Analysis2

Setup

Enviroment Setup

```
odf <- read.csv('./cleandata.csv')
library('caret')
```

```
## Loading required package: lattice
```

```
## Loading required package: ggplot2
```

```
#setwd('~/Desktop/andlab/code')
```

Function Define

```
process <- function(df, reg, upr, plot=FALSE){

  newdf <- data.frame('y' = df$aggressive_sumscore)
  newdf$fitted <- reg$fitted.values

  newdf$class <- ifelse(newdf$y <= (-2.020650971), 'L', ifelse(newdf$y>(upr),'M','H
'))
  #change == -2.020650971 to change <= -2.020650971 to solve prediction for 0 is 0
  newdf$pred_class <-ifelse(newdf$fitted <= (-2.020650971), 'L', ifelse(newdf$fitted>
(upr),'M','H'))

  print(mean(newdf$pred_class == newdf$class))
  #cm <- confusionMatrix(factor(newdf$pred_class, levels = 0:2), factor(newdf$class,
levels = 0:2) )
  cm <- confusionMatrix(table(newdf$class,newdf$pred_class))
  if(plot)
  {
    par(mfrow = c(2, 2))
    plot(reg)
  }
  return(cm=cm)
}

process_2_level <- function(df, reg, plot=FALSE){

  newdf <- data.frame('y' = df$aggressive_sumscore)
  newdf$fitted <- reg$fitted.values

  newdf$class <- ifelse(newdf$y <= (-2.020650971), 'L', 'H')
  #change == -2.020650971 to change <= -2.020650971 to solve prediction for 0 is 0
  newdf$pred_class <-ifelse(newdf$fitted <= (-2.020650971), 'L', 'H')

  print(mean(newdf$pred_class == newdf$class))
  #cm <- confusionMatrix(factor(newdf$pred_class, levels = 0:2), factor(newdf$class,
levels = 0:2) )
  cm <- confusionMatrix(table(newdf$class,newdf$pred_class))
  if(plot)
  {
    par(mfrow = c(2, 2))
    plot(reg)
  }
  return(cm=cm)
}
```

Analysis W/ All Data, All Attributes

Attribute selection

```
df <- subset(odf, select=-c(X, prosocial_child, prosocial_parent, interview_date, int
erview_age, subjectkey))
```

OLS

Model Selection

```
reg <- lm(df$aggressive_sumscore ~ ., data=df)
```

Result

```
summary(reg)
```

```
##
## Call:
## lm(formula = df$aggressive_sumscore ~ ., data = df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -8.8719 -1.3256 -0.2719  0.6299 23.5059
##
## Coefficients:
##                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -1.359e+01  9.854e-01 -13.791  < 2e-16 ***
## asr_scr_perstr_t          1.634e-02  3.125e-03   5.228 1.74e-07 ***
## asr_scr_anxdep_t         -1.602e-02  1.349e-02  -1.188  0.23490
## asr_scr_withdrawn_t       2.066e-02  1.032e-02   2.003  0.04525 *
## asr_scr_somatic_t        -1.165e-02  1.814e-02  -0.642  0.52069
## asr_scr_thought_t         4.833e-02  8.285e-03   5.834 5.59e-09 ***
## asr_scr_attention_t       4.186e-02  1.450e-02   2.888  0.00389 **
## asr_scr_aggressive_t      2.377e-02  1.258e-02   1.890  0.05882 .
## asr_scr_rulebreak_t       1.178e-02  1.058e-02   1.113  0.26584
## asr_scr_intrusive_t      -4.153e-03  9.979e-03  -0.416  0.67728
## asr_scr_internal_t        1.197e-02  1.207e-02   0.992  0.32139
## asr_scr_external_t        2.688e-02  9.620e-03   2.794  0.00522 **
## asr_scr_totprob_t        -1.844e-02  1.607e-02  -1.148  0.25118
## asr_scr_depress_t        -3.107e-04  1.161e-02  -0.027  0.97865
## asr_scr_anxdisord_t      -2.626e-03  8.778e-03  -0.299  0.76483
## asr_scr_somaticpr_t       3.347e-02  1.463e-02   2.287  0.02222 *
## asr_scr_avoidant_t        4.095e-03  9.430e-03   0.434  0.66410
## asr_scr_adhd_t           -3.375e-02  3.039e-02  -1.111  0.26680
## asr_scr_antisocial_t      7.819e-03  1.269e-02   0.616  0.53767
## asr_scr_inattention_t    -7.126e-03  1.905e-02  -0.374  0.70836
## asr_scr_hyperactive_t     3.949e-02  2.066e-02   1.912  0.05594 .
## crpbi_bothcare            1.107e-03  4.177e-03   0.265  0.79097
## parent_monitor_y         -1.190e-01  5.600e-02  -2.126  0.03354 *
## kbi_p_conflict            2.439e+00  6.576e-02  37.098  < 2e-16 ***
## kbi_p_c_best_friend      -4.124e-03  3.643e-02  -0.113  0.90987
## kbi_p_c_reg_friend_group -7.763e-02  5.638e-02  -1.377  0.16862
## kbi_p_c_bully             1.204e+00  7.771e-02  15.488  < 2e-16 ***
## kbi_p_c_mh_sa             1.584e+00  6.643e-02  23.839  < 2e-16 ***
## fes_youth                 8.341e-02  1.464e-02   5.696 1.26e-08 ***
## fes_p_ss_fc_pr            1.704e-01  1.569e-02  10.862  < 2e-16 ***
## macv_p_ss_fs              1.191e-02  6.505e-02   0.183  0.85469
## macv_p_ss_fo             -4.349e-03  6.085e-02  -0.071  0.94302
## macv_p_ss_isr             7.783e-02  4.854e-02   1.604  0.10883
## macv_p_ss_fr              7.948e-02  5.396e-02   1.473  0.14080
## macv_p_ss_r               1.510e-01  3.469e-02   4.354 1.35e-05 ***
## demo_prnt_age_v2          2.018e-03  4.368e-03   0.462  0.64400
## demo_prnt_marital_v2      5.811e-02  1.983e-02   2.930  0.00340 **
## demo_comb_income_v2      -8.328e-02  1.643e-02  -5.070 4.05e-07 ***
## demo_fam_exp              2.423e-01  7.854e-02   3.085  0.00204 **
## demo_yrs_1                4.284e-03  2.974e-02   0.144  0.88548
## demo_yrs_2               -9.898e-02  4.233e-02  -2.338  0.01941 *
```

```
## parent_rules_q1           6.462e-02  5.081e-02   1.272  0.20344
## parent_rules_q4           5.858e-02  5.620e-02   1.042  0.29723
## parent_rules_q7          -9.391e-02  5.007e-02  -1.876  0.06074 .
## su_risk_p_1              -1.744e-02  2.443e-02  -0.714  0.47546
## su_risk_p_2_3             2.811e-02  3.651e-02   0.770  0.44138
## su_risk_p_4_5            -3.462e-02  3.858e-02  -0.897  0.36953
## neighborhood1_2_3_p      -5.099e-02  3.164e-02  -1.612  0.10706
## neighborhood_crime_y     -8.449e-02  2.688e-02  -3.144  0.00167 **
## sexM                      2.765e-01  5.441e-02   5.081 3.82e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.678 on 10128 degrees of freedom
## Multiple R-squared:  0.391,  Adjusted R-squared:  0.388
## F-statistic: 132.7 on 49 and 10128 DF,  p-value: < 2.2e-16
```

```
cm <- process(df, reg, -0.73254990)
```

```
## [1] 0.4793673
```

```
print(cm)
```

```
## Confusion Matrix and Statistics
##
##
##        H    L    M
##   H 1010  280 1379
##   L 1918 1087 1034
##   M  596   92 2782
##
## Overall Statistics
##
##                Accuracy : 0.4794
##                  95% CI : (0.4696, 0.4891)
##     No Information Rate : 0.5104
##     P-Value [Acc > NIR] : 1
##
##                   Kappa : 0.2324
##
##  Mcnemar's Test P-Value : <2e-16
##
## Statistics by Class:
##
##                      Class: H Class: L Class: M
## Sensitivity           0.28661   0.7450   0.5355
## Specificity           0.75068   0.6614   0.8619
## Pos Pred Value        0.37842   0.2691   0.8017
## Neg Pred Value        0.66520   0.9394   0.6403
## Prevalence            0.34624   0.1433   0.5104
## Detection Rate        0.09923   0.1068   0.2733
## Detection Prevalence  0.26223   0.3968   0.3409
## Balanced Accuracy     0.51864   0.7032   0.6987
```

```
print(cm$byClass)
```

```
##          Sensitivity Specificity Pos Pred Value Neg Pred Value Precision
## Class: H   0.2866061   0.7506763      0.3784189      0.6652018 0.3784189
## Class: L   0.7450308   0.6614291      0.2691260      0.9394038 0.2691260
## Class: M   0.5355149   0.8619306      0.8017291      0.6402803 0.8017291
##             Recall        F1 Prevalence Detection Rate Detection Prevalence
## Class: H 0.2866061 0.3261747  0.3462370     0.09923364            0.2622323
## Class: L 0.7450308 0.3954165  0.1433484     0.10679898            0.3968363
## Class: M 0.5355149 0.6421235  0.5104146     0.27333464            0.3409314
##          Balanced Accuracy
## Class: H         0.5186412
## Class: L         0.7032300
## Class: M         0.6987227
```

OLS W/ Interaction

Model Selection

```
reg <- lm(df$aggressive_sumscore ~ . + .^2, data=df)
```

Result

```
#summary(reg)
cm <- process(df, reg, -0.73254990)
```

```
## [1] 0.4740617
```

```
print(cm)
```

```
## Confusion Matrix and Statistics
##
##
##        H    L    M
##   H 1167  318 1184
##   L 2139  921  979
##   M  595  138 2737
##
## Overall Statistics
##
##                Accuracy : 0.4741
##                  95% CI : (0.4643, 0.4838)
##     No Information Rate : 0.4814
##     P-Value [Acc > NIR] : 0.9329
##
##                   Kappa : 0.2285
##
##  Mcnemar's Test P-Value : <2e-16
##
## Statistics by Class:
##
##                      Class: H Class: L Class: M
## Sensitivity            0.2992  0.66885   0.5586
## Specificity            0.7607  0.64572   0.8611
## Pos Pred Value         0.4372  0.22803   0.7888
## Neg Pred Value         0.6359  0.92572   0.6775
## Prevalence             0.3833  0.13529   0.4814
## Detection Rate         0.1147  0.09049   0.2689
## Detection Prevalence   0.2622  0.39684   0.3409
## Balanced Accuracy      0.5299  0.65728   0.7098
```

```
print(cm$byClass)
```

```
##          Sensitivity Specificity Pos Pred Value Neg Pred Value Precision
## Class: H   0.2991541   0.7607137      0.4372424      0.6359036 0.4372424
## Class: L   0.6688453   0.6457221      0.2280267      0.9257208 0.2280267
## Class: M   0.5585714   0.8611216      0.7887608      0.6775492 0.7887608
##             Recall        F1 Prevalence Detection Rate Detection Prevalence
## Class: H 0.2991541 0.3552511  0.3832777     0.11465907            0.2622323
## Class: L 0.6688453 0.3401034  0.1352918     0.09048929            0.3968363
## Class: M 0.5585714 0.6540024  0.4814305     0.26891334            0.3409314
##          Balanced Accuracy
## Class: H         0.5299339
## Class: L         0.6572837
## Class: M         0.7098465
```

Stepwise

Model Selection

```
null <- lm(aggressive_sumscore ~ 1, data=df)
full <- lm(aggressive_sumscore ~ ., data=df)
reg <- step(null, scope=formula(full), direction="forward", k=log(nrow(df)), trace=0)
```

Result

```
summary(reg)
```

```
##
## Call:
## lm(formula = aggressive_sumscore ~ kbi_p_conflict + asr_scr_totprob_t +
##     kbi_p_c_mh_sa + kbi_p_c_bully + demo_comb_income_v2 + fes_p_ss_fc_pr +
##     asr_scr_thought_t + fes_youth + asr_scr_aggressive_t + macv_p_ss_r +
##     sex + asr_scr_perstr_t + asr_scr_rulebreak_t + asr_scr_somaticpr_t +
##     neighborhood_crime_y + demo_prnt_marital_v2 + demo_fam_exp +
##     demo_yrs_2, data = df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -8.4674 -1.3330 -0.2751  0.6233 23.3535
##
## Coefficients:
##                         Estimate Std. Error t value Pr(>|t|)
## (Intercept)          -13.248063   0.567855 -23.330  < 2e-16 ***
## kbi_p_conflict         2.436656   0.065381  37.269  < 2e-16 ***
## asr_scr_totprob_t      0.010164   0.004901   2.074 0.038140 *
## kbi_p_c_mh_sa          1.570705   0.065904  23.833  < 2e-16 ***
## kbi_p_c_bully          1.221631   0.077484  15.766  < 2e-16 ***
## demo_comb_income_v2   -0.094698   0.015499  -6.110 1.03e-09 ***
## fes_p_ss_fc_pr         0.171870   0.015495  11.092  < 2e-16 ***
## asr_scr_thought_t      0.051923   0.007284   7.128 1.09e-12 ***
## fes_youth              0.091432   0.014320   6.385 1.79e-10 ***
## asr_scr_aggressive_t   0.050437   0.008067   6.252 4.21e-10 ***
## macv_p_ss_r            0.189970   0.030712   6.185 6.43e-10 ***
## sexM                   0.294368   0.053547   5.497 3.95e-08 ***
## asr_scr_perstr_t       0.016209   0.003001   5.401 6.77e-08 ***
## asr_scr_rulebreak_t    0.032303   0.007307   4.421 9.94e-06 ***
## asr_scr_somaticpr_t    0.023043   0.005276   4.367 1.27e-05 ***
## neighborhood_crime_y  -0.102614   0.026088  -3.933 8.43e-05 ***
## demo_prnt_marital_v2   0.064344   0.019318   3.331 0.000869 ***
## demo_fam_exp           0.253414   0.077844   3.255 0.001136 **
## demo_yrs_2            -0.115955   0.038130  -3.041 0.002364 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.682 on 10159 degrees of freedom
## Multiple R-squared:  0.3875, Adjusted R-squared:  0.3864
## F-statistic:   357 on 18 and 10159 DF,  p-value: < 2.2e-16
```

```
cm <- process(df, reg, -0.73254990)
```

```
## [1] 0.4828061
```

```
print(cm)
```

```
## Confusion Matrix and Statistics
##
##
##        H    L    M
##   H 1034  282 1353
##   L 1904 1104 1031
##   M  601   93 2776
##
## Overall Statistics
##
##                Accuracy : 0.4828
##                  95% CI : (0.4731, 0.4926)
##     No Information Rate : 0.507
##     P-Value [Acc > NIR] : 1
##
##                   Kappa : 0.2375
##
##  Mcnemar's Test P-Value : <2e-16
##
## Statistics by Class:
##
##                      Class: H Class: L Class: M
## Sensitivity            0.2922   0.7465   0.5380
## Specificity            0.7537   0.6626   0.8617
## Pos Pred Value         0.3874   0.2733   0.8000
## Neg Pred Value         0.6664   0.9389   0.6446
## Prevalence             0.3477   0.1453   0.5070
## Detection Rate         0.1016   0.1085   0.2727
## Detection Prevalence   0.2622   0.3968   0.3409
## Balanced Accuracy      0.5230   0.7045   0.6998
```

```
print(cm$byClass)
```

```
##          Sensitivity Specificity Pos Pred Value Neg Pred Value Precision
## Class: H   0.2921729   0.7537280       0.387411      0.6664003  0.387411
## Class: L   0.7464503   0.6626049       0.273335      0.9389151  0.273335
## Class: M   0.5379845   0.8616979       0.800000      0.6446035  0.800000
##             Recall        F1 Prevalence Detection Rate Detection Prevalence
## Class: H 0.2921729 0.3331186  0.3477107      0.1015917            0.2622323
## Class: L 0.7464503 0.4001450  0.1453134      0.1084692            0.3968363
## Class: M 0.5379845 0.6433372  0.5069758      0.2727451            0.3409314
##          Balanced Accuracy
## Class: H         0.5229505
## Class: L         0.7045276
## Class: M         0.6998412
```

Stepwise W/ Interaction

Model Selection

```
null <- lm(aggressive_sumscore ~ 1, data=df)
full <- lm(aggressive_sumscore ~ . + .^2, data=df)
reg <- step(null, scope=formula(full), direction="forward", k=log(nrow(df)), trace=0)
```

Result

```
summary(reg)
```

```
##
## Call:
## lm(formula = aggressive_sumscore ~ kbi_p_conflict + asr_scr_totprob_t +
##     kbi_p_c_mh_sa + kbi_p_c_bully + demo_comb_income_v2 + fes_p_ss_fc_pr +
##     asr_scr_thought_t + fes_youth + asr_scr_external_t + macv_p_ss_r +
##     sex + demo_prnt_marital_v2 + asr_scr_somaticpr_t + neighborhood_crime_y +
##     asr_scr_perstr_t + demo_yrs_2 + kbi_p_conflict:kbi_p_c_mh_sa +
##     kbi_p_conflict:fes_p_ss_fc_pr + kbi_p_conflict:demo_comb_income_v2 +
##     kbi_p_c_bully:fes_p_ss_fc_pr + kbi_p_c_mh_sa:demo_comb_income_v2 +
##     kbi_p_conflict:asr_scr_thought_t + demo_comb_income_v2:asr_scr_external_t +
##     kbi_p_c_mh_sa:kbi_p_c_bully + kbi_p_conflict:sex + kbi_p_c_mh_sa:fes_p_ss_fc_p
r +
##     asr_scr_thought_t:asr_scr_perstr_t + sex:demo_prnt_marital_v2 +
##     asr_scr_somaticpr_t:neighborhood_crime_y + asr_scr_external_t:neighborhood_cri
me_y +
##     demo_comb_income_v2:macv_p_ss_r, data = df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -11.7351  -1.1291  -0.3811   0.4078  19.5009
##
## Coefficients:
##                                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                             2.2317115  1.9873400   1.123 0.261479
## kbi_p_conflict                         -1.9558622  0.6619753  -2.955 0.003138
## asr_scr_totprob_t                       0.0106500  0.0058345   1.825 0.067979
## kbi_p_c_mh_sa                           0.2379764  0.2518173   0.945 0.344663
## kbi_p_c_bully                           0.4934210  0.1317418   3.745 0.000181
## demo_comb_income_v2                     0.4045354  0.0680067   5.948 2.80e-09
## fes_p_ss_fc_pr                         -0.1368620  0.0397981  -3.439 0.000586
## asr_scr_thought_t                      -0.1742947  0.0338860  -5.144 2.75e-07
## fes_youth                               0.0918837  0.0138949   6.613 3.96e-11
## asr_scr_external_t                      0.1130590  0.0131050   8.627  < 2e-16
## macv_p_ss_r                             0.4057357  0.0753028   5.388 7.28e-08
## sexM                                   -0.5866261  0.1664620  -3.524 0.000427
## demo_prnt_marital_v2                    0.0148380  0.0244117   0.608 0.543318
## asr_scr_somaticpr_t                    -0.0526143  0.0158025  -3.329 0.000873
## neighborhood_crime_y                   -0.7106093  0.1978421  -3.592 0.000330
## asr_scr_perstr_t                       -0.1277934  0.0307414  -4.157 3.25e-05
## demo_yrs_2                             -0.1204507  0.0370644  -3.250 0.001159
## kbi_p_conflict:kbi_p_c_mh_sa            1.1303767  0.1270810   8.895  < 2e-16
## kbi_p_conflict:fes_p_ss_fc_pr           0.2022695  0.0301776   6.703 2.16e-11
## kbi_p_conflict:demo_comb_income_v2     -0.1188820  0.0279670  -4.251 2.15e-05
## kbi_p_c_bully:fes_p_ss_fc_pr            0.1669764  0.0350239   4.767 1.89e-06
## kbi_p_c_mh_sa:demo_comb_income_v2      -0.1123828  0.0239162  -4.699 2.65e-06
## kbi_p_conflict:asr_scr_thought_t        0.0737069  0.0110210   6.688 2.38e-11
## demo_comb_income_v2:asr_scr_external_t -0.0053652  0.0011575  -4.635 3.61e-06
## kbi_p_c_mh_sa:kbi_p_c_bully             0.8021752  0.1482976   5.409 6.47e-08
## kbi_p_conflict:sexM                     0.5289856  0.1203266   4.396 1.11e-05
## kbi_p_c_mh_sa:fes_p_ss_fc_pr            0.1385897  0.0323166   4.288 1.82e-05
## asr_scr_thought_t:asr_scr_perstr_t      0.0026546  0.0005805   4.573 4.86e-06
```

```
## sexM:demo_prnt_marital_v2                 0.1206735  0.0313150   3.854 0.000117
## asr_scr_somaticpr_t:neighborhood_crime_y  0.0191305  0.0038125   5.018 5.31e-07
## asr_scr_external_t:neighborhood_crime_y  -0.0096229  0.0027345  -3.519 0.000435
## demo_comb_income_v2:macv_p_ss_r          -0.0279320  0.0089865  -3.108 0.001887
##
## (Intercept)
## kbi_p_conflict                           **
## asr_scr_totprob_t                        .
## kbi_p_c_mh_sa
## kbi_p_c_bully                            ***
## demo_comb_income_v2                      ***
## fes_p_ss_fc_pr                           ***
## asr_scr_thought_t                        ***
## fes_youth                                ***
## asr_scr_external_t                       ***
## macv_p_ss_r                              ***
## sexM                                     ***
## demo_prnt_marital_v2
## asr_scr_somaticpr_t                      ***
## neighborhood_crime_y                     ***
## asr_scr_perstr_t                         ***
## demo_yrs_2                               **
## kbi_p_conflict:kbi_p_c_mh_sa             ***
## kbi_p_conflict:fes_p_ss_fc_pr            ***
## kbi_p_conflict:demo_comb_income_v2       ***
## kbi_p_c_bully:fes_p_ss_fc_pr             ***
## kbi_p_c_mh_sa:demo_comb_income_v2        ***
## kbi_p_conflict:asr_scr_thought_t         ***
## demo_comb_income_v2:asr_scr_external_t   ***
## kbi_p_c_mh_sa:kbi_p_c_bully              ***
## kbi_p_conflict:sexM                      ***
## kbi_p_c_mh_sa:fes_p_ss_fc_pr             ***
## asr_scr_thought_t:asr_scr_perstr_t       ***
## sexM:demo_prnt_marital_v2                ***
## asr_scr_somaticpr_t:neighborhood_crime_y ***
## asr_scr_external_t:neighborhood_crime_y  ***
## demo_comb_income_v2:macv_p_ss_r          **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.601 on 10146 degrees of freedom
## Multiple R-squared:  0.4243, Adjusted R-squared:  0.4225
## F-statistic: 241.2 on 31 and 10146 DF,  p-value: < 2.2e-16
```

```
cm <- process(df, reg, -0.73254990)
```

```
## [1] 0.438593
```

```
print(cm)
```

```
## Confusion Matrix and Statistics
##
##
##        H    L    M
##   H 1276  106 1287
##   L 2664  478  897
##   M  732   28 2710
##
## Overall Statistics
##
##                Accuracy : 0.4386
##                  95% CI : (0.4289, 0.4483)
##     No Information Rate : 0.4808
##     P-Value [Acc > NIR] : 1
##
##                   Kappa : 0.1885
##
##  Mcnemar's Test P-Value : <2e-16
##
## Statistics by Class:
##
##                      Class: H Class: L Class: M
## Sensitivity            0.2731  0.78105   0.5537
## Specificity            0.7470  0.62774   0.8562
## Pos Pred Value         0.4781  0.11835   0.7810
## Neg Pred Value         0.5477  0.97817   0.6744
## Prevalence             0.4590  0.06013   0.4808
## Detection Rate         0.1254  0.04696   0.2663
## Detection Prevalence   0.2622  0.39684   0.3409
## Balanced Accuracy      0.5101  0.70439   0.7050
```

```
print(cm$byClass)
```

```
##          Sensitivity Specificity Pos Pred Value Neg Pred Value Precision
## Class: H   0.2731164   0.7470033      0.4780817      0.5477427 0.4780817
## Class: L   0.7810458   0.6277441      0.1183461      0.9781723 0.1183461
## Class: M   0.5537393   0.8561696      0.7809798      0.6744186 0.7809798
##             Recall        F1 Prevalence Detection Rate Detection Prevalence
## Class: H 0.2731164 0.3476366 0.45902928     0.12536844            0.2622323
## Class: L 0.7810458 0.2055472 0.06012969     0.04696404            0.3968363
## Class: M 0.5537393 0.6480153 0.48084103     0.26626056            0.3409314
##          Balanced Accuracy
## Class: H         0.5100599
## Class: L         0.7043949
## Class: M         0.7049544
```

Analysis W/ All Data, Selected Attributes

Attribute selection

```
df <- subset(odf, select=-c(X, prosocial_child, prosocial_parent, interview_date, int
erview_age, subjectkey, asr_scr_perstr_t, asr_scr_somaticpr_t, asr_scr_inattention_t,
crpbi_bothcare, kbi_p_c_best_friend, kbi_p_c_reg_friend_group, macv_p_ss_fs, macv_p_s
s_fo, macv_p_ss_isr,
macv_p_ss_fr, macv_p_ss_r, demo_prnt_age_v2, demo_prnt_marital_v2, demo_comb_income_v
2, demo_yrs_1, demo_yrs_2, parent_rules_q1, parent_rules_q4, parent_rules_q7, su_risk
_p_1, su_risk_p_2_3, su_risk_p_4_5))
```

OLS

Model Selection

```
reg <- lm(df$aggressive_sumscore ~ ., data=df)
```

Result

```
summary(reg)
```

```
##
## Call:
## lm(formula = df$aggressive_sumscore ~ ., data = df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -8.7694 -1.3102 -0.2715  0.5568 24.0396
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)           -1.247e+01  8.480e-01 -14.708  < 2e-16 ***
## asr_scr_anxdep_t      -1.558e-02  1.333e-02  -1.169 0.242507
## asr_scr_withdrawn_t    3.277e-02  1.025e-02   3.196 0.001398 **
## asr_scr_somatic_t      2.973e-02  7.634e-03   3.895 9.88e-05 ***
## asr_scr_thought_t      5.414e-02  8.248e-03   6.564 5.50e-11 ***
## asr_scr_attention_t    3.817e-02  1.393e-02   2.740 0.006154 **
## asr_scr_aggressive_t   2.972e-02  1.262e-02   2.355 0.018563 *
## asr_scr_rulebreak_t    1.434e-02  1.058e-02   1.356 0.175121
## asr_scr_intrusive_t   -3.903e-04  1.003e-02  -0.039 0.968951
## asr_scr_internal_t     1.408e-02  1.195e-02   1.178 0.238628
## asr_scr_external_t     2.635e-02  9.523e-03   2.767 0.005663 **
## asr_scr_totprob_t     -2.580e-02  1.550e-02  -1.664 0.096159 .
## asr_scr_depress_t     -1.320e-02  1.051e-02  -1.256 0.209309
## asr_scr_anxdisord_t    2.341e-03  8.729e-03   0.268 0.788551
## asr_scr_avoidant_t    -7.555e-03  9.410e-03  -0.803 0.422076
## asr_scr_adhd_t        -4.546e-02  1.717e-02  -2.648 0.008115 **
## asr_scr_antisocial_t   2.176e-03  1.274e-02   0.171 0.864352
## asr_scr_hyperactive_t  4.757e-02  1.464e-02   3.248 0.001165 **
## parent_monitor_y      -1.450e-01  5.616e-02  -2.582 0.009833 **
## kbi_p_conflict         2.394e+00  6.586e-02  36.353  < 2e-16 ***
## kbi_p_c_bully          1.238e+00  7.813e-02  15.846  < 2e-16 ***
## kbi_p_c_mh_sa          1.569e+00  6.649e-02  23.598  < 2e-16 ***
## fes_youth              9.811e-02  1.467e-02   6.689 2.37e-11 ***
## fes_p_ss_fc_pr         1.680e-01  1.573e-02  10.677  < 2e-16 ***
## demo_fam_exp           5.279e-01  7.332e-02   7.200 6.46e-13 ***
## neighborhood1_2_3_p   -1.082e-01  3.077e-02  -3.518 0.000437 ***
## neighborhood_crime_y  -1.220e-01  2.682e-02  -4.547 5.49e-06 ***
## sexM                   2.704e-01  5.473e-02   4.941 7.91e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.7 on 10150 degrees of freedom
## Multiple R-squared:  0.3794, Adjusted R-squared:  0.3778
## F-statistic: 229.8 on 27 and 10150 DF,  p-value: < 2.2e-16
```

```
cm <- process(df, reg, -0.73254990)
```

```
## [1] 0.4733739
```

```
print(cm)
```

```
## Confusion Matrix and Statistics
##
##
##        H    L    M
##   H 1061  264 1344
##   L 2023 1002 1014
##   M  632   83 2755
##
## Overall Statistics
##
##                Accuracy : 0.4734
##                  95% CI : (0.4636, 0.4831)
##     No Information Rate : 0.5024
##     P-Value [Acc > NIR] : 1
##
##                   Kappa : 0.226
##
##  Mcnemar's Test P-Value : <2e-16
##
## Statistics by Class:
##
##                      Class: H Class: L Class: M
## Sensitivity            0.2855  0.74277   0.5388
## Specificity            0.7512  0.65602   0.8588
## Pos Pred Value         0.3975  0.24808   0.7939
## Neg Pred Value         0.6464  0.94348   0.6485
## Prevalence             0.3651  0.13254   0.5024
## Detection Rate         0.1042  0.09845   0.2707
## Detection Prevalence   0.2622  0.39684   0.3409
## Balanced Accuracy      0.5183  0.69940   0.6988
```

```
print(cm$byClass)
```

```
##          Sensitivity Specificity Pos Pred Value Neg Pred Value Precision
## Class: H   0.2855221   0.7511606      0.3975272      0.6464243 0.3975272
## Class: L   0.7427724   0.6560199      0.2480812      0.9434761 0.2480812
## Class: M   0.5388226   0.8588351      0.7939481      0.6484794 0.7939481
##             Recall        F1 Prevalence Detection Rate Detection Prevalence
## Class: H 0.2855221 0.3323414  0.3651012     0.10424445            0.2622323
## Class: L 0.7427724 0.3719376  0.1325408     0.09844763            0.3968363
## Class: M 0.5388226 0.6419667  0.5023580     0.27068186            0.3409314
##          Balanced Accuracy
## Class: H         0.5183413
## Class: L         0.6993962
## Class: M         0.6988289
```

OLS W/ Interaction

Model Selection

```
reg <- lm(df$aggressive_sumscore ~ . + .^2, data=df)
```

Result

```
summary(reg)
```

```
##
## Call:
## lm(formula = df$aggressive_sumscore ~ . + .^2, data = df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -11.5425  -1.0999  -0.3485   0.4434  18.3338
##
## Coefficients:
##                                          Estimate Std. Error t value
## (Intercept)                             3.642e+01  1.796e+01   2.028
## asr_scr_anxdep_t                        3.865e-01  3.850e-01   1.004
## asr_scr_withdrawn_t                     6.075e-01  3.002e-01   2.024
## asr_scr_somatic_t                      -5.192e-01  2.341e-01  -2.218
## asr_scr_thought_t                      -1.017e+00  2.469e-01  -4.117
## asr_scr_attention_t                    -7.608e-01  3.953e-01  -1.924
## asr_scr_aggressive_t                    2.879e-01  3.724e-01   0.773
## asr_scr_rulebreak_t                    -3.613e-01  2.998e-01  -1.205
## asr_scr_intrusive_t                    -8.813e-01  2.542e-01  -3.467
## asr_scr_internal_t                     -1.524e+00  4.484e-01  -3.399
## asr_scr_external_t                      2.223e-01  3.971e-01   0.560
## asr_scr_totprob_t                       2.149e+00  5.304e-01   4.052
## asr_scr_depress_t                       3.567e-01  3.217e-01   1.109
## asr_scr_anxdisord_t                     1.652e-01  2.678e-01   0.617
## asr_scr_avoidant_t                     -3.090e-01  2.819e-01  -1.096
## asr_scr_adhd_t                          1.528e-01  4.962e-01   0.308
## asr_scr_antisocial_t                   -5.268e-01  3.846e-01  -1.370
## asr_scr_hyperactive_t                   2.678e-01  4.490e-01   0.596
## parent_monitor_y                        8.494e-01  1.632e+00   0.520
## kbi_p_conflict                          2.724e+00  1.893e+00   1.439
## kbi_p_c_bully                           4.590e-01  2.272e+00   0.202
## kbi_p_c_mh_sa                           1.074e+00  1.975e+00   0.544
## fes_youth                               8.510e-01  4.513e-01   1.886
## fes_p_ss_fc_pr                         -9.440e-01  4.637e-01  -2.036
## demo_fam_exp                           -2.173e+00  2.148e+00  -1.012
## neighborhood1_2_3_p                    -9.092e-01  9.159e-01  -0.993
## neighborhood_crime_y                   -3.320e-01  7.972e-01  -0.416
## sexM                                    9.123e-01  1.754e+00   0.520
## asr_scr_anxdep_t:asr_scr_withdrawn_t    2.393e-03  3.720e-03   0.643
## asr_scr_anxdep_t:asr_scr_somatic_t     -6.865e-03  2.526e-03  -2.717
## asr_scr_anxdep_t:asr_scr_thought_t      2.616e-03  3.251e-03   0.805
## asr_scr_anxdep_t:asr_scr_attention_t    4.345e-03  5.732e-03   0.758
## asr_scr_anxdep_t:asr_scr_aggressive_t  -9.233e-03  5.859e-03  -1.576
## asr_scr_anxdep_t:asr_scr_rulebreak_t   -7.566e-03  4.462e-03  -1.695
## asr_scr_anxdep_t:asr_scr_intrusive_t   -3.071e-03  4.381e-03  -0.701
## asr_scr_anxdep_t:asr_scr_internal_t     1.329e-02  6.372e-03   2.086
## asr_scr_anxdep_t:asr_scr_external_t    -1.683e-04  5.482e-03  -0.031
## asr_scr_anxdep_t:asr_scr_totprob_t     -8.688e-03  1.024e-02  -0.848
## asr_scr_anxdep_t:asr_scr_depress_t      3.435e-03  3.594e-03   0.956
## asr_scr_anxdep_t:asr_scr_anxdisord_t    2.418e-03  3.721e-03   0.650
## asr_scr_anxdep_t:asr_scr_avoidant_t    -5.055e-03  4.404e-03  -1.148
```

```
## asr_scr_anxdep_t:asr_scr_adhd_t             6.691e-04  6.879e-03   0.097
## asr_scr_anxdep_t:asr_scr_antisocial_t       3.196e-03  5.234e-03   0.611
## asr_scr_anxdep_t:asr_scr_hyperactive_t     -1.920e-03  5.808e-03  -0.331
## asr_scr_anxdep_t:parent_monitor_y           1.857e-02  2.698e-02   0.688
## asr_scr_anxdep_t:kbi_p_conflict            -3.508e-02  2.900e-02  -1.210
## asr_scr_anxdep_t:kbi_p_c_bully              3.438e-02  3.530e-02   0.974
## asr_scr_anxdep_t:kbi_p_c_mh_sa              6.584e-03  3.108e-02   0.212
## asr_scr_anxdep_t:fes_youth                 -6.793e-03  7.124e-03  -0.953
## asr_scr_anxdep_t:fes_p_ss_fc_pr             1.484e-03  7.108e-03   0.209
## asr_scr_anxdep_t:demo_fam_exp              -3.520e-02  3.306e-02  -1.065
## asr_scr_anxdep_t:neighborhood1_2_3_p        2.494e-02  1.422e-02   1.754
## asr_scr_anxdep_t:neighborhood_crime_y      -1.248e-02  1.315e-02  -0.949
## asr_scr_anxdep_t:sexM                      -2.986e-03  2.714e-02  -0.110
## asr_scr_withdrawn_t:asr_scr_somatic_t       1.958e-03  2.504e-03   0.782
## asr_scr_withdrawn_t:asr_scr_thought_t       4.367e-03  2.262e-03   1.931
## asr_scr_withdrawn_t:asr_scr_attention_t     2.709e-03  4.452e-03   0.609
## asr_scr_withdrawn_t:asr_scr_aggressive_t   -1.752e-02  4.202e-03  -4.169
## asr_scr_withdrawn_t:asr_scr_rulebreak_t    -5.258e-03  3.400e-03  -1.547
## asr_scr_withdrawn_t:asr_scr_intrusive_t    -6.433e-04  3.560e-03  -0.181
## asr_scr_withdrawn_t:asr_scr_internal_t     -2.127e-03  5.779e-03  -0.368
## asr_scr_withdrawn_t:asr_scr_external_t      8.946e-03  4.128e-03   2.167
## asr_scr_withdrawn_t:asr_scr_totprob_t      -6.360e-03  7.831e-03  -0.812
## asr_scr_withdrawn_t:asr_scr_depress_t       3.129e-03  3.163e-03   0.989
## asr_scr_withdrawn_t:asr_scr_anxdisord_t     1.304e-03  2.654e-03   0.491
## asr_scr_withdrawn_t:asr_scr_avoidant_t     -7.837e-04  2.049e-03  -0.382
## asr_scr_withdrawn_t:asr_scr_adhd_t          1.450e-04  5.267e-03   0.028
## asr_scr_withdrawn_t:asr_scr_antisocial_t   -1.022e-03  3.898e-03  -0.262
## asr_scr_withdrawn_t:asr_scr_hyperactive_t  -2.383e-03  4.625e-03  -0.515
## asr_scr_withdrawn_t:parent_monitor_y       -4.811e-03  2.050e-02  -0.235
## asr_scr_withdrawn_t:kbi_p_conflict          7.842e-03  2.236e-02   0.351
## asr_scr_withdrawn_t:kbi_p_c_bully          -2.988e-03  2.576e-02  -0.116
## asr_scr_withdrawn_t:kbi_p_c_mh_sa           6.822e-03  2.257e-02   0.302
## asr_scr_withdrawn_t:fes_youth               9.427e-03  5.398e-03   1.746
## asr_scr_withdrawn_t:fes_p_ss_fc_pr         -7.275e-04  5.411e-03  -0.134
## asr_scr_withdrawn_t:demo_fam_exp            4.675e-02  2.486e-02   1.881
## asr_scr_withdrawn_t:neighborhood1_2_3_p    -2.415e-02  1.085e-02  -2.225
## asr_scr_withdrawn_t:neighborhood_crime_y    2.578e-02  9.661e-03   2.669
## asr_scr_withdrawn_t:sexM                   -8.874e-03  2.122e-02  -0.418
## asr_scr_somatic_t:asr_scr_thought_t         2.105e-03  2.002e-03   1.051
## asr_scr_somatic_t:asr_scr_attention_t      -2.547e-04  3.496e-03  -0.073
## asr_scr_somatic_t:asr_scr_aggressive_t     -3.786e-03  3.389e-03  -1.117
## asr_scr_somatic_t:asr_scr_rulebreak_t      -4.057e-03  2.695e-03  -1.506
## asr_scr_somatic_t:asr_scr_intrusive_t       3.005e-03  2.636e-03   1.140
## asr_scr_somatic_t:asr_scr_internal_t       -4.339e-03  2.875e-03  -1.509
## asr_scr_somatic_t:asr_scr_external_t       -1.765e-03  2.967e-03  -0.595
## asr_scr_somatic_t:asr_scr_totprob_t        -1.844e-03  4.971e-03  -0.371
## asr_scr_somatic_t:asr_scr_depress_t         8.325e-03  2.621e-03   3.177
## asr_scr_somatic_t:asr_scr_anxdisord_t       7.794e-03  2.637e-03   2.956
## asr_scr_somatic_t:asr_scr_avoidant_t        4.774e-04  2.875e-03   0.166
## asr_scr_somatic_t:asr_scr_adhd_t           -2.863e-04  4.214e-03  -0.068
## asr_scr_somatic_t:asr_scr_antisocial_t      2.819e-03  3.143e-03   0.897
```

```
## asr_scr_somatic_t:asr_scr_hyperactive_t     4.452e-03  3.688e-03   1.207
## asr_scr_somatic_t:parent_monitor_y         -1.237e-02  1.497e-02  -0.826
## asr_scr_somatic_t:kbi_p_conflict           -2.360e-03  1.682e-02  -0.140
## asr_scr_somatic_t:kbi_p_c_bully             5.304e-02  2.069e-02   2.564
## asr_scr_somatic_t:kbi_p_c_mh_sa            -3.307e-04  1.817e-02  -0.018
## asr_scr_somatic_t:fes_youth                -2.747e-03  3.980e-03  -0.690
## asr_scr_somatic_t:fes_p_ss_fc_pr            1.900e-03  4.165e-03   0.456
## asr_scr_somatic_t:demo_fam_exp             -8.113e-03  1.977e-02  -0.410
## asr_scr_somatic_t:neighborhood1_2_3_p       1.455e-02  8.294e-03   1.754
## asr_scr_somatic_t:neighborhood_crime_y      2.867e-02  7.350e-03   3.901
## asr_scr_somatic_t:sexM                     -2.819e-02  1.564e-02  -1.802
## asr_scr_thought_t:asr_scr_attention_t      -1.250e-03  3.302e-03  -0.379
## asr_scr_thought_t:asr_scr_aggressive_t      1.304e-02  3.532e-03   3.692
## asr_scr_thought_t:asr_scr_rulebreak_t       5.508e-03  2.713e-03   2.030
## asr_scr_thought_t:asr_scr_intrusive_t       7.332e-03  2.634e-03   2.783
## asr_scr_thought_t:asr_scr_internal_t        3.382e-04  3.945e-03   0.086
## asr_scr_thought_t:asr_scr_external_t       -5.455e-03  3.366e-03  -1.621
## asr_scr_thought_t:asr_scr_totprob_t        -1.800e-03  5.600e-03  -0.321
## asr_scr_thought_t:asr_scr_depress_t        -1.637e-03  2.498e-03  -0.655
## asr_scr_thought_t:asr_scr_anxdisord_t       1.028e-03  1.976e-03   0.520
## asr_scr_thought_t:asr_scr_avoidant_t       -1.474e-03  2.223e-03  -0.663
## asr_scr_thought_t:asr_scr_adhd_t           -1.869e-03  3.999e-03  -0.467
## asr_scr_thought_t:asr_scr_antisocial_t     -4.662e-03  3.224e-03  -1.446
## asr_scr_thought_t:asr_scr_hyperactive_t    -3.387e-03  3.354e-03  -1.010
## asr_scr_thought_t:parent_monitor_y          3.130e-02  1.642e-02   1.906
## asr_scr_thought_t:kbi_p_conflict            7.470e-02  1.881e-02   3.971
## asr_scr_thought_t:kbi_p_c_bully            -1.210e-02  2.081e-02  -0.582
## asr_scr_thought_t:kbi_p_c_mh_sa             3.404e-02  1.824e-02   1.866
## asr_scr_thought_t:fes_youth                 7.680e-03  4.526e-03   1.697
## asr_scr_thought_t:fes_p_ss_fc_pr           -3.027e-03  4.456e-03  -0.679
## asr_scr_thought_t:demo_fam_exp             -4.037e-02  1.974e-02  -2.045
## asr_scr_thought_t:neighborhood1_2_3_p       5.026e-03  8.963e-03   0.561
## asr_scr_thought_t:neighborhood_crime_y     -8.120e-03  7.709e-03  -1.053
## asr_scr_thought_t:sexM                     -3.140e-03  1.705e-02  -0.184
## asr_scr_attention_t:asr_scr_aggressive_t   -4.891e-03  5.890e-03  -0.831
## asr_scr_attention_t:asr_scr_rulebreak_t     3.473e-03  4.734e-03   0.734
## asr_scr_attention_t:asr_scr_intrusive_t     7.257e-03  4.378e-03   1.658
## asr_scr_attention_t:asr_scr_internal_t      9.674e-03  5.560e-03   1.740
## asr_scr_attention_t:asr_scr_external_t      5.026e-03  4.650e-03   1.081
## asr_scr_attention_t:asr_scr_totprob_t      -2.534e-02  7.519e-03  -3.370
## asr_scr_attention_t:asr_scr_depress_t       9.753e-04  4.286e-03   0.228
## asr_scr_attention_t:asr_scr_anxdisord_t     5.899e-03  3.664e-03   1.610
## asr_scr_attention_t:asr_scr_avoidant_t      4.058e-03  3.970e-03   1.022
## asr_scr_attention_t:asr_scr_adhd_t         -1.943e-04  2.715e-03  -0.072
## asr_scr_attention_t:asr_scr_antisocial_t    2.470e-03  5.564e-03   0.444
## asr_scr_attention_t:asr_scr_hyperactive_t -1.485e-04  4.179e-03  -0.036
## asr_scr_attention_t:parent_monitor_y       -4.286e-03  2.826e-02  -0.152
## asr_scr_attention_t:kbi_p_conflict         -6.991e-02  3.042e-02  -2.298
## asr_scr_attention_t:kbi_p_c_bully          -1.492e-02  3.747e-02  -0.398
## asr_scr_attention_t:kbi_p_c_mh_sa           2.720e-02  3.023e-02   0.900
## asr_scr_attention_t:fes_youth              -9.440e-05  7.506e-03  -0.013
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## asr_scr_attention_t:fes_p_ss_fc_pr          4.742e-03  7.616e-03   0.623
## asr_scr_attention_t:demo_fam_exp            6.578e-02  3.558e-02   1.849
## asr_scr_attention_t:neighborhood1_2_3_p    -4.325e-04  1.536e-02  -0.028
## asr_scr_attention_t:neighborhood_crime_y    5.202e-03  1.371e-02   0.380
## asr_scr_attention_t:sexM                    5.204e-03  2.836e-02   0.184
## asr_scr_aggressive_t:asr_scr_rulebreak_t    7.614e-03  3.116e-03   2.443
## asr_scr_aggressive_t:asr_scr_intrusive_t   -5.567e-03  3.484e-03  -1.598
## asr_scr_aggressive_t:asr_scr_internal_t     2.710e-02  6.399e-03   4.236
## asr_scr_aggressive_t:asr_scr_external_t     1.238e-02  4.094e-03   3.025
## asr_scr_aggressive_t:asr_scr_totprob_t     -2.673e-02  9.219e-03  -2.899
## asr_scr_aggressive_t:asr_scr_depress_t      1.158e-03  4.373e-03   0.265
## asr_scr_aggressive_t:asr_scr_anxdisord_t   -1.164e-02  3.706e-03  -3.140
## asr_scr_aggressive_t:asr_scr_avoidant_t     4.812e-03  3.900e-03   1.234
## asr_scr_aggressive_t:asr_scr_adhd_t         1.087e-02  7.262e-03   1.497
## asr_scr_aggressive_t:asr_scr_antisocial_t   4.009e-03  4.729e-03   0.848
## asr_scr_aggressive_t:asr_scr_hyperactive_t -5.646e-03  6.498e-03  -0.869
## asr_scr_aggressive_t:parent_monitor_y      -2.743e-02  2.642e-02  -1.038
## asr_scr_aggressive_t:kbi_p_conflict        -2.373e-02  2.850e-02  -0.833
## asr_scr_aggressive_t:kbi_p_c_bully         -2.034e-02  3.468e-02  -0.587
## asr_scr_aggressive_t:kbi_p_c_mh_sa          4.770e-04  2.930e-02   0.016
## asr_scr_aggressive_t:fes_youth             -4.693e-04  6.659e-03  -0.070
## asr_scr_aggressive_t:fes_p_ss_fc_pr        -2.698e-03  6.822e-03  -0.396
## asr_scr_aggressive_t:demo_fam_exp           4.348e-02  3.185e-02   1.365
## asr_scr_aggressive_t:neighborhood1_2_3_p   -1.405e-02  1.416e-02  -0.992
## asr_scr_aggressive_t:neighborhood_crime_y   5.134e-03  1.223e-02   0.420
## asr_scr_aggressive_t:sexM                  -5.688e-03  2.595e-02  -0.219
## asr_scr_rulebreak_t:asr_scr_intrusive_t    -4.153e-03  2.952e-03  -1.407
## asr_scr_rulebreak_t:asr_scr_internal_t      1.408e-02  5.744e-03   2.451
## asr_scr_rulebreak_t:asr_scr_external_t     -3.758e-03  4.564e-03  -0.823
## asr_scr_rulebreak_t:asr_scr_totprob_t      -1.618e-02  8.631e-03  -1.875
## asr_scr_rulebreak_t:asr_scr_depress_t       6.290e-04  3.539e-03   0.178
## asr_scr_rulebreak_t:asr_scr_anxdisord_t    -4.010e-03  2.821e-03  -1.422
## asr_scr_rulebreak_t:asr_scr_avoidant_t      3.197e-03  3.177e-03   1.006
## asr_scr_rulebreak_t:asr_scr_adhd_t          2.218e-03  5.494e-03   0.404
## asr_scr_rulebreak_t:asr_scr_antisocial_t    6.401e-03  2.931e-03   2.184
## asr_scr_rulebreak_t:asr_scr_hyperactive_t   3.900e-03  4.677e-03   0.834
## asr_scr_rulebreak_t:parent_monitor_y        2.395e-02  2.151e-02   1.113
## asr_scr_rulebreak_t:kbi_p_conflict          2.935e-02  2.353e-02   1.248
## asr_scr_rulebreak_t:kbi_p_c_bully          -5.182e-03  2.787e-02  -0.186
## asr_scr_rulebreak_t:kbi_p_c_mh_sa           2.535e-02  2.449e-02   1.035
## asr_scr_rulebreak_t:fes_youth              -8.727e-03  5.612e-03  -1.555
## asr_scr_rulebreak_t:fes_p_ss_fc_pr          1.106e-02  5.834e-03   1.895
## asr_scr_rulebreak_t:demo_fam_exp           -1.031e-03  2.550e-02  -0.040
## asr_scr_rulebreak_t:neighborhood1_2_3_p     3.397e-03  1.137e-02   0.299
## asr_scr_rulebreak_t:neighborhood_crime_y    5.498e-03  1.043e-02   0.527
## asr_scr_rulebreak_t:sexM                   -4.789e-02  2.156e-02  -2.221
## asr_scr_intrusive_t:asr_scr_internal_t      6.091e-03  4.848e-03   1.256
## asr_scr_intrusive_t:asr_scr_external_t      3.275e-04  4.496e-03   0.073
## asr_scr_intrusive_t:asr_scr_totprob_t      -8.315e-03  7.849e-03  -1.059
## asr_scr_intrusive_t:asr_scr_depress_t      -4.350e-03  3.456e-03  -1.259
## asr_scr_intrusive_t:asr_scr_anxdisord_t    -5.831e-03  2.796e-03  -2.086
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## asr_scr_intrusive_t:asr_scr_avoidant_t      4.118e-03  3.476e-03   1.185
## asr_scr_intrusive_t:asr_scr_adhd_t         -5.927e-03  5.198e-03  -1.140
## asr_scr_intrusive_t:asr_scr_antisocial_t    1.302e-02  3.896e-03   3.343
## asr_scr_intrusive_t:asr_scr_hyperactive_t   1.088e-02  4.583e-03   2.375
## asr_scr_intrusive_t:parent_monitor_y        2.493e-02  2.147e-02   1.161
## asr_scr_intrusive_t:kbi_p_conflict         -4.666e-02  2.247e-02  -2.077
## asr_scr_intrusive_t:kbi_p_c_bully           1.313e-02  2.631e-02   0.499
## asr_scr_intrusive_t:kbi_p_c_mh_sa          -2.462e-02  2.416e-02  -1.019
## asr_scr_intrusive_t:fes_youth              -5.299e-03  5.599e-03  -0.946
## asr_scr_intrusive_t:fes_p_ss_fc_pr          5.591e-03  5.490e-03   1.018
## asr_scr_intrusive_t:demo_fam_exp            3.777e-03  2.613e-02   0.145
## asr_scr_intrusive_t:neighborhood1_2_3_p     1.371e-02  1.099e-02   1.247
## asr_scr_intrusive_t:neighborhood_crime_y   -1.518e-02  9.845e-03  -1.542
## asr_scr_intrusive_t:sexM                   -5.297e-03  2.064e-02  -0.257
## asr_scr_internal_t:asr_scr_external_t      -9.530e-03  2.852e-03  -3.341
## asr_scr_internal_t:asr_scr_totprob_t        2.826e-03  2.037e-03   1.387
## asr_scr_internal_t:asr_scr_depress_t       -1.188e-02  6.503e-03  -1.827
## asr_scr_internal_t:asr_scr_anxdisord_t     -1.542e-03  6.446e-03  -0.239
## asr_scr_internal_t:asr_scr_avoidant_t       3.791e-03  6.945e-03   0.546
## asr_scr_internal_t:asr_scr_adhd_t          -1.145e-02  8.007e-03  -1.430
## asr_scr_internal_t:asr_scr_antisocial_t    -7.570e-03  6.654e-03  -1.138
## asr_scr_internal_t:asr_scr_hyperactive_t   -3.403e-03  7.665e-03  -0.444
## asr_scr_internal_t:parent_monitor_y         4.726e-02  2.496e-02   1.893
## asr_scr_internal_t:kbi_p_conflict          -2.196e-02  3.071e-02  -0.715
## asr_scr_internal_t:kbi_p_c_bully           -6.343e-02  3.867e-02  -1.640
## asr_scr_internal_t:kbi_p_c_mh_sa            2.153e-02  2.992e-02   0.720
## asr_scr_internal_t:fes_youth                5.484e-03  6.379e-03   0.860
## asr_scr_internal_t:fes_p_ss_fc_pr          -3.304e-03  7.106e-03  -0.465
## asr_scr_internal_t:demo_fam_exp            -2.243e-02  3.656e-02  -0.613
## asr_scr_internal_t:neighborhood1_2_3_p     -7.439e-03  1.360e-02  -0.547
## asr_scr_internal_t:neighborhood_crime_y    -2.618e-03  1.201e-02  -0.218
## asr_scr_internal_t:sexM                     3.520e-02  2.395e-02   1.470
## asr_scr_external_t:asr_scr_totprob_t        1.089e-02  2.636e-03   4.129
## asr_scr_external_t:asr_scr_depress_t        5.206e-03  4.206e-03   1.238
## asr_scr_external_t:asr_scr_anxdisord_t      9.118e-03  3.683e-03   2.476
## asr_scr_external_t:asr_scr_avoidant_t      -2.740e-03  3.587e-03  -0.764
## asr_scr_external_t:asr_scr_adhd_t          -1.229e-02  6.697e-03  -1.835
## asr_scr_external_t:asr_scr_antisocial_t    -1.430e-02  6.811e-03  -2.099
## asr_scr_external_t:asr_scr_hyperactive_t   -6.421e-03  6.869e-03  -0.935
## asr_scr_external_t:parent_monitor_y         2.657e-02  1.998e-02   1.330
## asr_scr_external_t:kbi_p_conflict           8.981e-03  2.558e-02   0.351
## asr_scr_external_t:kbi_p_c_bully           -2.965e-02  3.000e-02  -0.988
## asr_scr_external_t:kbi_p_c_mh_sa            5.315e-02  2.413e-02   2.202
## asr_scr_external_t:fes_youth                8.422e-03  5.180e-03   1.626
## asr_scr_external_t:fes_p_ss_fc_pr           2.084e-03  5.818e-03   0.358
## asr_scr_external_t:demo_fam_exp            -1.428e-02  2.680e-02  -0.533
## asr_scr_external_t:neighborhood1_2_3_p      4.342e-04  1.093e-02   0.040
## asr_scr_external_t:neighborhood_crime_y    -1.185e-02  9.490e-03  -1.249
## asr_scr_external_t:sexM                     9.817e-03  1.892e-02   0.519
## asr_scr_totprob_t:asr_scr_depress_t         2.949e-03  8.672e-03   0.340
## asr_scr_totprob_t:asr_scr_anxdisord_t      -8.164e-03  7.105e-03  -1.149
```

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## asr_scr_totprob_t:asr_scr_avoidant_t       -1.108e-03  7.325e-03  -0.151
## asr_scr_totprob_t:asr_scr_adhd_t            4.194e-02  1.182e-02   3.549
## asr_scr_totprob_t:asr_scr_antisocial_t      1.253e-02  1.059e-02   1.183
## asr_scr_totprob_t:asr_scr_hyperactive_t     7.880e-04  1.137e-02   0.069
## asr_scr_totprob_t:parent_monitor_y         -7.429e-02  3.244e-02  -2.290
## asr_scr_totprob_t:kbi_p_conflict            2.667e-02  4.147e-02   0.643
## asr_scr_totprob_t:kbi_p_c_bully             8.758e-02  4.955e-02   1.768
## asr_scr_totprob_t:kbi_p_c_mh_sa            -5.050e-02  3.904e-02  -1.294
## asr_scr_totprob_t:fes_youth                -4.942e-03  8.360e-03  -0.591
## asr_scr_totprob_t:fes_p_ss_fc_pr            3.066e-05  9.377e-03   0.003
## asr_scr_totprob_t:demo_fam_exp              2.731e-02  4.649e-02   0.587
## asr_scr_totprob_t:neighborhood1_2_3_p      -7.409e-03  1.777e-02  -0.417
## asr_scr_totprob_t:neighborhood_crime_y      6.828e-03  1.561e-02   0.437
## asr_scr_totprob_t:sexM                     -3.666e-02  3.095e-02  -1.185
## asr_scr_depress_t:asr_scr_anxdisord_t      -1.905e-03  2.304e-03  -0.827
## asr_scr_depress_t:asr_scr_avoidant_t       -1.812e-03  2.772e-03  -0.654
## asr_scr_depress_t:asr_scr_adhd_t           -3.375e-03  4.906e-03  -0.688
## asr_scr_depress_t:asr_scr_antisocial_t     -7.579e-03  3.921e-03  -1.933
## asr_scr_depress_t:asr_scr_hyperactive_t    -9.627e-05  4.177e-03  -0.023
## asr_scr_depress_t:parent_monitor_y          1.019e-02  2.092e-02   0.487
## asr_scr_depress_t:kbi_p_conflict            5.792e-02  2.258e-02   2.565
## asr_scr_depress_t:kbi_p_c_bully            -3.000e-02  2.810e-02  -1.068
## asr_scr_depress_t:kbi_p_c_mh_sa             3.474e-02  2.363e-02   1.470
## asr_scr_depress_t:fes_youth                 5.691e-04  5.530e-03   0.103
## asr_scr_depress_t:fes_p_ss_fc_pr           -2.860e-03  5.615e-03  -0.509
## asr_scr_depress_t:demo_fam_exp             -5.458e-03  2.547e-02  -0.214
## asr_scr_depress_t:neighborhood1_2_3_p      -2.119e-03  1.160e-02  -0.183
## asr_scr_depress_t:neighborhood_crime_y     -2.097e-02  1.040e-02  -2.017
## asr_scr_depress_t:sexM                     -2.070e-02  2.144e-02  -0.965
## asr_scr_anxdisord_t:asr_scr_avoidant_t     -9.242e-04  2.183e-03  -0.423
## asr_scr_anxdisord_t:asr_scr_adhd_t         -7.126e-03  4.127e-03  -1.727
## asr_scr_anxdisord_t:asr_scr_antisocial_t    5.828e-03  3.283e-03   1.775
## asr_scr_anxdisord_t:asr_scr_hyperactive_t   5.691e-03  3.405e-03   1.671
## asr_scr_anxdisord_t:parent_monitor_y       -2.957e-02  1.802e-02  -1.640
## asr_scr_anxdisord_t:kbi_p_conflict          1.042e-02  1.952e-02   0.534
## asr_scr_anxdisord_t:kbi_p_c_bully          -3.070e-02  2.267e-02  -1.354
## asr_scr_anxdisord_t:kbi_p_c_mh_sa          -5.096e-02  1.954e-02  -2.608
## asr_scr_anxdisord_t:fes_youth               1.599e-03  4.707e-03   0.340
## asr_scr_anxdisord_t:fes_p_ss_fc_pr          3.648e-03  4.667e-03   0.782
## asr_scr_anxdisord_t:demo_fam_exp            4.157e-02  2.082e-02   1.996
## asr_scr_anxdisord_t:neighborhood1_2_3_p    -6.199e-04  9.668e-03  -0.064
## asr_scr_anxdisord_t:neighborhood_crime_y    1.277e-02  8.722e-03   1.464
## asr_scr_anxdisord_t:sexM                   -1.856e-02  1.799e-02  -1.031
## asr_scr_avoidant_t:asr_scr_adhd_t          -5.511e-03  4.685e-03  -1.176
## asr_scr_avoidant_t:asr_scr_antisocial_t     1.380e-03  3.699e-03   0.373
## asr_scr_avoidant_t:asr_scr_hyperactive_t    3.778e-03  4.103e-03   0.921
## asr_scr_avoidant_t:parent_monitor_y        -5.185e-03  1.948e-02  -0.266
## asr_scr_avoidant_t:kbi_p_conflict           2.974e-03  2.100e-02   0.142
## asr_scr_avoidant_t:kbi_p_c_bully           -2.074e-02  2.422e-02  -0.856
## asr_scr_avoidant_t:kbi_p_c_mh_sa           -4.708e-02  2.131e-02  -2.209
## asr_scr_avoidant_t:fes_youth               -9.170e-03  5.013e-03  -1.829
```

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## asr_scr_avoidant_t:fes_p_ss_fc_pr           8.162e-03  5.079e-03   1.607
## asr_scr_avoidant_t:demo_fam_exp            -1.050e-02  2.364e-02  -0.444
## asr_scr_avoidant_t:neighborhood1_2_3_p      2.764e-02  1.038e-02   2.663
## asr_scr_avoidant_t:neighborhood_crime_y    -2.293e-02  9.202e-03  -2.492
## asr_scr_avoidant_t:sexM                    -3.820e-03  1.920e-02  -0.199
## asr_scr_adhd_t:asr_scr_antisocial_t        -1.015e-02  6.070e-03  -1.672
## asr_scr_adhd_t:asr_scr_hyperactive_t       -5.536e-03  2.222e-03  -2.491
## asr_scr_adhd_t:parent_monitor_y             4.497e-02  3.522e-02   1.277
## asr_scr_adhd_t:kbi_p_conflict               5.738e-02  3.612e-02   1.589
## asr_scr_adhd_t:kbi_p_c_bully               -3.558e-02  4.519e-02  -0.787
## asr_scr_adhd_t:kbi_p_c_mh_sa               -1.116e-01  3.716e-02  -3.002
## asr_scr_adhd_t:fes_youth                    2.683e-03  9.276e-03   0.289
## asr_scr_adhd_t:fes_p_ss_fc_pr              -1.730e-02  9.488e-03  -1.824
## asr_scr_adhd_t:demo_fam_exp                -1.130e-01  4.352e-02  -2.597
## asr_scr_adhd_t:neighborhood1_2_3_p          1.619e-02  1.893e-02   0.855
## asr_scr_adhd_t:neighborhood_crime_y         2.260e-02  1.682e-02   1.344
## asr_scr_adhd_t:sexM                         6.810e-02  3.528e-02   1.930
## asr_scr_antisocial_t:asr_scr_hyperactive_t  5.751e-03  5.089e-03   1.130
## asr_scr_antisocial_t:parent_monitor_y      -4.457e-03  2.604e-02  -0.171
## asr_scr_antisocial_t:kbi_p_conflict        -9.077e-03  2.738e-02  -0.332
## asr_scr_antisocial_t:kbi_p_c_bully          4.182e-02  3.345e-02   1.250
## asr_scr_antisocial_t:kbi_p_c_mh_sa         -1.672e-02  2.984e-02  -0.560
## asr_scr_antisocial_t:fes_youth             -2.299e-03  6.720e-03  -0.342
## asr_scr_antisocial_t:fes_p_ss_fc_pr         1.881e-03  6.846e-03   0.275
## asr_scr_antisocial_t:demo_fam_exp          -1.246e-02  3.152e-02  -0.395
## asr_scr_antisocial_t:neighborhood1_2_3_p   -2.094e-02  1.392e-02  -1.505
## asr_scr_antisocial_t:neighborhood_crime_y  -1.377e-03  1.237e-02  -0.111
## asr_scr_antisocial_t:sexM                   6.804e-02  2.612e-02   2.605
## asr_scr_hyperactive_t:parent_monitor_y     -8.261e-02  3.032e-02  -2.725
## asr_scr_hyperactive_t:kbi_p_conflict       -6.859e-02  2.999e-02  -2.287
## asr_scr_hyperactive_t:kbi_p_c_bully         6.129e-02  3.711e-02   1.652
## asr_scr_hyperactive_t:kbi_p_c_mh_sa         8.281e-02  3.021e-02   2.741
## asr_scr_hyperactive_t:fes_youth            -4.761e-03  7.855e-03  -0.606
## asr_scr_hyperactive_t:fes_p_ss_fc_pr        3.433e-03  7.948e-03   0.432
## asr_scr_hyperactive_t:demo_fam_exp          6.540e-02  3.643e-02   1.795
## asr_scr_hyperactive_t:neighborhood1_2_3_p  -1.511e-02  1.643e-02  -0.920
## asr_scr_hyperactive_t:neighborhood_crime_y -1.431e-02  1.492e-02  -0.959
## asr_scr_hyperactive_t:sexM                 -4.104e-02  2.988e-02  -1.374
## parent_monitor_y:kbi_p_conflict            -4.410e-01  1.320e-01  -3.341
## parent_monitor_y:kbi_p_c_bully             -1.560e-01  1.532e-01  -1.018
## parent_monitor_y:kbi_p_c_mh_sa             -2.201e-01  1.223e-01  -1.799
## parent_monitor_y:fes_youth                 -2.002e-02  2.755e-02  -0.726
## parent_monitor_y:fes_p_ss_fc_pr             2.059e-02  3.133e-02   0.657
## parent_monitor_y:demo_fam_exp               2.118e-01  1.370e-01   1.546
## parent_monitor_y:neighborhood1_2_3_p       -2.256e-02  5.950e-02  -0.379
## parent_monitor_y:neighborhood_crime_y       1.312e-02  4.817e-02   0.272
## parent_monitor_y:sexM                       2.365e-01  1.126e-01   2.101
## kbi_p_conflict:kbi_p_c_bully                4.241e-01  1.694e-01   2.503
## kbi_p_conflict:kbi_p_c_mh_sa                1.109e+00  1.366e-01   8.113
## kbi_p_conflict:fes_youth                   -1.671e-02  3.415e-02  -0.489
## kbi_p_conflict:fes_p_ss_fc_pr               2.297e-01  3.424e-02   6.709
```

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## kbi_p_conflict:demo_fam_exp                 2.370e-01  1.770e-01   1.339
## kbi_p_conflict:neighborhood1_2_3_p          1.616e-01  7.320e-02   2.207
## kbi_p_conflict:neighborhood_crime_y        -7.159e-02  6.327e-02  -1.132
## kbi_p_conflict:sexM                         3.470e-01  1.327e-01   2.616
## kbi_p_c_bully:kbi_p_c_mh_sa                 9.265e-01  1.612e-01   5.749
## kbi_p_c_bully:fes_youth                    -1.010e-02  4.032e-02  -0.251
## kbi_p_c_bully:fes_p_ss_fc_pr                1.178e-01  4.305e-02   2.737
## kbi_p_c_bully:demo_fam_exp                 -3.401e-01  1.839e-01  -1.850
## kbi_p_c_bully:neighborhood1_2_3_p          -2.407e-01  8.248e-02  -2.919
## kbi_p_c_bully:neighborhood_crime_y          6.289e-02  6.972e-02   0.902
## kbi_p_c_bully:sexM                          1.531e-01  1.567e-01   0.977
## kbi_p_c_mh_sa:fes_youth                     2.894e-03  3.474e-02   0.083
## kbi_p_c_mh_sa:fes_p_ss_fc_pr                1.039e-01  3.705e-02   2.804
## kbi_p_c_mh_sa:demo_fam_exp                  2.175e-01  1.719e-01   1.265
## kbi_p_c_mh_sa:neighborhood1_2_3_p          -2.009e-01  7.357e-02  -2.730
## kbi_p_c_mh_sa:neighborhood_crime_y          1.216e-01  6.317e-02   1.926
## kbi_p_c_mh_sa:sexM                          4.057e-01  1.366e-01   2.971
## fes_youth:fes_p_ss_fc_pr                    3.799e-03  7.955e-03   0.478
## fes_youth:demo_fam_exp                      2.374e-02  3.735e-02   0.636
## fes_youth:neighborhood1_2_3_p              -1.078e-02  1.618e-02  -0.666
## fes_youth:neighborhood_crime_y             -2.329e-02  1.318e-02  -1.767
## fes_youth:sexM                              1.941e-03  2.916e-02   0.067
## fes_p_ss_fc_pr:demo_fam_exp                 2.825e-02  4.002e-02   0.706
## fes_p_ss_fc_pr:neighborhood1_2_3_p         -2.334e-02  1.748e-02  -1.335
## fes_p_ss_fc_pr:neighborhood_crime_y         6.293e-04  1.509e-02   0.042
## fes_p_ss_fc_pr:sexM                         5.367e-02  3.158e-02   1.700
## demo_fam_exp:neighborhood1_2_3_p           -6.064e-03  7.385e-02  -0.082
## demo_fam_exp:neighborhood_crime_y          -6.176e-02  6.424e-02  -0.961
## demo_fam_exp:sexM                           5.928e-02  1.463e-01   0.405
## neighborhood1_2_3_p:neighborhood_crime_y    1.627e-02  2.526e-02   0.644
## neighborhood1_2_3_p:sexM                   -1.344e-01  6.144e-02  -2.188
## neighborhood_crime_y:sexM                  -1.104e-02  5.326e-02  -0.207
##                                            Pr(>|t|)
## (Intercept)                                0.042624 *
## asr_scr_anxdep_t                           0.315426
## asr_scr_withdrawn_t                        0.043035 *
## asr_scr_somatic_t                          0.026584 *
## asr_scr_thought_t                          3.87e-05 ***
## asr_scr_attention_t                        0.054337 .
## asr_scr_aggressive_t                       0.439445
## asr_scr_rulebreak_t                        0.228281
## asr_scr_intrusive_t                        0.000529 ***
## asr_scr_internal_t                         0.000679 ***
## asr_scr_external_t                         0.575533
## asr_scr_totprob_t                          5.11e-05 ***
## asr_scr_depress_t                          0.267563
## asr_scr_anxdisord_t                        0.537353
## asr_scr_avoidant_t                         0.273158
## asr_scr_adhd_t                             0.758194
## asr_scr_antisocial_t                       0.170772
## asr_scr_hyperactive_t                      0.550870
```

```
## parent_monitor_y                          0.602795
## kbi_p_conflict                            0.150291
## kbi_p_c_bully                             0.839916
## kbi_p_c_mh_sa                             0.586611
## fes_youth                                 0.059380 .
## fes_p_ss_fc_pr                            0.041795 *
## demo_fam_exp                              0.311780
## neighborhood1_2_3_p                       0.320916
## neighborhood_crime_y                      0.677059
## sexM                                      0.602882
## asr_scr_anxdep_t:asr_scr_withdrawn_t      0.520073
## asr_scr_anxdep_t:asr_scr_somatic_t        0.006596 **
## asr_scr_anxdep_t:asr_scr_thought_t        0.421061
## asr_scr_anxdep_t:asr_scr_attention_t      0.448483
## asr_scr_anxdep_t:asr_scr_aggressive_t     0.115093
## asr_scr_anxdep_t:asr_scr_rulebreak_t      0.090023 .
## asr_scr_anxdep_t:asr_scr_intrusive_t      0.483267
## asr_scr_anxdep_t:asr_scr_internal_t       0.037005 *
## asr_scr_anxdep_t:asr_scr_external_t       0.975505
## asr_scr_anxdep_t:asr_scr_totprob_t        0.396341
## asr_scr_anxdep_t:asr_scr_depress_t        0.339151
## asr_scr_anxdep_t:asr_scr_anxdisord_t      0.515801
## asr_scr_anxdep_t:asr_scr_avoidant_t       0.251057
## asr_scr_anxdep_t:asr_scr_adhd_t           0.922525
## asr_scr_anxdep_t:asr_scr_antisocial_t     0.541421
## asr_scr_anxdep_t:asr_scr_hyperactive_t    0.740929
## asr_scr_anxdep_t:parent_monitor_y         0.491202
## asr_scr_anxdep_t:kbi_p_conflict           0.226460
## asr_scr_anxdep_t:kbi_p_c_bully            0.330166
## asr_scr_anxdep_t:kbi_p_c_mh_sa            0.832210
## asr_scr_anxdep_t:fes_youth                0.340361
## asr_scr_anxdep_t:fes_p_ss_fc_pr           0.834655
## asr_scr_anxdep_t:demo_fam_exp             0.287104
## asr_scr_anxdep_t:neighborhood1_2_3_p      0.079463 .
## asr_scr_anxdep_t:neighborhood_crime_y     0.342854
## asr_scr_anxdep_t:sexM                     0.912388
## asr_scr_withdrawn_t:asr_scr_somatic_t     0.434374
## asr_scr_withdrawn_t:asr_scr_thought_t     0.053560 .
## asr_scr_withdrawn_t:asr_scr_attention_t   0.542842
## asr_scr_withdrawn_t:asr_scr_aggressive_t  3.09e-05 ***
## asr_scr_withdrawn_t:asr_scr_rulebreak_t   0.121952
## asr_scr_withdrawn_t:asr_scr_intrusive_t   0.856617
## asr_scr_withdrawn_t:asr_scr_internal_t    0.712863
## asr_scr_withdrawn_t:asr_scr_external_t    0.030262 *
## asr_scr_withdrawn_t:asr_scr_totprob_t     0.416691
## asr_scr_withdrawn_t:asr_scr_depress_t     0.322640
## asr_scr_withdrawn_t:asr_scr_anxdisord_t   0.623305
## asr_scr_withdrawn_t:asr_scr_avoidant_t    0.702115
## asr_scr_withdrawn_t:asr_scr_adhd_t        0.978045
## asr_scr_withdrawn_t:asr_scr_antisocial_t  0.793264
## asr_scr_withdrawn_t:asr_scr_hyperactive_t 0.606398
```

```
## asr_scr_withdrawn_t:parent_monitor_y       0.814445
## asr_scr_withdrawn_t:kbi_p_conflict         0.725778
## asr_scr_withdrawn_t:kbi_p_c_bully          0.907691
## asr_scr_withdrawn_t:kbi_p_c_mh_sa          0.762470
## asr_scr_withdrawn_t:fes_youth              0.080786 .
## asr_scr_withdrawn_t:fes_p_ss_fc_pr         0.893049
## asr_scr_withdrawn_t:demo_fam_exp           0.060014 .
## asr_scr_withdrawn_t:neighborhood1_2_3_p    0.026093 *
## asr_scr_withdrawn_t:neighborhood_crime_y   0.007629 **
## asr_scr_withdrawn_t:sexM                   0.675815
## asr_scr_somatic_t:asr_scr_thought_t        0.293079
## asr_scr_somatic_t:asr_scr_attention_t      0.941931
## asr_scr_somatic_t:asr_scr_aggressive_t     0.263958
## asr_scr_somatic_t:asr_scr_rulebreak_t      0.132211
## asr_scr_somatic_t:asr_scr_intrusive_t      0.254286
## asr_scr_somatic_t:asr_scr_internal_t       0.131214
## asr_scr_somatic_t:asr_scr_external_t       0.552032
## asr_scr_somatic_t:asr_scr_totprob_t        0.710691
## asr_scr_somatic_t:asr_scr_depress_t        0.001495 **
## asr_scr_somatic_t:asr_scr_anxdisord_t      0.003122 **
## asr_scr_somatic_t:asr_scr_avoidant_t       0.868126
## asr_scr_somatic_t:asr_scr_adhd_t           0.945837
## asr_scr_somatic_t:asr_scr_antisocial_t     0.369722
## asr_scr_somatic_t:asr_scr_hyperactive_t    0.227369
## asr_scr_somatic_t:parent_monitor_y         0.408788
## asr_scr_somatic_t:kbi_p_conflict           0.888404
## asr_scr_somatic_t:kbi_p_c_bully            0.010368 *
## asr_scr_somatic_t:kbi_p_c_mh_sa            0.985482
## asr_scr_somatic_t:fes_youth                0.489967
## asr_scr_somatic_t:fes_p_ss_fc_pr           0.648356
## asr_scr_somatic_t:demo_fam_exp             0.681578
## asr_scr_somatic_t:neighborhood1_2_3_p      0.079386 .
## asr_scr_somatic_t:neighborhood_crime_y     9.63e-05 ***
## asr_scr_somatic_t:sexM                     0.071505 .
## asr_scr_thought_t:asr_scr_attention_t      0.705054
## asr_scr_thought_t:asr_scr_aggressive_t     0.000223 ***
## asr_scr_thought_t:asr_scr_rulebreak_t      0.042347 *
## asr_scr_thought_t:asr_scr_intrusive_t      0.005390 **
## asr_scr_thought_t:asr_scr_internal_t       0.931686
## asr_scr_thought_t:asr_scr_external_t       0.105132
## asr_scr_thought_t:asr_scr_totprob_t        0.747911
## asr_scr_thought_t:asr_scr_depress_t        0.512379
## asr_scr_thought_t:asr_scr_anxdisord_t      0.603026
## asr_scr_thought_t:asr_scr_avoidant_t       0.507178
## asr_scr_thought_t:asr_scr_adhd_t           0.640202
## asr_scr_thought_t:asr_scr_antisocial_t     0.148221
## asr_scr_thought_t:asr_scr_hyperactive_t    0.312710
## asr_scr_thought_t:parent_monitor_y         0.056621 .
## asr_scr_thought_t:kbi_p_conflict           7.22e-05 ***
## asr_scr_thought_t:kbi_p_c_bully            0.560764
## asr_scr_thought_t:kbi_p_c_mh_sa            0.062004 .
```

```
## asr_scr_thought_t:fes_youth                0.089753 .
## asr_scr_thought_t:fes_p_ss_fc_pr           0.496863
## asr_scr_thought_t:demo_fam_exp             0.040903 *
## asr_scr_thought_t:neighborhood1_2_3_p      0.574992
## asr_scr_thought_t:neighborhood_crime_y     0.292271
## asr_scr_thought_t:sexM                     0.853873
## asr_scr_attention_t:asr_scr_aggressive_t   0.406273
## asr_scr_attention_t:asr_scr_rulebreak_t    0.463189
## asr_scr_attention_t:asr_scr_intrusive_t    0.097396 .
## asr_scr_attention_t:asr_scr_internal_t     0.081889 .
## asr_scr_attention_t:asr_scr_external_t     0.279832
## asr_scr_attention_t:asr_scr_totprob_t      0.000754 ***
## asr_scr_attention_t:asr_scr_depress_t      0.820009
## asr_scr_attention_t:asr_scr_anxdisord_t    0.107377
## asr_scr_attention_t:asr_scr_avoidant_t     0.306770
## asr_scr_attention_t:asr_scr_adhd_t         0.942959
## asr_scr_attention_t:asr_scr_antisocial_t   0.657057
## asr_scr_attention_t:asr_scr_hyperactive_t  0.971655
## asr_scr_attention_t:parent_monitor_y       0.879441
## asr_scr_attention_t:kbi_p_conflict         0.021557 *
## asr_scr_attention_t:kbi_p_c_bully          0.690503
## asr_scr_attention_t:kbi_p_c_mh_sa          0.368341
## asr_scr_attention_t:fes_youth              0.989966
## asr_scr_attention_t:fes_p_ss_fc_pr         0.533505
## asr_scr_attention_t:demo_fam_exp           0.064555 .
## asr_scr_attention_t:neighborhood1_2_3_p    0.977537
## asr_scr_attention_t:neighborhood_crime_y   0.704305
## asr_scr_attention_t:sexM                   0.854405
## asr_scr_aggressive_t:asr_scr_rulebreak_t   0.014567 *
## asr_scr_aggressive_t:asr_scr_intrusive_t   0.110114
## asr_scr_aggressive_t:asr_scr_internal_t    2.30e-05 ***
## asr_scr_aggressive_t:asr_scr_external_t    0.002491 **
## asr_scr_aggressive_t:asr_scr_totprob_t     0.003747 **
## asr_scr_aggressive_t:asr_scr_depress_t     0.791150
## asr_scr_aggressive_t:asr_scr_anxdisord_t   0.001696 **
## asr_scr_aggressive_t:asr_scr_avoidant_t    0.217264
## asr_scr_aggressive_t:asr_scr_adhd_t        0.134335
## asr_scr_aggressive_t:asr_scr_antisocial_t  0.396650
## asr_scr_aggressive_t:asr_scr_hyperactive_t 0.384932
## asr_scr_aggressive_t:parent_monitor_y      0.299088
## asr_scr_aggressive_t:kbi_p_conflict        0.405122
## asr_scr_aggressive_t:kbi_p_c_bully         0.557441
## asr_scr_aggressive_t:kbi_p_c_mh_sa         0.987012
## asr_scr_aggressive_t:fes_youth             0.943821
## asr_scr_aggressive_t:fes_p_ss_fc_pr        0.692461
## asr_scr_aggressive_t:demo_fam_exp          0.172273
## asr_scr_aggressive_t:neighborhood1_2_3_p   0.321171
## asr_scr_aggressive_t:neighborhood_crime_y  0.674627
## asr_scr_aggressive_t:sexM                  0.826534
## asr_scr_rulebreak_t:asr_scr_intrusive_t    0.159560
## asr_scr_rulebreak_t:asr_scr_internal_t     0.014247 *
```

```
## asr_scr_rulebreak_t:asr_scr_external_t     0.410378
## asr_scr_rulebreak_t:asr_scr_totprob_t      0.060813 .
## asr_scr_rulebreak_t:asr_scr_depress_t      0.858924
## asr_scr_rulebreak_t:asr_scr_anxdisord_t    0.155120
## asr_scr_rulebreak_t:asr_scr_avoidant_t     0.314293
## asr_scr_rulebreak_t:asr_scr_adhd_t         0.686421
## asr_scr_rulebreak_t:asr_scr_antisocial_t   0.029000 *
## asr_scr_rulebreak_t:asr_scr_hyperactive_t  0.404368
## asr_scr_rulebreak_t:parent_monitor_y       0.265604
## asr_scr_rulebreak_t:kbi_p_conflict         0.212234
## asr_scr_rulebreak_t:kbi_p_c_bully          0.852526
## asr_scr_rulebreak_t:kbi_p_c_mh_sa          0.300551
## asr_scr_rulebreak_t:fes_youth              0.119981
## asr_scr_rulebreak_t:fes_p_ss_fc_pr         0.058088 .
## asr_scr_rulebreak_t:demo_fam_exp           0.967742
## asr_scr_rulebreak_t:neighborhood1_2_3_p    0.765169
## asr_scr_rulebreak_t:neighborhood_crime_y   0.597965
## asr_scr_rulebreak_t:sexM                   0.026350 *
## asr_scr_intrusive_t:asr_scr_internal_t     0.209070
## asr_scr_intrusive_t:asr_scr_external_t     0.941939
## asr_scr_intrusive_t:asr_scr_totprob_t      0.289467
## asr_scr_intrusive_t:asr_scr_depress_t      0.208076
## asr_scr_intrusive_t:asr_scr_anxdisord_t    0.037022 *
## asr_scr_intrusive_t:asr_scr_avoidant_t     0.236206
## asr_scr_intrusive_t:asr_scr_adhd_t         0.254242
## asr_scr_intrusive_t:asr_scr_antisocial_t   0.000832 ***
## asr_scr_intrusive_t:asr_scr_hyperactive_t  0.017573 *
## asr_scr_intrusive_t:parent_monitor_y       0.245642
## asr_scr_intrusive_t:kbi_p_conflict         0.037832 *
## asr_scr_intrusive_t:kbi_p_c_bully          0.617686
## asr_scr_intrusive_t:kbi_p_c_mh_sa          0.308191
## asr_scr_intrusive_t:fes_youth              0.344021
## asr_scr_intrusive_t:fes_p_ss_fc_pr         0.308520
## asr_scr_intrusive_t:demo_fam_exp           0.885085
## asr_scr_intrusive_t:neighborhood1_2_3_p    0.212270
## asr_scr_intrusive_t:neighborhood_crime_y   0.123111
## asr_scr_intrusive_t:sexM                   0.797473
## asr_scr_internal_t:asr_scr_external_t      0.000837 ***
## asr_scr_internal_t:asr_scr_totprob_t       0.165343
## asr_scr_internal_t:asr_scr_depress_t       0.067757 .
## asr_scr_internal_t:asr_scr_anxdisord_t     0.810987
## asr_scr_internal_t:asr_scr_avoidant_t      0.585215
## asr_scr_internal_t:asr_scr_adhd_t          0.152800
## asr_scr_internal_t:asr_scr_antisocial_t    0.255309
## asr_scr_internal_t:asr_scr_hyperactive_t   0.657123
## asr_scr_internal_t:parent_monitor_y        0.058359 .
## asr_scr_internal_t:kbi_p_conflict          0.474566
## asr_scr_internal_t:kbi_p_c_bully           0.100935
## asr_scr_internal_t:kbi_p_c_mh_sa           0.471741
## asr_scr_internal_t:fes_youth               0.389974
## asr_scr_internal_t:fes_p_ss_fc_pr          0.641956
```

```
## asr_scr_internal_t:demo_fam_exp            0.539618
## asr_scr_internal_t:neighborhood1_2_3_p     0.584289
## asr_scr_internal_t:neighborhood_crime_y    0.827451
## asr_scr_internal_t:sexM                    0.141643
## asr_scr_external_t:asr_scr_totprob_t       3.67e-05 ***
## asr_scr_external_t:asr_scr_depress_t       0.215814
## asr_scr_external_t:asr_scr_anxdisord_t     0.013301 *
## asr_scr_external_t:asr_scr_avoidant_t      0.444919
## asr_scr_external_t:asr_scr_adhd_t          0.066475 .
## asr_scr_external_t:asr_scr_antisocial_t    0.035827 *
## asr_scr_external_t:asr_scr_hyperactive_t   0.349879
## asr_scr_external_t:parent_monitor_y        0.183524
## asr_scr_external_t:kbi_p_conflict          0.725476
## asr_scr_external_t:kbi_p_c_bully           0.323047
## asr_scr_external_t:kbi_p_c_mh_sa           0.027656 *
## asr_scr_external_t:fes_youth               0.103977
## asr_scr_external_t:fes_p_ss_fc_pr          0.720219
## asr_scr_external_t:demo_fam_exp            0.594155
## asr_scr_external_t:neighborhood1_2_3_p     0.968303
## asr_scr_external_t:neighborhood_crime_y    0.211757
## asr_scr_external_t:sexM                    0.603867
## asr_scr_totprob_t:asr_scr_depress_t        0.733802
## asr_scr_totprob_t:asr_scr_anxdisord_t      0.250564
## asr_scr_totprob_t:asr_scr_avoidant_t       0.879738
## asr_scr_totprob_t:asr_scr_adhd_t           0.000388 ***
## asr_scr_totprob_t:asr_scr_antisocial_t     0.236753
## asr_scr_totprob_t:asr_scr_hyperactive_t    0.944737
## asr_scr_totprob_t:parent_monitor_y         0.022031 *
## asr_scr_totprob_t:kbi_p_conflict           0.520193
## asr_scr_totprob_t:kbi_p_c_bully            0.077175 .
## asr_scr_totprob_t:kbi_p_c_mh_sa            0.195780
## asr_scr_totprob_t:fes_youth                0.554421
## asr_scr_totprob_t:fes_p_ss_fc_pr           0.997392
## asr_scr_totprob_t:demo_fam_exp             0.557001
## asr_scr_totprob_t:neighborhood1_2_3_p      0.676783
## asr_scr_totprob_t:neighborhood_crime_y     0.661885
## asr_scr_totprob_t:sexM                     0.236215
## asr_scr_depress_t:asr_scr_anxdisord_t      0.408405
## asr_scr_depress_t:asr_scr_avoidant_t       0.513298
## asr_scr_depress_t:asr_scr_adhd_t           0.491532
## asr_scr_depress_t:asr_scr_antisocial_t     0.053257 .
## asr_scr_depress_t:asr_scr_hyperactive_t    0.981613
## asr_scr_depress_t:parent_monitor_y         0.626262
## asr_scr_depress_t:kbi_p_conflict           0.010326 *
## asr_scr_depress_t:kbi_p_c_bully            0.285653
## asr_scr_depress_t:kbi_p_c_mh_sa            0.141532
## asr_scr_depress_t:fes_youth                0.918039
## asr_scr_depress_t:fes_p_ss_fc_pr           0.610567
## asr_scr_depress_t:demo_fam_exp             0.830346
## asr_scr_depress_t:neighborhood1_2_3_p      0.855126
## asr_scr_depress_t:neighborhood_crime_y     0.043760 *
```

```
## asr_scr_depress_t:sexM                       0.334496
## asr_scr_anxdisord_t:asr_scr_avoidant_t       0.672029
## asr_scr_anxdisord_t:asr_scr_adhd_t           0.084266 .
## asr_scr_anxdisord_t:asr_scr_antisocial_t     0.075909 .
## asr_scr_anxdisord_t:asr_scr_hyperactive_t    0.094688 .
## asr_scr_anxdisord_t:parent_monitor_y         0.100936
## asr_scr_anxdisord_t:kbi_p_conflict           0.593594
## asr_scr_anxdisord_t:kbi_p_c_bully            0.175644
## asr_scr_anxdisord_t:kbi_p_c_mh_sa            0.009113 **
## asr_scr_anxdisord_t:fes_youth                0.734022
## asr_scr_anxdisord_t:fes_p_ss_fc_pr           0.434483
## asr_scr_anxdisord_t:demo_fam_exp             0.045959 *
## asr_scr_anxdisord_t:neighborhood1_2_3_p      0.948875
## asr_scr_anxdisord_t:neighborhood_crime_y     0.143328
## asr_scr_anxdisord_t:sexM                     0.302385
## asr_scr_avoidant_t:asr_scr_adhd_t            0.239520
## asr_scr_avoidant_t:asr_scr_antisocial_t      0.708993
## asr_scr_avoidant_t:asr_scr_hyperactive_t     0.357274
## asr_scr_avoidant_t:parent_monitor_y          0.790077
## asr_scr_avoidant_t:kbi_p_conflict            0.887410
## asr_scr_avoidant_t:kbi_p_c_bully             0.391807
## asr_scr_avoidant_t:kbi_p_c_mh_sa             0.027188 *
## asr_scr_avoidant_t:fes_youth                 0.067406 .
## asr_scr_avoidant_t:fes_p_ss_fc_pr            0.108088
## asr_scr_avoidant_t:demo_fam_exp              0.657026
## asr_scr_avoidant_t:neighborhood1_2_3_p       0.007768 **
## asr_scr_avoidant_t:neighborhood_crime_y      0.012706 *
## asr_scr_avoidant_t:sexM                      0.842297
## asr_scr_adhd_t:asr_scr_antisocial_t          0.094550 .
## asr_scr_adhd_t:asr_scr_hyperactive_t         0.012743 *
## asr_scr_adhd_t:parent_monitor_y              0.201722
## asr_scr_adhd_t:kbi_p_conflict                0.112161
## asr_scr_adhd_t:kbi_p_c_bully                 0.431082
## asr_scr_adhd_t:kbi_p_c_mh_sa                 0.002687 **
## asr_scr_adhd_t:fes_youth                     0.772434
## asr_scr_adhd_t:fes_p_ss_fc_pr                0.068250 .
## asr_scr_adhd_t:demo_fam_exp                  0.009418 **
## asr_scr_adhd_t:neighborhood1_2_3_p           0.392479
## asr_scr_adhd_t:neighborhood_crime_y          0.178883
## asr_scr_adhd_t:sexM                          0.053576 .
## asr_scr_antisocial_t:asr_scr_hyperactive_t 0.258526
## asr_scr_antisocial_t:parent_monitor_y        0.864097
## asr_scr_antisocial_t:kbi_p_conflict          0.740208
## asr_scr_antisocial_t:kbi_p_c_bully           0.211217
## asr_scr_antisocial_t:kbi_p_c_mh_sa           0.575365
## asr_scr_antisocial_t:fes_youth               0.732276
## asr_scr_antisocial_t:fes_p_ss_fc_pr          0.783478
## asr_scr_antisocial_t:demo_fam_exp            0.692565
## asr_scr_antisocial_t:neighborhood1_2_3_p     0.132442
## asr_scr_antisocial_t:neighborhood_crime_y    0.911388
## asr_scr_antisocial_t:sexM                    0.009198 **
```

```
## asr_scr_hyperactive_t:parent_monitor_y     0.006443 **
## asr_scr_hyperactive_t:kbi_p_conflict       0.022223 *
## asr_scr_hyperactive_t:kbi_p_c_bully        0.098624 .
## asr_scr_hyperactive_t:kbi_p_c_mh_sa        0.006137 **
## asr_scr_hyperactive_t:fes_youth            0.544470
## asr_scr_hyperactive_t:fes_p_ss_fc_pr       0.665766
## asr_scr_hyperactive_t:demo_fam_exp         0.072613 .
## asr_scr_hyperactive_t:neighborhood1_2_3_p  0.357558
## asr_scr_hyperactive_t:neighborhood_crime_y 0.337766
## asr_scr_hyperactive_t:sexM                 0.169539
## parent_monitor_y:kbi_p_conflict            0.000838 ***
## parent_monitor_y:kbi_p_c_bully             0.308594
## parent_monitor_y:kbi_p_c_mh_sa             0.072023 .
## parent_monitor_y:fes_youth                 0.467552
## parent_monitor_y:fes_p_ss_fc_pr            0.511075
## parent_monitor_y:demo_fam_exp              0.122157
## parent_monitor_y:neighborhood1_2_3_p       0.704585
## parent_monitor_y:neighborhood_crime_y      0.785304
## parent_monitor_y:sexM                      0.035664 *
## kbi_p_conflict:kbi_p_c_bully               0.012314 *
## kbi_p_conflict:kbi_p_c_mh_sa               5.51e-16 ***
## kbi_p_conflict:fes_youth                   0.624643
## kbi_p_conflict:fes_p_ss_fc_pr              2.07e-11 ***
## kbi_p_conflict:demo_fam_exp                0.180576
## kbi_p_conflict:neighborhood1_2_3_p         0.027306 *
## kbi_p_conflict:neighborhood_crime_y        0.257844
## kbi_p_conflict:sexM                        0.008917 **
## kbi_p_c_bully:kbi_p_c_mh_sa                9.25e-09 ***
## kbi_p_c_bully:fes_youth                    0.802192
## kbi_p_c_bully:fes_p_ss_fc_pr               0.006216 **
## kbi_p_c_bully:demo_fam_exp                 0.064382 .
## kbi_p_c_bully:neighborhood1_2_3_p          0.003520 **
## kbi_p_c_bully:neighborhood_crime_y         0.367041
## kbi_p_c_bully:sexM                         0.328556
## kbi_p_c_mh_sa:fes_youth                    0.933621
## kbi_p_c_mh_sa:fes_p_ss_fc_pr               0.005050 **
## kbi_p_c_mh_sa:demo_fam_exp                 0.205888
## kbi_p_c_mh_sa:neighborhood1_2_3_p          0.006340 **
## kbi_p_c_mh_sa:neighborhood_crime_y         0.054191 .
## kbi_p_c_mh_sa:sexM                         0.002976 **
## fes_youth:fes_p_ss_fc_pr                   0.633003
## fes_youth:demo_fam_exp                     0.525013
## fes_youth:neighborhood1_2_3_p              0.505464
## fes_youth:neighborhood_crime_y             0.077226 .
## fes_youth:sexM                             0.946919
## fes_p_ss_fc_pr:demo_fam_exp                0.480218
## fes_p_ss_fc_pr:neighborhood1_2_3_p         0.181780
## fes_p_ss_fc_pr:neighborhood_crime_y        0.966749
## fes_p_ss_fc_pr:sexM                        0.089243 .
## demo_fam_exp:neighborhood1_2_3_p           0.934560
## demo_fam_exp:neighborhood_crime_y          0.336361
```

```
## demo_fam_exp:sexM                          0.685237
## neighborhood1_2_3_p:neighborhood_crime_y   0.519508
## neighborhood1_2_3_p:sexM                   0.028685 *
## neighborhood_crime_y:sexM                  0.835792
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.58 on 9799 degrees of freedom
## Multiple R-squared:  0.4533, Adjusted R-squared:  0.4322
## F-statistic: 21.49 on 378 and 9799 DF,  p-value: < 2.2e-16
```

```
cm <- process(df, reg, -0.73254990)
```

```
## [1] 0.4217921
```

```
print(cm)
```

```
## Confusion Matrix and Statistics
##
##
##        H    L    M
##   H 1372   89 1208
##   L 2864  304  871
##   M  809   44 2617
##
## Overall Statistics
##
##                Accuracy : 0.4218
##                  95% CI : (0.4122, 0.4315)
##     No Information Rate : 0.4957
##     P-Value [Acc > NIR] : 1
##
##                   Kappa : 0.1689
##
##  Mcnemar's Test P-Value : <2e-16
##
## Statistics by Class:
##
##                      Class: H Class: L Class: M
## Sensitivity            0.2720  0.69565   0.5573
## Specificity            0.7473  0.61657   0.8444
## Pos Pred Value         0.5141  0.07527   0.7542
## Neg Pred Value         0.5109  0.97834   0.6901
## Prevalence             0.4957  0.04294   0.4614
## Detection Rate         0.1348  0.02987   0.2571
## Detection Prevalence   0.2622  0.39684   0.3409
## Balanced Accuracy      0.5096  0.65611   0.7008
```

```
print(cm$byClass)
```

```
##          Sensitivity Specificity Pos Pred Value Neg Pred Value  Precision
## Class: H   0.2719524   0.7473213     0.51405021      0.5108536 0.51405021
## Class: L   0.6956522   0.6165691     0.07526615      0.9783352 0.07526615
## Class: M   0.5572828   0.8443999     0.75417867      0.6900716 0.75417867
##             Recall        F1 Prevalence Detection Rate Detection Prevalence
## Class: H 0.2719524 0.3557169 0.49567695     0.13480055            0.2622323
## Class: L 0.6956522 0.1358356 0.04293574     0.02986834            0.3968363
## Class: M 0.5572828 0.6409503 0.46138731     0.25712321            0.3409314
##          Balanced Accuracy
## Class: H         0.5096368
## Class: L         0.6561107
## Class: M         0.7008413
```

Stepwise

Model Selection

```
null <- lm(aggressive_sumscore ~ 1, data=df)
full <- lm(aggressive_sumscore ~ ., data=df)
reg <- step(null, scope=formula(full), direction="forward", k=log(nrow(df)), trace=0)
```

Result

```
summary(reg)
```

```
##
## Call:
## lm(formula = aggressive_sumscore ~ kbi_p_conflict + asr_scr_totprob_t +
##     kbi_p_c_mh_sa + kbi_p_c_bully + fes_p_ss_fc_pr + demo_fam_exp +
##     asr_scr_thought_t + fes_youth + asr_scr_aggressive_t + neighborhood_crime_y +
##     sex + asr_scr_somatic_t + asr_scr_rulebreak_t + neighborhood1_2_3_p,
##     data = df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -8.3849 -1.3197 -0.2627  0.5448 23.9794
##
## Coefficients:
##                         Estimate Std. Error t value Pr(>|t|)
## (Intercept)          -12.435452   0.543774 -22.869  < 2e-16 ***
## kbi_p_conflict         2.385529   0.065769  36.271  < 2e-16 ***
## asr_scr_totprob_t      0.002561   0.005119   0.500 0.616902
## kbi_p_c_mh_sa          1.564876   0.066319  23.596  < 2e-16 ***
## kbi_p_c_bully          1.241819   0.078098  15.901  < 2e-16 ***
## fes_p_ss_fc_pr         0.169474   0.015611  10.856  < 2e-16 ***
## demo_fam_exp           0.537810   0.072846   7.383 1.67e-13 ***
## asr_scr_thought_t      0.058021   0.007338   7.907 2.91e-15 ***
## fes_youth              0.106947   0.014379   7.438 1.11e-13 ***
## asr_scr_aggressive_t   0.052504   0.008125   6.462 1.08e-10 ***
## neighborhood_crime_y  -0.130638   0.026687  -4.895 9.97e-07 ***
## sexM                   0.295680   0.053950   5.481 4.34e-08 ***
## asr_scr_somatic_t      0.026582   0.006112   4.349 1.38e-05 ***
## asr_scr_rulebreak_t    0.031407   0.007340   4.279 1.90e-05 ***
## neighborhood1_2_3_p   -0.115897   0.030645  -3.782 0.000156 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.705 on 10163 degrees of freedom
## Multiple R-squared:  0.3767, Adjusted R-squared:  0.3758
## F-statistic: 438.7 on 14 and 10163 DF,  p-value: < 2.2e-16
```

```
cm <- process(df, reg, -0.73254990)
```

```
## [1] 0.4711142
```

```
print(cm)
```

```
## Confusion Matrix and Statistics
##
##
##        H    L    M
##   H 1088  249 1332
##   L 2009  985 1045
##   M  670   78 2722
##
## Overall Statistics
##
##                Accuracy : 0.4711
##                  95% CI : (0.4614, 0.4809)
##     No Information Rate : 0.501
##     P-Value [Acc > NIR] : 1
##
##                   Kappa : 0.2234
##
##  Mcnemar's Test P-Value : <2e-16
##
## Statistics by Class:
##
##                      Class: H Class: L Class: M
## Sensitivity            0.2888  0.75076   0.5338
## Specificity            0.7534  0.65554   0.8527
## Pos Pred Value         0.4076  0.24387   0.7844
## Neg Pred Value         0.6432  0.94673   0.6456
## Prevalence             0.3701  0.12891   0.5010
## Detection Rate         0.1069  0.09678   0.2674
## Detection Prevalence   0.2622  0.39684   0.3409
## Balanced Accuracy      0.5211  0.70315   0.6933
```

```
print(cm$byClass)
```

```
##          Sensitivity Specificity Pos Pred Value Neg Pred Value Precision
## Class: H   0.2888240   0.7533926      0.4076433      0.6432281 0.4076433
## Class: L   0.7507622   0.6555380      0.2438722      0.9467340 0.2438722
## Class: M   0.5338302   0.8527269      0.7844380      0.6456470 0.7844380
##             Recall        F1 Prevalence Detection Rate Detection Prevalence
## Class: H 0.2888240 0.3380982  0.3701120     0.10689723            0.2622323
## Class: L 0.7507622 0.3681555  0.1289055     0.09677736            0.3968363
## Class: M 0.5338302 0.6353133  0.5009825     0.26743958            0.3409314
##          Balanced Accuracy
## Class: H         0.5211083
## Class: L         0.7031501
## Class: M         0.6932785
```

Stepwise W/ Interaction

Model Selection

```
null <- lm(aggressive_sumscore ~ 1, data=df)
full <- lm(aggressive_sumscore ~ . + . ^2, data=df)
reg <- step(null, scope=formula(full), direction="forward", k=log(nrow(df)), trace=0)
```

Result

```
summary(reg)
```

```
##
## Call:
## lm(formula = aggressive_sumscore ~ kbi_p_conflict + asr_scr_totprob_t +
##     kbi_p_c_mh_sa + kbi_p_c_bully + fes_p_ss_fc_pr + demo_fam_exp +
##     asr_scr_thought_t + fes_youth + neighborhood_crime_y + asr_scr_external_t +
##     sex + asr_scr_somatic_t + neighborhood1_2_3_p + asr_scr_withdrawn_t +
##     kbi_p_conflict:kbi_p_c_mh_sa + kbi_p_conflict:fes_p_ss_fc_pr +
##     kbi_p_conflict:asr_scr_thought_t + kbi_p_c_bully:fes_p_ss_fc_pr +
##     kbi_p_c_mh_sa:kbi_p_c_bully + kbi_p_c_mh_sa:sex + kbi_p_c_mh_sa:demo_fam_exp +
##     asr_scr_external_t:neighborhood1_2_3_p + neighborhood_crime_y:asr_scr_somatic_
t +
##     neighborhood_crime_y:asr_scr_external_t + kbi_p_conflict:sex +
##     kbi_p_c_mh_sa:fes_p_ss_fc_pr + asr_scr_totprob_t:asr_scr_withdrawn_t +
##     asr_scr_thought_t:asr_scr_external_t, data = df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -12.2860  -1.1509  -0.3817   0.4143  18.9376
##
## Coefficients:
##                                             Estimate Std. Error t value Pr(>|t|)
## (Intercept)                               -6.3432235  2.2631826  -2.803 0.005076
## kbi_p_conflict                            -3.0114506  0.5805804  -5.187 2.18e-07
## asr_scr_totprob_t                          0.1849995  0.0327038   5.657 1.58e-08
## kbi_p_c_mh_sa                             -0.9670667  0.2019965  -4.788 1.71e-06
## kbi_p_c_bully                              0.4035642  0.1329914   3.035 0.002415
## fes_p_ss_fc_pr                            -0.1339629  0.0401425  -3.337 0.000849
## demo_fam_exp                               0.3910806  0.0760968   5.139 2.81e-07
## asr_scr_thought_t                         -0.1797049  0.0365477  -4.917 8.93e-07
## fes_youth                                  0.1060253  0.0139815   7.583 3.66e-14
## neighborhood_crime_y                      -0.9352874  0.2109226  -4.434 9.34e-06
## asr_scr_external_t                         0.0018755  0.0383552   0.049 0.961001
## sexM                                      -0.3769502  0.1559460  -2.417 0.015659
## asr_scr_somatic_t                         -0.0649967  0.0179292  -3.625 0.000290
## neighborhood1_2_3_p                        0.3911141  0.1415752   2.763 0.005745
## asr_scr_withdrawn_t                        0.2359530  0.0370340   6.371 1.96e-10
## kbi_p_conflict:kbi_p_c_mh_sa               1.1853772  0.1280436   9.258  < 2e-16
## kbi_p_conflict:fes_p_ss_fc_pr              0.1963636  0.0304638   6.446 1.20e-10
## kbi_p_conflict:asr_scr_thought_t           0.0764380  0.0110143   6.940 4.16e-12
## kbi_p_c_bully:fes_p_ss_fc_pr               0.1860799  0.0353522   5.264 1.44e-07
## kbi_p_c_mh_sa:kbi_p_c_bully                0.8348493  0.1499016   5.569 2.62e-08
## kbi_p_c_mh_sa:sexM                         0.4774966  0.1289065   3.704 0.000213
## kbi_p_c_mh_sa:demo_fam_exp                 0.5441161  0.1441754   3.774 0.000162
## asr_scr_external_t:neighborhood1_2_3_p    -0.0110843  0.0029607  -3.744 0.000182
## neighborhood_crime_y:asr_scr_somatic_t     0.0248221  0.0042657   5.819 6.10e-09
## neighborhood_crime_y:asr_scr_external_t   -0.0120696  0.0028818  -4.188 2.84e-05
## kbi_p_conflict:sexM                        0.4876089  0.1237710   3.940 8.22e-05
## kbi_p_c_mh_sa:fes_p_ss_fc_pr               0.1213790  0.0329547   3.683 0.000232
## asr_scr_totprob_t:asr_scr_withdrawn_t     -0.0038084  0.0006437  -5.917 3.39e-09
## asr_scr_thought_t:asr_scr_external_t       0.0025072  0.0006381   3.929 8.58e-05
##
```

```
## (Intercept)                              **
## kbi_p_conflict                           ***
## asr_scr_totprob_t                        ***
## kbi_p_c_mh_sa                            ***
## kbi_p_c_bully                            **
## fes_p_ss_fc_pr                           ***
## demo_fam_exp                             ***
## asr_scr_thought_t                        ***
## fes_youth                                ***
## neighborhood_crime_y                     ***
## asr_scr_external_t
## sexM                                     *
## asr_scr_somatic_t                        ***
## neighborhood1_2_3_p                      **
## asr_scr_withdrawn_t                      ***
## kbi_p_conflict:kbi_p_c_mh_sa             ***
## kbi_p_conflict:fes_p_ss_fc_pr            ***
## kbi_p_conflict:asr_scr_thought_t         ***
## kbi_p_c_bully:fes_p_ss_fc_pr             ***
## kbi_p_c_mh_sa:kbi_p_c_bully              ***
## kbi_p_c_mh_sa:sexM                       ***
## kbi_p_c_mh_sa:demo_fam_exp               ***
## asr_scr_external_t:neighborhood1_2_3_p   ***
## neighborhood_crime_y:asr_scr_somatic_t   ***
## neighborhood_crime_y:asr_scr_external_t  ***
## kbi_p_conflict:sexM                      ***
## kbi_p_c_mh_sa:fes_p_ss_fc_pr             ***
## asr_scr_totprob_t:asr_scr_withdrawn_t    ***
## asr_scr_thought_t:asr_scr_external_t     ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.627 on 10149 degrees of freedom
## Multiple R-squared:  0.4126, Adjusted R-squared:  0.411
## F-statistic: 254.6 on 28 and 10149 DF,  p-value: < 2.2e-16
```

```
cm <- process(df, reg, -0.73254990)
```

```
## [1] 0.4283749
```

```
print(cm)
```

```
## Confusion Matrix and Statistics
##
##
##        H    L    M
##   H 1330   91 1248
##   L 2768  340  931
##   M  763   17 2690
##
## Overall Statistics
##
##                Accuracy : 0.4284
##                  95% CI : (0.4187, 0.4381)
##     No Information Rate : 0.4784
##     P-Value [Acc > NIR] : 1
##
##                   Kappa : 0.1766
##
##  Mcnemar's Test P-Value : <2e-16
##
## Statistics by Class:
##
##                      Class: H Class: L Class: M
## Sensitivity            0.2736  0.75893   0.5525
## Specificity            0.7482  0.61984   0.8531
## Pos Pred Value         0.4983  0.08418   0.7752
## Neg Pred Value         0.5298  0.98241   0.6752
## Prevalence             0.4776  0.04402   0.4784
## Detection Rate         0.1307  0.03341   0.2643
## Detection Prevalence   0.2622  0.39684   0.3409
## Balanced Accuracy      0.5109  0.68938   0.7028
```

```
print(cm$byClass)
```

```
##          Sensitivity Specificity Pos Pred Value Neg Pred Value  Precision
## Class: H   0.2736063   0.7481663     0.49831398      0.5297643 0.49831398
## Class: L   0.7589286   0.6198356     0.08417925      0.9824076 0.08417925
## Class: M   0.5524748   0.8530797     0.77521614      0.6751640 0.77521614
##             Recall        F1 Prevalence Detection Rate Detection Prevalence
## Class: H 0.2736063 0.3532537 0.47759874     0.13067400            0.2622323
## Class: L 0.7589286 0.1515489 0.04401651     0.03340538            0.3968363
## Class: M 0.5524748 0.6451613 0.47838475     0.26429554            0.3409314
##          Balanced Accuracy
## Class: H         0.5108863
## Class: L         0.6893821
## Class: M         0.7027773
```

Analysis W/ Selected Data, All Attributes

```
df <- read.csv('cleandata.csv')
odf<- df[(df$aggressive_sumscore  <= (-2.020650971)) | (df$aggressive_sumscore  >=
(0.2168869)), ]
```