```
Call:
glm(formula = hasobject ~ Classifier, family = binomial, data = cleandata)

Coefficients:
             Estimate Std. Error z value Pr(>|z|)
(Intercept)   0.72711    0.07344   9.900  < 2e-16 ***
Classifierd  -0.63180    0.44306  -1.426    0.154
Classifierl  -1.40607    0.16316  -8.618  < 2e-16 ***
Classifiert   0.62595    0.12278   5.098 3.43e-07 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 2154.7  on 1708  degrees of freedom
Residual deviance: 2006.9  on 1705  degrees of freedom
AIC: 2014.9

Number of Fisher Scoring iterations: 4
```

(Model 1)

```
Generalized linear mixed model fit by maximum likelihood (Laplace Approximation) [glmerMod]
 Family: binomial  ( logit )
Formula: hasobject ~ (1 | purestem)
   Data: cleandata

     AIC       BIC    logLik -2*log(L)  df.resid
  1882.6    1893.5    -939.3    1878.6      1707

Scaled residuals:
    Min      1Q  Median      3Q     Max
-3.8026 -0.6277  0.3352  0.5802  2.1124

Random effects:
 Groups    Name        Variance Std.Dev.
 purestem (Intercept) 1.67      1.292
Number of obs: 1709, groups:  purestem, 395

Fixed effects:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)   0.6681     0.1040   6.426 1.31e-10 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

(Model 2)

```
Generalized linear mixed model fit by maximum likelihood (Laplace Approximation) [glmerMod]
 Family: binomial  ( logit )
Formula: hasobject ~ Classifier + (1 | purestem)
   Data: cleandata

     AIC       BIC    logLik -2*log(L)  df.resid
  1762.9    1790.1    -876.5    1752.9      1704

Scaled residuals:
    Min     1Q  Median     3Q     Max
-6.1354 -0.5524  0.3054  0.5034  4.0287

Random effects:
 Groups    Name         Variance Std.Dev.
 purestem (Intercept) 1.73      1.315
Number of obs: 1709, groups:  purestem, 395

Fixed effects:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)   0.3938     0.1361   2.894   0.0038 **
Classifierd  -1.0820     0.5863  -1.846   0.0649 .
Classifierl  -1.1175     0.2438  -4.584 4.56e-06 ***
Classifierł   1.3102     0.1931   6.785 1.16e-11 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Correlation of Fixed Effects:
            (Intr) Clssfrd Clssfrl
Classifierd -0.138
Classifierl -0.434  0.066
Classifierł -0.547  0.084   0.368
```

(Model 3)

```
> table(cleandata$Classifier, cleandata$hasobject)

      FALSE  TRUE
  ø     275   569
  d      10    11
  l     140    71
  ł     130   503
> table(lesscleandata$Classifier, lesscleandata$hasobject)

      FALSE  TRUE
  ø     291   611
  d     153   119
  l     144    76
  ł     158   595
  ø;d     0     2
>
```

(classifiers vs transitivity)

```
          One Sample t-test

data:  diff12
t = 4.2257, df = 4, p-value = 0.01342
alternative hypothesis: true mean is not equal to 0
95 percent confidence interval:
 0.006951542 0.033587070
sample estimates:
 mean of x
0.02026931
```

Model 1 vs 2

```
> t.test(diff13)

          One Sample t-test

data:  diff13
t = 7.9222, df = 4, p-value = 0.001374
alternative hypothesis: true mean is not equal to 0
95 percent confidence interval:
 0.02374936 0.04937783
sample estimates:
 mean of x
0.03656359
```

1 vs 3

```
> t.test(diff23)

          One Sample t-test

data:  diff23
t = 7.791, df = 4, p-value = 0.001464
alternative hypothesis: true mean is not equal to 0
95 percent confidence interval:
 0.01048757 0.02210101
sample estimates:
 mean of x
0.01629429
```

2 vs 3

```
> confint(model1)

 Waiting for profiling to be done...

                 2.5 %        97.5 %
(Intercept)   0.5843048   0.8723248
Classifierd  -1.5071255   0.2550212
Classifierl  -1.7300393  -1.0897110
Classifiert   0.3870837   0.8686517
> confint(model2)

 Computing profile confidence intervals ...

                2.5 %      97.5 %
.sig01       1.0828541   1.547228
(Intercept)  0.4653256   0.880956
> confint(model3)

 Computing profile confidence intervals ...

                 2.5 %        97.5 %
.sig01       1.0923576   1.58118653
(Intercept)   0.1239811   0.65974224
Classifierd  -2.2323400   0.08210252
Classifierl  -1.5972541  -0.63937822
Classifiert   0.9396299   1.69804019

`
```
CIs (Models 1-3)

```
> testCategorical(simres3, catPred = cleandata$Classifier)
$uniformity
$uniformity$details
catPred: ø

        Asymptotic one-sample Kolmogorov-Smirnov test

data:  dd[x, ]
D = 0.10643, p-value = 9.942e-09
alternative hypothesis: two-sided


------------------------------------------------------------------
catPred: d

        Exact one-sample Kolmogorov-Smirnov test

data:  dd[x, ]
D = 0.2244, p-value = 0.207
alternative hypothesis: two-sided


------------------------------------------------------------------
catPred: l

        Asymptotic one-sample Kolmogorov-Smirnov test

data:  dd[x, ]
D = 0.048151, p-value = 0.7122
alternative hypothesis: two-sided


------------------------------------------------------------------
catPred: ł

        Asymptotic one-sample Kolmogorov-Smirnov test

data:  dd[x, ]
D = 0.040578, p-value = 0.2483
alternative hypothesis: two-sided
```

```
$uniformity$p.value
[1] 9.941628e-09 2.069953e-01 7.121698e-01 2.482520e-01

$uniformity$p.value.cor
[1] 3.976651e-08 6.209859e-01 7.121698e-01 6.209859e-01


$homogeneity
Levene's Test for Homogeneity of Variance (center = median)
        Df F value Pr(>F)
group    3   1.377  0.248
      1705

> testDispersion(simres3)

        DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated

data:  simulationOutput
dispersion = 0.94646, p-value = 0.142
alternative hypothesis: two.sided

> title(sub = "= 0.142")
> testZeroInflation(simres3)

        DHARMa zero-inflation test via comparison to expected zeros with simulation under
        H0 = fitted model

data:  simulationOutput
ratioObsSim = 0.86473, p-value = 0.036
alternative hypothesis: two.sided

> title(sub = "= 0.036")
> testOutliers(simres3)

        DHARMa outlier test based on exact binomial test with approximate expectations
```

DHARMa Outputs (Model 3 + data for just null classifier)