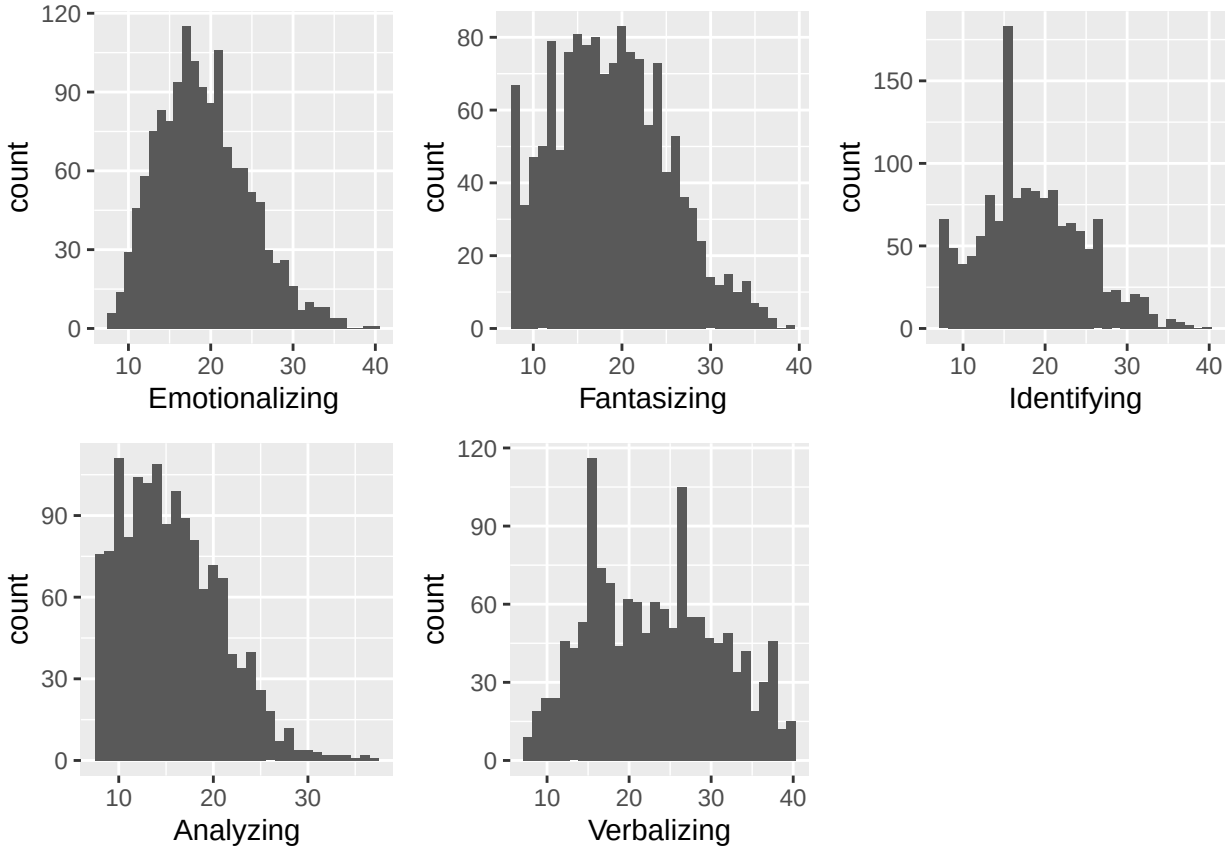
Histograms of variables of interest

Schizotypy

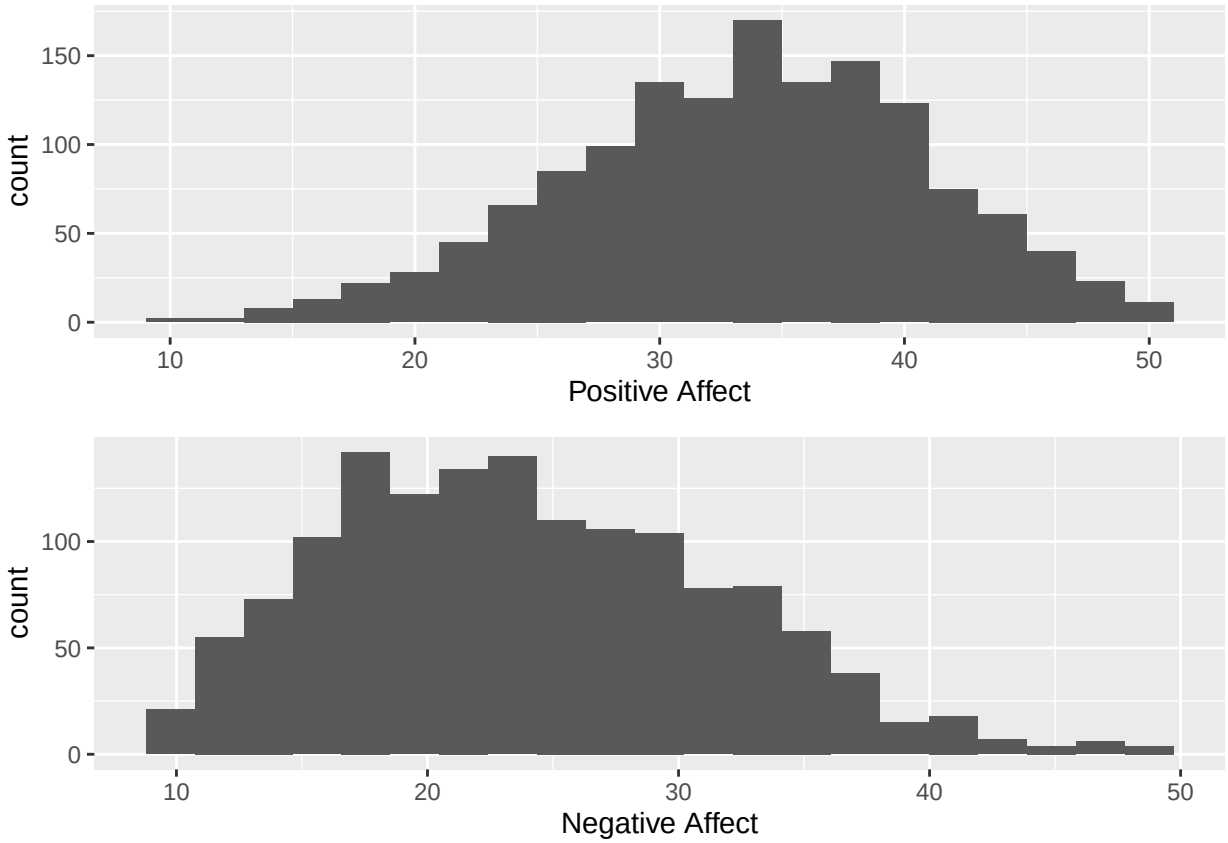


Bermond-Vorst Alexithymia Questionnaire

Lower scores are alexithymia-indicative, reflecting difficulties identifying, analyzing, and verbalizing emotions and diminished emotionalizing and fantasizing.


count
Emotionalizing
Fantasizing
Identifying
Analyzing
Verbalizing

Positive and Negative Affect Schedule



Correlation matrices

Schizotypy and Alexithymia (2nd-order factors)

```
##          pos_schz neg_schz dis_schz cog_alex
## pos_schz
## neg_schz    0.17*
## dis_schz    0.41*    0.34*
## cog_alex    0.23*    0.48*    0.46*
## aff_alex   -0.23*    0.21*   -0.13*    0.14*
```

Schizotypy and Alexithymia (1st-order factors)

```
##            pos_schz  neg_schz  dis_schz idnt_bvaq nlyz_bvaq verb_bvaq emot_bvaq
## pos_schz
## neg_schz      0.17*
## dis_schz      0.41*     0.34*
## idnt_bvaq     0.29*     0.33*     0.52*
## nlyz_bvaq     0.09*     0.40*     0.26*     0.51*
## verb_bvaq     0.17*     0.45*     0.34*     0.52*     0.54*
## emot_bvaq -0.05         0.39* -0.04      0.04         0.40*     0.24*
## fant_bvaq    -0.28* -0.04        -0.15*    -0.09*     0.13* -0.08         0.16*
```

Schizotypy and Affect

```
##           pos_schz neg_schz dis_schz pa_PANAS
## pos_schz
## neg_schz     0.17*
## dis_schz     0.41*    0.34*
## pa_PANAS -0.07       -0.42*   -0.33*
## na_PANAS     0.33*    0.20*    0.47*   -0.24*
```

Alexithymia and Affect

```
##          cog_alex  aff_alex pa_PANAS
## cog_alex
## aff_alex    0.14*
## pa_PANAS   -0.44*  0.01
## na_PANAS    0.37*    -0.25*   -0.24*
```

```
##           idnt_bvaq nlyz_bvaq verb_bvaq emot_bvaq fant_bvaq pa_PANAS
## idnt_bvaq
## nlyz_bvaq     0.51*
## verb_bvaq     0.52*     0.54*
## emot_bvaq  0.04         0.40*     0.24*
## fant_bvaq    -0.09*     0.13* -0.08         0.16*
## pa_PANAS     -0.41*    -0.29*    -0.39* -0.07      0.07
## na_PANAS      0.43*     0.18*     0.29*    -0.20*    -0.18*   -0.24*
```

Linear Models: BVAQ scores predicted by schizotypy dimensions

For each model, the summary of the multiple linear regression with all predictors entered simulatenously is given first. This is followed by the delta Rs for each of the predictors (schizotypy dimensions) when they are entered into the model last. Finally, a scatterplot is included in which each schizotypy dimensions' unique variance is used to predict the outcome variable (BVAQ scores)—each schizotypy dimensions has been partialed out by the other two dimensions.

Summarized models

Cognitive Alexithymia

```
##
## Call:
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.27255 -0.60290 -0.00916  0.57321  2.64935
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -1.108e-17  2.182e-02   0.000    1.000
## pos_schz     3.127e-02  2.399e-02   1.304    0.192
```

```
## neg_schz     3.666e-01  2.327e-02  15.757   <2e-16 ***
## dis_schz     3.161e-01  2.516e-02  12.563   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8211 on 1412 degrees of freedom
## Multiple R-squared:  0.3272, Adjusted R-squared:  0.3258
## F-statistic: 228.9 on 3 and 1412 DF,  p-value: < 2.2e-16
```

```
## [1] "Betas"
```

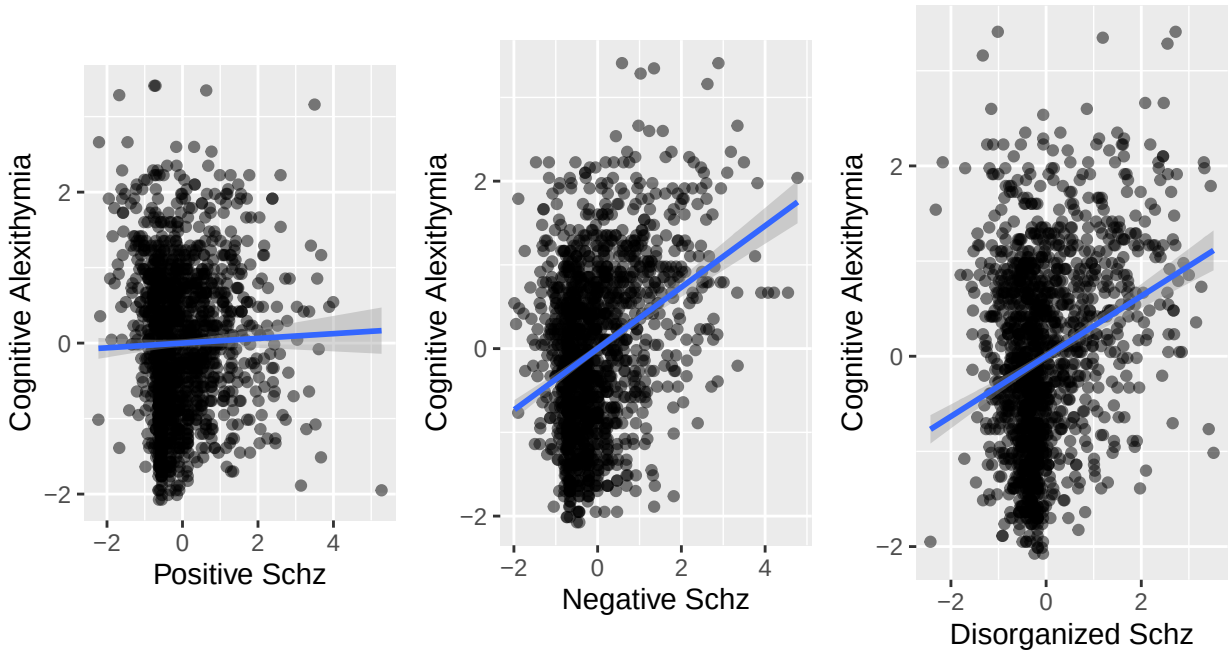
```
##   pos_schz   neg_schz   dis_schz
## 0.03127446 0.36661211 0.31606217
```

```
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Coefficients
##                  SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz      1.1462  1   0.0012 0.0008
## neg_schz    167.3965  1   0.1495 0.1183
## dis_schz    106.4109  1   0.1005 0.0752
##
## Sum of squared errors (SSE): 952.0
## Sum of squared total  (SST): 1415.0
```

Relationship between positive schizotypy and cognitive alexithymia is predicated on common variance with other schizotypy factors: extracting common variance with disorganized schizotypy is enough to reduce the relationship to non-significant;extracting common variance with negative schizotypy slightly weakens the relationship but does not render it non-significant.
R-squared for model with only negative and disorganized schizotypy is equivalent to that of the full schizotypy model.

```
##
## Call:
## lm(formula = cog_alex ~ pos_schz + neg_schz, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.44760 -0.64043  0.01087  0.60172  2.58190
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 7.344e-17  2.300e-02   0.000        1
## pos_schz    1.464e-01  2.336e-02   6.265 4.94e-10 ***
## neg_schz    4.554e-01  2.336e-02  19.491  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8655 on 1413 degrees of freedom
## Multiple R-squared:  0.252,  Adjusted R-squared:  0.251
## F-statistic: 238.1 on 2 and 1413 DF,  p-value: < 2.2e-16
```

```
## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"

##
## Call:
## lm(formula = cog_alex ~ neg_schz + dis_schz, data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.3249 -0.5972  0.0019  0.5793  2.6260
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -1.790e-17  2.183e-02    0.00        1
## neg_schz     3.677e-01  2.326e-02   15.81   <2e-16 ***
## dis_schz     3.286e-01  2.326e-02   14.13   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8213 on 1413 degrees of freedom
## Multiple R-squared:  0.3264, Adjusted R-squared:  0.3255
## F-statistic: 342.4 on 2 and 1413 DF,  p-value: < 2.2e-16

## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"

##
## Call:
## lm(formula = cog_alex ~ pos_schz + neg_schz, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.44760 -0.64043  0.01087  0.60172  2.58190
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 7.344e-17  2.300e-02   0.000        1
## pos_schz    1.464e-01  2.336e-02   6.265 4.94e-10 ***
## neg_schz    4.554e-01  2.336e-02  19.491  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8655 on 1413 degrees of freedom
## Multiple R-squared:  0.252,  Adjusted R-squared:  0.251
## F-statistic: 238.1 on 2 and 1413 DF,  p-value: < 2.2e-16

## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"
```



Probing effects with BVAQ subscales

This section needs work Particularly, figuring out how to report these findings formally.

The relationship between cognitive alexithymia and *disorganized schizotypy* is driven by the difficulty identifying emotions subscale.

```
##
## Call:
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + idnt_bvaq,
##     data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.69161 -0.38017 -0.02131  0.34008  1.64016
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)  1.366e-17  1.436e-02   0.000   1.0000
## pos_schz    -3.389e-02  1.586e-02  -2.137   0.0328 *
## neg_schz     2.407e-01  1.559e-02  15.441   <2e-16 ***
## dis_schz     1.730e-03  1.810e-02   0.096   0.9239
## idnt_bvaq    7.399e-01  1.721e-02  42.998   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5404 on 1411 degrees of freedom
## Multiple R-squared:  0.7088, Adjusted R-squared:  0.708
## F-statistic: 858.6 on 4 and 1411 DF,  p-value: < 2.2e-16
```

```
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + idnt_bvaq,
##     data = main_df)
##
## Coefficients
##                  SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz      1.3334  1   0.0032 0.0009
## neg_schz     69.6273  1   0.1446 0.0492
## dis_schz      0.0027  1   0.0000 0.0000
## idnt_bvaq   539.9049  1   0.5672 0.3816
##
## Sum of squared errors (SSE): 412.0
## Sum of squared total  (SST): 1415.0
```

Both difficulty verbalizing and difficulty analyzing emotions explain the relationship between *negative schizotypy* and cognitive alexithymia. Diff. Verbalizing contributes slightly more than Diff. Analyzing Emotions.

Together

```
##
## Call:
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + nlyz_bvaq +
##     verb_bvaq, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.97264 -0.20634 -0.00834  0.17483  1.00913
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)  9.771e-17  7.579e-03   0.000    1.000
## pos_schz     3.690e-02  8.342e-03   4.424 1.05e-05 ***
## neg_schz    -9.578e-03  8.892e-03  -1.077    0.282
## dis_schz     1.287e-01  8.936e-03  14.399  < 2e-16 ***
## nlyz_bvaq    4.445e-01  9.218e-03  48.226  < 2e-16 ***
## verb_bvaq    5.818e-01  9.632e-03  60.401  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.2852 on 1410 degrees of freedom
## Multiple R-squared:  0.919,  Adjusted R-squared:  0.9187
## F-statistic:  3198 on 5 and 1410 DF,  p-value: < 2.2e-16
```

```
## [1] "Betas"
```

```
##     pos_schz     neg_schz     dis_schz
##  0.036898842 -0.009578305  0.128665108
```

```
## [1] "Effect sizes"
```

```
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + nlyz_bvaq +
##     verb_bvaq, data = main_df)
##
```

```
## Coefficients
##                   SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz      1.5914  1   0.0137 0.0011
## neg_schz      0.0944  1   0.0008 0.0001
## dis_schz     16.8616  1   0.1282 0.0119
## nlyz_bvaq   189.1421  1   0.6226 0.1337
## verb_bvaq   296.6961  1   0.7212 0.2097
##
## Sum of squared errors (SSE): 114.7
## Sum of squared total  (SST): 1415.0
```

Invidually

```
##
## Call:
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + nlyz_bvaq,
##     data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.73330 -0.38466 -0.03735  0.34914  1.87379
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 2.126e-16  1.435e-02   0.000 1.000000
## pos_schz    5.541e-02  1.578e-02   3.511 0.000461 ***
## neg_schz    1.299e-01  1.626e-02   7.991 2.76e-15 ***
## dis_schz    2.095e-01  1.673e-02  12.523  < 2e-16 ***
## nlyz_bvaq   6.806e-01  1.581e-02  43.061  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5399 on 1411 degrees of freedom
## Multiple R-squared:  0.7093, Adjusted R-squared:  0.7085
## F-statistic: 860.6 on 4 and 1411 DF,  p-value: < 2.2e-16
```

```
## [1] "Betas"
```

```
##   pos_schz   neg_schz   dis_schz
## 0.05540948 0.12991154 0.20948636
```

```
## [1] "Effect sizes"
```

```
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + nlyz_bvaq,
##     data = main_df)
##
## Coefficients
##                   SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz      3.5933  1   0.0087 0.0025
## neg_schz     18.6167  1   0.0433 0.0132
```

```
## dis_schz     45.7235  1   0.1000 0.0323
## nlyz_bvaq   540.5866  1   0.5679 0.3820
##
## Sum of squared errors (SSE): 411.4
## Sum of squared total  (SST): 1415.0
```

```
##
## Call:
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + verb_bvaq,
##     data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.70463 -0.31652 -0.00723  0.31880  1.95774
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -6.103e-17  1.233e-02   0.000    1.000
## pos_schz     1.770e-02  1.356e-02   1.306    0.192
## neg_schz     7.000e-02  1.422e-02   4.924  9.5e-07 ***
## dis_schz     1.584e-01  1.450e-02  10.920  < 2e-16 ***
## verb_bvaq    7.788e-01  1.419e-02  54.865  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.464 on 1411 degrees of freedom
## Multiple R-squared:  0.7853, Adjusted R-squared:  0.7847
## F-statistic:  1290 on 4 and 1411 DF,  p-value: < 2.2e-16
```

```
## [1] "Betas"
```

```
##   pos_schz   neg_schz   dis_schz
## 0.01770277 0.06999621 0.15839478
```

```
## [1] "Effect sizes"
```

```
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + verb_bvaq,
##     data = main_df)
##
## Coefficients
##                  SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz      0.3671  1   0.0012 0.0003
## neg_schz      5.2197  1   0.0169 0.0037
## dis_schz     25.6763  1   0.0779 0.0181
## verb_bvaq   648.1405  1   0.6809 0.4580
##
## Sum of squared errors (SSE): 303.8
## Sum of squared total  (SST): 1415.0
```

Probing effects with PANAS

```
##
## Call:
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + pa_PANAS,
##     data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.43083 -0.56428 -0.00048  0.54338  2.62971
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -8.077e-17  2.110e-02   0.000   1.0000
## pos_schz     5.299e-02  2.330e-02   2.274   0.0231 *
## neg_schz     2.833e-01  2.401e-02  11.797   <2e-16 ***
## dis_schz     2.583e-01  2.502e-02  10.325   <2e-16 ***
## pa_PANAS    -2.374e-01  2.390e-02  -9.932   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.7941 on 1411 degrees of freedom
## Multiple R-squared:  0.3712, Adjusted R-squared:  0.3694
## F-statistic: 208.2 on 4 and 1411 DF,  p-value: < 2.2e-16

## [1] "Betas"

##    pos_schz    neg_schz    dis_schz    pa_PANAS
##  0.05299369  0.28329540  0.25828300 -0.23739947

## [1] "Effect sizes"

## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + pa_PANAS,
##     data = main_df)
##
## Coefficients
##                 SSR df pEta-sqr dR-sqr
## (Intercept)  0.0000  1   0.0000     NA
## pos_schz     3.2620  1   0.0037 0.0023
## neg_schz    87.7587  1   0.0898 0.0620
## dis_schz    67.2182  1   0.0702 0.0475
## pa_PANAS    62.2014  1   0.0653 0.0440
##
## Sum of squared errors (SSE): 889.8
## Sum of squared total  (SST): 1415.0

##
## Call:
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + na_PANAS,
##     data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.29428 -0.59171  0.00289  0.55521  2.85720
##
```

```
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 3.477e-17  2.142e-02   0.000    1.000
## pos_schz    2.824e-03  2.386e-02   0.118    0.906
## neg_schz    3.601e-01  2.286e-02  15.753  < 2e-16 ***
## dis_schz    2.447e-01  2.652e-02   9.228  < 2e-16 ***
## na_PANAS    1.816e-01  2.462e-02   7.375 2.79e-13 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.806 on 1411 degrees of freedom
## Multiple R-squared:  0.3522, Adjusted R-squared:  0.3504
## F-statistic: 191.8 on 4 and 1411 DF,  p-value: < 2.2e-16

## [1] "Betas"

##    pos_schz    neg_schz    dis_schz    na_PANAS
## 0.002824128 0.360052704 0.244734794 0.181591413

## [1] "Effect sizes"

## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + na_PANAS,
##     data = main_df)
##
## Coefficients
##                  SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz      0.0091  1   0.0000 0.0000
## neg_schz    161.2155  1   0.1496 0.1139
## dis_schz     55.3174  1   0.0569 0.0391
## na_PANAS     35.3346  1   0.0371 0.0250
##
## Sum of squared errors (SSE): 916.6
## Sum of squared total  (SST): 1415.0

##
## Call:
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + pa_PANAS +
##     na_PANAS, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.35161 -0.54284  0.01131  0.54618  2.81150
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -3.610e-17  2.080e-02   0.000    1.000
## pos_schz     2.678e-02  2.331e-02   1.149    0.251
## neg_schz     2.834e-01  2.366e-02  11.977  < 2e-16 ***
## dis_schz     2.004e-01  2.619e-02   7.654 3.60e-14 ***
## pa_PANAS    -2.208e-01  2.369e-02  -9.320  < 2e-16 ***
## na_PANAS     1.576e-01  2.404e-02   6.556 7.74e-11 ***
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.7825 on 1410 degrees of freedom
## Multiple R-squared:  0.3898, Adjusted R-squared:  0.3876
## F-statistic: 180.1 on 5 and 1410 DF,  p-value: < 2.2e-16
```

```
## [1] "Betas"
```

```
##    pos_schz    neg_schz    dis_schz    pa_PANAS    na_PANAS
##  0.02677832  0.28343150  0.20041190 -0.22078814  0.15762610
```

```
## [1] "Effect sizes"
```

```
## lm(formula = cog_alex ~ pos_schz + neg_schz + dis_schz + pa_PANAS +
##     na_PANAS, data = main_df)
##
## Coefficients
##                 SSR df pEta-sqr dR-sqr
## (Intercept)  0.0000  1   0.0000     NA
## pos_schz     0.8084  1   0.0009 0.0006
## neg_schz    87.8430  1   0.0923 0.0621
## dis_schz    35.8715  1   0.0399 0.0254
## pa_PANAS    53.1858  1   0.0580 0.0376
## na_PANAS    26.3190  1   0.0296 0.0186
##
## Sum of squared errors (SSE): 863.4
## Sum of squared total  (SST): 1415.0
```

Affective Alexithymia

```
##
## Call:
## lm(formula = aff_alex ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.5866 -0.6698 -0.0211  0.6429  3.1972
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -2.273e-16  2.481e-02   0.000        1
## pos_schz    -2.194e-01  2.727e-02  -8.044 1.82e-15 ***
## neg_schz     2.940e-01  2.646e-02  11.112  < 2e-16 ***
## dis_schz    -1.453e-01  2.861e-02  -5.080 4.29e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9337 on 1412 degrees of freedom
## Multiple R-squared:  0.1301, Adjusted R-squared:  0.1283
## F-statistic: 70.41 on 3 and 1412 DF,  p-value: < 2.2e-16
```

```
## [1] "Betas"
```

```
##   pos_schz   neg_schz   dis_schz
## -0.2194060  0.2939835 -0.1453086
```

```
## lm(formula = aff_alex ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Coefficients
##                   SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz     56.4121  1   0.0438 0.0399
## neg_schz    107.6412  1   0.0804 0.0761
## dis_schz     22.4918  1   0.0179 0.0159
##
## Sum of squared errors (SSE): 1230.9
## Sum of squared total  (SST): 1415.0
```

Relationship between negative schizotypy and affective alexithymia grows stronger after accounting for common variance with positive and, in particular, disorganized schizotypy.

```
##
## Call:
## lm(formula = cog_alex ~ pos_schz + neg_schz, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.44760 -0.64043  0.01087  0.60172  2.58190
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 7.344e-17  2.300e-02   0.000        1
## pos_schz    1.464e-01  2.336e-02   6.265 4.94e-10 ***
## neg_schz    4.554e-01  2.336e-02  19.491  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8655 on 1413 degrees of freedom
## Multiple R-squared:  0.252,  Adjusted R-squared:  0.251
## F-statistic: 238.1 on 2 and 1413 DF,  p-value: < 2.2e-16
```

```
## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++"
```

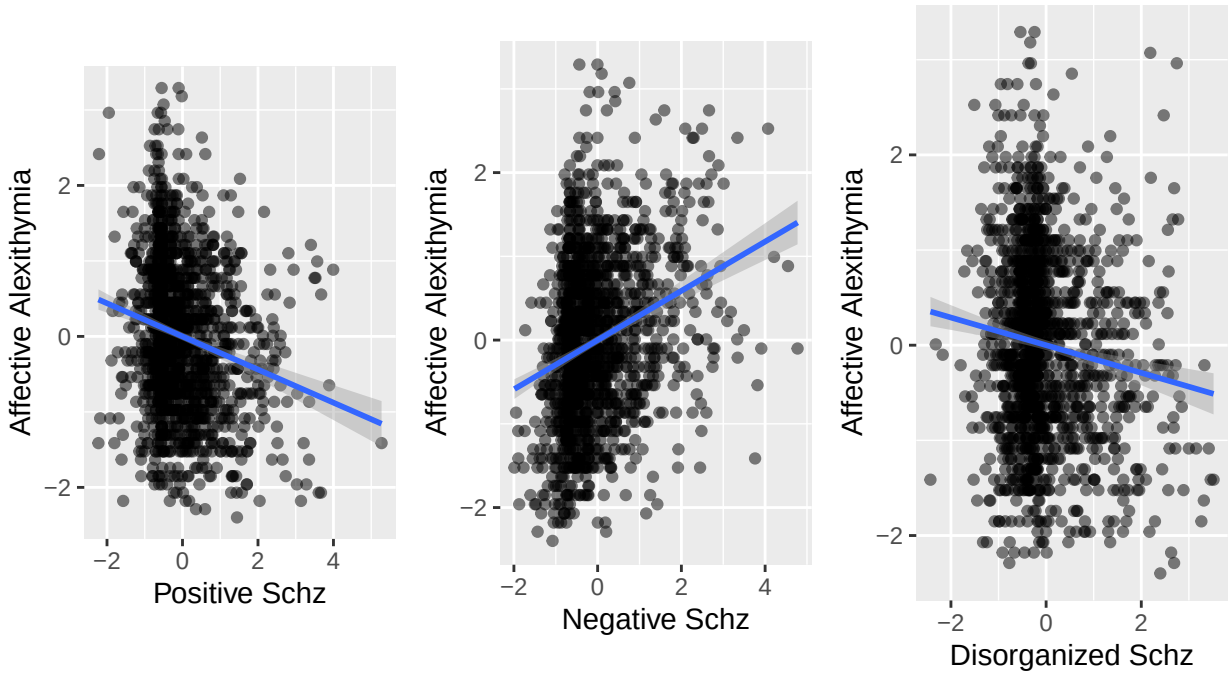
```
##
## Call:
## lm(formula = cog_alex ~ neg_schz + dis_schz, data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.3249 -0.5972  0.0019  0.5793  2.6260
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -1.790e-17  2.183e-02    0.00        1
## neg_schz     3.677e-01  2.326e-02   15.81   <2e-16 ***
## dis_schz     3.286e-01  2.326e-02   14.13   <2e-16 ***
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8213 on 1413 degrees of freedom
## Multiple R-squared:  0.3264, Adjusted R-squared:  0.3255
## F-statistic: 342.4 on 2 and 1413 DF,  p-value: < 2.2e-16
```

```
## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"
```

```
##
## Call:
## lm(formula = cog_alex ~ pos_schz + neg_schz, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.44760 -0.64043  0.01087  0.60172  2.58190
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 7.344e-17  2.300e-02   0.000        1
## pos_schz    1.464e-01  2.336e-02   6.265 4.94e-10 ***
## neg_schz    4.554e-01  2.336e-02  19.491  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8655 on 1413 degrees of freedom
## Multiple R-squared:  0.252,  Adjusted R-squared:  0.251
## F-statistic: 238.1 on 2 and 1413 DF,  p-value: < 2.2e-16
```

```
## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"
```



Probing effects with BVAQ subscales

Emotionalizing drives effects with *negative and disorganized* schizotypy

```
##
## Call:
## lm(formula = aff_alex ~ pos_schz + neg_schz + dis_schz + emot_bvaq,
##     data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.48115 -0.50028 -0.05064  0.46286  2.06858
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -1.805e-16  1.786e-02   0.000   1.0000
## pos_schz    -1.822e-01  1.966e-02  -9.270   <2e-16 ***
## neg_schz    -3.824e-02  2.113e-02  -1.809   0.0706 .
## dis_schz    -1.514e-02  2.090e-02  -0.724   0.4690
## emot_bvaq    7.198e-01  1.986e-02  36.249   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6721 on 1411 degrees of freedom
## Multiple R-squared:  0.5496, Adjusted R-squared:  0.5483
## F-statistic: 430.4 on 4 and 1411 DF,  p-value: < 2.2e-16

## [1] "Betas"
```

```
##    pos_schz    neg_schz    dis_schz
## -0.18224504 -0.03824278 -0.01514125
```

```
## [1] "Effect sizes"
```

```
## lm(formula = aff_alex ~ pos_schz + neg_schz + dis_schz + emot_bvaq,
##     data = main_df)
##
## Coefficients
##                  SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz     38.8154  1   0.0574 0.0274
## neg_schz      1.4790  1   0.0023 0.0010
## dis_schz      0.2370  1   0.0004 0.0002
## emot_bvaq   593.5257  1   0.4822 0.4195
##
## Sum of squared errors (SSE): 637.3
## Sum of squared total  (SST): 1415.0
```

Fantasizing drives the effect of positive schizotypy:

```
##
## Call:
## lm(formula = aff_alex ~ pos_schz + neg_schz + dis_schz + fant_bvaq,
##     data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.43751 -0.40414 -0.02264  0.34336  2.15551
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -3.758e-17  1.429e-02   0.000    1.000
## pos_schz    -8.048e-03  1.620e-02  -0.497    0.619
## neg_schz     2.768e-01  1.524e-02  18.168  < 2e-16 ***
## dis_schz    -1.048e-01  1.649e-02  -6.353 2.84e-10 ***
## fant_bvaq    7.960e-01  1.492e-02  53.358  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5376 on 1411 degrees of freedom
## Multiple R-squared:  0.7118, Adjusted R-squared:  0.7109
## F-statistic:   871 on 4 and 1411 DF,  p-value: < 2.2e-16
```

```
## [1] "Betas"
```

```
##     pos_schz     neg_schz     dis_schz
## -0.008047711  0.276837990 -0.104764664
```

```
## [1] "Effect sizes"
```

```
## lm(formula = aff_alex ~ pos_schz + neg_schz + dis_schz + fant_bvaq,
##     data = main_df)
##
## Coefficients
##                  SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz      0.0714  1   0.0002 0.0001
## neg_schz     95.4094  1   0.1896 0.0674
## dis_schz     11.6667  1   0.0278 0.0082
## fant_bvaq   822.9973  1   0.6686 0.5816
##
## Sum of squared errors (SSE): 407.9
## Sum of squared total  (SST): 1415.0
```

Probing effects with PANAS

```
##
## Call:
## lm(formula = aff_alex ~ pos_schz + neg_schz + dis_schz + pa_PANAS,
##     data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.44432 -0.67225 -0.02324  0.61928  3.12791
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -2.013e-16  2.473e-02   0.000  1.00000
## pos_schz    -2.275e-01  2.731e-02  -8.331  < 2e-16 ***
## neg_schz     3.251e-01  2.815e-02  11.549  < 2e-16 ***
## dis_schz    -1.238e-01  2.932e-02  -4.221 2.59e-05 ***
## pa_PANAS     8.854e-02  2.801e-02   3.160  0.00161 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9307 on 1411 degrees of freedom
## Multiple R-squared:  0.1362, Adjusted R-squared:  0.1338
## F-statistic: 55.64 on 4 and 1411 DF,  p-value: < 2.2e-16
```

```
## [1] "Betas"
```

```
##    pos_schz    neg_schz    dis_schz    pa_PANAS
## -0.22750649  0.32505745 -0.12375920  0.08854104
```

```
## [1] "Effect sizes"
```

```
## lm(formula = aff_alex ~ pos_schz + neg_schz + dis_schz + pa_PANAS,
##     data = main_df)
##
## Coefficients
##                  SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
```

```
## pos_schz     60.1202  1   0.0469 0.0425
## neg_schz    115.5398  1   0.0864 0.0817
## dis_schz     15.4330  1   0.0125 0.0109
## pa_PANAS      8.6523  1   0.0070 0.0061
##
## Sum of squared errors (SSE): 1222.2
## Sum of squared total  (SST): 1415.0

##
## Call:
## lm(formula = aff_alex ~ pos_schz + neg_schz + dis_schz + na_PANAS,
##     data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.6498 -0.6431 -0.0129  0.6260  3.2132
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -2.825e-16  2.430e-02   0.000   1.0000
## pos_schz    -1.851e-01  2.707e-02  -6.841 1.17e-11 ***
## neg_schz     3.019e-01  2.593e-02  11.643  < 2e-16 ***
## dis_schz    -5.943e-02  3.009e-02  -1.975   0.0484 *
## na_PANAS    -2.186e-01  2.793e-02  -7.828 9.68e-15 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9143 on 1411 degrees of freedom
## Multiple R-squared:  0.1663, Adjusted R-squared:  0.164
## F-statistic: 70.38 on 4 and 1411 DF,  p-value: < 2.2e-16

## [1] "Betas"

##    pos_schz    neg_schz    dis_schz    na_PANAS
## -0.18514979  0.30188146 -0.05942535 -0.21864914

## [1] "Effect sizes"

## lm(formula = aff_alex ~ pos_schz + neg_schz + dis_schz + na_PANAS,
##     data = main_df)
##
## Coefficients
##                  SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz     39.1216  1   0.0321 0.0276
## neg_schz    113.3307  1   0.0877 0.0801
## dis_schz      3.2615  1   0.0028 0.0023
## na_PANAS     51.2277  1   0.0416 0.0362
##
## Sum of squared errors (SSE): 1179.6
## Sum of squared total  (SST): 1415.0

##
```

```
## Call:
## lm(formula = aff_alex ~ pos_schz + neg_schz + dis_schz + pa_PANAS +
##     na_PANAS, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.68164 -0.63281 -0.00973  0.61710  3.11858
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -2.613e-16  2.426e-02   0.000   1.0000
## pos_schz    -1.923e-01  2.719e-02  -7.075 2.35e-12 ***
## neg_schz     3.249e-01  2.760e-02  11.769  < 2e-16 ***
## dis_schz    -4.612e-02  3.054e-02  -1.510   0.1312
## pa_PANAS     6.626e-02  2.764e-02   2.398   0.0166 *
## na_PANAS    -2.115e-01  2.805e-02  -7.540 8.40e-14 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9128 on 1410 degrees of freedom
## Multiple R-squared:  0.1697, Adjusted R-squared:  0.1668
## F-statistic: 57.64 on 5 and 1410 DF,  p-value: < 2.2e-16
```

```
## [1] "Betas"
```

```
##    pos_schz    neg_schz    dis_schz    pa_PANAS    na_PANAS
## -0.19233825  0.32487486 -0.04612441  0.06625673 -0.21145734
```

```
## [1] "Effect sizes"
```

```
## lm(formula = aff_alex ~ pos_schz + neg_schz + dis_schz + pa_PANAS +
##     na_PANAS, data = main_df)
##
## Coefficients
##                  SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz     41.7049  1   0.0343 0.0295
## neg_schz    115.4099  1   0.0894 0.0816
## dis_schz      1.9000  1   0.0016 0.0013
## pa_PANAS      4.7897  1   0.0041 0.0034
## na_PANAS     47.3651  1   0.0388 0.0335
##
## Sum of squared errors (SSE): 1174.8
## Sum of squared total  (SST): 1415.0
```

Summary: Cognitive alexithymia is largely predicted by negative schizotypy, disorganized schizotypy and their overlap; relationships are positive: higher schizotypy represents higher difficulties associated with identifying, analyzing and verbalizing emotions.
Affective alexithymia is predicted by all schizotypy dimensions: here negative schizotypy and disorganized schizotypy have a supressing effect on each other as their effects occur in opposite directions.

Detailed models

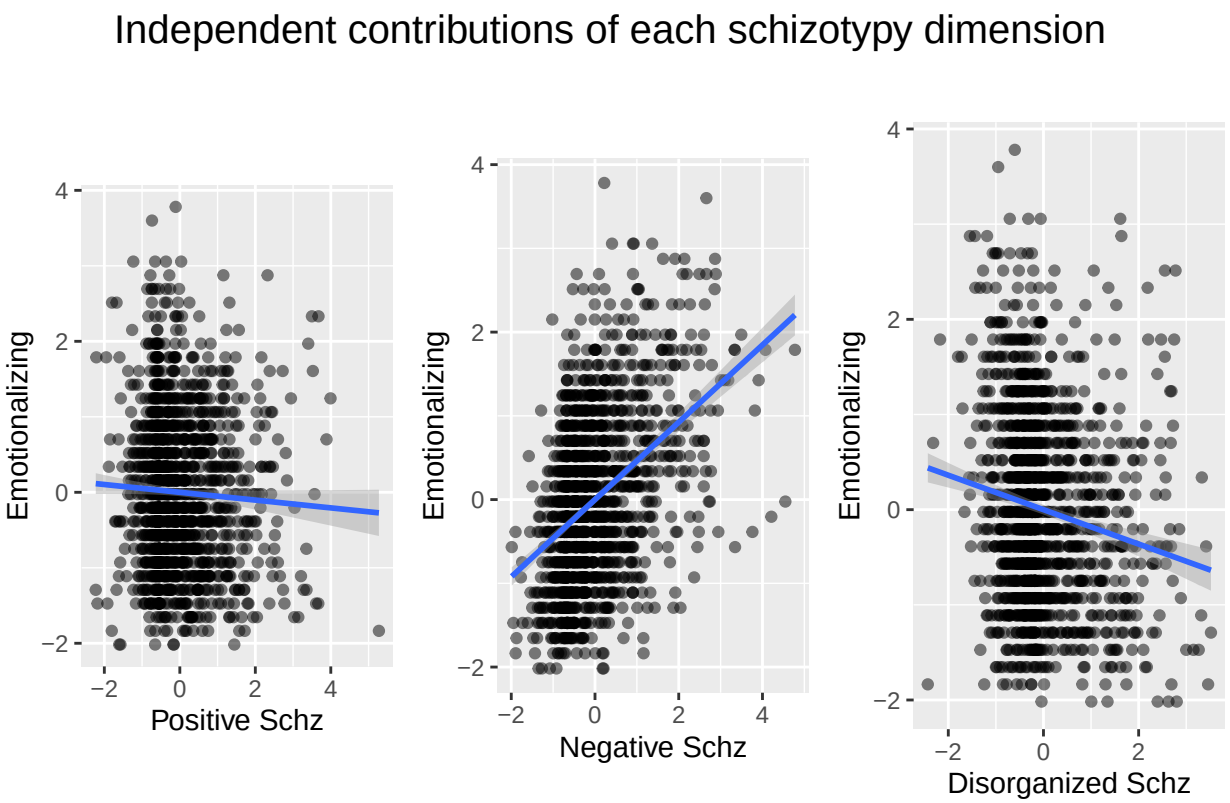
Dim.Emotionalizing

```
##
## Call:
## lm(formula = emot_bvaq ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.3342 -0.6445 -0.0588  0.6025  3.6419
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -6.506e-17  2.394e-02   0.000   1.0000
## pos_schz    -5.163e-02  2.631e-02  -1.962   0.0499 *
## neg_schz     4.616e-01  2.552e-02  18.084  < 2e-16 ***
## dis_schz    -1.808e-01  2.760e-02  -6.553  7.9e-11 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9008 on 1412 degrees of freedom
## Multiple R-squared:  0.1903, Adjusted R-squared:  0.1886
## F-statistic: 110.7 on 3 and 1412 DF,  p-value: < 2.2e-16

## [1] "Betas"

##    pos_schz    neg_schz    dis_schz
## -0.05162925  0.46157508 -0.18084671

## lm(formula = emot_bvaq ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Coefficients
##                  SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz      3.1237  1   0.0027 0.0022
## neg_schz    265.3490  1   0.1881 0.1875
## dis_schz     34.8387  1   0.0295 0.0246
##
## Sum of squared errors (SSE): 1145.7
## Sum of squared total  (SST): 1415.0

##
## Call:
## lm(formula = emot_bvaq ~ pos_schz + neg_schz, data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.5097 -0.6711 -0.0465  0.5863  3.7509
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -1.134e-16  2.429e-02   0.000        1
```

```
## pos_schz    -1.175e-01  2.468e-02  -4.761 2.12e-06 ***
## neg_schz     4.108e-01  2.468e-02  16.647  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.914 on 1413 degrees of freedom
## Multiple R-squared:  0.1657, Adjusted R-squared:  0.1645
## F-statistic: 140.3 on 2 and 1413 DF,  p-value: < 2.2e-16

## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"


##
## Call:
## lm(formula = emot_bvaq ~ neg_schz + dis_schz, data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.4155 -0.6486 -0.0570  0.6175  3.6476
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -5.379e-17  2.396e-02   0.000        1
## neg_schz     4.597e-01  2.553e-02  18.005  < 2e-16 ***
## dis_schz    -2.015e-01  2.553e-02  -7.893 5.85e-15 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9017 on 1413 degrees of freedom
## Multiple R-squared:  0.1881, Adjusted R-squared:  0.187
## F-statistic: 163.7 on 2 and 1413 DF,  p-value: < 2.2e-16

## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"


##
## Call:
## lm(formula = emot_bvaq ~ dis_schz + pos_schz, data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.0248 -0.7541 -0.0763  0.6641  3.7442
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -1.782e-16  2.656e-02   0.000    1.000
## dis_schz    -2.924e-02  2.917e-02  -1.003    0.316
## pos_schz    -3.385e-02  2.917e-02  -1.161    0.246
##
## Residual standard error: 0.9993 on 1413 degrees of freedom
## Multiple R-squared:  0.002819,   Adjusted R-squared:  0.001408
## F-statistic: 1.997 on 2 and 1413 DF,  p-value: 0.1361

## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"
```

Positive schizotypy shows a negative relationship with diminished emotionalizing only when partialing out negative schz. but not after including disorganized schz. in the model. Effect of *negative schizotypy* grows stronger after accounting for disorganized schz. in particular, but also positive schz. *Disorganized schizotypy* shows a negative relationship with diminished emotionalizing when partialing out negative schz. (effect survives after introducing positive schizotypy).

Simulatenous entry model is sufficient to describe emotionalizing findings.



Slopes for Negative and Disorganized are equivalent to the slopes for affective alexithymia.

Dim. Fantasizing

```
##
## Call:
## lm(formula = fant_bvaq ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.97244 -0.70885 -0.07072  0.67419  2.84091
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -2.384e-16  2.549e-02   0.000   1.0000
## pos_schz    -2.655e-01  2.802e-02  -9.477   <2e-16 ***
## neg_schz     2.154e-02  2.718e-02   0.793   0.4282
## dis_schz    -5.094e-02  2.939e-02  -1.733   0.0833 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
## Residual standard error: 0.9591 on 1412 degrees of freedom
## Multiple R-squared:  0.08199,    Adjusted R-squared:  0.08004
## F-statistic: 42.04 on 3 and 1412 DF,  p-value: < 2.2e-16
```

```
## [1] "Betas"
```

```
##    pos_schz    neg_schz    dis_schz
## -0.26553459  0.02154027 -0.05093638
```

```
## lm(formula = fant_bvaq ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Coefficients
##                 SSR df pEta-sqr dR-sqr
## (Intercept)  0.0000  1   0.0000     NA
## pos_schz    82.6261  1   0.0598 0.0584
## neg_schz     0.5779  1   0.0004 0.0004
## dis_schz     2.7637  1   0.0021 0.0020
##
## Sum of squared errors (SSE): 1299.0
## Sum of squared total  (SST): 1415.0
```

The effect of *positive schizotypy* is stable. The relationship between *Disorganized schizotypy* becomes non-significant when adjusting for positive schizotypy and does not change when adjusting for negative schizotypy. *Negative schizotypy* shows no relationship at all with fantasizing.

```
##
## Call:
## lm(formula = fant_bvaq ~ pos_schz + neg_schz, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.92783 -0.71912 -0.06553  0.68260  2.86616
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -2.520e-16  2.551e-02   0.000     1.00
## pos_schz    -2.841e-01  2.591e-02 -10.963   <2e-16 ***
## neg_schz     7.232e-03  2.591e-02   0.279     0.78
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9598 on 1413 degrees of freedom
## Multiple R-squared:  0.08004,    Adjusted R-squared:  0.07874
## F-statistic: 61.47 on 2 and 1413 DF,  p-value: < 2.2e-16
```

```
## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"
```

```
##
## Call:
## lm(formula = fant_bvaq ~ neg_schz + dis_schz, data = main_df)
##
## Residuals:
```

```
##      Min       1Q   Median       3Q      Max
## -1.82834 -0.71950 -0.05312  0.68929  3.05790
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -1.804e-16  2.628e-02   0.000     1.00
## neg_schz     1.192e-02  2.800e-02   0.426     0.67
## dis_schz    -1.573e-01  2.800e-02  -5.619 2.31e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9888 on 1413 degrees of freedom
## Multiple R-squared:  0.0236, Adjusted R-squared:  0.02222
## F-statistic: 17.08 on 2 and 1413 DF,  p-value: 4.695e-08
```

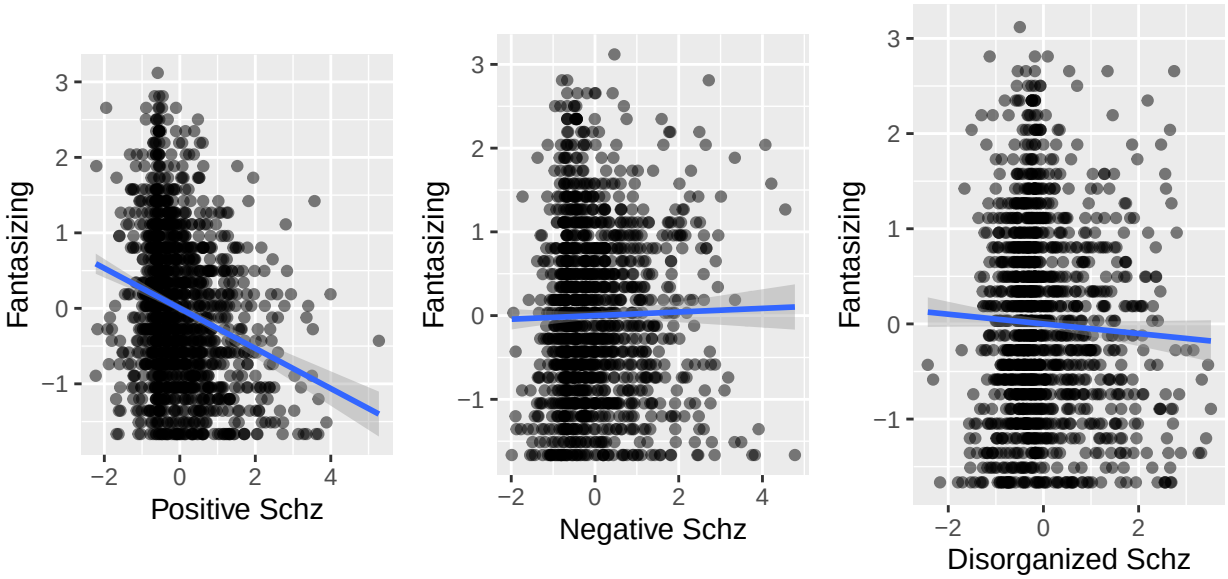
```
## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"
```

```
##
## Call:
## lm(formula = fant_bvaq ~ dis_schz + pos_schz, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.93329 -0.70520 -0.07356  0.67510  2.85093
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -2.437e-16  2.549e-02   0.000    1.000
## dis_schz    -4.386e-02  2.800e-02  -1.567    0.117
## pos_schz    -2.647e-01  2.800e-02  -9.455   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.959 on 1413 degrees of freedom
## Multiple R-squared:  0.08159,    Adjusted R-squared:  0.08029
## F-statistic: 62.76 on 2 and 1413 DF,  p-value: < 2.2e-16
```

```
## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"
```

Slope for positive schizotypy is equivalent to summarized model.

Independent contributions of each schizotypy dimension



Diff. Identifying Emotions

```
##
## Call:
## lm(formula = idnt_bvaq ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.73863 -0.60206 -0.02347  0.55629  2.99923
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -3.343e-17  2.221e-02   0.000  1.00000
## pos_schz     8.806e-02  2.441e-02   3.607  0.00032 ***
## neg_schz     1.701e-01  2.368e-02   7.185 1.09e-12 ***
## dis_schz     4.248e-01  2.561e-02  16.591  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8357 on 1412 degrees of freedom
## Multiple R-squared:  0.3031, Adjusted R-squared:  0.3016
## F-statistic: 204.7 on 3 and 1412 DF,  p-value: < 2.2e-16

## [1] "Coefficients"

##   pos_schz   neg_schz   dis_schz
## 0.08806441 0.17013542 0.42481550

## [1] "Effect Size"
```

```
## lm(formula = idnt_bvaq ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Coefficients
##                  SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz      9.0882  1   0.0091 0.0064
## neg_schz     36.0514  1   0.0353 0.0255
## dis_schz    192.2391  1   0.1631 0.1359
##
## Sum of squared errors (SSE): 986.1
## Sum of squared total  (SST): 1415.0
```

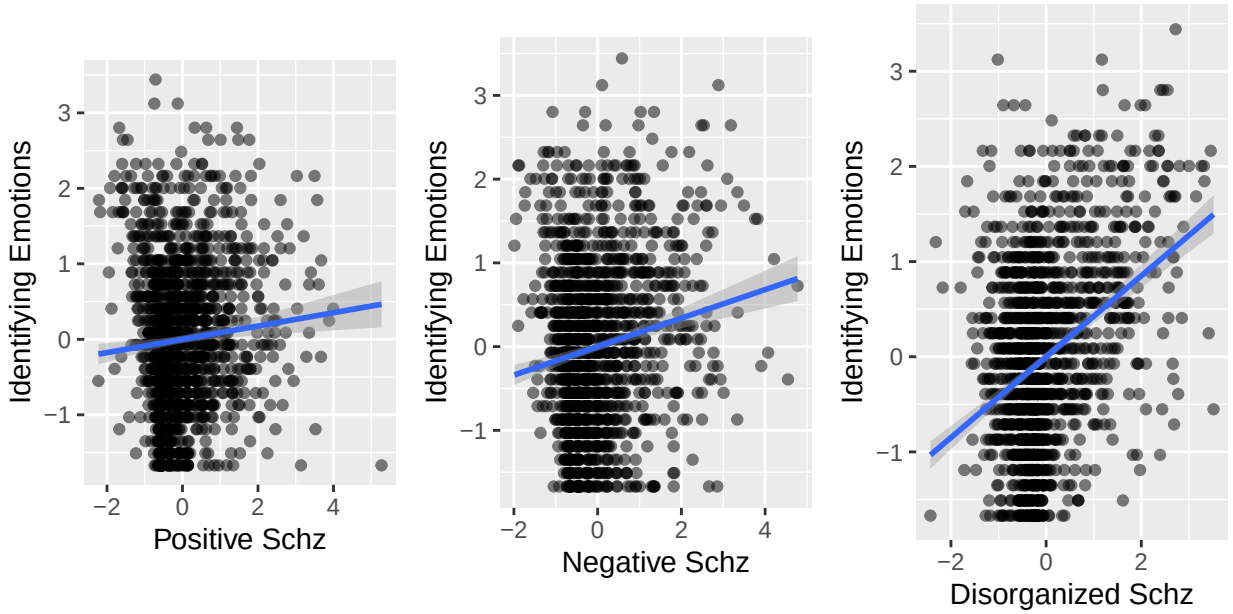
Negative schizotypy shows the most stable effect.

See more in Summary

```
##
## Call:
## lm(formula = idnt_bvaq ~ pos_schz + neg_schz, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.72719 -0.65688 -0.05157  0.60496  2.81530
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 8.017e-17  2.427e-02   0.000        1
## pos_schz    2.428e-01  2.465e-02   9.847   <2e-16 ***
## neg_schz    2.895e-01  2.465e-02  11.741   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9132 on 1413 degrees of freedom
## Multiple R-squared:  0.1672, Adjusted R-squared:  0.166
## F-statistic: 141.9 on 2 and 1413 DF,  p-value: < 2.2e-16

## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"

##
## Call:
## lm(formula = idnt_bvaq ~ neg_schz + dis_schz, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.72049 -0.59455 -0.03373  0.56440  2.93357
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -5.264e-17  2.230e-02   0.000        1
## neg_schz     1.733e-01  2.376e-02   7.294 5.01e-13 ***
## dis_schz     4.601e-01  2.376e-02  19.361  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
## Residual standard error: 0.8392 on 1413 degrees of freedom
## Multiple R-squared:  0.2967, Adjusted R-squared:  0.2957
## F-statistic:   298 on 2 and 1413 DF,  p-value: < 2.2e-16

## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++"

##
## Call:
## lm(formula = idnt_bvaq ~ dis_schz + pos_schz, data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.4839 -0.6218 -0.0372  0.5745  3.4903
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -7.514e-17  2.260e-02   0.000 1.000000
## dis_schz     4.807e-01  2.483e-02  19.360  < 2e-16 ***
## pos_schz     9.462e-02  2.483e-02   3.811 0.000144 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8505 on 1413 degrees of freedom
## Multiple R-squared:  0.2776, Adjusted R-squared:  0.2766
## F-statistic: 271.5 on 2 and 1413 DF,  p-value: < 2.2e-16

## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++"
```

Independent contributions of each schizotypy dimension



Diff. Analyzing Emotions

```
##
## Call:
## lm(formula = nlyz_bvaq ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.0626 -0.7306 -0.0736  0.6342  3.2079
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -3.287e-16  2.416e-02   0.000    1.000
## pos_schz    -3.546e-02  2.656e-02  -1.335    0.182
## neg_schz     3.478e-01  2.576e-02  13.501  < 2e-16 ***
## dis_schz     1.566e-01  2.785e-02   5.622 2.28e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9091 on 1412 degrees of freedom
## Multiple R-squared:  0.1753, Adjusted R-squared:  0.1736
## F-statistic: 100.1 on 3 and 1412 DF,  p-value: < 2.2e-16
```

```
## [1] "Coefficients"
```

```
##    pos_schz    neg_schz    dis_schz
## -0.03545948  0.34776352  0.15658254
```

```
## [1] "Delta Rs"
```

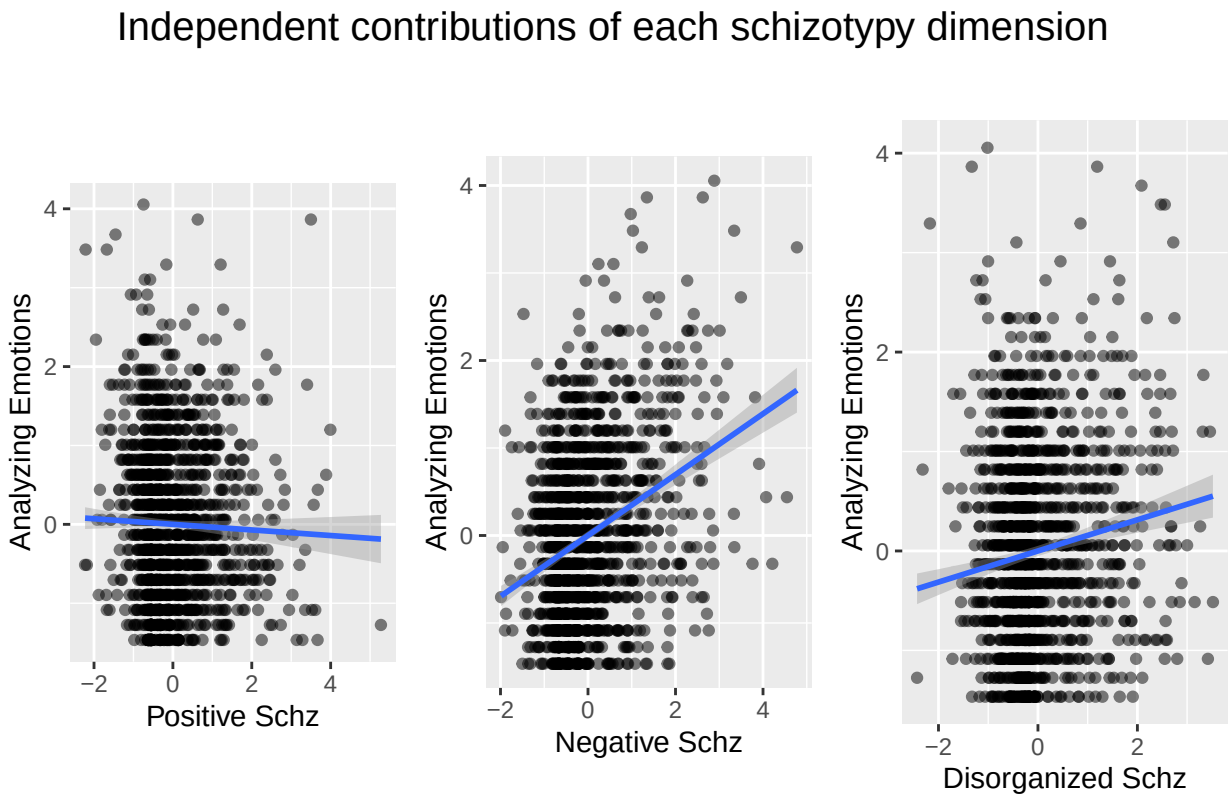
```
## lm(formula = nlyz_bvaq ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Coefficients
##                   SSR df pEta-sqr dR-sqr
## (Intercept)   0.0000  1   0.0000     NA
## pos_schz      1.4735  1   0.0013 0.0010
## neg_schz    150.6263  1   0.1143 0.1064
## dis_schz     26.1173  1   0.0219 0.0185
##
## Sum of squared errors (SSE): 1166.9
## Sum of squared total  (SST): 1415.0
```

Effect of *negative schizotypy is the most stable* Correlation with *Disorganized schizotypy* is reduced by half when accounting for negative schz.

```
##
## Call:
## lm(formula = nlyz_bvaq ~ pos_schz + neg_schz, data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.1574 -0.7241 -0.1040  0.6381  3.1401
```

```
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -2.868e-16  2.442e-02   0.000    1.000
## pos_schz     2.157e-02  2.481e-02   0.869    0.385
## neg_schz     3.917e-01  2.481e-02  15.792   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9189 on 1413 degrees of freedom
## Multiple R-squared:  0.1569, Adjusted R-squared:  0.1557
## F-statistic: 131.5 on 2 and 1413 DF,  p-value: < 2.2e-16

## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"

##
## Call:
## lm(formula = nlyz_bvaq ~ neg_schz + dis_schz, data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.0732 -0.7251 -0.0759  0.6365  3.2283
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -3.209e-16  2.417e-02   0.000        1
## neg_schz     3.465e-01  2.575e-02  13.456  < 2e-16 ***
## dis_schz     1.424e-01  2.575e-02   5.529 3.82e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9093 on 1413 degrees of freedom
## Multiple R-squared:  0.1743, Adjusted R-squared:  0.1731
## F-statistic: 149.1 on 2 and 1413 DF,  p-value: < 2.2e-16

## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"

##
## Call:
## lm(formula = nlyz_bvaq ~ dis_schz + pos_schz, data = main_df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.0130 -0.7490 -0.1299  0.6272  4.1949
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -4.139e-16  2.566e-02   0.000    1.000
## dis_schz     2.708e-01  2.819e-02   9.607   <2e-16 ***
## pos_schz    -2.207e-02  2.819e-02  -0.783    0.434
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
## Residual standard error: 0.9656 on 1413 degrees of freedom
## Multiple R-squared:  0.06888,    Adjusted R-squared:  0.06757
## F-statistic: 52.27 on 2 and 1413 DF,  p-value: < 2.2e-16

## [1] "++++++++++++++++++++++++++++++++++++++++++++++++++++++++"
```



Diff. Verbalizing Emotions

```
##
## Call:
## lm(formula = verb_bvaq ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.36772 -0.63698 -0.06301  0.63203  2.34907
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 6.414e-17  2.312e-02   0.000    1.000
## pos_schz    1.743e-02  2.541e-02   0.686    0.493
## neg_schz    3.809e-01  2.465e-02  15.451  < 2e-16 ***
## dis_schz    2.025e-01  2.666e-02   7.595 5.56e-14 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.87 on 1412 degrees of freedom
## Multiple R-squared:  0.2447, Adjusted R-squared:  0.2431
## F-statistic: 152.5 on 3 and 1412 DF,  p-value: < 2.2e-16
```

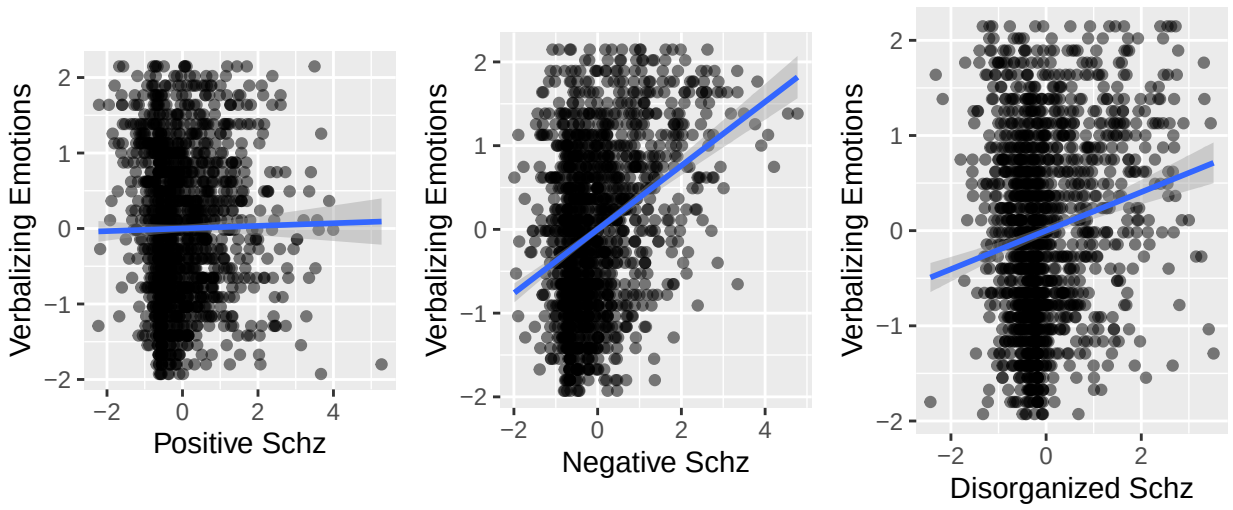
```
## [1] "Coefficients"
```

```
##  pos_schz  neg_schz  dis_schz
## 0.0174275 0.3808867 0.2024619
```

```
## [1] "Delta Rs"
```

```
## lm(formula = verb_bvaq ~ pos_schz + neg_schz + dis_schz, data = main_df)
##
## Coefficients
##                   SSR df pEta-sqr dR-sqr
## (Intercept)    0.0000  1   0.0000     NA
## pos_schz       0.3559  1   0.0003 0.0003
## neg_schz     180.6859  1   0.1446 0.1277
## dis_schz      43.6644  1   0.0393 0.0309
##
## Sum of squared errors (SSE): 1068.7
## Sum of squared total  (SST): 1415.0
```

Independent contributions of each schizotypy dimension



Summary

Identifying emotions: All schizotypy dimensions predict difficulties in identifying emotions. Disorganized schizotypy showed the strongest effect (b = -.42) followed by negative schizotypy (b = -.18) and positive schizotypy (b = -.08). Disorganized schizotypy in particular explained 13% of the variance in identifying emotions beyond the other two schizotypy dimensions. Multiple R-squared for the whole model is 0.30. In conjunction with low Rs for positive and negative schizotypy—but not disorganized (R = .13) results suggest that difficulty identifying emotions may potentially be particularly associated with a general factor of vulnerability toward psychosis, in addition to cognitive difficulties associated with schizotypy.

Analyzing emotions: Negative and disorganized schizotypy predict difficulties in analyzing emotions. Negative schizotypy shows a medium effect size (b = -.33) and disorganized schizotypy shows a more moderate effect (b = -.17). Multiple R-squared for the whole model is 0.17. R-squared for negative schizotypy being 0.09 (compared to disorganized schizotypy (.02)) suggests it may largely be that socio-emotional factors drive this effect, with a small contribution from cognitive disturbance factors.

Verbalizing emotions: Similarly, negative (b = -.37) and disorganized (b = -.21) schizotypy predict difficulties in verbalizing emotions. Multiple R-squared for the whole model is 0.24. The magnitude and overall pattern of correlation coefficient suggests difficulty verbalizing may largely overlap with difficulty analyzing emotions. These effects may point to the same underlying process.

Emotionalizing: Negative schizotypy shows a strong negative correlation with emotionalizing (b = -.42) and its R (= 0.187) is particularly high. Surprisingly, disorganized schizotypy shows a positive relationship with emotionalizing after common variance with negative schizotypy has been extracted. It may be a good idea to examine if the overlap between disorganized schizotypy and emotionalizing negatively predicts social functioning in this dataset or emotional disregulation in a future study.

Fantasizing: As expected, positive schizotypy shows a moderate positive correlation with fantasizing (b = 0.24). No other schizotypy dimensions significantly correlate with fantasizing.

Conclusions

Negative schizotypy shows moderate-to-strong relationships with decreases in emotional awareness. The negative dimension seems to characterize cognitive-affective traits assessed by the BVAQ (except for fantasizing). As a next step, I would like to examine how the significant effects/covariances predict social functioning relative to negative schizotypy and emotional awareness dimensions alone. Before that, I can introduce the PANAS variables as covariates to see if these relationships are independent of particular affective traits.

Disorganized cognition/schizotypy also tended to show small-to-moderate associations with emotional awareness subscales. Except for the case of emotionalizing, I am hesitant to conclude that the relationship between disorganized schizotypy and EA is separate from that of negative schizotypy and EA (i.e. that they point to two different processes).

Positive schizotypy did not tend to be associated with EA components. This contradicts previous findings of studies. I believe this largely due to introducing disorganized schizotypy in the model (for which, arguably, there weren't any good instruments available before the MSS). The relationship with fantasizing may be interesting to examine in the context of social functioning.