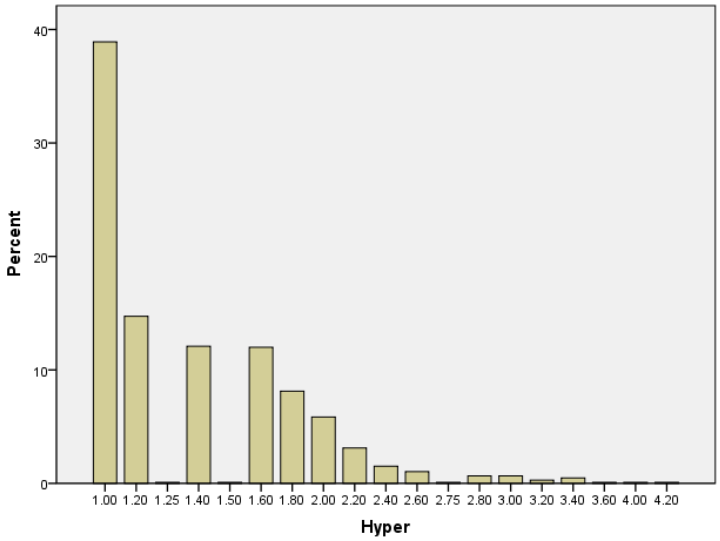
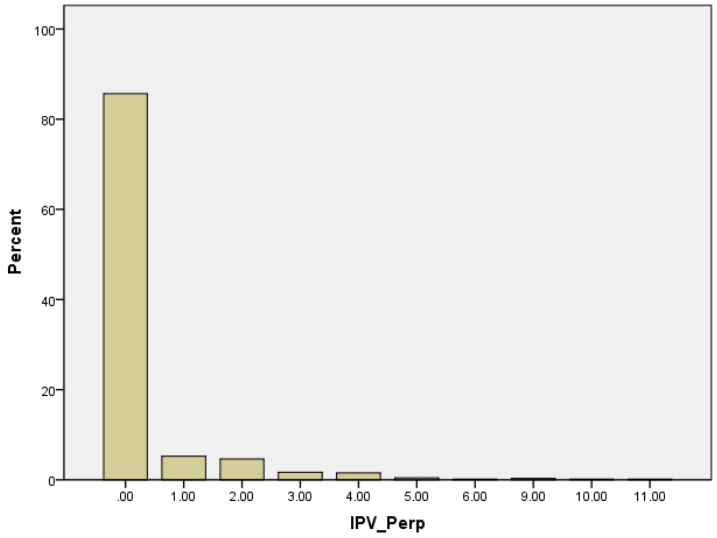
Multilevel Models for Other Non-Normal Outcomes in Mplus v. 7.11

Study Overview:
These data come from a daily diary study that followed 41 male and female college students over a six-week period to examine within-person relationships among hyperarousal symptoms, alcohol use, and perpetration of intimate partner violence (IPV). To be eligible, potential participants had to be currently involved in a romantic relationship and have face-to-face contact with their partner at least once a week with no intentions of breaking up with their partner in the preceding six weeks. In addition, participants had to report using alcohol in the previous six weeks with no intention of abstaining from future alcohol use, and perpetrating or experiencing at least one instance of physical (e.g., pushing, shoving, slapping/punching, or choking), sexual (e.g., using threats or physical force to obtain sex), or psychological abuse (e.g., calling the partner stupid, worthless, or ugly) in the previous six months. Below are the distributions of the hyperarousal predictor (left) and intimate partner violence outcome (right) across all daily observations.

Predictor: Hyperarousal (mean across items on 1-5 scale)



Outcome: Perpetration of Intimate Partner Violence (count of actions)



We will be examining several candidate models for IPV: Normal, Logit, Poisson, Negative Binomial, Negative Binomial Hurdle, and Two-Part Log. Although it may be somewhat suspect given its distribution, for the sake of illustration we will treat hyperarousal as normal across models. We are, however, using the MLR estimator (i.e., robust maximum likelihood) that corrects the parameter standard errors (via the "sandwich" method) for non-normality.

Model 1: Normal Response Distribution

```
TITLE:   Model 1: Normal Response Distribution
DATA:    FILE IS MPlusData.csv;
VARIABLE:    NAMES ARE ID hyper alc perp perpr;
             USEVARIABLES ARE hyper perp;
             MISSING ARE ALL (-99);
             CLUSTER IS ID;
 ! No extra code here means we assume each item response is normal
DEFINE:      CENTER hyper (GRANDMEAN);
ANALYSIS:    ESTIMATOR IS MLR; TYPE = TWOLEVEL RANDOM;

MODEL:
%WITHIN%
hyper* perp*;      ! Level-1 residual variances
perp ON hyper*;    ! Level-1 relationship (within person)

%BETWEEN%
 hyper* perp*;     ! Level-2 random intercept variances
[hyper* perp*];    ! Fixed intercepts
perp ON hyper*;    ! Level-2 relationship (between person)

     Estimated Intraclass Correlations for the Y Variables
                Intraclass              Intraclass
     Variable  Correlation   Variable  Correlation
     PERP         0.521      HYPER        0.464

Number of Free Parameters                        8
Loglikelihood
          H0 Value                       -1385.261
          H0 Scaling Correction Factor       7.021
            for MLR
          H1 Value                       -1385.261
          H1 Scaling Correction Factor       7.021
            for MLR

Information Criteria
          Akaike (AIC)                    2786.522
          Bayesian (BIC)                  2826.243
          Sample-Size Adjusted BIC        2800.833
            (n* = (n + 2) / 24)

Chi-Square Test of Model Fit
          Value                             0.000*
          Degrees of Freedom                   0
          P-Value                           0.0000
          Scaling Correction Factor         1.000
            for MLR
RMSEA (Root Mean Square Error Of Approximation)
          Estimate                          0.000
CFI/TLI
          CFI                               1.000
          TLI                               1.000
```

```
MODEL RESULTS
                                                    Two-Tailed
                    Estimate       S.E.  Est./S.E.    P-Value
Within Level

FOR EVERY UNIT INCREASE IN HYPER, PERP INCREASES BY .396
IF YOU EXPERIENCE MORE HYPER IN COMPARISON TO OWN MEAN, THEN MORE PERP
IPV THAT DAY
PERP       ON
    HYPER              0.396      0.112      3.547      0.000

RESIDUAL VARIANCE (NOTHING PREDICTING HYPER)
Variances
    HYPER              0.132      0.024      5.577      0.000

RESIDUAL LEFT OVER VARIANCE (PERP IS PREDICTED BY HYPER)
Residual Variances
    PERP               0.783      0.242      3.230      0.001

Between Level

EXPERIENCING MORE HYPER IN COMPARISON TO OTHER PERSONS DOES NOT
SIGNIFICANTLY PREDICT PERP OF IPV
PERP       ON
    HYPER              0.850      0.465      1.828      0.067

FIXED INTERCEPT FOR HYPER
(HYPER IS UNCONDITIONAL SINCE IT IS NOT BEING PREDICTED BY ANYTHING)
Means
    HYPER              0.034      0.055      0.618      0.536

FIXED INTERCEPT (CONDITIONAL ON HYPER: IS AMOUNT OF IPV PERPETRATED BY
SOMEONE AVERAGE ON HYPER ACROSS DAYS)
Intercepts
    PERP               0.561      0.146      3.848      0.000

RANDOM INTERCEPT VARIANCE (NOTHING PREDICTING HYPER)
Variances
    HYPER              0.115      0.025      4.663      0.000

RANDOM INTERCEPT LEFT OVER VARIANCE (PERP IS PREDICTED BY HYPER)
Residual Variances
    PERP               0.793      0.460      1.725      0.084
```

Model 2: Logit Model

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TITLE:   Model 2: Logit Model
DATA:    FILE IS MPlusData.csv;

VARIABLE:    NAMES ARE ID hyper alc perp perpr;
             USEVARIABLES ARE hyper perpr;
             MISSING ARE ALL (-99);
             CLUSTER IS ID;
             CATEGORICAL IS perpr;
                    ! Perp is now binary only
DEFINE:      CENTER hyper (GRANDMEAN);

ANALYSIS:    ESTIMATOR IS MLR; TYPE = TWOLEVEL RANDOM;


MODEL:
%WITHIN%
hyper*;             ! Level-1 residual variance for hyper only
perpr ON hyper*;    ! Level-1 relationship (within person)

%BETWEEN%
Bhyper BY hyper@1; ! Separate hyper using latent variable "Bhyper"
hyper@0 Bhyper*;   ! Level-2 random intercept variance is now Bhyper
[hyper@0 Bhyper*]; ! Fixed intercept is now from Bhyper
 perpr*;           ! Level-2 random intercept variance
[perpr$1];         ! Threshold (opposite of fixed intercept in logits)
perpr ON Bhyper*;  ! Level-2 relationship (between person)

Number of Free Parameters                        7

Loglikelihood
          H0 Value                          -712.033
          H0 Scaling Correction Factor         3.178
            for MLR

Information Criteria
          Akaike (AIC)                     1438.067
          Bayesian (BIC)                   1472.823
          Sample-Size Adjusted BIC         1450.589
            (n* = (n + 2) / 24
```

```
MODEL RESULTS
                                                    Two-Tailed
                    Estimate       S.E.  Est./S.E.    P-Value
Within Level

PREDICTING WHETHER OR NOT A PERSON WILL PERPETRATE MORE THAN USUAL:
FOR EVERY UNIT INCREASE IN HYPER, THE LOGIT OF PERPR INCREASES BY 1.55
PERPR      ON
    HYPER              1.547      0.436      3.547      0.000

RESIDUAL VARIANCE (NOTHING PREDICTING HYPER)
Variances
    HYPER              0.132      0.024      5.578      0.000

Between Level

INTERCEPT VARIANCE IN HYPER HAS BEEN 'MOVED' TO BHYPER TO TRICK MPLUS
 BHYPER   BY
    HYPER              1.000      0.000    999.000    999.000

PREDICT RANDOM INTERCEPT: IF MORE HYPER THAN OTHERS, AMOUNT OF VIOLENCE
PERPETRATED INCREASES BY .50 FOR EVERY UNIT INCREASE IN HYPER (NON-SIG)
PERPR      ON
    BHYPER             0.503      0.840      0.598      0.544

FIXED INTERCEPT FOR HYPER HAS BEEN 'MOVED' TO BHYPER TO TRICK MPLUS
 Intercepts
    HYPER              0.000      0.000    999.000    999.000
Means
    BHYPER             0.034      0.056      0.613      0.540

LOGIT OF THE PROBABILITY OF NOT PERPETRATING VIOLENCE ON AVERAGE ACROSS
DAYS FOR SOMEONE WHO IS AT MEAN HYPER RELATIVE TO OTHERS
Thresholds
    PERPR$1            1.996      0.272      7.328      0.000

RANDOM INTERCEPT VARIANCE (NOTHING PREDICTING IT)
 Variances
    BHYPER             0.114      0.025      4.657      0.000

RANDOM INTERCEPT LEFT OVER VARIANCE (PERP IS PREDICTED BY HYPER)
 Residual Variances
    PERPR              1.843      0.711      2.592      0.010
    HYPER              0.000      0.000    999.000    999.000
```

Model 3a: Poisson Model

```
TITLE:   Model 3a and 3b:
         Poisson and Negative Binomial  (Predicting Log of Count)

DATA:    FILE IS MPlusData.csv;

VARIABLE:    NAMES ARE ID hyper alc perp perpr;
             USEVARIABLES ARE hyper perp;
             MISSING ARE ALL (-99);
             CLUSTER IS ID;
             COUNT IS perp (p);
                    ! Now perp is poisson

DEFINE:      CENTER hyper (GRANDMEAN);

ANALYSIS:    ESTIMATOR IS MLR; TYPE = TWOLEVEL RANDOM;

MODEL:

%WITHIN%
hyper*;              ! Level-1 residual variance for hyper only
perp ON hyper*;      ! Level-1 relationship (within person)

%BETWEEN%
Bhyper BY hyper@1;   ! Separate hyper using latent variable "Bhyper"
hyper@0 Bhyper*;     ! Level-2 random intercept variance is now Bhyper
[hyper@0 Bhyper*];   ! Fixed intercept is now from Bhyper
 perp*;              ! Level-2 random intercept variance
[perp*];             ! Fixed intercept
perp ON Bhyper*;     ! Level-2 relationship (between person)


Number of Free Parameters                        7

Loglikelihood
          H0 Value                         -920.516
          H0 Scaling Correction Factor        3.550
            for MLR

Information Criteria
          Akaike (AIC)                     1855.032
          Bayesian (BIC)                   1889.788
          Sample-Size Adjusted BIC         1867.555
            (n* = (n + 2) / 24)
```

```
MODEL RESULTS
                                                    Two-Tailed
                    Estimate       S.E.  Est./S.E.    P-Value

Within Level

PREDICTING LOG COUNT OF HOW MUCH SOMEONE PERPS MORE THAN USUAL WHEN
HYPER IS MORE THAN USUAL (MARGINALLY SIGNIFICANT)
PERP       ON
    HYPER              0.488      0.250      1.952      0.051

RESIDUAL VARIANCE (NOTHING PREDICTING HYPER)
Variances
    HYPER              0.132      0.024      5.577      0.000

Between Level

INTERCEPT VARIANCE IN HYPER HAS BEEN 'MOVED' TO BHYPER TO TRICK MPLUS
BHYPER   BY
    HYPER              1.000      0.000    999.000    999.000

EXPERIENCING MORE HYPER THAN OTHERS ON AVERAGE ACROSS DAYS DOES NOT
PREDICT LOG COUNT OF HOW MUCH IPV SOMEONE PERPS ON AVERAGE
PERP       ON
    BHYPER             1.128      0.747      1.509      0.131

FIXED INTERCEPT FOR HYPER HAS BEEN 'MOVED' TO BHYPER TO TRICK MPLUS
Means
    BHYPER             0.035      0.056      0.636      0.525

Intercepts
    HYPER              0.000      0.000    999.000    999.000

FIXED INTERCEPT (CONDITIONAL ON HYPER: IS LOG COUNT OF IPV PERPETRATED
BY SOMEONE AVERAGE ON HYPER ACROSS DAYS)
    PERP              -1.629      0.273     -5.973      0.000

RANDOM INTERCEPT VARIANCE (NOTHING PREDICTING HYPER)
Variances
    BHYPER             0.114      0.024      4.675      0.000

RANDOM INTERCEPT LEFT OVER VARIANCE (PERP IS PREDICTED BY HYPER)
Residual Variances
    HYPER              0.000      0.000    999.000    999.000
    PERP               1.909      0.597      3.199      0.001
```

Model 3b: Negative Binomial

```
TITLE:   Model 3b: Negative Binomial  (Predicting Log of Count still)
DATA:    FILE IS MPlusData.csv;

VARIABLE:    NAMES ARE ID hyper alc perp perpr;
             USEVARIABLES ARE hyper perp;
             MISSING ARE ALL (-99);
             CLUSTER IS ID;
             COUNT IS perp (nb);
                    ! Now perp is Negative Binomial

DEFINE:      CENTER hyper (GRANDMEAN);

ANALYSIS:    ESTIMATOR IS MLR; TYPE = TWOLEVEL RANDOM;

MODEL:

%WITHIN%
hyper*;              ! Level-1 residual variance for hyper only
perp ON hyper*;      ! Level-1 relationship (within person)

%BETWEEN%
Bhyper BY hyper@1;   ! Separate hyper using latent variable "Bhyper"
hyper@0 Bhyper*;     ! Level-2 random intercept variance is now Bhyper
[hyper@0 Bhyper*];   ! Fixed intercept is now from Bhyper
 perp*;              ! Level-2 random intercept variance
[perp*];             ! Fixed intercept
perp ON Bhyper*;     ! Level-2 relationship (between person)

Number of Free Parameters                        8

Loglikelihood
          H0 Value                       -870.761
          H0 Scaling Correction Factor       2.918
            for MLR

Information Criteria
          Akaike (AIC)                   1757.522
          Bayesian (BIC)                 1797.243
          Sample-Size Adjusted BIC       1771.834
            (n* = (n + 2) / 24)
```

```
MODEL RESULTS
                                                    Two-Tailed
                    Estimate       S.E.  Est./S.E.    P-Value

Within Level

PREDICTING LOG COUNT OF HOW MUCH SOMEONE PERPS MORE THAN USUAL WHEN
HYPER IS MORE THAN USUAL (MARGINALLY SIGNIFICANT)
PERP       ON
    HYPER              1.350      0.359      3.758      0.000

RESIDUAL VARIANCE (NOTHING PREDICTING HYPER)
Variances
    HYPER              0.132      0.024      5.577      0.000

"STRETCHINESS FACTOR" - NB FITS BETTER THAN POISSON, WHICH IS INDICATED
BY SIG. P-VALUE OR -2ΔLL. IF POISSON FITS OK DISPERSION SHOULD EQUAL 0)
Dispersion
    PERP               2.441      0.679      3.595      0.000

Between Level

INTERCEPT VARIANCE IN HYPER HAS BEEN 'MOVED' TO BHYPER TO TRICK MPLUS
BHYPER   BY
    HYPER              1.000      0.000    999.000    999.000

EXPERIENCING MORE HYPER THAN OTHERS ON AVERAGE ACROSS DAYS DOES NOT
PREDICT LOG COUNT OF HOW MUCH IPV SOMEONE PERPS ON AVERAGE
PERP       ON
    BHYPER             0.519      0.784      0.663      0.508

FIXED INTERCEPT FOR HYPER HAS BEEN 'MOVED' TO BHYPER TO TRICK MPLUS
Means
    BHYPER             0.034      0.056      0.614      0.539
Intercepts
    HYPER              0.000      0.000    999.000    999.000

FIXED INTERCEPT (CONDITIONAL ON HYPER: IS LOG COUNT OF IPV PERPETRATED
BY SOMEONE AVERAGE ON HYPER ACROSS DAYS)
    PERP              -1.622      0.275     -5.891      0.000

RANDOM INTERCEPT VARIANCE (NOTHING PREDICTING HYPER)
Variances
    BHYPER             0.114      0.024      4.665      0.000

RANDOM INTERCEPT LEFT OVER VARIANCE (PERP IS PREDICTED BY HYPER)
Residual Variances
    HYPER              0.000      0.000    999.000    999.000
    PERP               1.869      0.665      2.809      0.005
```

Model 4: Negative Binomial Hurdle

```
TITLE:   Model 4: Negative Binomial Hurdle
         Predicting 0, then Log of Count
DATA:    FILE IS MPlusData.csv;

VARIABLE:    NAMES ARE ID hyper alc perp perpr;
             USEVARIABLES ARE hyper perp;
             MISSING ARE ALL (-99);
             CLUSTER IS ID;
             COUNT IS perp (nbh);
! Now perp is negative binomial hurdle (if 0 and how much)

DEFINE:      CENTER hyper (GRANDMEAN);
ANALYSIS:    ESTIMATOR IS MLR; TYPE = TWOLEVEL RANDOM;

MODEL:
%WITHIN%
hyper*;              ! Level-1 residual variance for hyper only
perp   ON hyper*;    ! Level-1 relationship for log count
perp#1 ON hyper*;    ! Level-1 relationship for is 0?

%BETWEEN%
Bhyper BY hyper@1;   ! Separate hyper using latent variable "Bhyper"
hyper@0 Bhyper*;     ! Level-2 random intercept variance is now Bhyper
[hyper@0 Bhyper*];   ! Fixed intercept is now from Bhyper
 perp*;              ! Level-2 random intercept variance for amount
 perp#1*;            ! Level-2 random intercept variance for if 0
[perp*];             ! Fixed intercept for amount
[perp#1*];           ! Fixed intercept for if 0
perp   ON Bhyper*;   ! Level-2 relationship for amount
perp#1 ON Bhyper*;   ! Level-2 relationship for if 0
```

```
Number of Free Parameters                       12
Loglikelihood
          H0 Value                       -860.832
          H0 Scaling Correction Factor      2.247
            for MLR
Information Criteria
          Akaike (AIC)                   1745.664
          Bayesian (BIC)                 1805.245
          Sample-Size Adjusted BIC       1767.131
            (n* = (n + 2) / 24)
```

```
RANDOM INTERCEPT VARIANCE (NOTHING PREDICTING HYPER)
Variances
    BHYPER             0.115      0.025      4.661      0.000

RANDOM INTERCEPT LEFT OVER VARIANCE (PERP IS PREDICTED BY HYPER)
Residual Variances
    HYPER              0.000      0.000    999.000    999.000
    PERP#1             1.856      0.720      2.579      0.010
    PERP               0.241      0.134      1.801      0.072
```

```
MODEL RESULTS
                                                    Two-Tailed
                   Estimate       S.E.  Est./S.E.    P-Value
Within Level

IF PERSON PERPETRATES, HYPER MORE THAN USUAL DOES NOT PREDICT HOW MUCH
IPV THEY PERP THAT DAY
PERP       ON
    HYPER              0.073      0.174      0.421      0.674
IF HIGHER ON HYPER THAN USUAL, LESS LIKELY TO "NOT HIT" (SO WILL HIT)
LOGIT OF NOT HITTING DECREASES BY -1.5 PER UNIT MORE HYPER THAN USUAL
PERP#1     ON
    HYPER             -1.546      0.436     -3.544      0.000

RESIDUAL VARIANCE (NOTHING PREDICTING HYPER)
Variances
    HYPER              0.132      0.024      5.577      0.000

"STRETCHINESS FACTOR" - NB FITS BETTER THAN POISSON, WHICH IS INDICATED
BY SIG. P-VALUE OR -2ΔLL. IF POISSON FITS OK DISPERSION SHOULD EQUAL 0)
IS WAY REDUCED ONCE THE ZEROS ARE FIT BY THE OTHER PART OF THE MODEL
Dispersion
    PERP               0.264      0.219      1.204      0.229

Between Level

INTERCEPT VARIANCE IN HYPER HAS BEEN 'MOVED' TO BHYPER TO TRICK MPLUS
BHYPER   BY
    HYPER              1.000      0.000    999.000    999.000

AMONG HITTERS, EXPERIENCING MORE HYPER THAN OTHERS ON AVERAGE ACROSS
DAYS DOES NOT PREDICT LOG COUNT OF IPV SOMEONE PERPS ON AVERAGE
PERP       ON
    BHYPER             0.264      0.471      0.561      0.574

EXPERIENCING MORE HYPER THAN OTHERS ON AVERAGE ACROSS DAYS DOES NOT
PREDICT LOGIT OF NOT HITTING
PERP#1     ON
    BHYPER            -0.527      0.854     -0.616      0.538

FIXED INTERCEPT FOR HYPER HAS BEEN 'MOVED' TO BHYPER TO TRICK MPLUS
Means
    BHYPER             0.035      0.056      0.620      0.535

FIXED INTERCEPT (CONDITIONAL ON HYPER: IS LOG COUNT OR LOGIT OF IPV
PERPETRATED BY SOMEONE AVERAGE ON HYPER ACROSS DAYS)
Intercepts
    HYPER              0.000      0.000    999.000    999.000
    PERP#1             2.006      0.274      7.335      0.000
    PERP               0.385      0.169      2.274      0.023
```

Model 5: Two-Part Distribution Model (with log transform for continuous part)

```
TITLE:   Model 5: Two-Part Distributions  (1 vs. something - "if and
                how much", log amount predicted as continuous)
DATA:    FILE IS MPlusData.csv;
DATA TWOPART:    ! Instructs Mplus to cut up each into 0/log of amount
     NAMES ARE      perp;
     BINARY ARE     Bperp;
     CONTINUOUS ARE Cperp;
     CUTPOINT IS 0;
     TRANSFORM IS LOG; !Could also use "NONE" for no transformation
VARIABLE:    NAMES ARE ID hyper alc perp perpr;
             USEVARIABLES ARE hyper Bperp Cperp;
             CATEGORICAL ARE Bperp;
             MISSING ARE ALL (-99);
             CLUSTER IS ID;
DEFINE:      CENTER hyper (GRANDMEAN);
ANALYSIS:    ESTIMATOR IS MLR; TYPE = TWOLEVEL RANDOM;
MODEL:
%WITHIN%
hyper* Cperp*;       ! Level-1 residual variance for both
Cperp ON hyper*;     ! Level-1 relationship for amount
Bperp ON hyper*;     ! Level-1 relationship for is NOT 0?

%BETWEEN%
Bhyper BY hyper@1;   ! Separate hyper using latent variable "Bhyper"
hyper@0 Bhyper*;     ! Level-2 random intercept variance is now Bhyper
[hyper@0 Bhyper*];   ! Fixed intercept is now from Bhyper
 Cperp*;             ! Level-2 random intercept variance for amount
 Bperp*;             ! Level-2 random intercept variance for if NOT 0
[Cperp*];            ! Fixed intercept for amount
[Bperp$1*];          ! Fixed threshold for if NOT 0
Cperp ON Bhyper*;    ! Level-2 relationship for amount
Bperp ON Bhyper*;    ! Level-2 relationship for if NOT 0
```

```
Number of Free Parameters                       12
Loglikelihood
          H0 Value                       -794.694
          H0 Scaling Correction Factor      2.246
            for MLR
Information Criteria
          Akaike (AIC)                   1613.388
          Bayesian (BIC)                 1672.969
          Sample-Size Adjusted BIC       1634.855
            (n* = (n + 2) / 24)
```

```
RANDOM INTERCEPT VARIANCE (NOTHING PREDICTING HYPER)
Variances
    BHYPER             0.114      0.025      4.652      0.000
RANDOM INTERCEPT LEFT OVER VARIANCE (PERP IS PREDICTED BY HYPER)
Residual Variances
    BPERP              1.860      0.720      2.583      0.010
    HYPER              0.000      0.000    999.000    999.000
    CPERP              0.099      0.047      2.108      0.035
```

```
MODEL RESULTS
                                                    Two-Tailed
                    Estimate       S.E.  Est./S.E.    P-Value
Within Level
IF PERSON PERPETRATES, HYPER MORE THAN USUAL DOES NOT PREDICT LOG
AMOUNT OF HOW MUCH IPV THEY PERP THAT DAY
CPERP      ON
    HYPER              0.124      0.097      1.281      0.200

IF HIGHER ON HYPER THAN USUAL, MORE LIKELY TO HIT (OPPOSITE OF NBH)
LOGIT OF HITTING INCREASES BY 1.5 PER UNIT MORE HYPER THAN USUAL
BPERP      ON
    HYPER              1.552      0.436      3.557      0.000

RESIDUAL VARIANCE (NOTHING PREDICTING HYPER)
Variances
    HYPER              0.132      0.024      5.577      0.000

RESIDUAL LEFT OVER VARIANCE (PERP IS PREDICTED BY HYPER)
Residual Variances
    CPERP              0.274      0.040      6.797      0.000

Between Level

INTERCEPT VARIANCE IN HYPER HAS BEEN 'MOVED' TO BHYPER TO TRICK MPLUS
BHYPER   BY
    HYPER              1.000      0.000    999.000    999.000

AMONG HITTERS, EXPERIENCING MORE HYPER THAN OTHERS ON AVERAGE ACROSS
DAYS DOES NOT PREDICT LOG AMOUNT OF IPV SOMEONE PERPS ON AVERAGE
CPERP      ON
    BHYPER             0.065      0.263      0.249      0.804

EXPERIENCING MORE HYPER THAN OTHERS ON AVERAGE ACROSS DAYS DOES NOT
PREDICT LOGIT OF HITTING
BPERP      ON
    BHYPER             0.493      0.859      0.574      0.566

FIXED INTERCEPT FOR HYPER HAS BEEN 'MOVED' TO BHYPER TO TRICK MPLUS
Means
    BHYPER             0.034      0.056      0.609      0.543

FIXED INTERCEPT (CONDITIONAL ON HYPER: IS LOG AMOUNT OF IPV PERPETRATED
BY SOMEONE AVERAGE ON HYPER ACROSS DAYS)
Intercepts
    HYPER              0.000      0.000    999.000    999.000
    CPERP              0.608      0.075      8.077      0.000
FIXED INTERCEPT (CONDITIONAL ON HYPER: IS LOGIT OF NOT HITTING FOR
SOMEONE AVERAGE ON HYPER ACROSS DAYS)
Thresholds
    BPERP$1            2.006      0.274      7.331      0.000
```

So which model should we choose to interpret?

Unfortunately, absolute model fit statistics are not given for the non-normal models, and relative fit statistics (AIC and BIC) are not comparable across the normal, Poisson/NB/NBH, and two-part families. What we can do is examine the predicted item responses for each alternative model and see what seems reasonable. Here is the plot (made in excel) for showing the predicted amount of IPV for ±2SD of within-person hyperarousal.

The WP effect of hyperarousal predicting amount of IPV is significant according to the normal, Poisson, and Negative Binomial models. As we can see, the normal model predicts a significant linear relationship, which will eventually extend below 0, whereas those relationships predicted by the Poisson and Negative Binomial models "shut off" as the predicted count approaches 0 (because of the log link transformation—that is its purpose).

In contrast, both "if and how much" type models—the Negative Binomial Hurdle and the Two-Part Log—have expected counts that do not approach 0, because that zero-inflated aspect of the data is modeled as a separate outcome instead. So after dividing the outcome into"0 vs. something", these two models suggest there is no WP relationship for "something". In contrast, there is a significant WP relationship for the "if" part (not shown in figure).