

Analysis Revision - Sensitivity

Helia Hosseinpour, Laura E. Matzen, Kristin M. Divis, Spencer C. Castro, and Lace Padilla

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Experiment 1

Theme used for every small multiple created

Identify

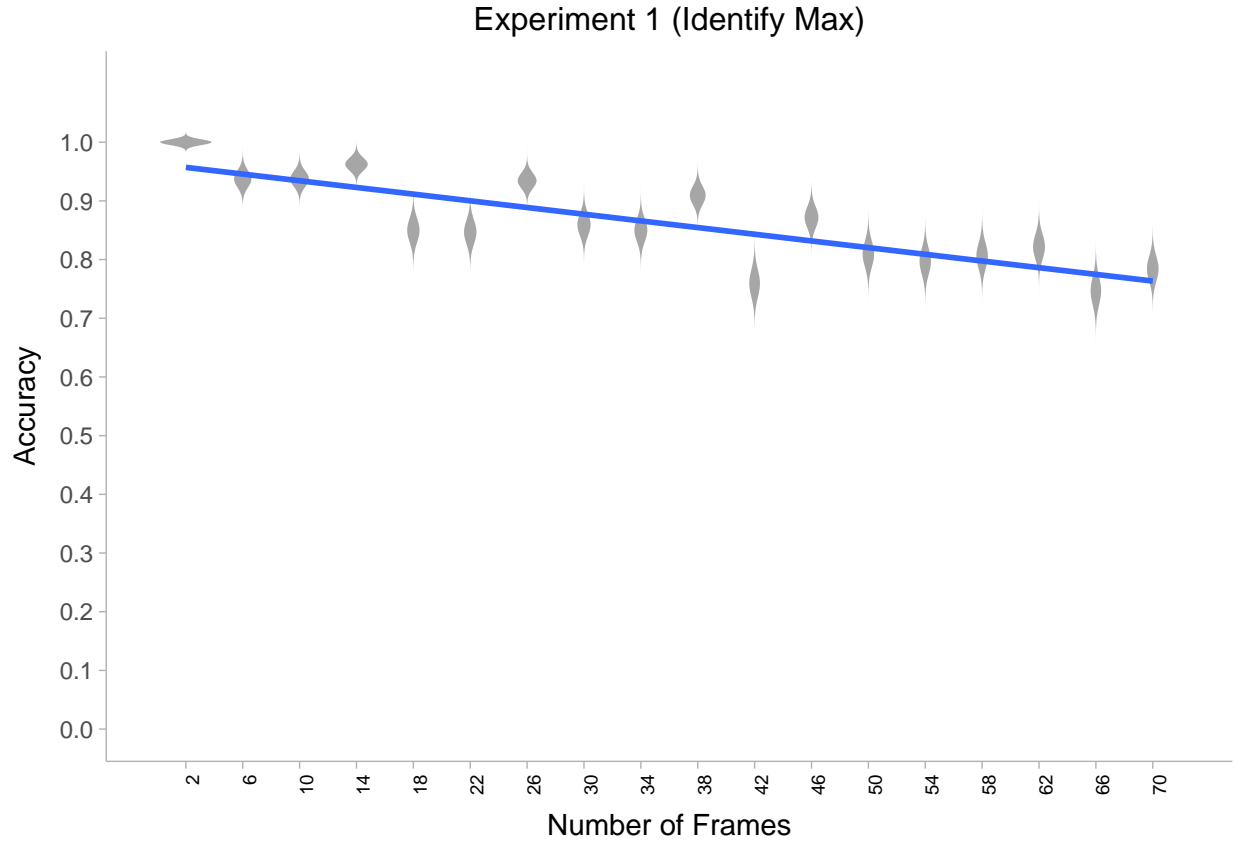
Identify 1 Accuracy Analysis

Four participants were removed due to writing a four-letter word that started with g other than “grid” in the attention check.

```

## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: dfaccID1
##
##      AIC      BIC   logLik deviance df.resid
##  4160.6   4187.3  -2076.3   4152.6     5756
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -9.4772   0.1825   0.2912   0.4234   1.5387
##
## Random effects:
## Groups      Name             Variance Std.Dev.
## Trial        (Intercept)  0.1323     0.3637
## ResponseId  (Intercept)  0.6315     0.7947
## Number of obs: 5760, groups: Trial, 20; ResponseId, 16
##
## Fixed effects:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)    3.129925   0.237533   13.18   <2e-16 ***
## Frame_Quantity -0.026880   0.002042  -13.16   <2e-16 ***
## ———
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr)
## Frame_Qntty -0.379

```

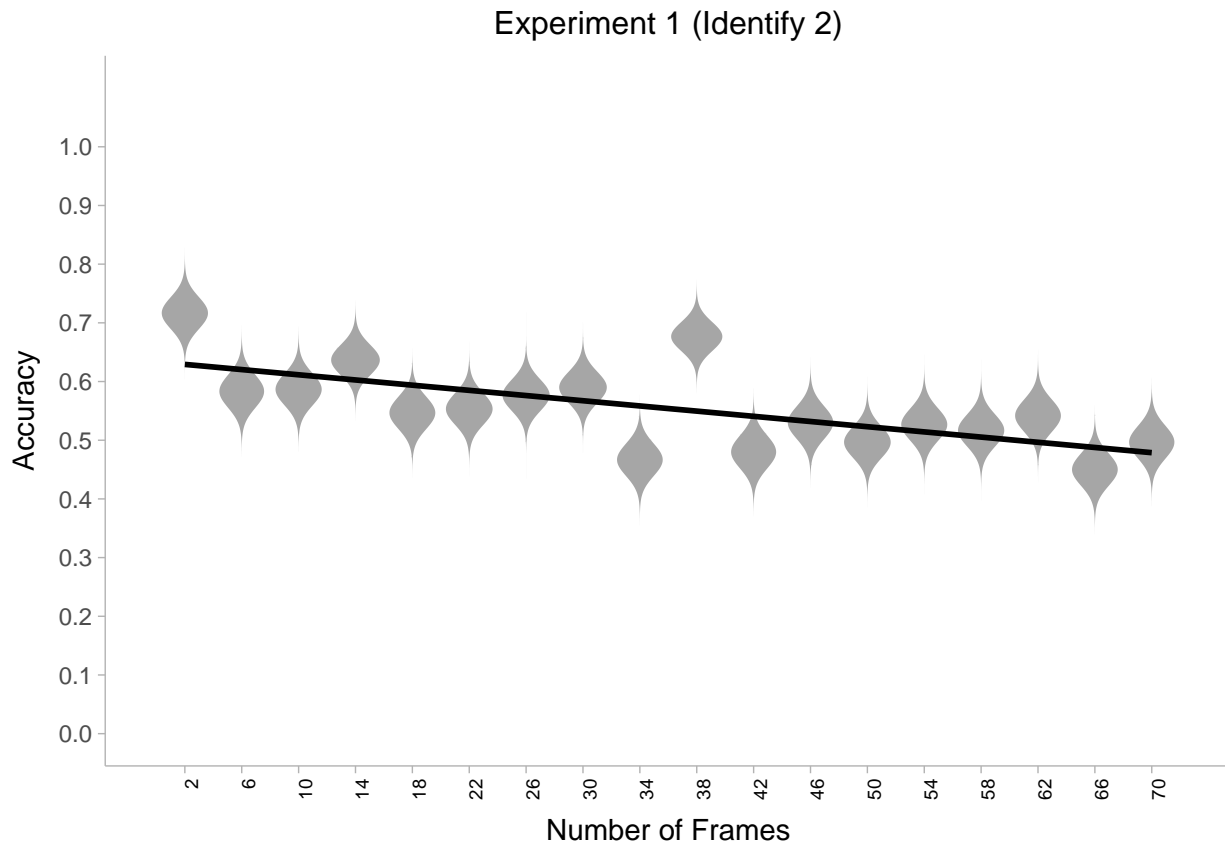


Identify 2 Accuracy Analysis

Five participants were removed due to writing a four-letter word that started with g other than “grid” in the attention check.

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: dfaccID2
##
##      AIC      BIC   logLik deviance df.resid
## 6630.0   6656.4  -3311.0   6622.0     5395
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.3822 -1.0058  0.5399  0.7864  5.0914
##
## Random effects:
##  Groups      Name              Variance Std.Dev.
##  Trial        (Intercept)  0.0808     0.2843
##  ResponseId  (Intercept)  0.9233     0.9609
## Number of obs: 5399, groups:  Trial, 20; ResponseId, 15
##
## Fixed effects:
##              Estimate Std. Error z value Pr(>|z|)
```

```
## (Intercept)      0.550548    0.263355    2.091    0.0366 *
## Frame_Quantity  -0.010513    0.001439   -7.304    2.8e-13 ***
## —————
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr)
## Frame_Qntty  -0.199
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## Model is nearly unidentifiable: very large eigenvalue
## — Rescale variables?
```



Identify 2 Secondary Analysis (MeanRange vs Range vs Mean) Identify 2 Mean Accuracy

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: dfacc
##
##      AIC      BIC   logLik deviance df.resid
## 6619.0   6645.3  -3305.5   6611.0     5395
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
```

```

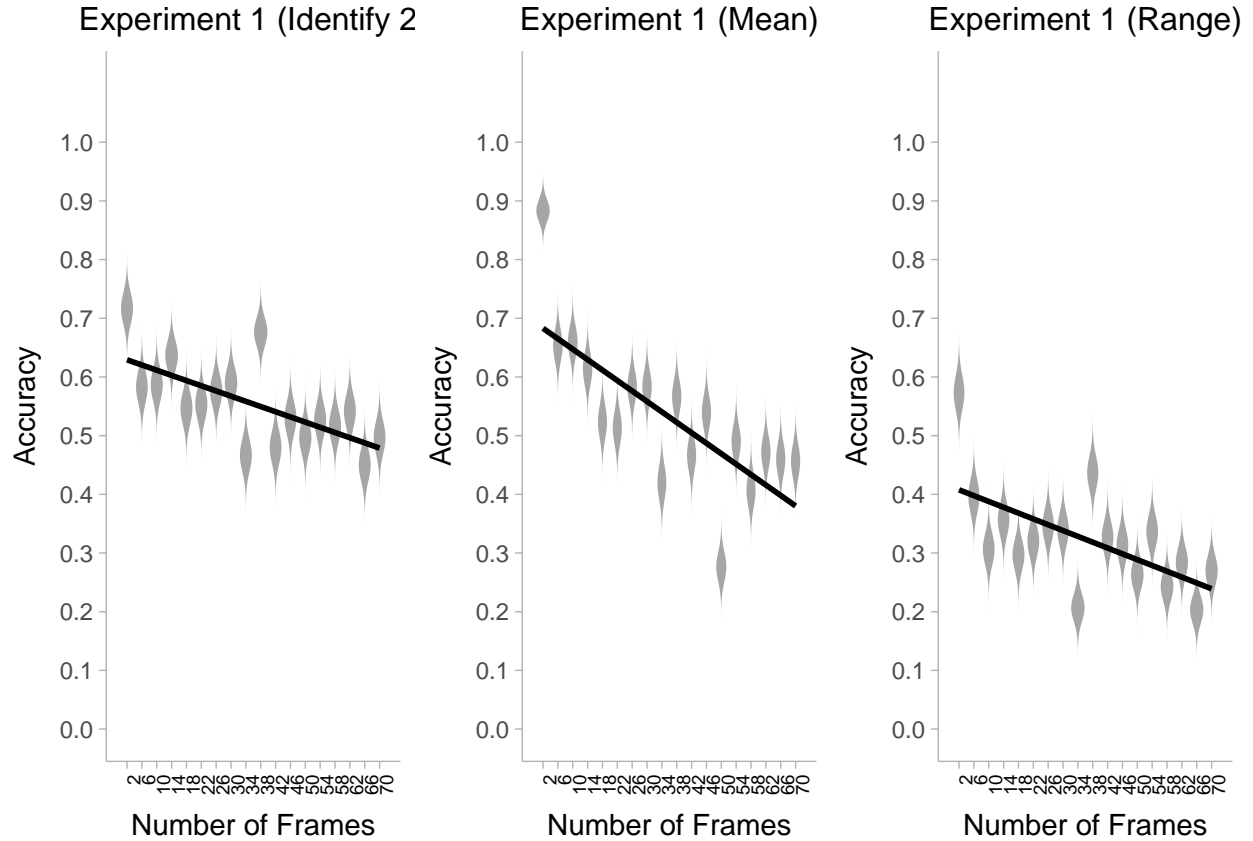
## -2.7524 -0.8993 0.4562 0.7922 5.0275
##
## Random effects:
## Groups Name Variance Std.Dev.
## Trial (Intercept) 0.1399 0.3740
## ResponseId (Intercept) 0.6865 0.8285
## Number of obs: 5399, groups: Trial, 20; ResponseId, 15
##
## Fixed effects:
## Estimate Std. Error z value Pr(>|z|)
## (Intercept) 0.865537 0.237863 3.639 0.000274 ***
## Frame_Quantity -0.021067 0.001468 -14.353 < 2e-16 ***
## —
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
## (Intr)
## Frame_Qntty -0.225

Identify 2 Range Accuracy

## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: dfacc
##
## AIC BIC logLik deviance df.resid
## 6238.9 6265.3 -3115.4 6230.9 5395
##
## Scaled residuals:
## Min 1Q Median 3Q Max
## -1.5246 -0.7029 -0.4813 0.9689 5.0244
##
## Random effects:
## Groups Name Variance Std.Dev.
## Trial (Intercept) 0.2965 0.5445
## ResponseId (Intercept) 0.5359 0.7320
## Number of obs: 5399, groups: Trial, 20; ResponseId, 15
##
## Fixed effects:
## Estimate Std. Error z value Pr(>|z|)
## (Intercept) -0.432770 0.233129 -1.856 0.0634 .
## Frame_Quantity -0.012743 0.001502 -8.485 <2e-16 ***
## —
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
## (Intr)
## Frame_Qntty -0.219

Plots side-by-side

```

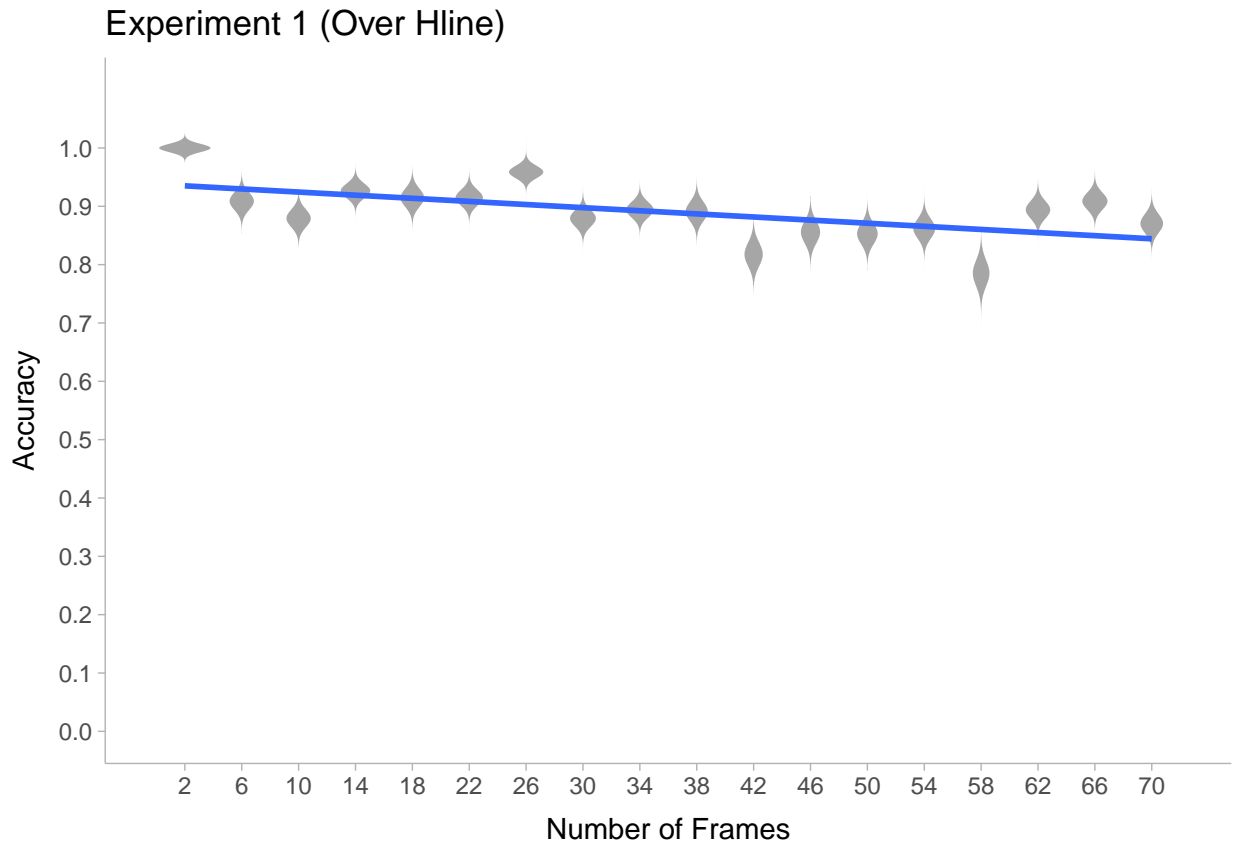


Identify 3 Accuracy Analysis

Three participants were removed due to writing a four-letter word that started with g other than “grid” in the attention check.

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: dfaccID3
##
##      AIC      BIC   logLik deviance df.resid
## 3482.1  3508.9  -1737.0  3474.1     6116
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -7.8902  0.1610  0.2236  0.3211  1.9274
##
## Random effects:
## Groups      Name                Variance Std.Dev.
## Trial        (Intercept)  0.1512    0.3889
## ResponseId  (Intercept)  1.0754    1.0370
## Number of obs: 6120, groups:  Trial, 20; ResponseId, 17
##
## Fixed effects:
##              Estimate Std. Error z value Pr(>|z|)
```

```
## (Intercept)      3.196882    0.287468   11.121   < 2e-16 ***
## Frame_Quantity  -0.016888    0.002219   -7.611   2.71e-14 ***
## ———
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr)
## Frame_Qntty  -0.322
```



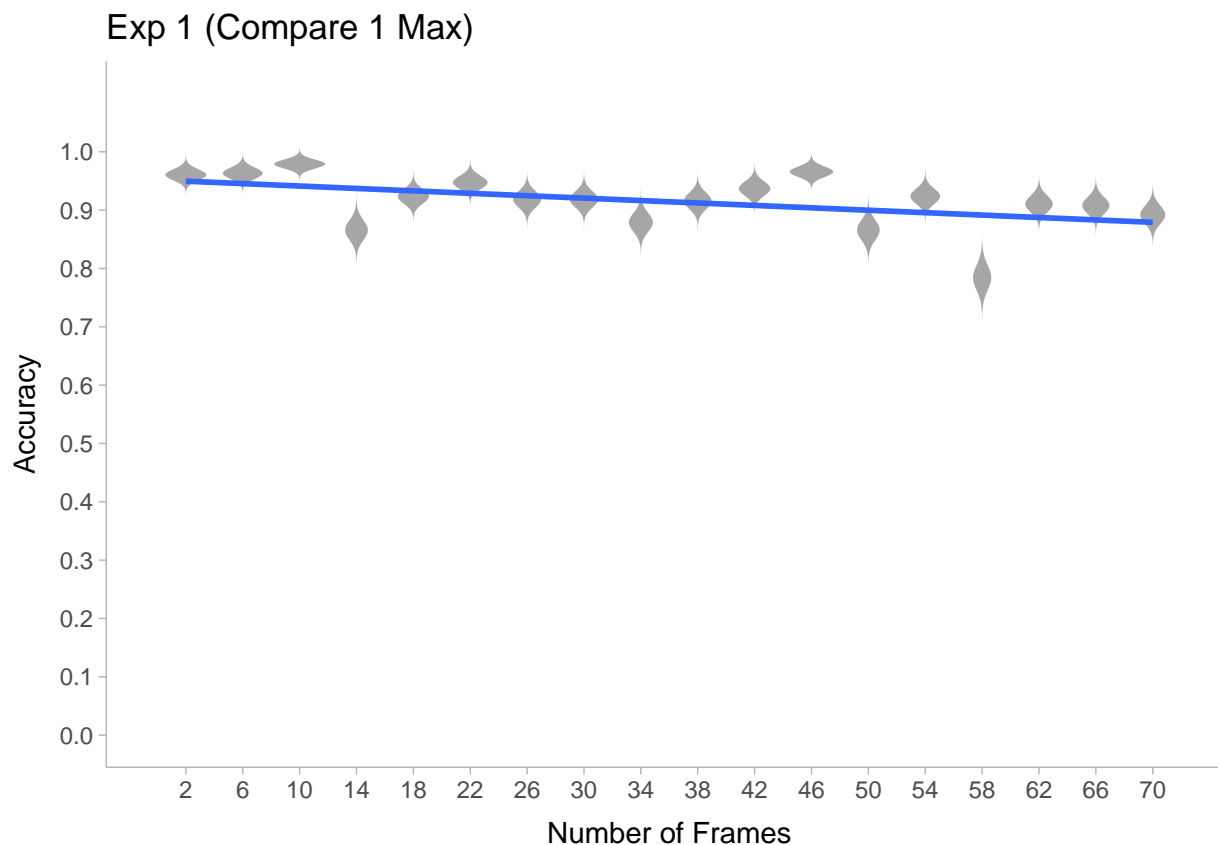
Compare

Compare 1 Accuracy Analysis

One participant was removed due to writing a four-letter word that started with g other than “grid” in the attention check.

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: dfaccC1
##
##      AIC      BIC   logLik deviance df.resid
##  3583.8   3611.1  -1787.9   3575.8     6836
##
```

```
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -7.4763  0.1667  0.2251  0.3067  1.3477
##
## Random effects:
##   Groups      Name      Variance Std.Dev.
##   Trial        (Intercept) 0.2725   0.5220
##   ResponseId (Intercept) 0.5647   0.7515
## Number of obs: 6840, groups:  Trial, 20; ResponseId, 19
##
## Fixed effects:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)    3.276987   0.234050  14.001  < 2e-16 ***
## Frame_Quantity -0.014762   0.002212  -6.673  2.5e-11 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr)
## Frame_Qntty -0.390
```



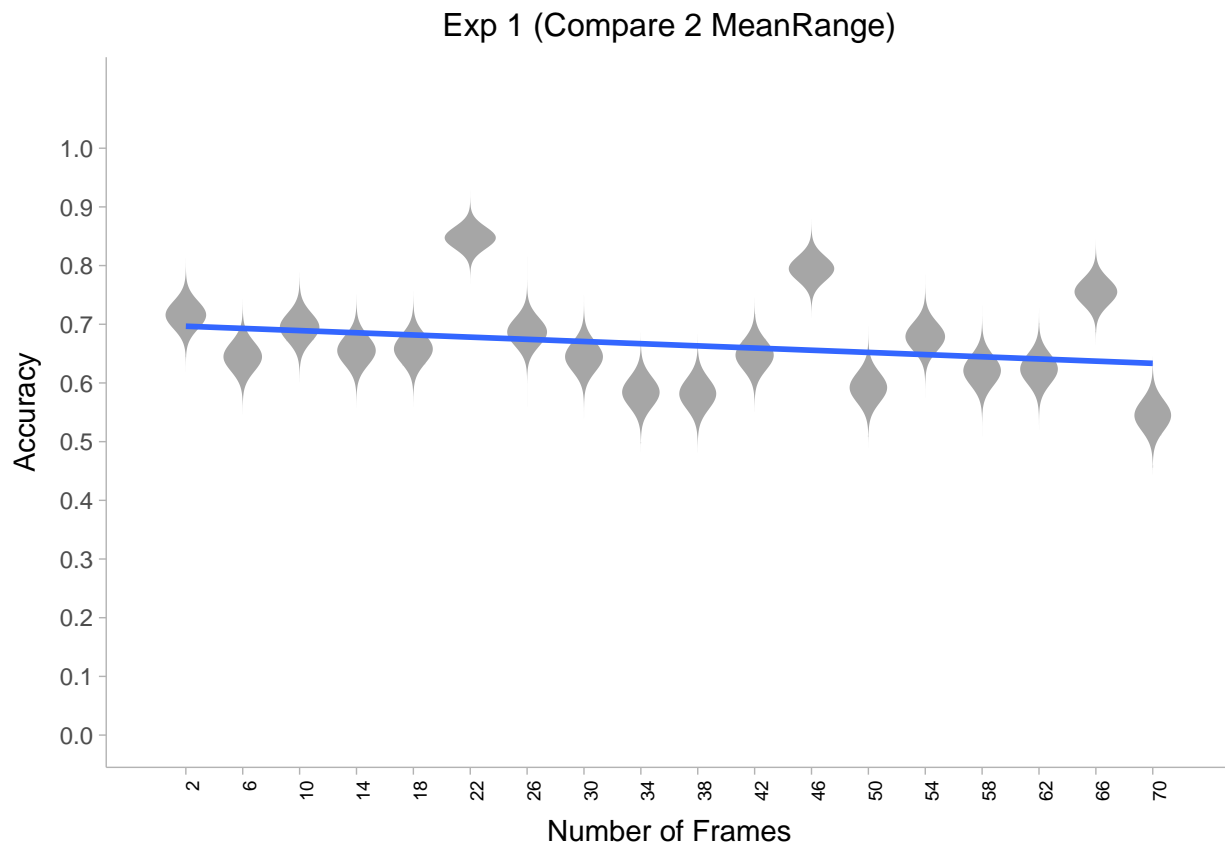
Compare 2 Accuracy Analysis

One participant was removed due to writing a four-letter word that started with g other than “grid” in the attention check.


```

## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: dfaccC2
##
##      AIC      BIC    logLik deviance df.resid
##  8571.7   8599.0   -4281.8   8563.7     6836
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.3966 -1.2021  0.6029  0.7267  1.2127
##
## Random effects:
## Groups      Name             Variance Std.Dev.
## Trial        (Intercept)  0.10664   0.3266
## ResponseId  (Intercept)  0.04894   0.2212
## Number of obs: 6840, groups: Trial, 20; ResponseId, 19
##
## Fixed effects:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)    0.867200   0.103509   8.378 < 2e-16 ***
## Frame_Quantity -0.004315   0.001256  -3.435 0.000593 ***
## ———
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr)
## Frame_Qntty -0.444
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## Model is nearly unidentifiable: very large eigenvalue
## — Rescale variables?

```



Compare 2 Secondary Analysis (MeanRange vs Range vs Mean) Compare 2 Mean Accuracy

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: dfacc
##
##      AIC      BIC   logLik deviance df.resid
## 5337.3   5364.7  -2664.7   5329.3     6836
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -5.1623   0.2812   0.3464   0.4137   1.5779
##
## Random effects:
##  Groups      Name              Variance Std.Dev.
##  Trial        (Intercept)  0.1477     0.3843
##  ResponseId  (Intercept)  0.2520     0.5020
## Number of obs: 6840, groups:  Trial, 20; ResponseId, 19
##
## Fixed effects:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)    2.281993   0.163215  13.982  < 2e-16 ***
## Frame_Quantity -0.010111   0.001726  -5.859  4.66e-09 ***
## —————
```

```

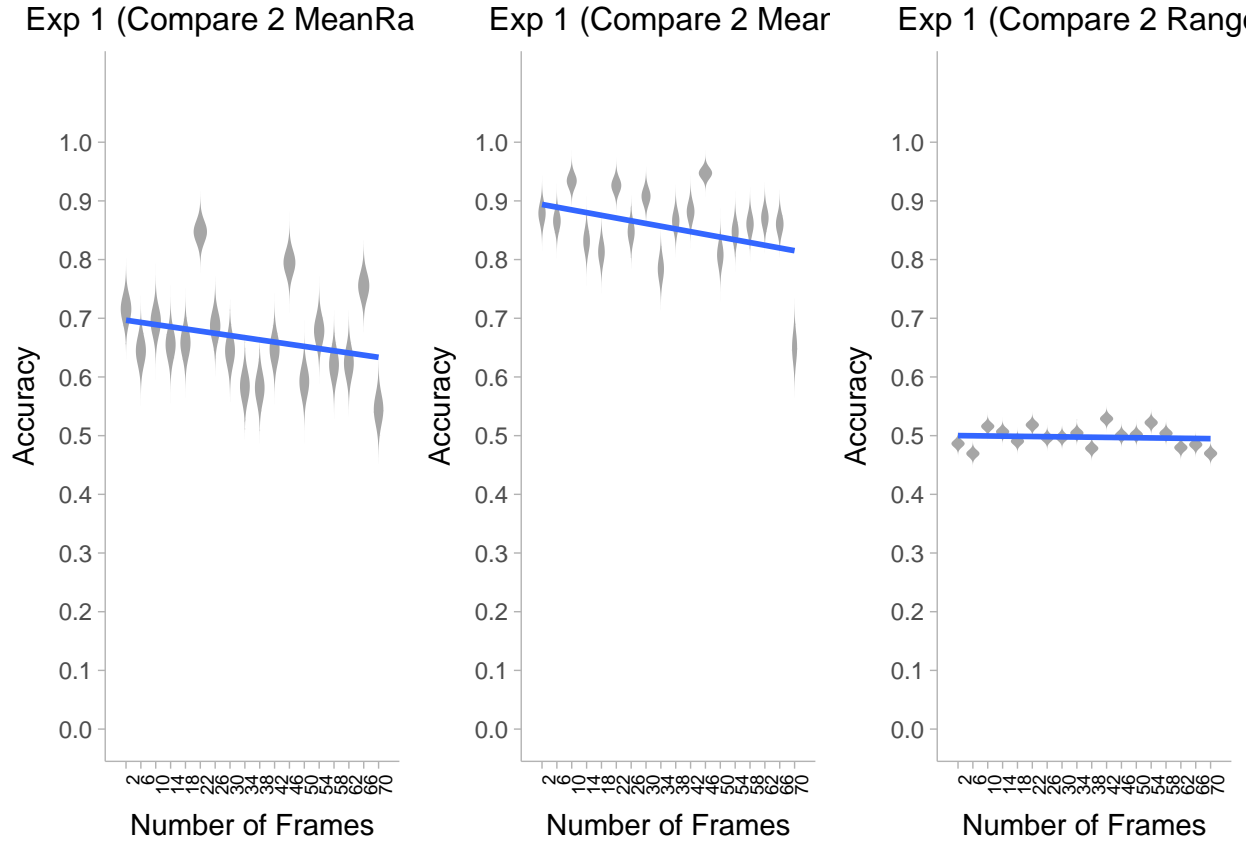
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr)
## Frame_Qntty -0.413

Compare 2 Range Accuracy

## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: dfacc
##
##      AIC      BIC    logLik deviance df.resid
## 179328.0 179367.1 -89660.0 179320.0   129596
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.1752 -0.9982 -0.8981  1.0005  1.1142
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## Trial      (Intercept) 0.01244  0.1115
## ResponseId (Intercept) 0.00000  0.0000
## Number of obs: 129600, groups:  Trial, 20; ResponseId, 20
##
## Fixed effects:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)    0.0009688  0.0272774   0.036   0.972
## Frame_Quantity -0.0003051  0.0002681  -1.138   0.255
##
## Correlation of Fixed Effects:
##      (Intr)
## Frame_Qntty -0.353
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## boundary (singular) fit: see help('isSingular')

```

Plots side-by-side



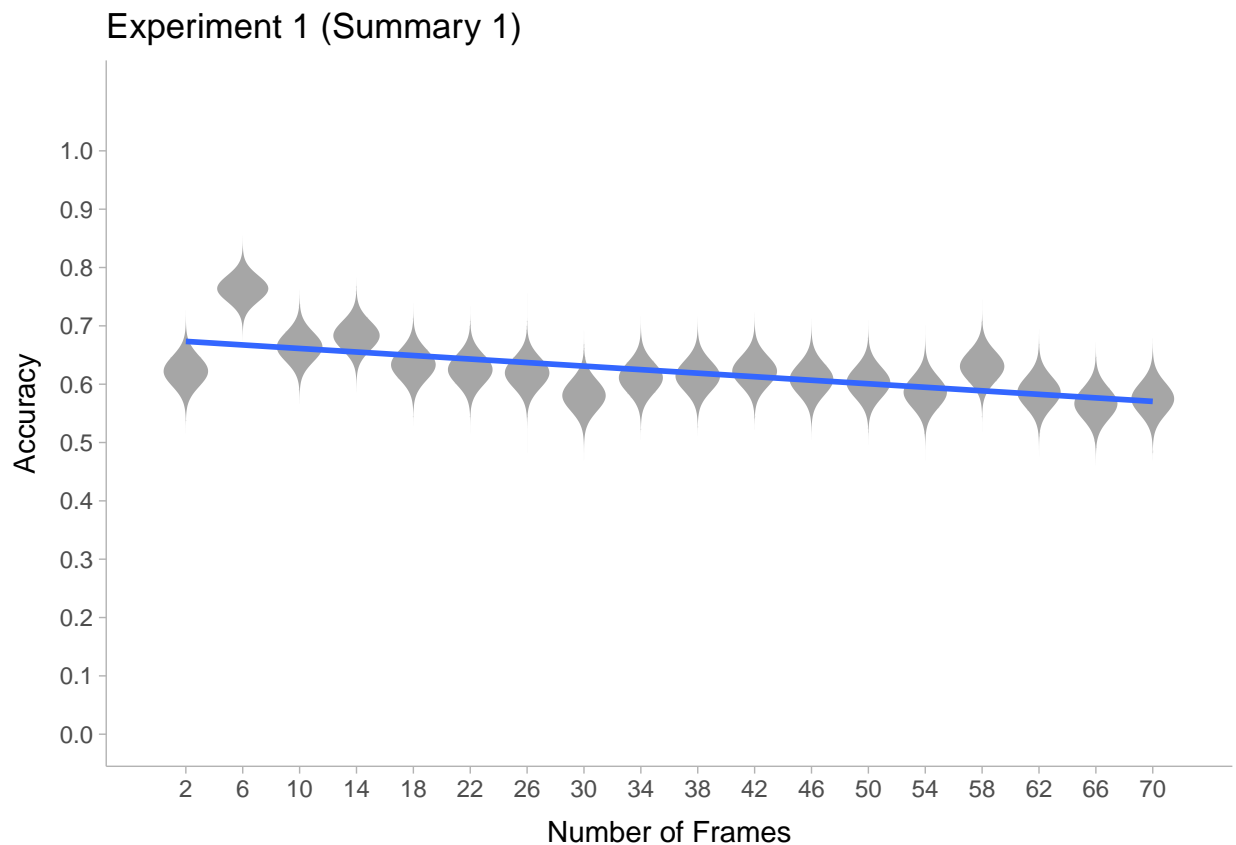
Summarize

Summarize 1 Accuracy Analysis

Three participants were removed due to writing a four-letter word that started with g other than “grid” in the attention check.

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: dfaccS1
##
##      AIC      BIC    logLik deviance df.resid
##  8459.5   8486.6  -4225.7   8451.5     6476
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.1942 -1.1600  0.6511  0.7793  1.4367
##
## Random effects:
##  Groups      Name      Variance Std.Dev.
##  Trial      (Intercept)  0.05159   0.2271
##  ResponseId (Intercept) 0.07381   0.2717
## Number of obs: 6480, groups: Trial, 20; ResponseId, 18
```

```
##
## Fixed effects:
##               Estimate Std. Error z value Pr(>|z|)
## (Intercept)    0.752441   0.097418   7.724 1.13e-14 ***
## Frame_Quantity -0.006633   0.001257  -5.277 1.31e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##               (Intr)
## Frame_Qntty  -0.473
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## Model is nearly unidentifiable: very large eigenvalue
## - Rescale variables?
```



Summarize 2 Error Analysis

Seven participants were removed due to either writing a four-letter word that started with g other than “grid” in the attention check or responding with values outside of the maximum power value possible.

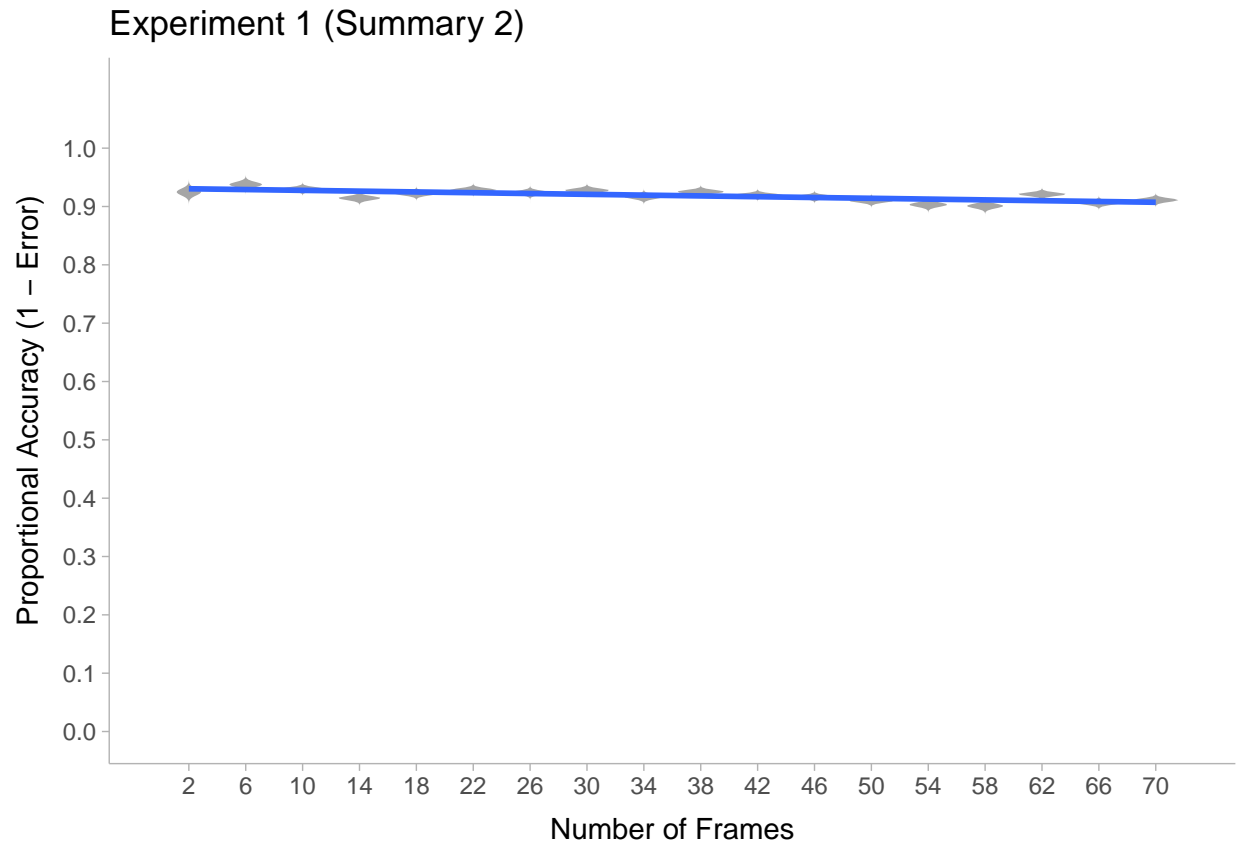
```
## [1] 0.9188053
```

```
## [1] 0.09137975
```

```

## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
## Formula: acc ~ Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: dfaccS2
##
## REML criterion at convergence: -14337.9
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -8.4951 -0.4819  0.1488  0.6148  5.4635
##
## Random effects:
## Groups      Name                Variance Std.Dev.
## Trial        (Intercept)  5.450e-06 0.002335
## ResponseId  (Intercept)  5.356e-03 0.073186
## Residual                    3.318e-03 0.057601
## Number of obs: 5036, groups: Trial, 20; ResponseId, 14
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)   9.311e-01  1.963e-02  1.315e+01  47.423  4.3e-16 ***
## Frame_Quantity -3.413e-04  3.913e-05  5.002e+03  -8.724  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr)
## Frame_Qntty -0.072

```



Experiment 1 - 6 Combined Tasks of Accuracy

Combine all of the main accuracy datasets

Changing the referent

Identify 1

(Spencer can you update the FullModels.RData with these interation models?)

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ task * Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: df_fullId1
##
##      AIC      BIC   logLik deviance df.resid
## 35130.2 35249.7 -17551.1  35102.2    37425
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -7.7335   0.1289   0.2834   0.6428   4.9140
##
## Random effects:
```

```

## Groups      Name      Variance Std.Dev.
## ResponseId (Intercept) 0.49877  0.7062
## Trial        (Intercept) 0.03891  0.1972
## Number of obs: 37439, groups:  ResponseId, 104; Trial, 20
##
## Fixed effects:
##
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)      3.077590   0.207607  14.824 < 2e-16 ***
## taskID2          -2.528514   0.279509  -9.046 < 2e-16 ***
## taskID3           0.038624   0.285799   0.135 0.892499
## taskC1           0.093835   0.279434   0.336 0.737021
## taskC2          -2.219206   0.264908  -8.377 < 2e-16 ***
## taskS1          -2.324207   0.267715  -8.682 < 2e-16 ***
## Frame_Quantity  -0.026503   0.002028 -13.067 < 2e-16 ***
## taskID2:Frame_Quantity 0.016120   0.002482   6.495 8.28e-11 ***
## taskID3:Frame_Quantity 0.009975   0.002993   3.333 0.000858 ***
## taskC1:Frame_Quantity 0.012073   0.002988   4.040 5.34e-05 ***
## taskC2:Frame_Quantity 0.022228   0.002383   9.329 < 2e-16 ***
## taskS1:Frame_Quantity 0.019859   0.002387   8.321 < 2e-16 ***
## —
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) tskID2 tskID3 taskC1 taskC2 taskS1 Frm_Qn tID2:F tID3:F
## taskID2      -0.709
## taskID3      -0.693  0.515
## taskC1       -0.709  0.527  0.515
## taskC2       -0.748  0.556  0.543  0.556
## taskS1       -0.741  0.550  0.538  0.550  0.580
## Frame_Qntty -0.428  0.318  0.311  0.318  0.335  0.332
## tskID2:Fr_Q  0.349 -0.367 -0.254 -0.260 -0.274 -0.271 -0.817
## tskID3:Fr_Q  0.290 -0.215 -0.445 -0.215 -0.227 -0.225 -0.678  0.554
## tskC1:Frm_Q  0.290 -0.216 -0.211 -0.452 -0.227 -0.225 -0.679  0.555  0.460
## tskC2:Frm_Q  0.364 -0.271 -0.264 -0.270 -0.376 -0.282 -0.851  0.696  0.577
## tskS1:Frm_Q  0.364 -0.270 -0.264 -0.270 -0.285 -0.373 -0.850  0.694  0.576
##      tC1:F_ tC2:F_
## taskID2
## taskID3
## taskC1
## taskC2
## taskS1
## Frame_Qntty
## tskID2:Fr_Q
## tskID3:Fr_Q
## tskC1:Frm_Q
## tskC2:Frm_Q  0.578
## tskS1:Frm_Q  0.577  0.723
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## Model failed to converge with max|grad| = 0.00519987 (tol = 0.002,
## component 1)
## Model is nearly unidentifiable: very large eigenvalue
## — Rescale variables?

```


Identify 2

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ task * Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: df_fullId2
##
##          AIC          BIC    logLik deviance df.resid
## 35130.2   35249.7 -17551.1   35102.2     37425
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -7.7330   0.1289   0.2834   0.6428   4.9141
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## ResponseId (Intercept) 0.49875  0.7062
## Trial        (Intercept) 0.03891  0.1973
## Number of obs: 37439, groups: ResponseId, 104; Trial, 20
##
## Fixed effects:
##
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)      0.549142    0.197527   2.780  0.00543 **
## taskID1          2.528356    0.279683   9.040 < 2e-16 ***
## taskID3          2.567006    0.278690   9.211 < 2e-16 ***
## taskC1           2.622296    0.272230   9.633 < 2e-16 ***
## taskC2           0.309210    0.257162   1.202  0.22921
## taskS1           0.204299    0.260003   0.786  0.43201
## Frame_Quantity   -0.010384    0.001431  -7.257 3.95e-13 ***
## taskID1:Frame_Quantity -0.016115    0.002482  -6.493 8.40e-11 ***
## taskID3:Frame_Quantity -0.006144    0.002625  -2.341  0.01923 *
## taskC1:Frame_Quantity -0.004046    0.002620  -1.544  0.12249
## taskC2:Frame_Quantity  0.006109    0.001900   3.215  0.00130 **
## taskS1:Frame_Quantity  0.003739    0.001905   1.963  0.04968 *
## —
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) tskID1 tskID3 taskC1 taskC2 taskS1 Frm_Qn tID1:F tID3:F
## taskID1      -0.671
## taskID3      -0.674  0.477
## taskC1       -0.690  0.488  0.490
## taskC2       -0.730  0.516  0.518  0.530
## taskS1       -0.722  0.510  0.512  0.524  0.555
## Frame_Qntty -0.265  0.187  0.188  0.192  0.204  0.201
## tskID1:Fr_Q  0.153 -0.367 -0.109 -0.111 -0.118 -0.116 -0.576
## tskID3:Fr_Q  0.145 -0.102 -0.376 -0.105 -0.111 -0.110 -0.545  0.314
## tskC1:Frm_Q  0.145 -0.103 -0.103 -0.382 -0.111 -0.110 -0.546  0.315  0.298
## tskC2:Frm_Q  0.200 -0.141 -0.141 -0.145 -0.270 -0.152 -0.753  0.434  0.410
## tskS1:Frm_Q  0.199 -0.140 -0.141 -0.144 -0.153 -0.268 -0.751  0.433  0.409
##      tC1:F_ tC2:F_
## taskID1
## taskID3
```

```

## taskC1
## taskC2
## taskS1
## Frame_Qntty
## tskID1:Fr_Q
## tskID3:Fr_Q
## tskC1:Frm_Q
## tskC2:Frm_Q 0.411
## tskS1:Frm_Q 0.410 0.565
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## Model failed to converge with max|grad| = 0.00227741 (tol = 0.002,
  component 1)
## Model is nearly unidentifiable: very large eigenvalue
## - Rescale variables?

```

Identify 3

```

## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ task * Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: df_fullId3
##
##      AIC      BIC   logLik deviance df.resid
## 35130.2 35249.7 -17551.1 35102.2    37425
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -7.7335  0.1288  0.2834  0.6428  4.9142
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## ResponseId (Intercept) 0.4989   0.7064
## Trial        (Intercept) 0.0389   0.1972
## Number of obs: 37439, groups: ResponseId, 104; Trial, 20
##
## Fixed effects:
##
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)    3.116434   0.205919  15.134 < 2e-16 ***
## taskID2       -2.567276   0.278241  -9.227 < 2e-16 ***
## taskID1       -0.038723   0.285625  -0.136 0.892158
## taskC1         0.055023   0.278063   0.198 0.843138
## taskC2       -2.258076   0.263488  -8.570 < 2e-16 ***
## taskS1       -2.363218   0.266240  -8.876 < 2e-16 ***
## Frame_Quantity -0.016532   0.002200  -7.515 5.71e-14 ***
## taskID2:Frame_Quantity 0.006150   0.002624   2.344 0.019097 *
## taskID1:Frame_Quantity -0.009967   0.002992  -3.331 0.000865 ***
## taskC1:Frame_Quantity 0.002103   0.003107   0.677 0.498479
## taskC2:Frame_Quantity 0.012259   0.002530   4.845 1.27e-06 ***
## taskS1:Frame_Quantity 0.009889   0.002534   3.902 9.52e-05 ***
## —
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##

```

```

## Correlation of Fixed Effects:
##      (Intr) tskID2 tskID1 taskC1 taskC2 taskS1 Frm_Qn tID2:F tID1:F
## taskID2      -0.706
## taskID1      -0.688  0.509
## taskC1       -0.706  0.522  0.509
## taskC2       -0.745  0.551  0.537  0.551
## taskS1       -0.737  0.545  0.531  0.545  0.576
## Frame_Qntty -0.441  0.327  0.318  0.326  0.345  0.341
## tskID2:Fr_Q  0.370 -0.376 -0.267 -0.274 -0.289 -0.286 -0.838
## tskID1:Fr_Q  0.324 -0.240 -0.445 -0.240 -0.253 -0.251 -0.735  0.616
## tskC1:Frm_Q  0.312 -0.231 -0.225 -0.460 -0.244 -0.241 -0.708  0.593  0.521
## tskC2:Frm_Q  0.384 -0.284 -0.277 -0.284 -0.385 -0.296 -0.869  0.729  0.639
## tskS1:Frm_Q  0.383 -0.283 -0.276 -0.283 -0.299 -0.382 -0.868  0.728  0.638
##      tC1:F_ tC2:F_
## taskID2
## taskID1
## taskC1
## taskC2
## taskS1
## Frame_Qntty
## tskID2:Fr_Q
## tskID1:Fr_Q
## tskC1:Frm_Q
## tskC2:Frm_Q  0.615
## tskS1:Frm_Q  0.615  0.755
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## Model failed to converge with max|grad| = 0.011303 (tol = 0.002, component
## 1)
## Model is nearly unidentifiable: very large eigenvalue
## - Rescale variables?

```

Compare 1

```

## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ task * Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: df_fullComp1
##
##      AIC      BIC   logLik deviance df.resid
## 35130.2 35249.7 -17551.1 35102.2    37425
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -7.7328  0.1289  0.2834  0.6428  4.9141
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## ResponseId (Intercept) 0.49889  0.7063
## Trial        (Intercept) 0.03895  0.1974
## Number of obs: 37439, groups: ResponseId, 104; Trial, 20
##
## Fixed effects:

```

```

##               Estimate Std. Error z value Pr(>|z|)
## (Intercept)      3.171527   0.197410  16.066 < 2e-16 ***
## taskID1          -0.093880   0.279419  -0.336  0.73688
## taskID2          -2.622532   0.271982  -9.642 < 2e-16 ***
## taskID3          -0.055141   0.278317  -0.198  0.84295
## taskC2           -2.313504   0.257096  -8.999 < 2e-16 ***
## taskS1           -2.417792   0.259825  -9.305 < 2e-16 ***
## Frame_Quantity   -0.014433   0.002195  -6.575 4.85e-11 ***
## taskID1:Frame_Quantity -0.012062 0.002988  -4.037 5.42e-05 ***
## taskID2:Frame_Quantity  0.004053 0.002620   1.547  0.12189
## taskID3:Frame_Quantity -0.002094 0.003108  -0.674  0.50044
## taskC2:Frame_Quantity  0.010158 0.002526   4.021 5.79e-05 ***
## taskS1:Frame_Quantity  0.007792 0.002530   3.080  0.00207 **
## —
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) tskID1 tskID2 tskID3 taskC2 taskS1 Frm_Qn tID1:F tID2:F
## taskID1      -0.671
## taskID2      -0.689  0.487
## taskID3      -0.673  0.476  0.488
## taskC2       -0.730  0.515  0.530  0.517
## taskS1       -0.721  0.509  0.524  0.511  0.554
## Frame_Qntty -0.457  0.322  0.331  0.323  0.351  0.347
## tskID1:Fr_Q  0.335 -0.452 -0.243 -0.238 -0.257 -0.254 -0.734
## tskID2:Fr_Q  0.382 -0.270 -0.382 -0.271 -0.294 -0.290 -0.838  0.615
## tskID3:Fr_Q  0.322 -0.228 -0.234 -0.460 -0.247 -0.245 -0.706  0.519  0.592
## tskC2:Frm_Q  0.397 -0.280 -0.288 -0.281 -0.393 -0.301 -0.869  0.638  0.728
## tskS1:Frm_Q  0.396 -0.280 -0.287 -0.281 -0.304 -0.389 -0.868  0.637  0.727
##      tID3:F tC2:F_
## taskID1
## taskID2
## taskID3
## taskC2
## taskS1
## Frame_Qntty
## tskID1:Fr_Q
## tskID2:Fr_Q
## tskID3:Fr_Q
## tskC2:Frm_Q  0.614
## tskS1:Frm_Q  0.613  0.754
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## Model failed to converge with max|grad| = 0.0312314 (tol = 0.002, component
  1)
## Model is nearly unidentifiable: very large eigenvalue
## — Rescale variables?

```

Compare 2

```

## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ task * Frame_Quantity + (1 | Trial) + (1 | ResponseId)

```

```

##      Data: df_fullComp2
##
##      AIC      BIC    logLik deviance df.resid
## 35130.2 35249.7 -17551.1 35102.2    37425
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -7.7330  0.1289  0.2834  0.6428  4.9141
##
## Random effects:
##      Groups      Name      Variance Std.Dev.
## ResponseId (Intercept) 0.49875  0.7062
## Trial      (Intercept) 0.03891  0.1973
## Number of obs: 37439, groups: ResponseId, 104; Trial, 20
##
## Fixed effects:
##
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)      0.858358    0.175409   4.893 9.91e-07 ***
## taskC1           2.313080    0.256275   9.026 < 2e-16 ***
## taskID1          2.219155    0.264012   8.406 < 2e-16 ***
## taskID2         -0.309209    0.256254  -1.207 0.227566
## taskID3          2.257814    0.263090   8.582 < 2e-16 ***
## taskS1          -0.104957    0.243332  -0.431 0.666228
## Frame_Quantity  -0.004274    0.001250  -3.419 0.000628 ***
## taskC1:Frame_Quantity -0.010156    0.002525  -4.022 5.78e-05 ***
## taskID1:Frame_Quantity -0.022224    0.002382  -9.331 < 2e-16 ***
## taskID2:Frame_Quantity -0.006110    0.001900  -3.216 0.001299 **
## taskID3:Frame_Quantity -0.012254    0.002530  -4.843 1.28e-06 ***
## taskS1:Frame_Quantity -0.002370    0.001773  -1.337 0.181310
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) taskC1 tskID1 tskID2 tskID3 taskS1 Frm_Qn tC1:F_ tID1:F
## taskC1      -0.640
## taskID1      -0.621  0.425
## taskID2      -0.641  0.438  0.424
## taskID3      -0.624  0.427  0.414  0.427
## taskS1       -0.674  0.461  0.447  0.461  0.449
## Frame_Qntty -0.259  0.177  0.172  0.177  0.173  0.187
## tskC1:Frm_Q  0.128 -0.392 -0.085 -0.087 -0.085 -0.092 -0.495
## tskID1:Fr_Q  0.135 -0.093 -0.375 -0.092 -0.090 -0.097 -0.525  0.260
## tskID2:Fr_Q  0.170 -0.117 -0.113 -0.270 -0.114 -0.123 -0.658  0.326  0.345
## tskID3:Fr_Q  0.128 -0.088 -0.085 -0.087 -0.385 -0.092 -0.494  0.245  0.259
## tskS1:Frm_Q  0.182 -0.125 -0.121 -0.125 -0.121 -0.266 -0.705  0.349  0.370
##      tID2:F tID3:F
## taskC1
## taskID1
## taskID2
## taskID3
## taskS1
## Frame_Qntty
## tskC1:Frm_Q
## tskID1:Fr_Q

```

```
## tskID2:Fr_Q
## tskID3:Fr_Q 0.325
## tskS1:Frm_Q 0.464 0.348
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## Model is nearly unidentifiable: very large eigenvalue
## - Rescale variables?
```

Summarize 1

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ task * Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: df_fullSumm1
##
##      AIC      BIC   logLik deviance df.resid
## 35130.2 35249.7 -17551.1 35102.2    37425
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -7.7330  0.1289  0.2834  0.6428  4.9141
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## ResponseId (Intercept) 0.49875  0.7062
## Trial        (Intercept) 0.03891  0.1973
## Number of obs: 37439, groups: ResponseId, 104; Trial, 20
##
## Fixed effects:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)    0.753440   0.179829   4.190 2.79e-05 ***
## taskC1         2.417989   0.259372   9.322 < 2e-16 ***
## taskID1        2.324097   0.267094   8.701 < 2e-16 ***
## taskID2       -0.204294   0.259295  -0.788 0.43077
## taskID3        2.362696   0.266202   8.876 < 2e-16 ***
## taskC2         0.104864   0.243640   0.430 0.66690
## Frame_Quantity -0.006644   0.001258  -5.282 1.28e-07 ***
## taskC1:Frame_Quantity -0.007786   0.002529  -3.078 0.00208 **
## taskID1:Frame_Quantity -0.019854   0.002386  -8.321 < 2e-16 ***
## taskID2:Frame_Quantity -0.003740   0.001905  -1.963 0.04961 *
## taskID3:Frame_Quantity -0.009884   0.002534  -3.900 9.62e-05 ***
## taskC2:Frame_Quantity  0.002370   0.001773   1.337 0.18138
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) taskC1 tskID1 tskID2 tskID3 taskC2 Frm_Qn tC1:F_ tID1:F
## taskC1        -0.651
## taskID1       -0.632  0.438
## taskID2       -0.651  0.451  0.437
## taskID3       -0.635  0.440  0.427  0.440
## taskC2       -0.693  0.480  0.466  0.480  0.468
## Frame_Qntty -0.256  0.177  0.172  0.177  0.173  0.188
```

```

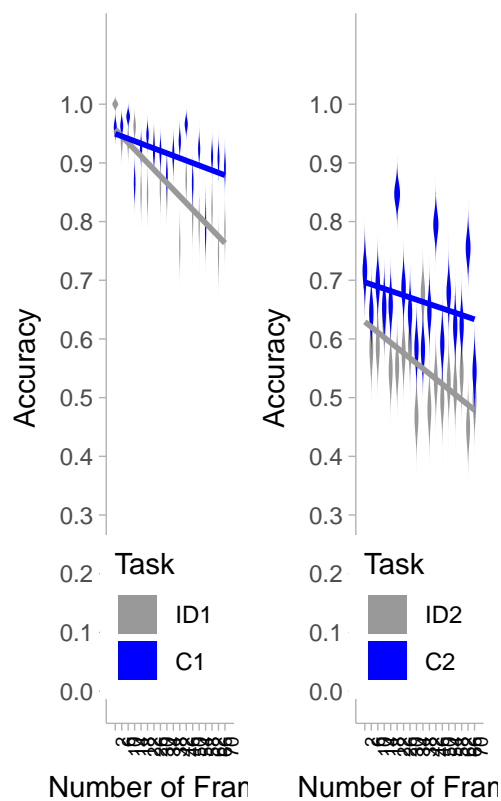
## tskC1:Frm_Q  0.127 -0.389 -0.085 -0.088 -0.086 -0.093 -0.497
## tskID1:Fr_Q  0.134 -0.093 -0.372 -0.093 -0.091 -0.099 -0.527  0.262
## tskID2:Fr_Q  0.169 -0.117 -0.113 -0.268 -0.114 -0.124 -0.660  0.328  0.348
## tskID3:Fr_Q  0.127 -0.088 -0.085 -0.088 -0.382 -0.093 -0.496  0.247  0.262
## tskC2:Frm_Q  0.181 -0.125 -0.122 -0.125 -0.122 -0.266 -0.709  0.353  0.374
##          tID2:F tID3:F
## taskC1
## taskID1
## taskID2
## taskID3
## taskC2
## Frame_Qntty
## tskC1:Frm_Q
## tskID1:Fr_Q
## tskID2:Fr_Q
## tskID3:Fr_Q  0.328
## tskC2:Frm_Q  0.468  0.352
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## Model failed to converge with max|grad| = 0.00205102 (tol = 0.002,
  component 1)
## Model is nearly unidentifiable: very large eigenvalue
## - Rescale variables?

```

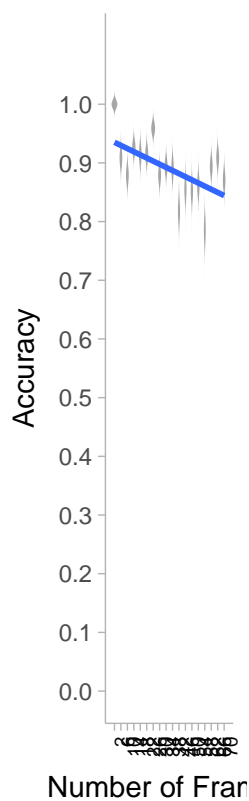
Plot of 7 tasks

Final Plot (ID1 & IDComp1 in pane 1, ID2 & Comp2 in pane 2, ID3 in pane 3, Summ1 in pane 4)

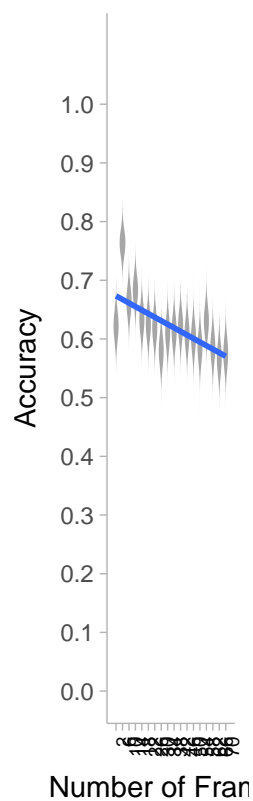
Identify 1 vs ComIdentify 2 vs Com



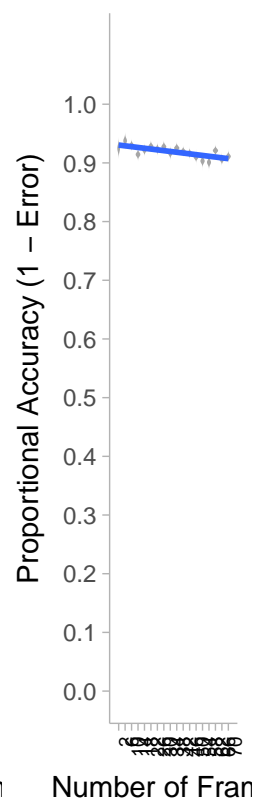
Identify 3



Summary 1



Summary 2



Means and SDs from df_full 6 tasks

```
## task
## ID2 S1 C2 ID1 ID3 C1
## 0.55 0.62 0.67 0.86 0.89 0.91
```

```
## task
## C1 ID3 ID1 C2 S1 ID2
## 0.28 0.31 0.35 0.47 0.48 0.50
```

```
## task
## ID1 ID2 ID3 C1 C2 S1
## 0.86 0.55 0.89 0.91 0.67 0.62
```

```
## task
## ID1 ID2 ID3 C1 C2 S1
## 0.35 0.50 0.31 0.28 0.47 0.48
```

```
## [1] 0.9188053
```

```
## [1] 0.09137975
```

Means and SDs from df_full groups of Identify, Compare, and Summarize


```
## taskGroup
## Comp ID Summ
## 0.79 0.77 0.62
```

```
## taskGroup
## Comp ID Summ
## 0.41 0.42 0.48
```

Planned Comparison Groups (ID1 vs Comp1) - Testing for an Interaction

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ task * Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: df_ID1C1
##
##      AIC      BIC   logLik deviance df.resid
##  7790.4   7835.1  -3889.2   7778.4    12594
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -8.6962   0.1816   0.2488   0.3611   1.4066
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## ResponseId (Intercept) 0.5812   0.7623
## Trial        (Intercept) 0.1094   0.3308
## Number of obs: 12600, groups: ResponseId, 35; Trial, 20
##
## Fixed effects:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)    3.116578   0.227927  13.674 < 2e-16 ***
## taskC1         0.091875   0.296103   0.310  0.756
## Frame_Quantity -0.026782   0.002038 -13.141 < 2e-16 ***
## taskC1:Frame_Quantity 0.012229   0.002998   4.079 4.53e-05 ***
## ———
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) taskC1 Frm_Qn
## taskC1      -0.687
## Frame_Qntty -0.392  0.300
## tskC1:Frm_Q  0.266 -0.428 -0.679
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## Model is nearly unidentifiable: very large eigenvalue
## — Rescale variables?
```

Planned Comparison Groups (ID2 vs Comp2) - Testing for an Interaction

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
```

```

## Formula: acc ~ task * Frame_Quantity + (1 | Trial) + (1 | ResponseId)
## Data: df_ID2C2
##
##      AIC      BIC    logLik deviance df.resid
## 15278.5 15323.0 -7633.3 15266.5    12233
##
## Scaled residuals:
##      Min      1Q  Median      3Q      Max
## -2.2121 -1.1249  0.5964  0.7467  4.6991
##
## Random effects:
## Groups      Name      Variance Std.Dev.
## ResponseId (Intercept) 0.40946  0.6399
## Trial        (Intercept) 0.05947  0.2439
## Number of obs: 12239, groups: ResponseId, 34; Trial, 20
##
## Fixed effects:
##
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)      0.553447    0.184352   3.002  0.00268 **
## taskC2            0.308548    0.235287   1.311  0.18973
## Frame_Quantity    -0.010411    0.001433  -7.267 3.67e-13 ***
## taskC2:Frame_Quantity 0.006120    0.001903   3.216  0.00130 **
## ———
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) taskC2 Frm_Qn
## taskC2      -0.715
## Frame_Qntty -0.283  0.222
## tskC2:Frm_Q  0.213 -0.295 -0.753
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## Model is nearly unidentifiable: very large eigenvalue
## — Rescale variables?

```

```

##              Est      LL      UL
## (Intercept)      3.077590108  2.670679567  3.48450065
## taskID2          -2.528513846 -3.076350730 -1.98067696
## taskID3           0.038623766 -0.521542822  0.59879035
## taskC1           0.093834520 -0.453857069  0.64152611
## taskC2          -2.219205572 -2.738424421 -1.69998672
## taskS1          -2.324207335 -2.848928194 -1.79948648
## Frame_Quantity   -0.026502765 -0.030478071 -0.02252746
## taskID2:Frame_Quantity 0.016120353  0.011255997  0.02098471
## taskID3:Frame_Quantity 0.009975215  0.004109710  0.01584072
## taskC1:Frame_Quantity 0.012073113  0.006216163  0.01793006
## taskC2:Frame_Quantity 0.022228150  0.017558240  0.02689806
## taskS1:Frame_Quantity 0.019859003  0.015181253  0.02453675

```

```

##              Est      LL      UL
## (Intercept)     21.70603014 14.44978545 32.6061412
## taskID2          0.07977749  0.04612728  0.1379758
## taskID3          1.03937936  0.59360402  1.8199160
## taskC1           1.09837797  0.63517351  1.8993773

```

## taskC2	0.10869543	0.06467216	0.1826859
## taskS1	0.09786098	0.05790635	0.1653838
## Frame_Quantity	0.97384535	0.96998170	0.9777244
## taskID2:Frame_Quantity	1.01625099	1.01131958	1.0212064
## taskID3:Frame_Quantity	1.01002513	1.00411817	1.0159669
## taskC1:Frame_Quantity	1.01214629	1.00623552	1.0180918
## taskC2:Frame_Quantity	1.02247704	1.01771329	1.0272631
## taskS1:Frame_Quantity	1.02005751	1.01529707	1.0248403

Experiment 2

Demographics

There were 360 participants in Experiment 2. There were 171 participants who selected Male, 174 participants who selected Female, 10 participants who selected Non-binary/Third gender, and 2 who selected Prefer not to Say.

the mean age is 25.64 (SD = 15.4).

Identify

Identify 1 Accuracy Analysis

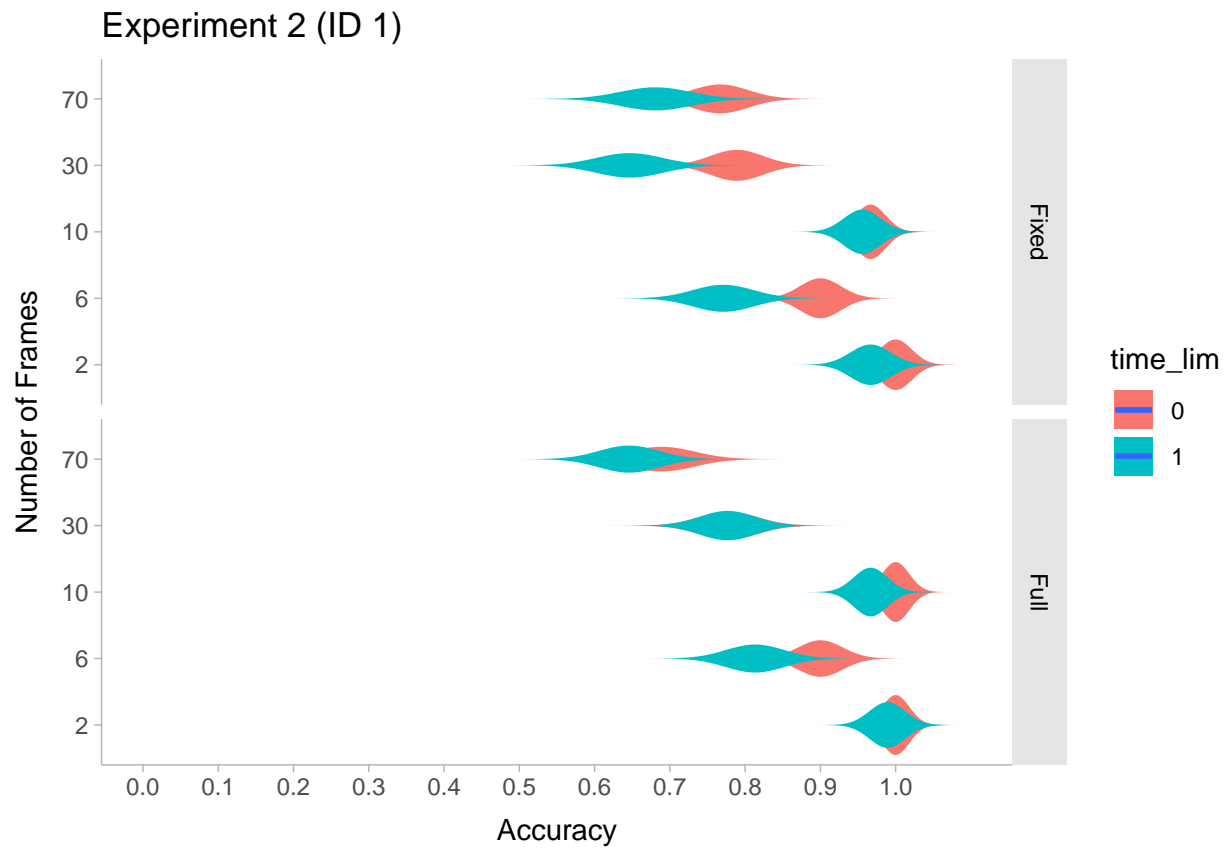
```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + time_lim + scale + (1 | ResponseId)
## Data: dfacc
##
##      AIC      BIC    logLik deviance df.resid
##  1401.3   1428.8   -695.6   1391.3     1826
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.9443   0.1852   0.2570   0.3661   1.7518
##
## Random effects:
##  Groups      Name      Variance Std.Dev.
##  ResponseId (Intercept) 0.9756   0.9877
## Number of obs: 1831, groups: ResponseId, 360
##
## Fixed effects:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)    3.202246    0.216989  14.758 < 2e-16 ***
## Frame_Quantity -0.030608    0.002734 -11.197 < 2e-16 ***
```

```

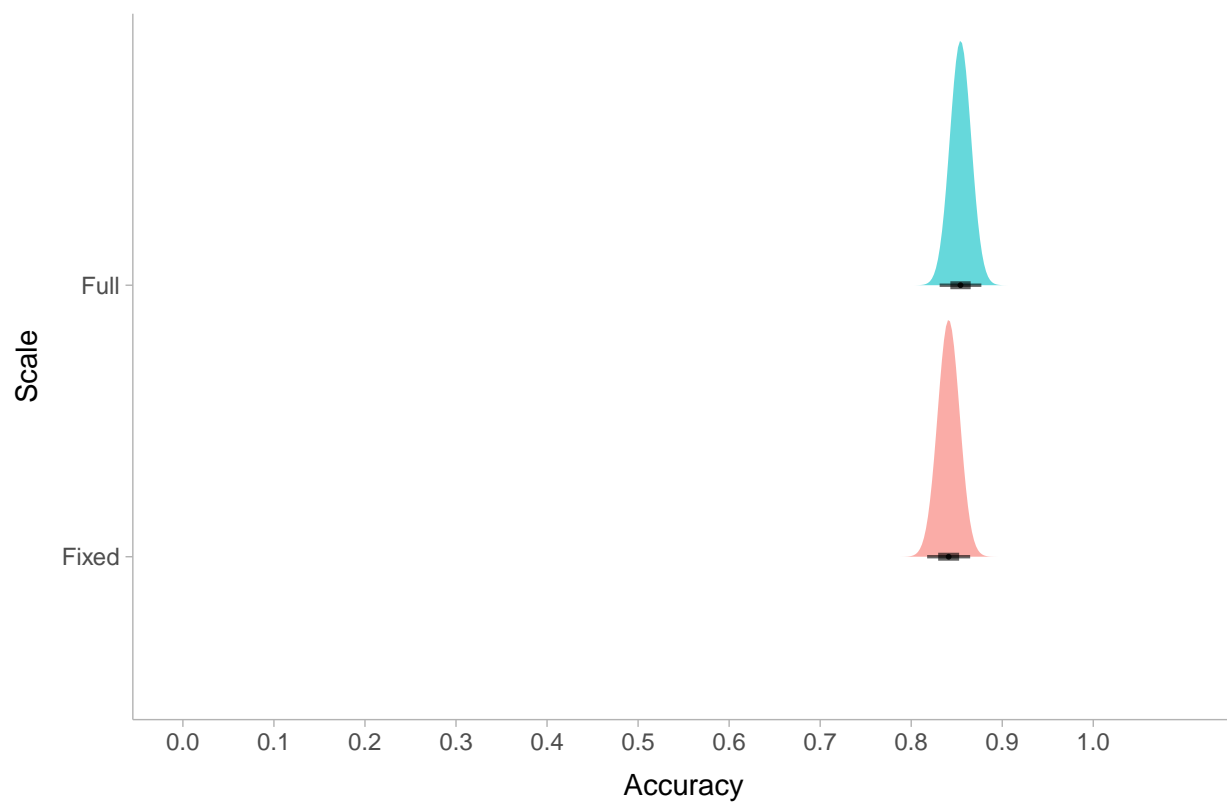
## time_lim1      -0.556445    0.185541   -2.999    0.00271 **
## scaleFull      0.103310    0.183551    0.563    0.57354
## —————
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) Frm_Qn tm_lm1
## Frame_Qntty  -0.562
## time_lim1     -0.537  0.066
## scaleFull     -0.415 -0.013  0.013

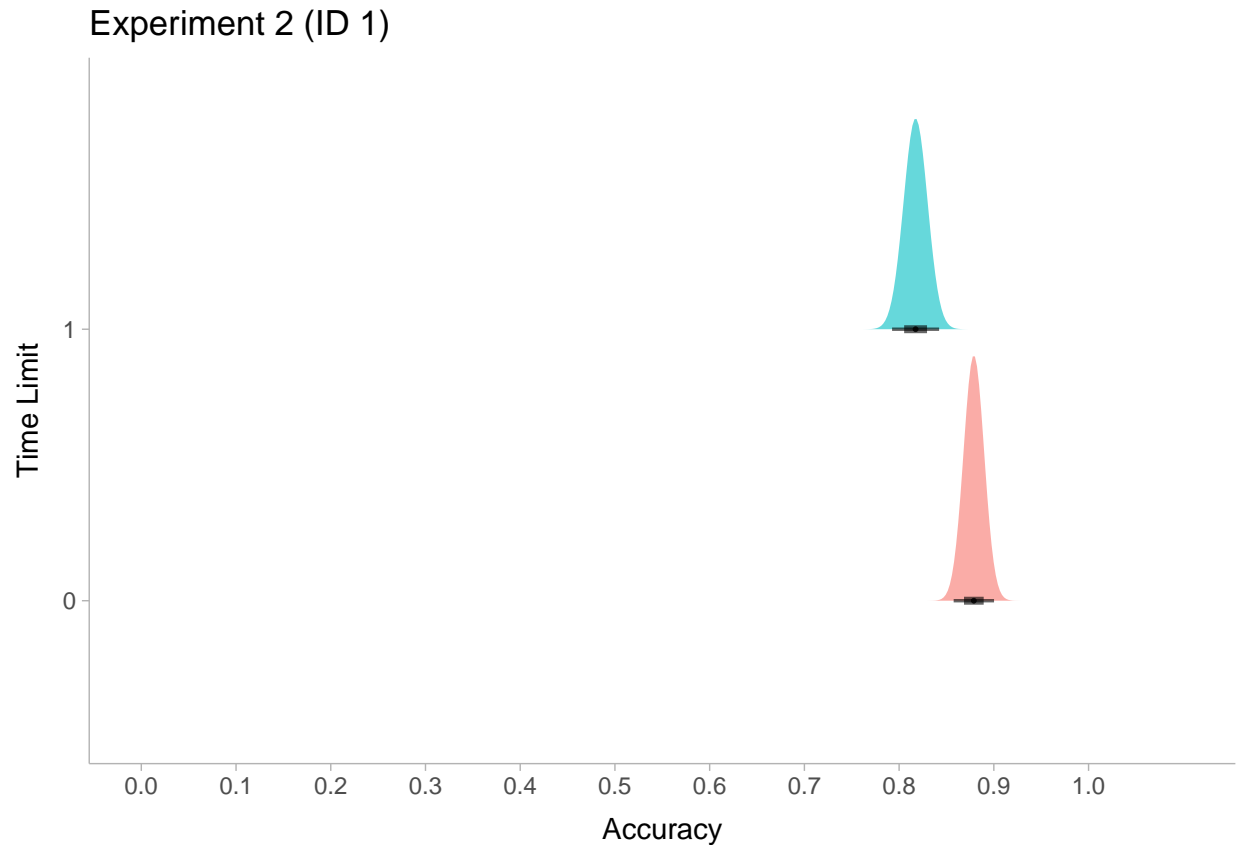
##              2.5 % 97.5 %
## .sig01              NA      NA
## (Intercept)        2.78    3.63
## Frame_Quantity    -0.04   -0.03
## time_lim1         -0.92   -0.19
## scaleFull         -0.26    0.46

```



Experiment 2 (ID 1)





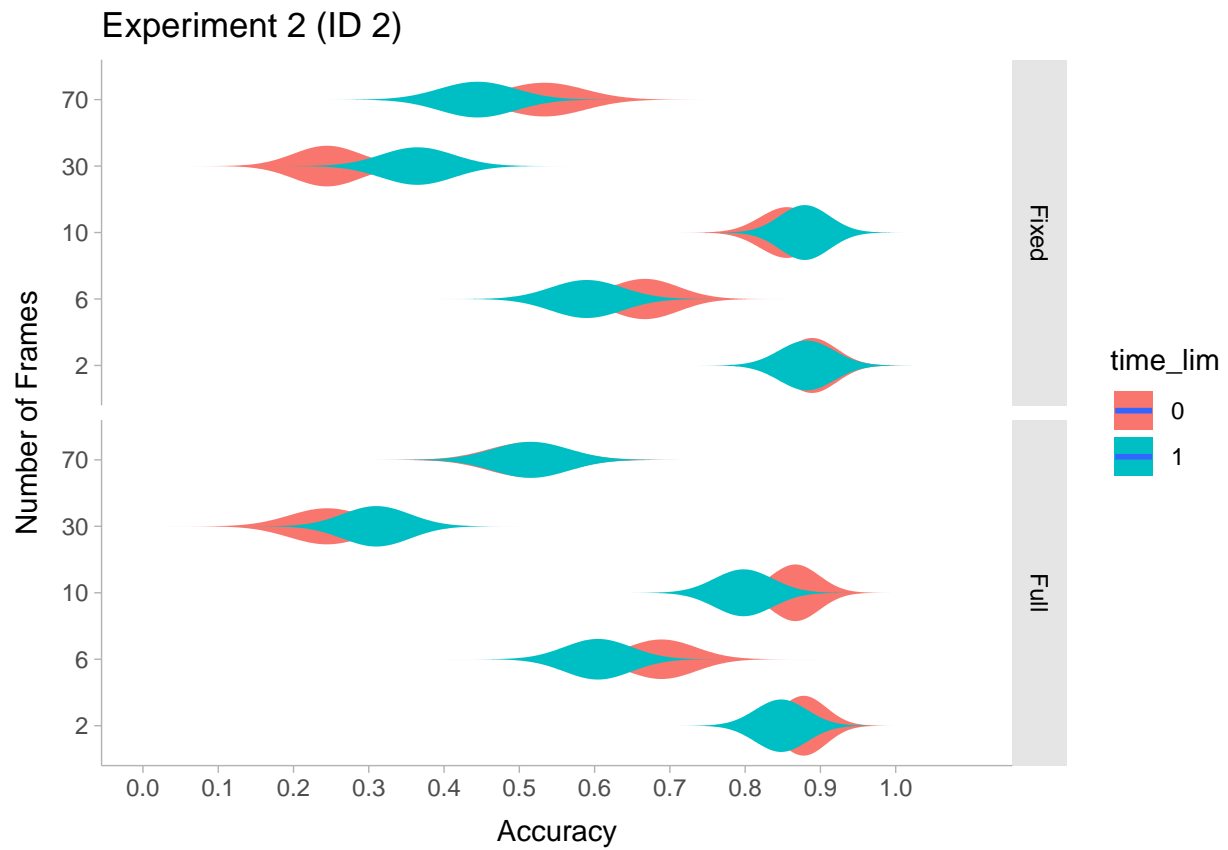
Identify 2 Accuracy Analysis

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + time_lim + scale + (1 | ResponseId)
## Data: dfacc
##
##      AIC      BIC   logLik deviance df.resid
##  2313.6   2341.2  -1151.8   2303.6    1845
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.7894 -1.1293  0.5777  0.6439  1.5127
##
## Random effects:
##  Groups      Name      Variance Std.Dev.
##  ResponseId (Intercept) 0.1439   0.3794
## Number of obs: 1850, groups:  ResponseId, 360
##
## Fixed effects:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)   1.171634   0.110223  10.630   <2e-16 ***
```

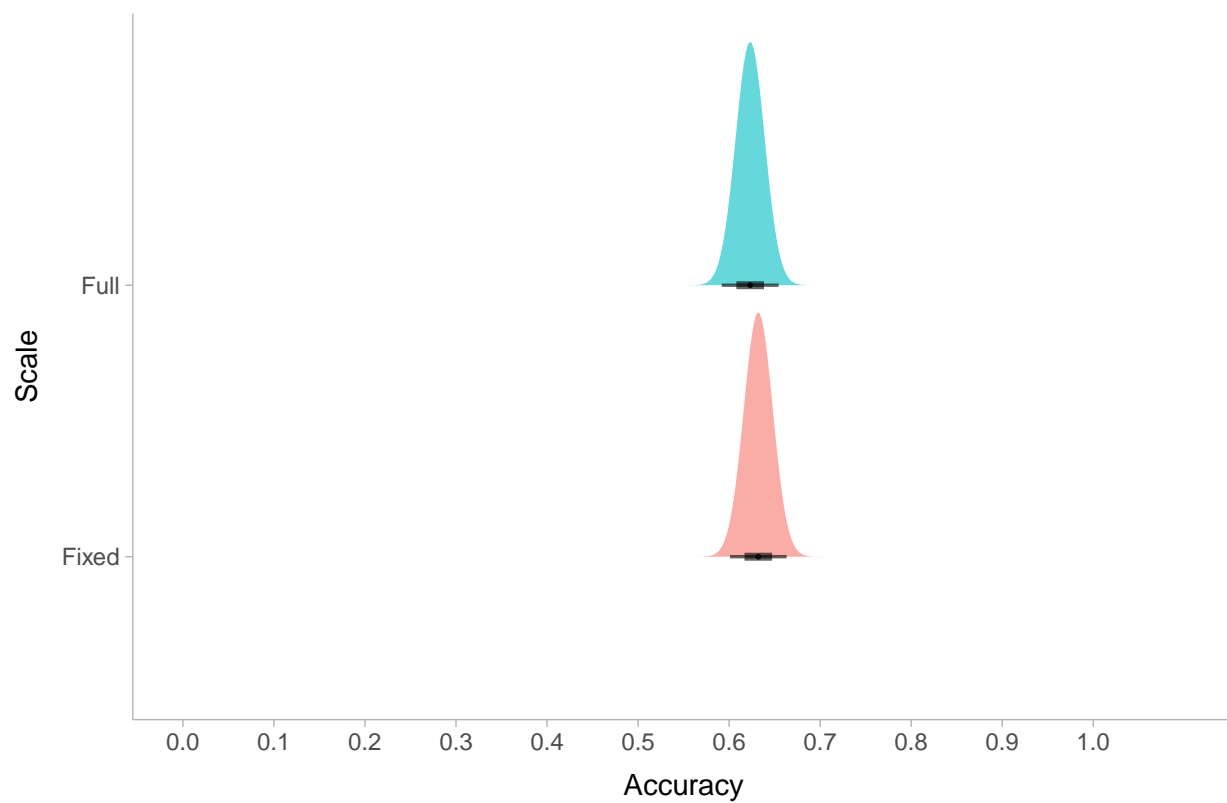
```

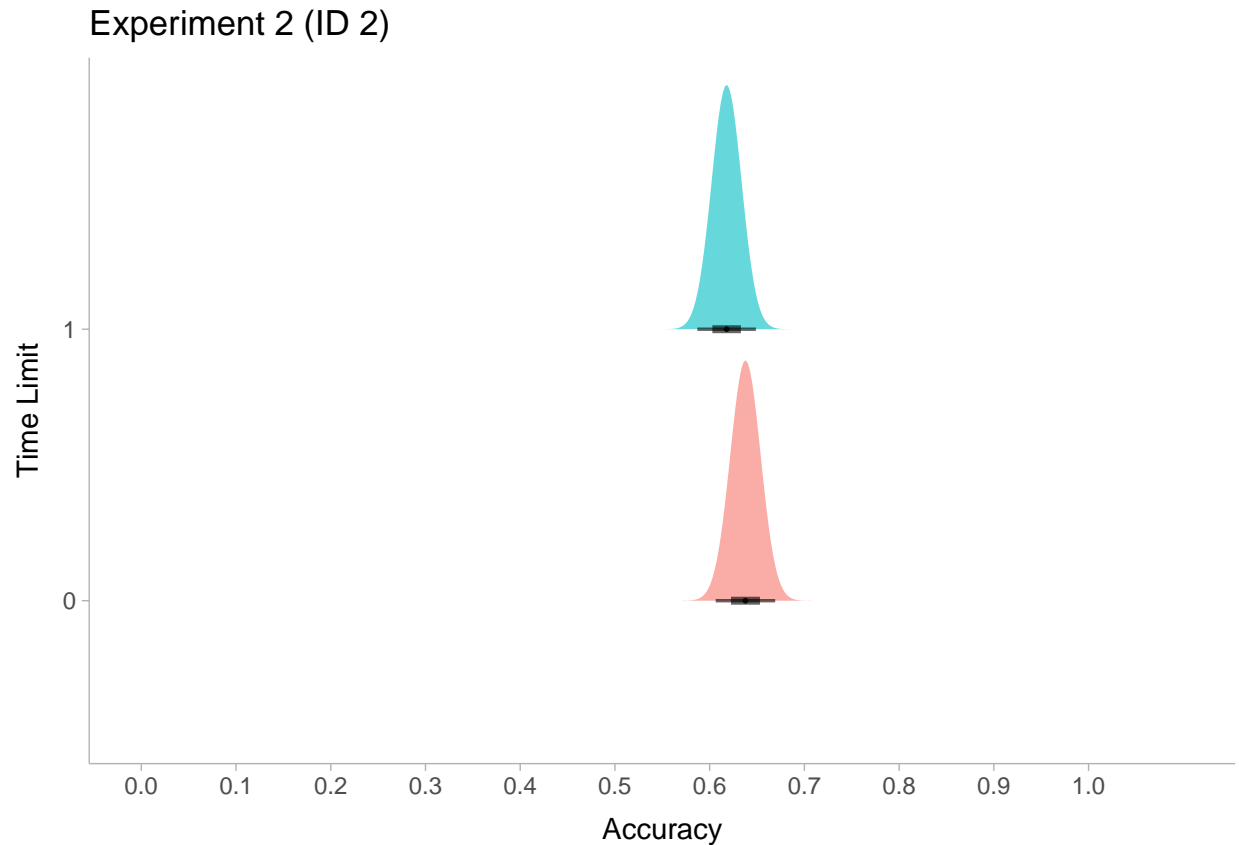
## Frame_Quantity  -0.022735    0.002017  -11.274    <2e-16 ***
## time_lim1       -0.067559    0.109362   -0.618      0.537
## scaleFull       -0.040458    0.109262   -0.370      0.711
## —————
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) Frm_Qn tm_lm1
## Frame_Qntty -0.488
## time_lim1   -0.502 -0.009
## scaleFull   -0.500  0.004 -0.002

```



Experiment 2 (ID 2)





Identify 3 Accuracy Analysis

We have a problem Trial for 18 frames - trial 12 (letter N) frame 14 is visually not over the dotted line at 79.5, but the value is 79.507. We are marking this as not a correct response.

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + time_lim + scale + (1 | Trial) + (1 |
## ResponseId)
## Data: dfacc
##
##      AIC      BIC   logLik deviance df.resid
## 1272.9   1305.8   -630.4   1260.9     1794
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.4827  0.0954  0.1911  0.3498  2.2059
##
## Random effects:
##  Groups      Name      Variance Std.Dev.
## ResponseId (Intercept) 1.976    1.406
## Trial        (Intercept) 6.501    2.550
## Number of obs: 1800, groups: ResponseId, 360; Trial, 4
```

```

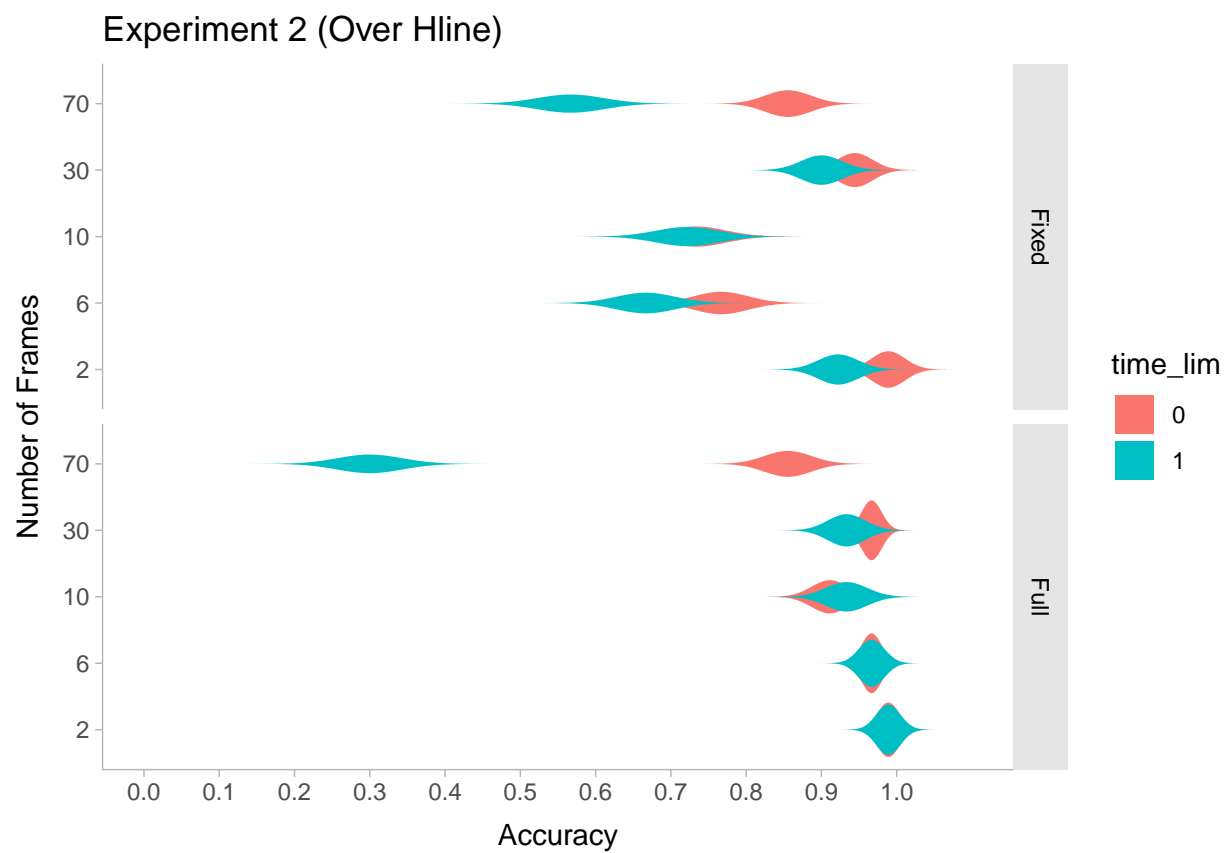
##
## Fixed effects:
##           Estimate Std. Error z value Pr(>|z|)
## (Intercept)   1.76474    1.32873   1.328 0.184131
## Frame_Quantity 0.04868    0.01251   3.890 0.000100 ***
## time_lim1     -1.36976    0.24667  -5.553 2.81e-08 ***
## scaleFull      0.83450    0.23210   3.595 0.000324 ***
## ———
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##           (Intr) Frm_Qn tm_lm1
## Frame_Qntty -0.208
## time_lim1   -0.113 -0.067
## scaleFull   -0.066  0.038 -0.095

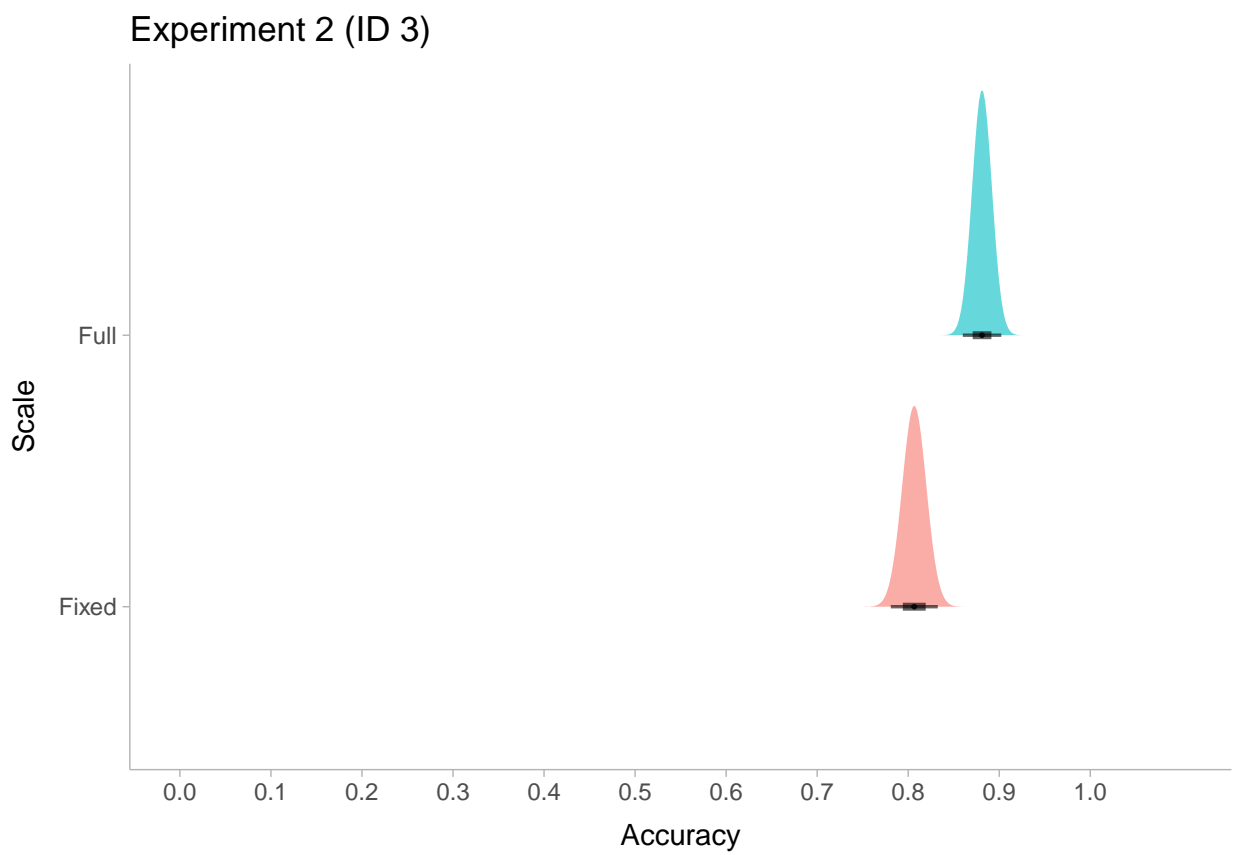
##           2.5 % 97.5 %
## .sig01      NA     NA
## .sig02      NA     NA
## (Intercept) -0.84   4.37
## Frame_Quantity 0.02   0.07
## time_lim1    -1.85  -0.89
## scaleFull     0.38   1.29

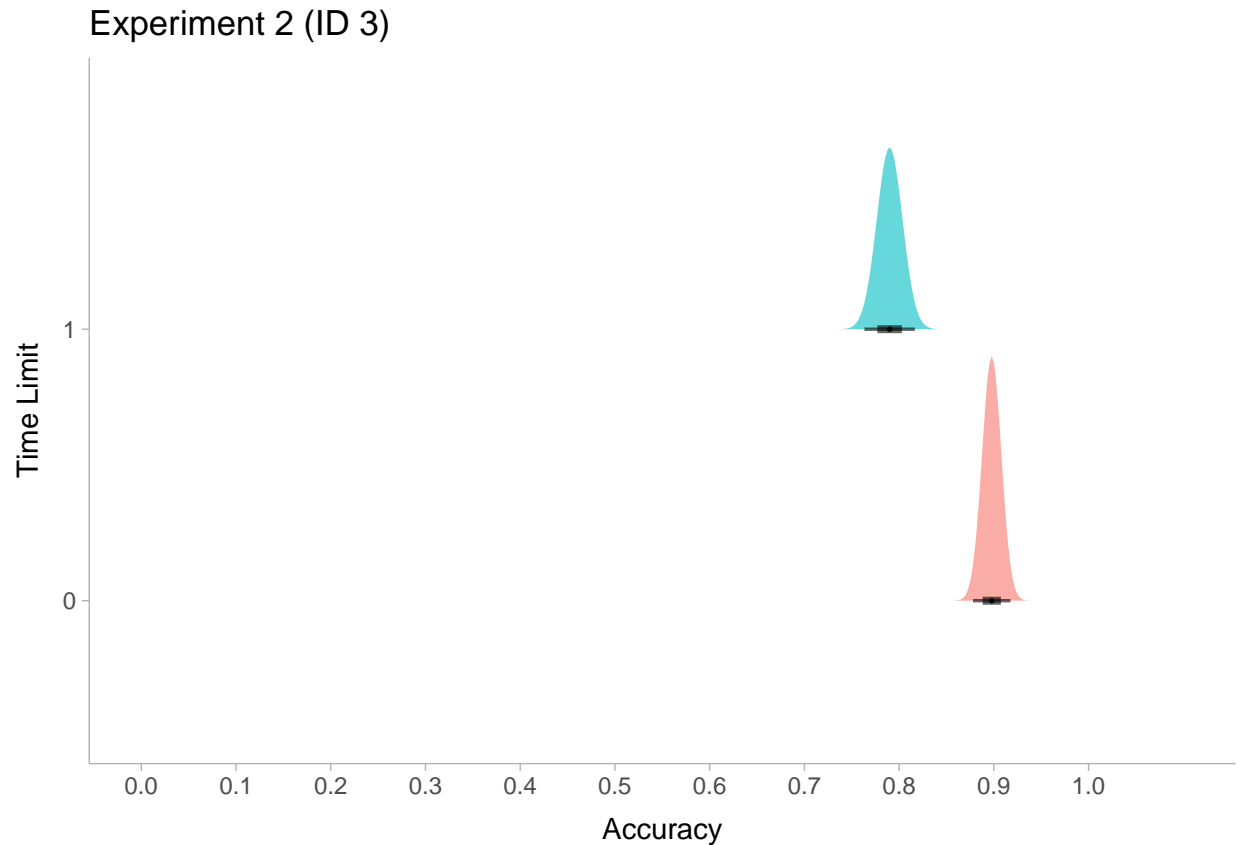
## scale
##      Fixed      Full
## 0.8066667 0.8811111

## scale
##      Fixed      Full
## 0.3951317 0.3238377

```







Compare

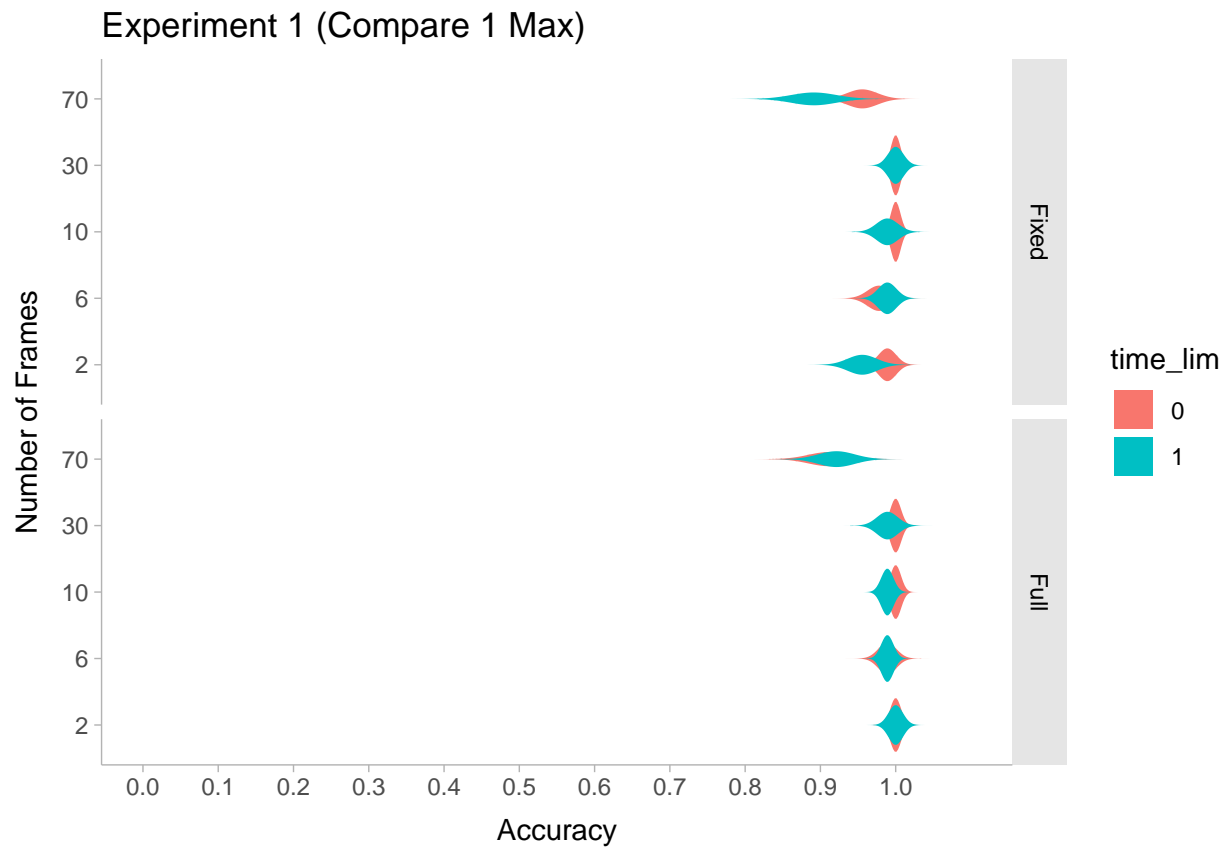
Compare 1 Accuracy Analysis

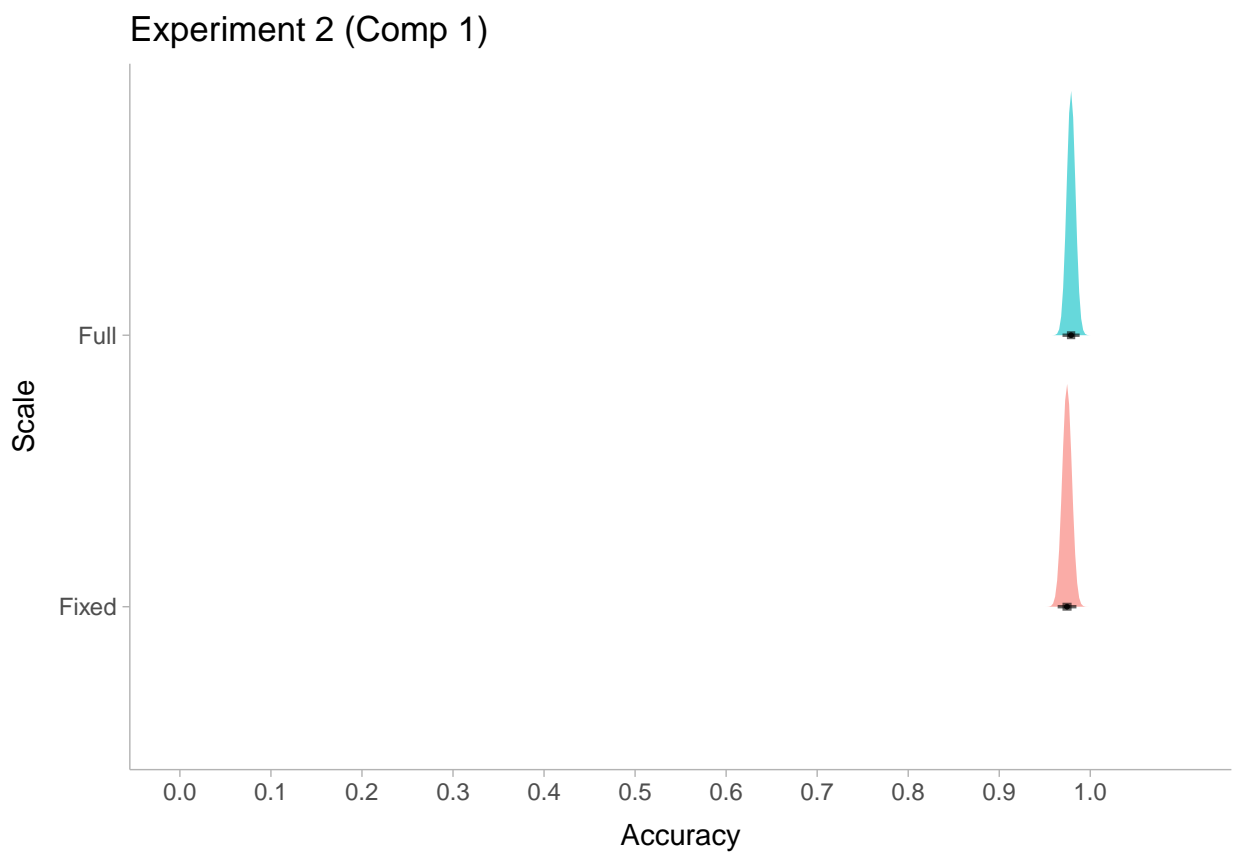
```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + time_lim + scale + (1 | Trial) + (1 |
## ResponseId)
## Data: dfacc
##
##      AIC      BIC    logLik deviance df.resid
##    324.4    357.4   -156.2    312.4    1795
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -6.2407  0.0021  0.0025  0.0177  4.8202
##
## Random effects:
##  Groups      Name             Variance Std.Dev.
## ResponseId (Intercept) 72.1012   8.4912
```

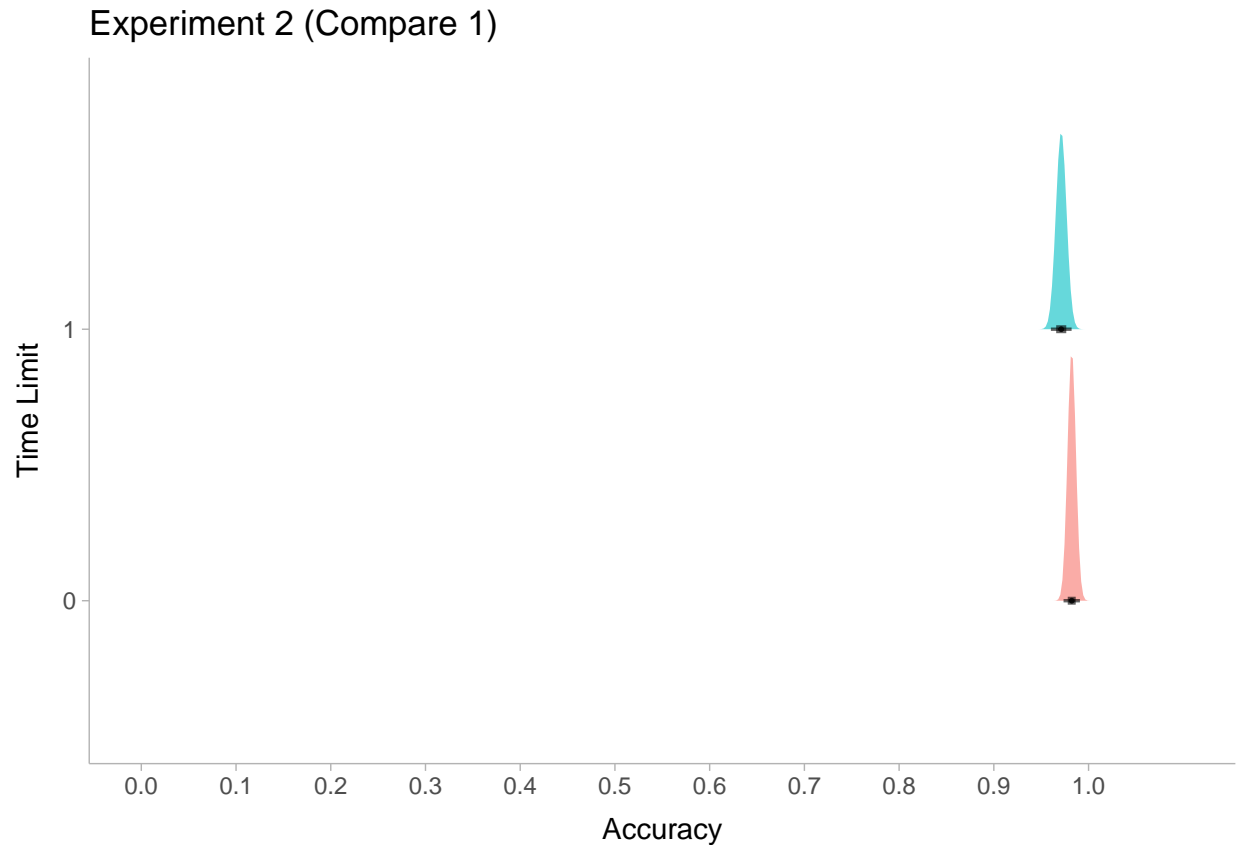
```

## Trial      (Intercept)  0.6371  0.7982
## Number of obs: 1801, groups:  ResponseId , 360; Trial , 4
##
## Fixed effects:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)   13.9147    1.4249   9.766 < 2e-16 ***
## Frame_Quantity -0.0787    0.0140  -5.620 1.91e-08 ***
## time_lim1     -0.3832    0.9068  -0.423  0.673
## scaleFull      0.2101    0.9004   0.233  0.815
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) Frm_Qn tm_lm1
## Frame_Qntty -0.677
## time_lim1   -0.359  0.000
## scaleFull   -0.295  0.003 -0.005

```





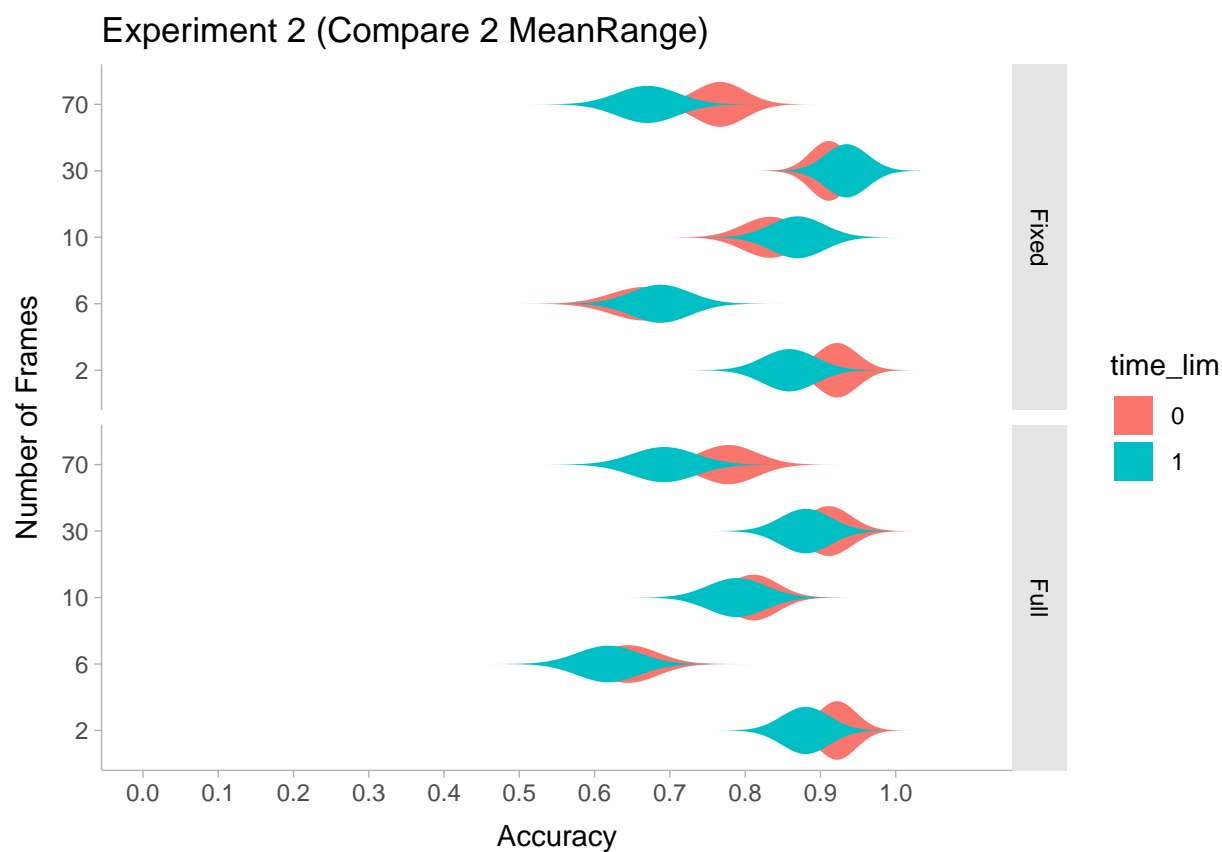


Compare 2 Accuracy Analysis

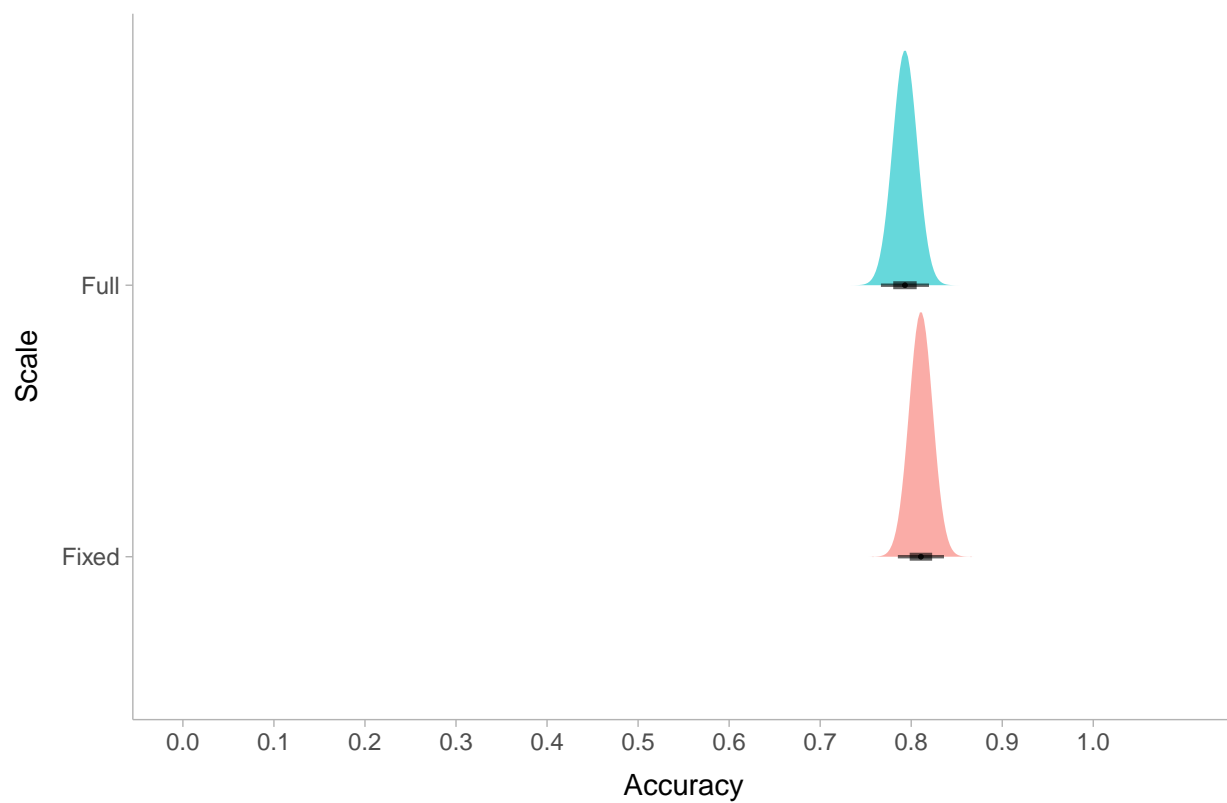
```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + time_lim + scale + (1 | Trial) + (1 |
## ResponseId)
## Data: dfacc
##
##      AIC      BIC   logLik deviance df.resid
##  1600.7   1633.8   -794.4   1588.7     1817
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.6522   0.1620   0.2645   0.4231   1.8475
##
## Random effects:
##  Groups      Name      Variance Std.Dev.
##  ResponseId (Intercept) 2.3851   1.5444
##  Trial        (Intercept) 0.7794   0.8828
## Number of obs: 1823, groups:  ResponseId, 360; Trial, 4
##
## Fixed effects:
```

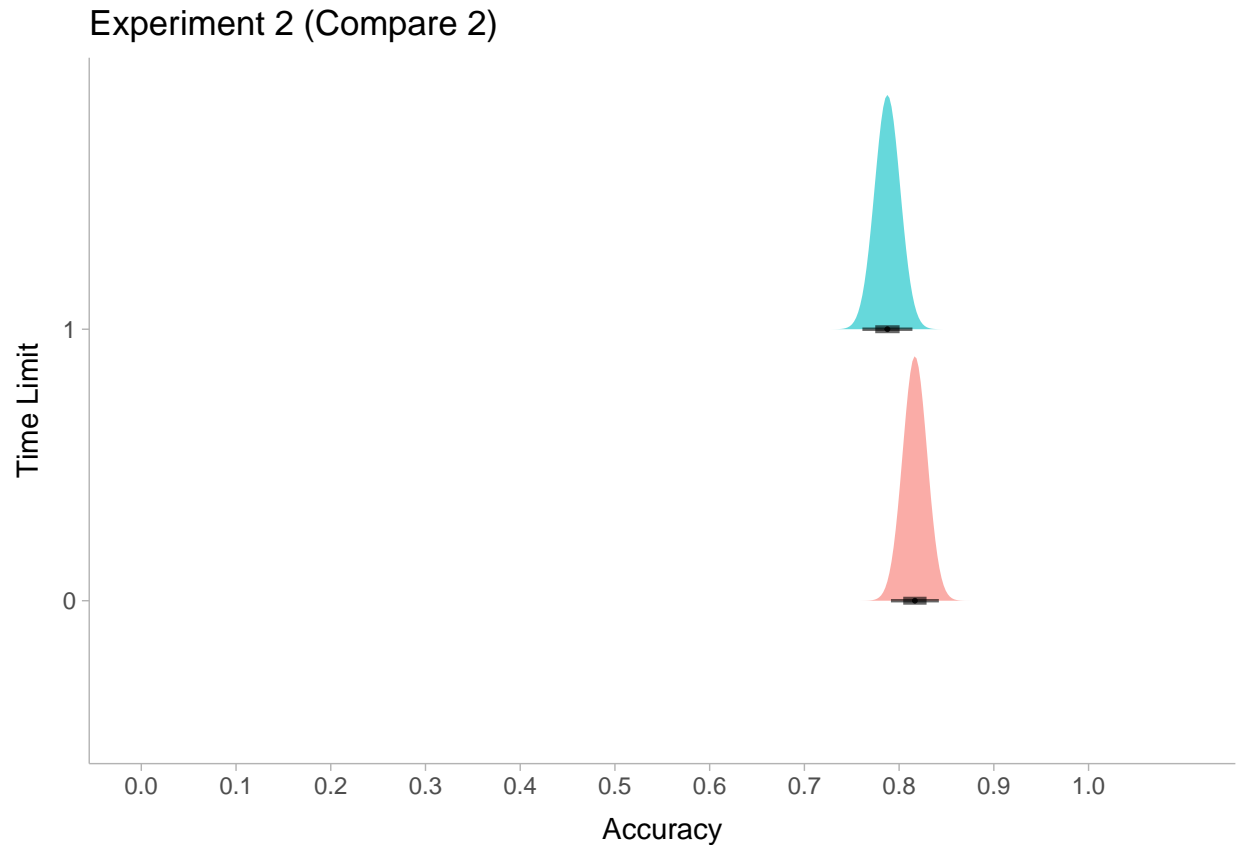


```
##               Estimate Std. Error z value Pr(>|z|)
## (Intercept)    2.691799   0.492686   5.464 4.67e-08 ***
## Frame_Quantity -0.012656   0.003306  -3.828 0.000129 ***
## time_lim1      -0.253171   0.217055  -1.166 0.243457
## scaleFull      -0.180190   0.216952  -0.831 0.406229
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) Frm_Qn tm_lm1
## Frame_Qntty  -0.155
## time_lim1     -0.231   0.004
## scaleFull     -0.227   0.008   0.001
```



Experiment 2 (Comp 2)



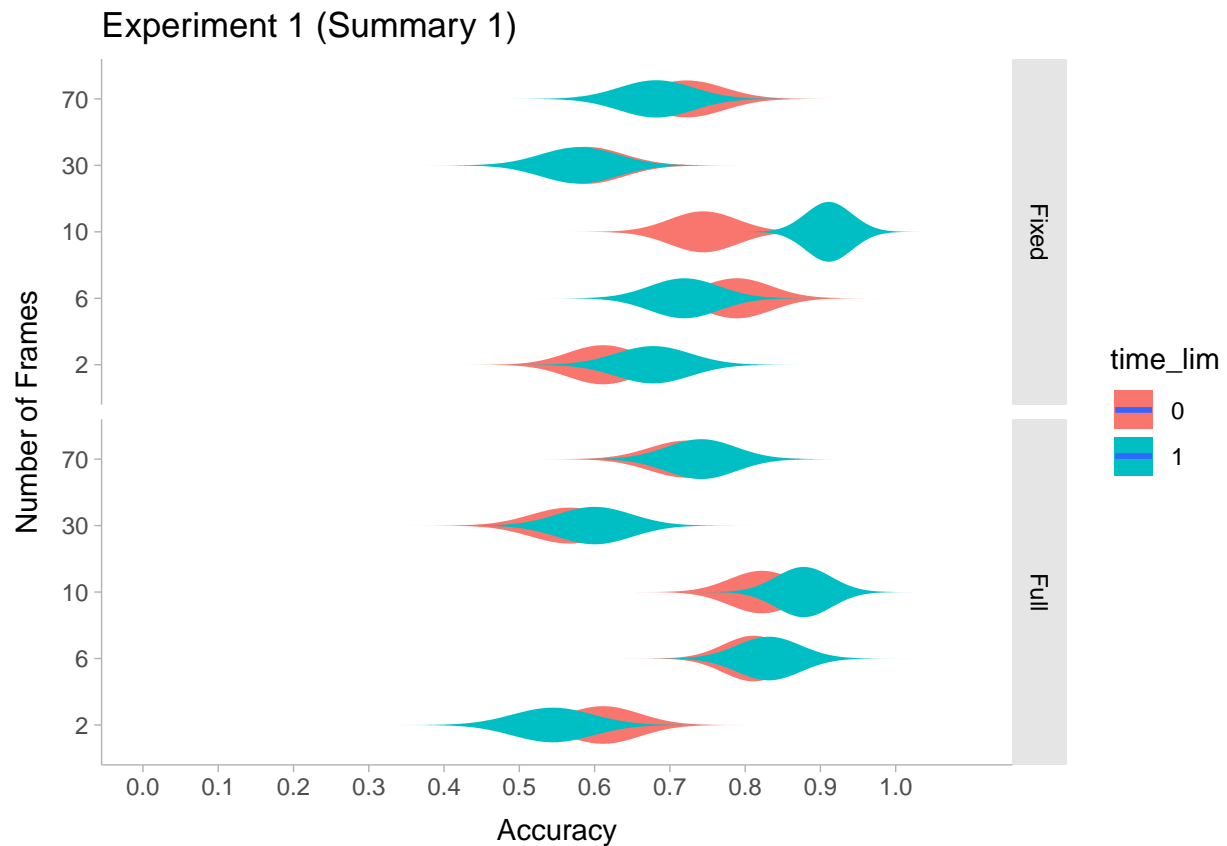


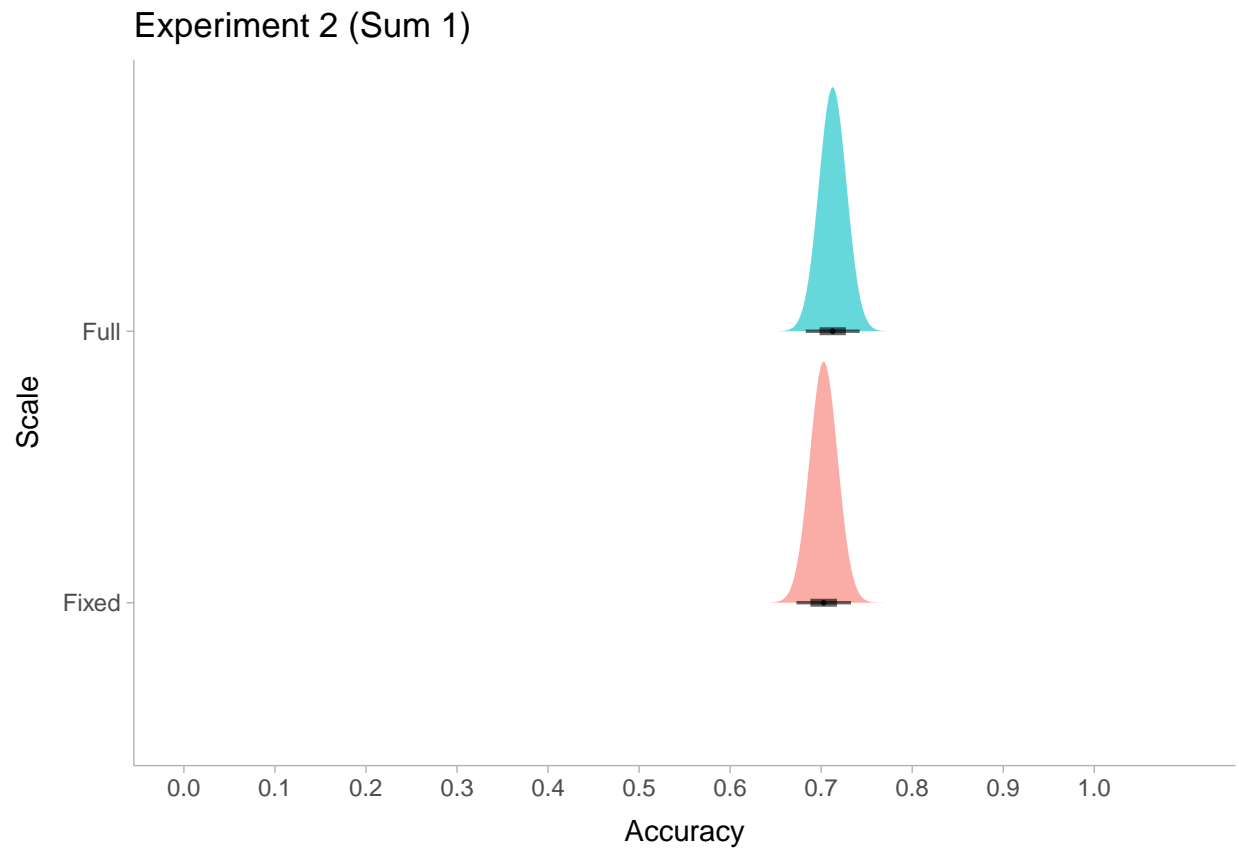
Summarize

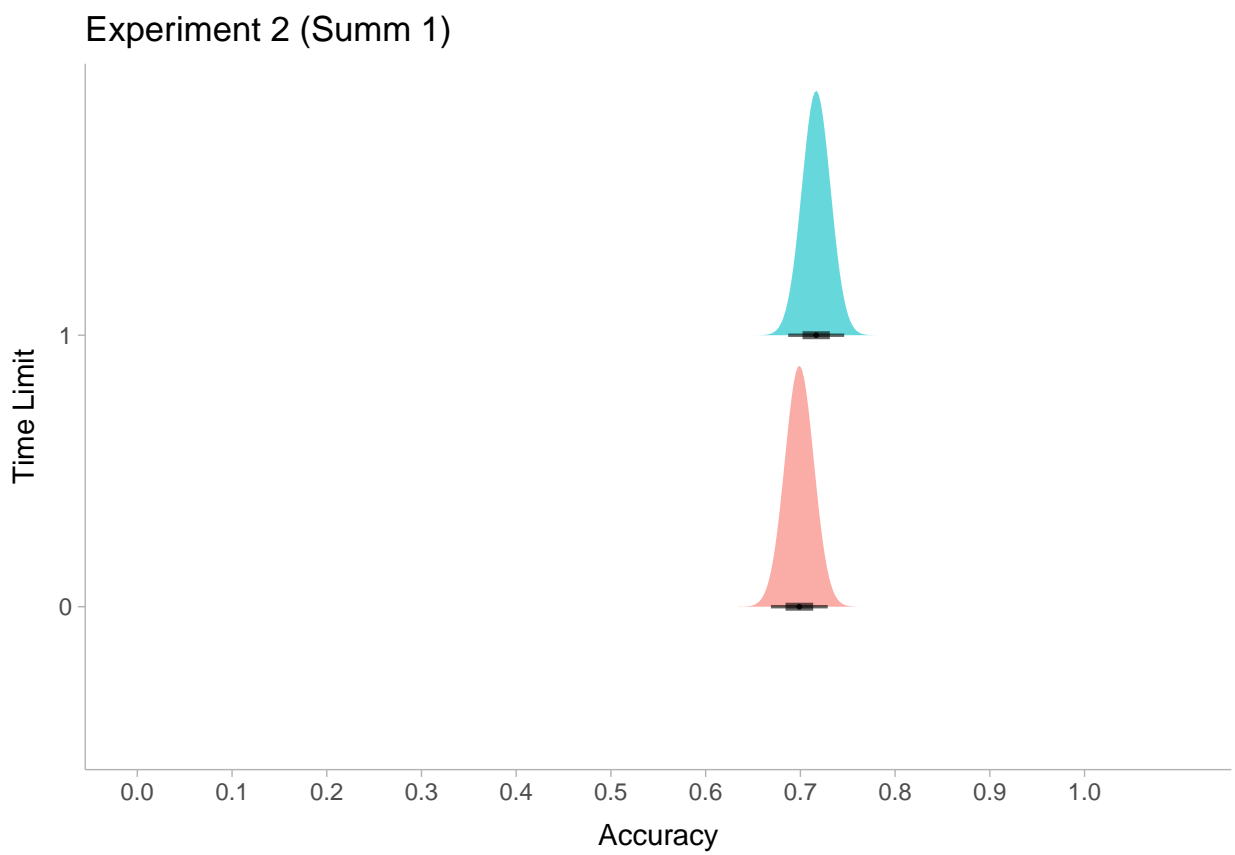
Summarize 1 Accuracy Analysis

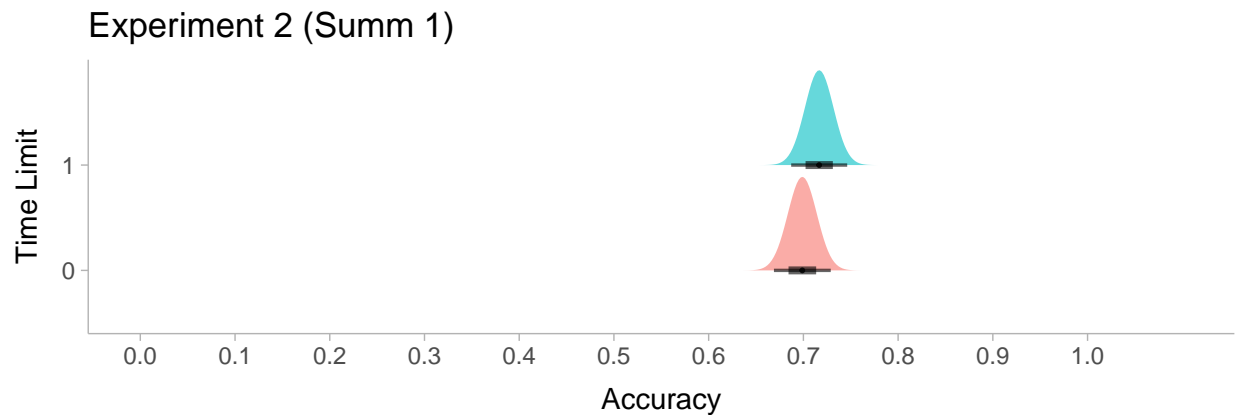
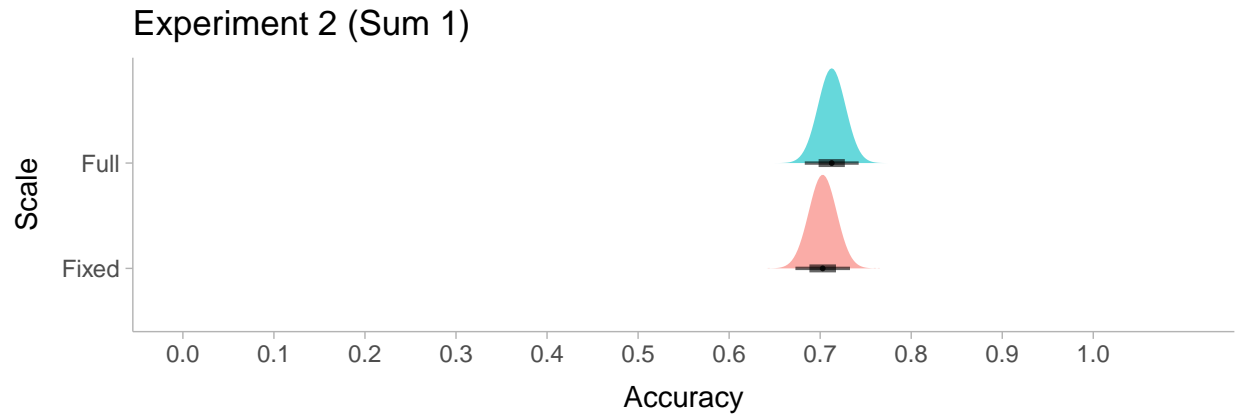
```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula: acc ~ Frame_Quantity + time_lim + scale + (1 | ResponseId)
## Data: dfacc
##
##      AIC      BIC   logLik deviance df.resid
##  2174.4   2201.9  -1082.2   2164.4     1788
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.6490 -1.4931  0.6255   0.6512  0.6991
##
## Random effects:
##  Groups      Name              Variance Std.Dev.
##  ResponseId (Intercept) 4e-14      2e-07
## Number of obs: 1793, groups:  ResponseId, 360
```

```
##
## Fixed effects:
##               Estimate Std. Error z value Pr(>|z|)
## (Intercept)    0.871067   0.101818   8.555   <2e-16 ***
## Frame_Quantity -0.002216   0.002047  -1.082    0.279
## time_lim1      0.085758   0.103939   0.825    0.409
## scaleFull      0.047924   0.103917   0.461    0.645
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) Frm_Qn tm_lm1
## Frame_Qntty -0.485
## time_lim1   -0.499  0.002
## scaleFull   -0.505 -0.002 -0.001
## optimizer (Nelder_Mead) convergence code: 0 (OK)
## boundary (singular) fit: see help('isSingular')
```









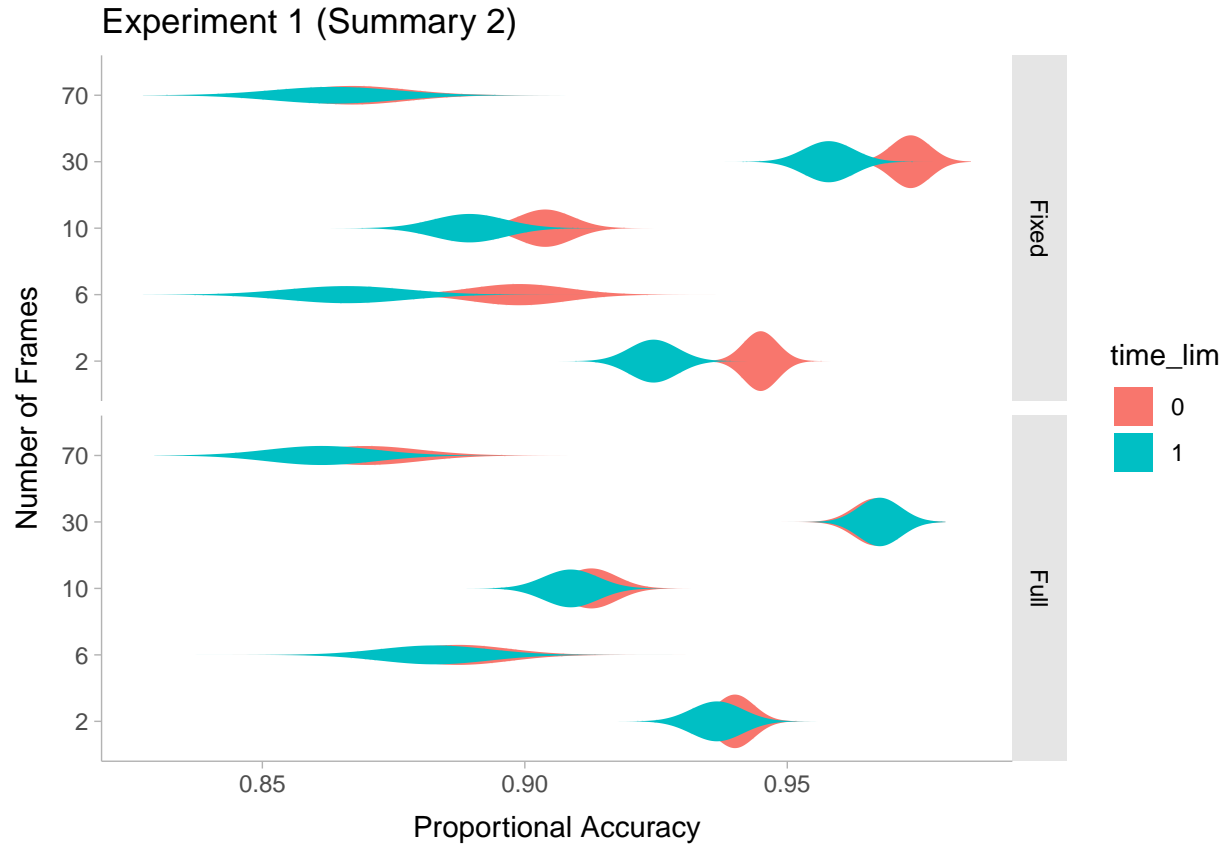
Summarize 2 Error Analysis

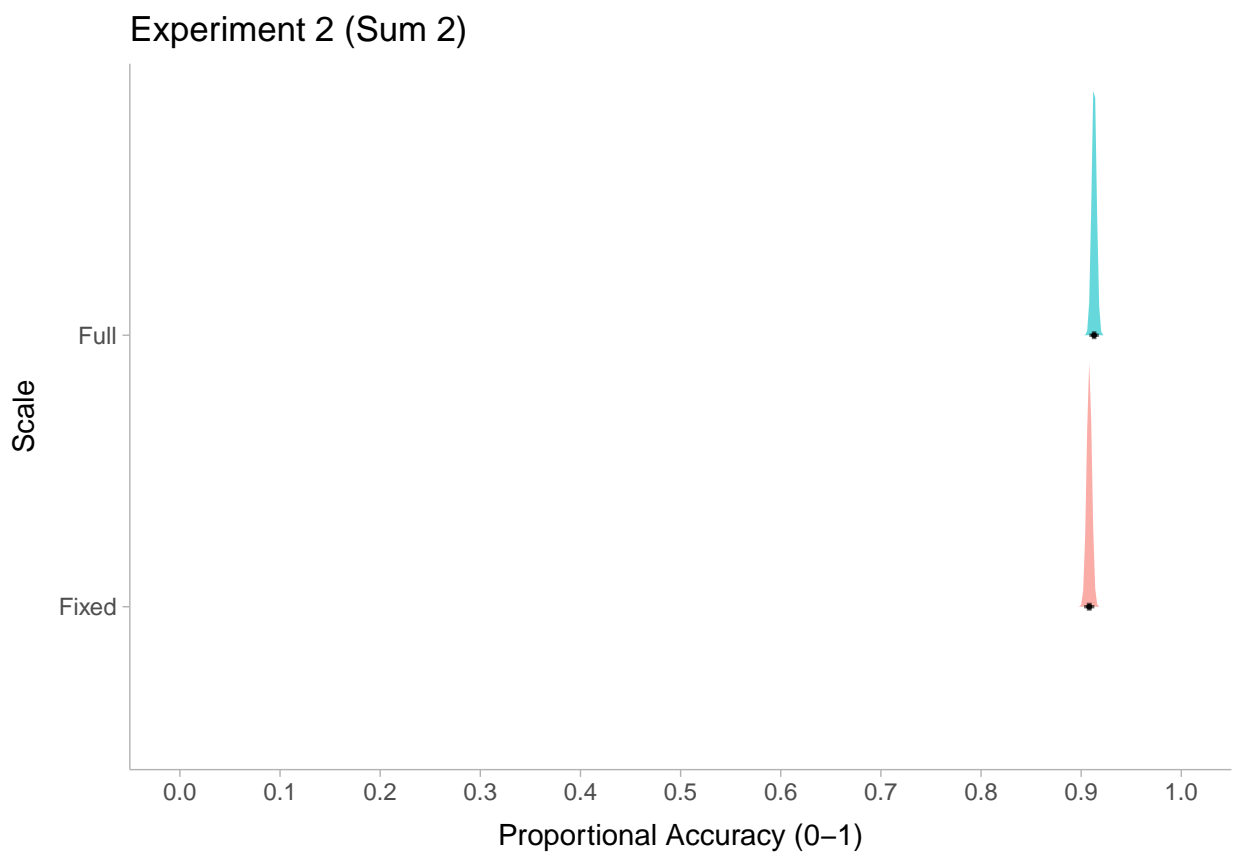
```
## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
## Formula: error ~ Frame_Quantity + time_lim * scale + (1 | Trial) + (1 |
##   ResponseId)
##   Data: dfacc
##
## REML criterion at convergence: -7093.5
##
## Scaled residuals:
##   Min      1Q  Median      3Q      Max
## -7.4833 -0.1970  0.2077  0.5486  2.0956
##
## Random effects:
##   Groups      Name      Variance Std.Dev.
##   ResponseId (Intercept) 0.002131 0.04617
##   Trial        (Intercept) 0.002292 0.04788
##   Residual                0.011495 0.10721
## Number of obs: 4663, groups:  ResponseId, 360; Trial, 3
##
## Fixed effects:
##
##               Estimate Std. Error      df t value Pr(>|t|)
```

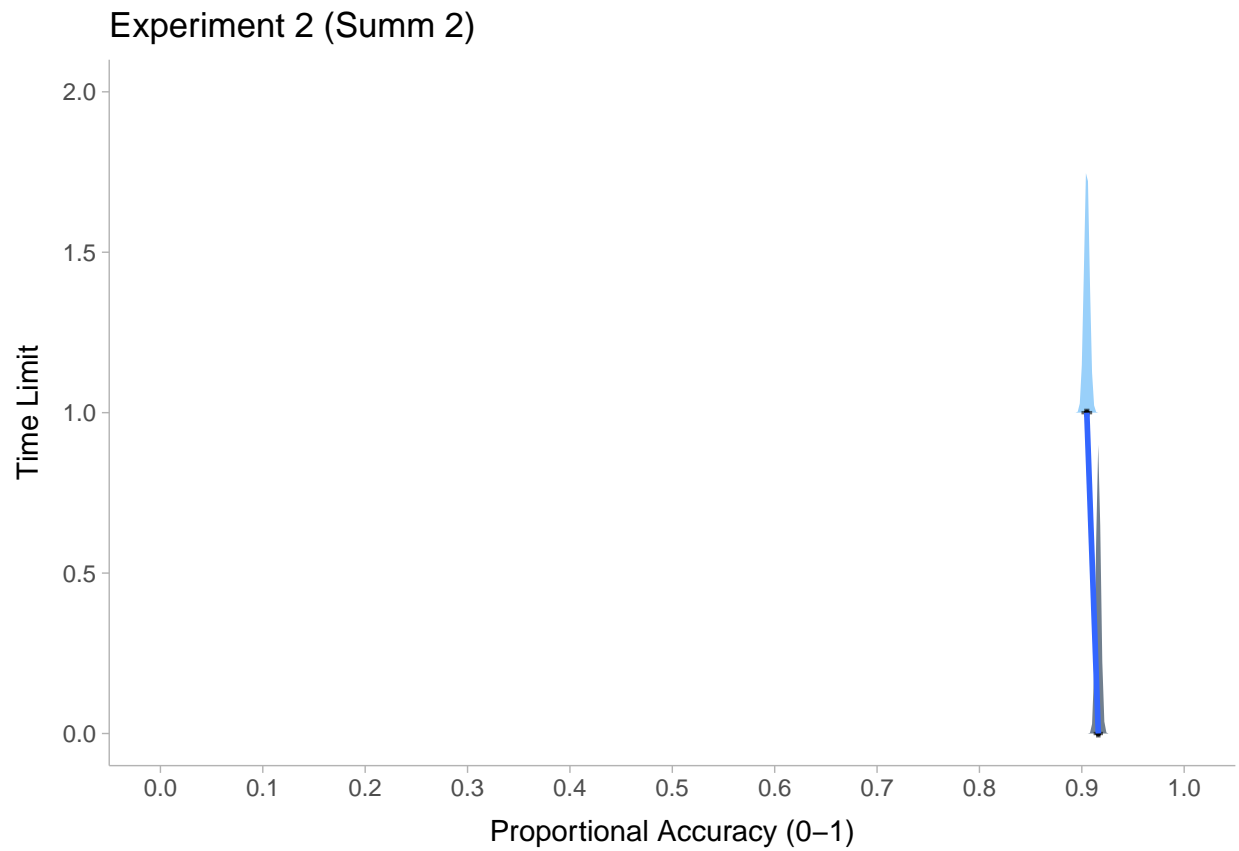
```

## (Intercept)          9.523e-01  2.830e-02  2.174e+00  33.644  0.000539 ***
## Frame_Quantity      -1.017e-03  7.577e-05  4.301e+03 -13.418  < 2e-16 ***
## time_lim            -1.871e-02  8.192e-03  3.546e+02  -2.285  0.022928 *
## scaleFull           -2.432e-03  8.188e-03  3.539e+02  -0.297  0.766578
## time_lim:scaleFull   1.464e-02  1.158e-02  3.544e+02   1.264  0.207019
## —
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) Frm_Qn tim_lm sclFl1
## Frame_Qntty  -0.060
## time_lim      -0.145  0.000
## scaleFull     -0.145  0.000  0.500
## tm_lm:sclFl   0.102  0.001 -0.707 -0.707

```

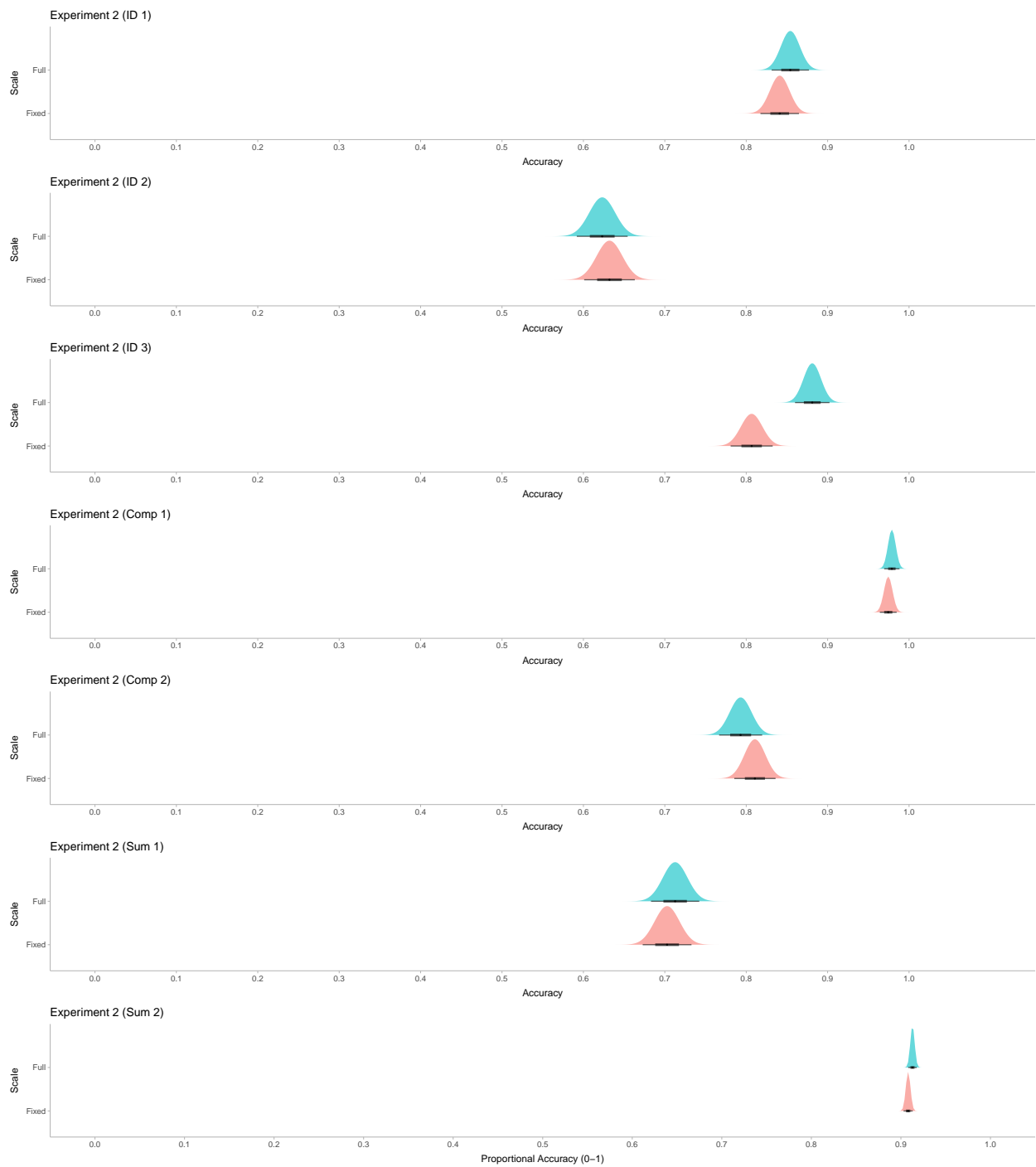






Experiment 2 - 7 Tasks

Fixed vs Full Scale



Time Limit vs No Time Limit

