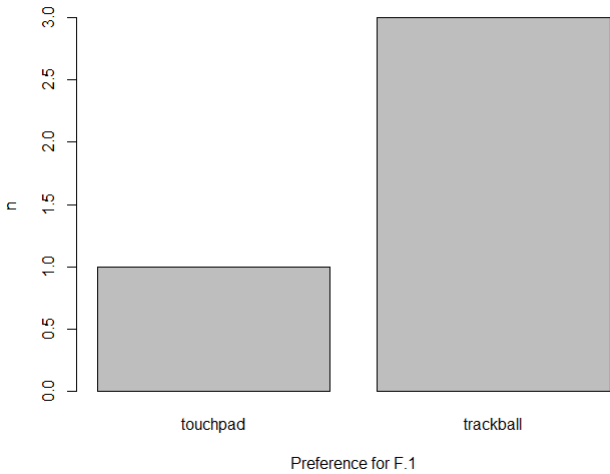
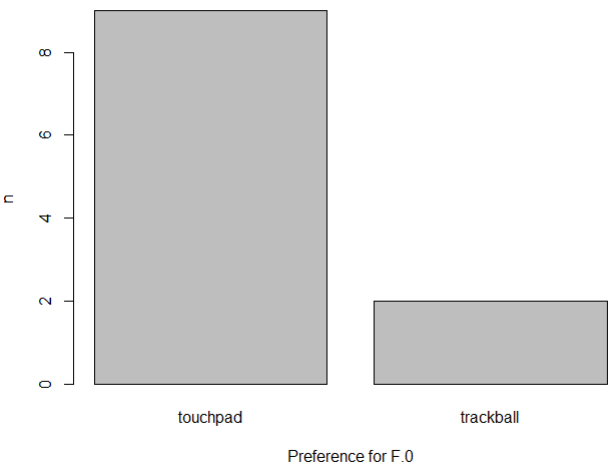
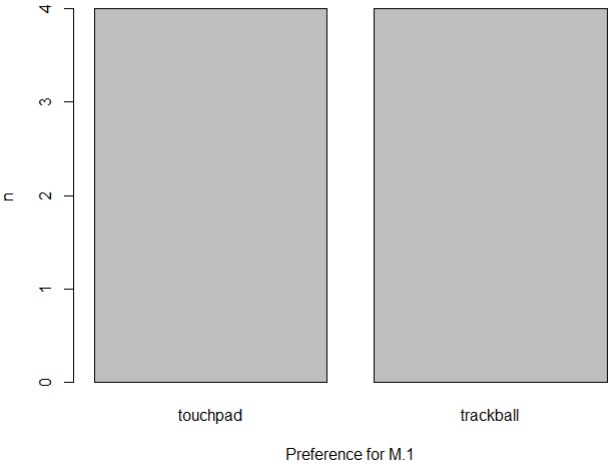
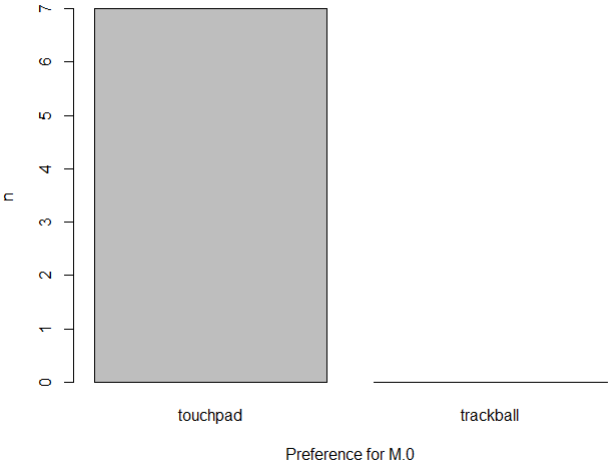


Device Prefs Sex (3 Sample Test of Proportions) n = 30

Disability	Sex	Pref
0:18	F:15	Touchpad:21
1:12	M:15	trackball:9



Binomial

	LR-Chisq	Df	Pr(>Chisq)	
Sex	2.8269	1	0.092695	.
<b>Disability</b>	<b>10.4437</b>	<b>1</b>	<b>0.001231</b>	<b>**</b>
Sex:Disability	0.6964	1	0.403997	

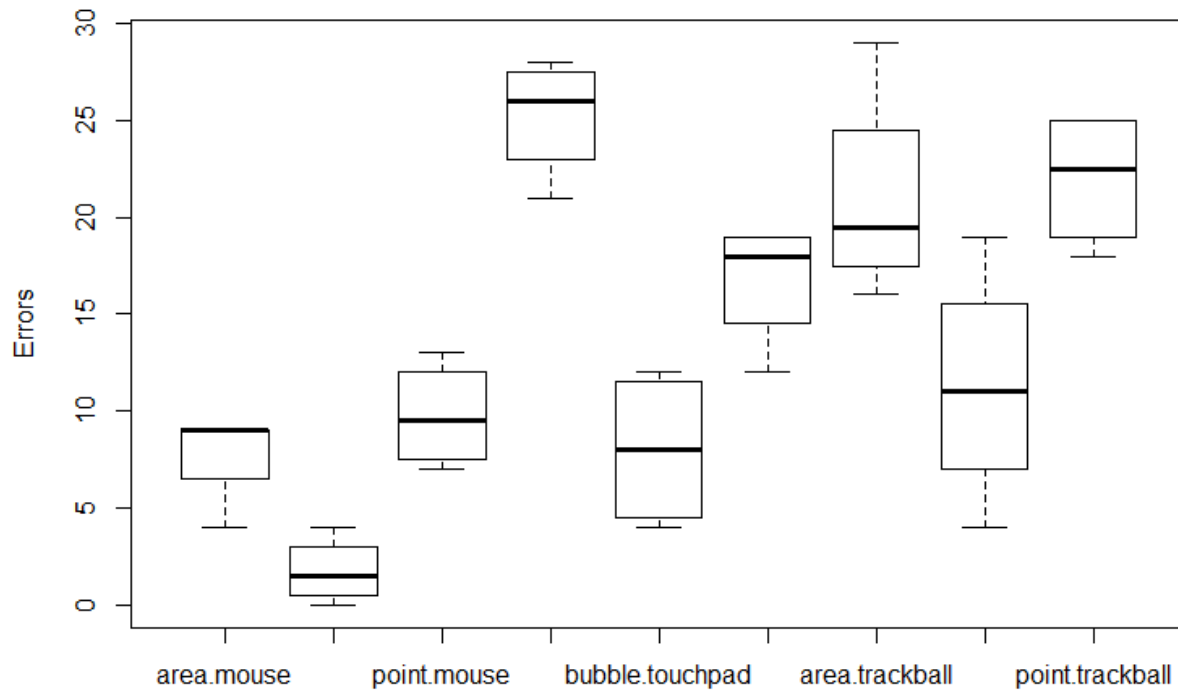
Multinomial

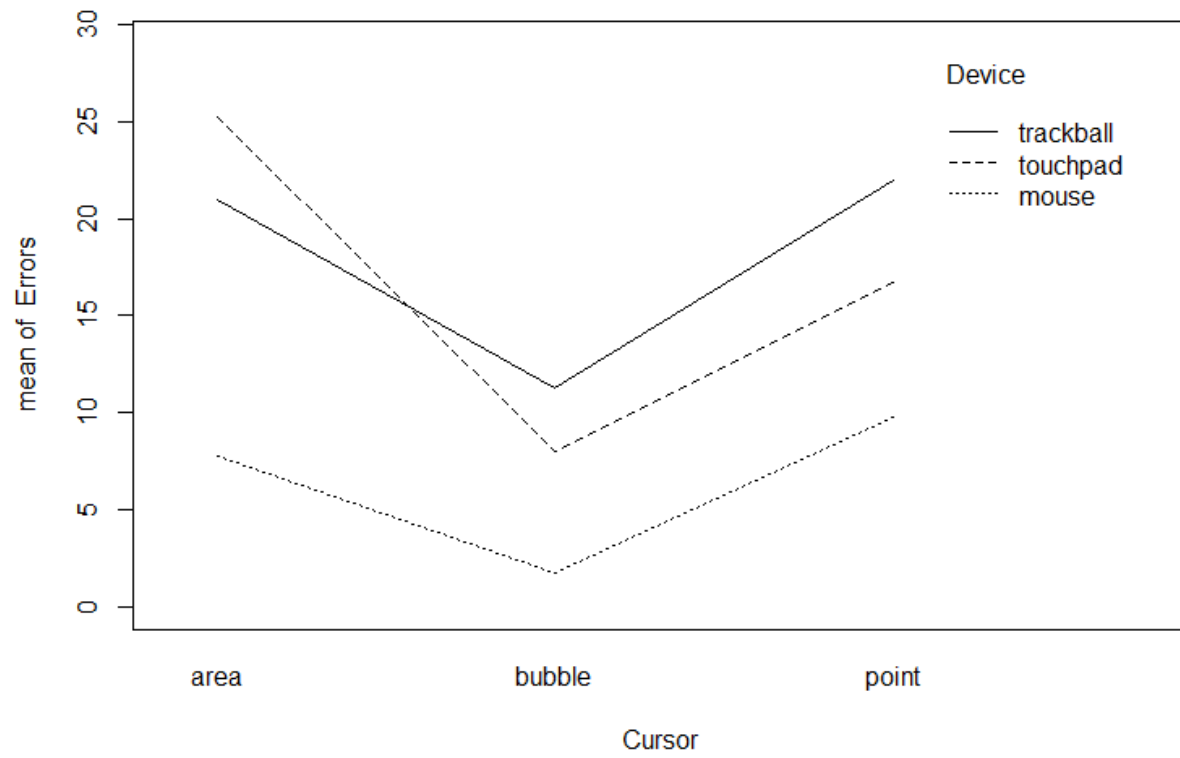
	LR-Chisq	Df	Pr(>Chisq)	
Sex	2.8267	1	0.092711	.
<b>Disability</b>	<b>10.4434</b>	<b>1</b>	<b>0.001231</b>	<b>**</b>
Sex:Disability	0.6961	1	0.404092	

### Ptgbtwn (3 x 3 Between Factors Study) n = 36

Device			Cursor					
Mouse:12			Area:12					
Touchpad:12			Bubble:12					
Trackball:12			Point:12					
	Device	Cursor	Min.	Q1	Median	Mean	Q3	Max.
1	mouse	area	4	7.75	9.0	7.75	9.00	9
2	mouse	bubble	0	0.75	1.5	1.75	2.50	4
3	mouse	point	7	7.75	9.5	9.75	11.50	13
4	touchpad	area	21	24.00	26.0	25.25	27.25	28
5	touchpad	bubble	4	4.75	8.0	8.00	11.25	12
6	touchpad	point	12	15.75	18.0	16.75	19.00	19
7	trackball	area	16	18.25	19.5	21.00	22.25	29
8	trackball	bubble	4	8.50	11.0	11.25	13.75	19
9	trackball	point	18	19.50	22.5	22.00	25.00	25

	Device	Cursor	Errors.mean	Errors.sd
1	mouse	area	7.75	2.500000
2	mouse	bubble	1.75	1.707825
3	mouse	point	9.75	2.753785
4	touchpad	area	25.25	3.095696
5	touchpad	bubble	8.00	4.082483
6	touchpad	point	16.75	3.304038
7	trackball	area	21.00	5.597619
8	trackball	bubble	11.25	6.184658
9	trackball	point	22.00	3.559026





#### Anova

	LR-Chisq	Df	Pr(>Chisq)	
Cursor	66.619	2	<b>3.419e-15</b>	***
Device	81.524	2	<b>2.2e-16</b>	***
Cursor:Device	12.916	4	<b>0.01169</b>	*

## Post-hoc comparisons

	Estimate	Std.Error	z-value	Pr(> z )	
<b>mouse,area-touchpad,area==0</b>	<b>-1.18113</b>	<b>0.20533</b>	<b>-5.752</b>	<b>2.90e-07</b>	<b>***</b>
<b>mouse,area-trackball,area==0</b>	<b>-0.99683</b>	<b>0.21015</b>	<b>-4.743</b>	<b>5.67e-05</b>	<b>***</b>
<b>mouse,area-mouse,bubble==0</b>	<b>1.48808</b>	<b>0.41847</b>	<b>3.556</b>	<b>0.006777</b>	<b>**</b>
mouse,area-touchpad,bubble==0	-0.03175	0.25201	-0.126	1.000000	
mouse,area-trackball,bubble==0	-0.37268	0.23341	-1.597	1.000000	
mouse,area-mouse,point==0	-0.22957	0.24062	-0.954	1.000000	
<b>mouse,area-touchpad,point==0</b>	<b>-0.77071</b>	<b>0.21722</b>	<b>-3.548</b>	<b>0.006777</b>	<b>**</b>
<b>mouse,area-trackball,point==0</b>	<b>-1.04335</b>	<b>0.20886</b>	<b>-4.995</b>	<b>1.70e-05</b>	<b>***</b>
touchpad,area-trackball,area==0	0.18430	0.14767	1.248	1.000000	
<b>touchpad,area-mouse,bubble==0</b>	<b>2.66921</b>	<b>0.39084</b>	<b>6.829</b>	<b>3.07e-10</b>	<b>***</b>
<b>touchpad,area-touchpad,bubble==0</b>	<b>1.14938</b>	<b>0.20286</b>	<b>5.666</b>	<b>4.53e-07</b>	<b>***</b>
<b>touchpad,area-trackball,bubble==0</b>	<b>0.80846</b>	<b>0.17923</b>	<b>4.511</b>	<b>0.000155</b>	<b>***</b>
<b>touchpad,area-mouse,point==0</b>	<b>0.95156</b>	<b>0.18853</b>	<b>5.047</b>	<b>1.34e-05</b>	<b>***</b>
touchpad,area-touchpad,point==0	0.41043	0.15756	2.605	0.119494	
touchpad,area-trackball,point==0	0.13778	0.14582	0.945	1.000000	
<b>trackball,area-mouse,bubble==0</b>	<b>2.48491</b>	<b>0.39340</b>	<b>6.317</b>	<b>9.10e-09</b>	<b>***</b>
<b>trackball,area-touchpad,bubble==0</b>	<b>0.96508</b>	<b>0.20774</b>	<b>4.646</b>	<b>8.81e-05</b>	<b>***</b>
<b>trackball,area-trackball,bubble==0</b>	<b>0.62415</b>	<b>0.18473</b>	<b>3.379</b>	<b>0.010926</b>	<b>*</b>
<b>trackball,area-mouse,point==0</b>	<b>0.76726</b>	<b>0.19377</b>	<b>3.960</b>	<b>0.001576</b>	<b>**</b>
trackball,area-touchpad,point==0	0.22612	0.16380	1.380	1.000000	
trackball,area-trackball,point==0	-0.04652	0.15254	-0.305	1.000000	
<b>mouse,bubble-touchpad,bubble==0</b>	<b>-1.51983</b>	<b>0.41726</b>	<b>-3.642</b>	<b>0.005132</b>	<b>**</b>
<b>mouse,bubble-trackball,bubble==0</b>	<b>-1.86075</b>	<b>0.40630</b>	<b>-4.580</b>	<b>0.000116</b>	<b>***</b>
<b>mouse,bubble-mouse,point==0</b>	<b>-1.71765</b>	<b>0.41049</b>	<b>-4.184</b>	<b>0.000629</b>	<b>***</b>
<b>mouse,bubble-touchpad,point==0</b>	<b>-2.25878</b>	<b>0.39722</b>	<b>-5.687</b>	<b>4.15e-07</b>	<b>***</b>
<b>mouse,bubble-trackball,point==0</b>	<b>-2.53143</b>	<b>0.39271</b>	<b>-6.446</b>	<b>4.02e-09</b>	<b>***</b>
touchpad,bubble-trackball,bubble==0	-0.34093	0.23124	-1.474	1.000000	
touchpad,bubble-mouse,point==0	-0.19783	0.23852	-0.829	1.000000	
<b>touchpad,bubble-touchpad,point==0</b>	<b>-0.73896</b>	<b>0.21488</b>	<b>-3.439</b>	<b>0.009347</b>	<b>**</b>
<b>touchpad,bubble-trackball,point==0</b>	<b>-1.01160</b>	<b>0.20643</b>	<b>-4.900</b>	<b>2.68e-05</b>	<b>***</b>
trackball,bubble-mouse,point==0	0.14310	0.21878	0.654	1.000000	
trackball,bubble-touchpad,point==0	-0.39803	0.19274	-2.065	0.466911	
<b>trackball,bubble-trackball,point==0</b>	<b>-0.67067</b>	<b>0.18326</b>	<b>-3.660</b>	<b>0.005052</b>	<b>**</b>
mouse,point-touchpad,point==0	-0.54113	0.20141	-2.687	0.101026	
<b>mouse,point-trackball,point==0</b>	<b>-0.81378</b>	<b>0.19237</b>	<b>-4.230</b>	<b>0.000537</b>	<b>***</b>
touchpad,point-trackball,point==0	-0.27264	0.16214	-1.682	1.000000	

# Ptgmixed (3 x 3 Mixed Factors Study) n = 12

Within: Device Between: Pointer

Anova

	Chisq	Df	Pr(>Chisq)	
(Intercept)	129.988	1	<2.2e-16	***
Device	33.536	2	5.22e-08	***
Cursor	17.529	2	0.0001562	***
Device:Cursor	12.311	4	0.0151800	*

	Estimate	Std.Error	z-value	Pr(> z )	
<b>mouse,area-touchpad,area==0</b>	<b>-1.18113</b>	<b>0.20532</b>	<b>-5.753</b>	<b>2.90e-07</b>	<b>***</b>
<b>mouse,area-trackball,area==0</b>	<b>-0.99683</b>	<b>0.21015</b>	<b>-4.744</b>	<b>5.67e-05</b>	<b>***</b>
<b>mouse,area-mouse,bubble==0</b>	<b>1.48808</b>	<b>0.41846</b>	<b>3.556</b>	<b>0.006776</b>	<b>**</b>
mouse,area-touchpad,bubble==0	-0.03175	0.25200	-0.126	1.000000	
mouse,area-trackball,bubble==0	-0.37268	0.23341	-1.597	1.000000	
mouse,area-mouse,point==0	-0.22957	0.24062	-0.954	1.000000	
<b>mouse,area-touchpad,point==0</b>	<b>-0.77071</b>	<b>0.21721</b>	<b>-3.548</b>	<b>0.006776</b>	<b>**</b>
<b>mouse,area-trackball,point==0</b>	<b>-1.04335</b>	<b>0.20885</b>	<b>-4.996</b>	<b>1.70e-05</b>	<b>***</b>
touchpad,area-trackball,area==0	0.18430	0.14767	1.248	1.000000	
<b>touchpad,area-mouse,bubble==0</b>	<b>2.66921</b>	<b>0.39084</b>	<b>6.829</b>	<b>3.07e-10</b>	<b>***</b>
<b>touchpad,area-touchpad,bubble==0</b>	<b>1.14938</b>	<b>0.20285</b>	<b>5.666</b>	<b>4.53e-07</b>	<b>***</b>
<b>touchpad,area-trackball,bubble==0</b>	<b>0.80846</b>	<b>0.17923</b>	<b>4.511</b>	<b>0.000155</b>	<b>***</b>
<b>touchpad,area-mouse,point==0</b>	<b>0.95156</b>	<b>0.18852</b>	<b>5.047</b>	<b>1.34e-05</b>	<b>***</b>
touchpad,area-touchpad,point==0	0.41043	0.15756	2.605	0.119479	
touchpad,area-trackball,point==0	0.13778	0.14582	0.945	1.000000	
<b>trackball,area-mouse,bubble==0</b>	<b>2.48491</b>	<b>0.39339</b>	<b>6.317</b>	<b>9.09e-09</b>	<b>***</b>
<b>trackball,area-touchpad,bubble==0</b>	<b>0.96508</b>	<b>0.20773</b>	<b>4.646</b>	<b>8.81e-05</b>	<b>***</b>
<b>trackball,area-trackball,bubble==0</b>	<b>0.62415</b>	<b>0.18473</b>	<b>3.379</b>	<b>0.010924</b>	<b>*</b>
<b>trackball,area-mouse,point==0</b>	<b>0.76726</b>	<b>0.19376</b>	<b>3.960</b>	<b>0.001576</b>	<b>**</b>
trackball,area-touchpad,point==0	0.22612	0.16380	1.381	1.000000	
trackball,area-trackball,point==0	-0.04652	0.15254	-0.305	1.000000	
<b>mouse,bubble-touchpad,bubble==0</b>	<b>-1.51983</b>	<b>0.41726</b>	<b>-3.642</b>	<b>0.005131</b>	<b>**</b>
<b>mouse,bubble-trackball,bubble==0</b>	<b>-1.86075</b>	<b>0.40629</b>	<b>-4.580</b>	<b>0.000116</b>	<b>***</b>
<b>mouse,bubble-mouse,point==0</b>	<b>-1.71765</b>	<b>0.41048</b>	<b>-4.185</b>	<b>0.000629</b>	<b>***</b>
<b>mouse,bubble-touchpad,point==0</b>	<b>-2.25878</b>	<b>0.39721</b>	<b>-5.687</b>	<b>4.15e-07</b>	<b>***</b>
<b>mouse,bubble-trackball,point==0</b>	<b>-2.53143</b>	<b>0.39270</b>	<b>-6.446</b>	<b>4.02e-09</b>	<b>***</b>
touchpad,bubble-trackball,bubble==0	-0.34093	0.23124	-1.474	1.000000	
touchpad,bubble-mouse,point==0	-0.19783	0.23851	-0.829	1.000000	
<b>touchpad,bubble-touchpad,point==0</b>	<b>-0.73896</b>	<b>0.21488</b>	<b>-3.439</b>	<b>0.009345</b>	<b>**</b>
<b>touchpad,bubble-trackball,point==0</b>	<b>-1.01160</b>	<b>0.20643</b>	<b>-4.901</b>	<b>2.68e-05</b>	<b>***</b>
trackball,bubble-mouse,point==0	0.14310	0.21877	0.654	1.000000	
trackball,bubble-touchpad,point==0	-0.39803	0.19273	-2.065	0.466873	
<b>trackball,bubble-trackball,point==0</b>	<b>-0.67067</b>	<b>0.18326</b>	<b>-3.660</b>	<b>0.005051</b>	<b>**</b>
mouse,point-touchpad,point==0	-0.54113	0.20141	-2.687	0.101012	
<b>mouse,point-trackball,point==0</b>	<b>-0.81378</b>	<b>0.19236</b>	<b>-4.230</b>	<b>0.000536</b>	<b>***</b>
touchpad,point-trackball,point==0	-0.27264	0.16214	-1.682	1.000000	

## ART

	F	Df	Df.res	Pr(>F)	
1	Device	27.9382	2	18	3.0262e-06
2	Cursor	19.9378	2	9	0.00049337
3	Device:Cursor	3.2119	4	18	0.03723782

Shapiro-wilk normality test

data: residuals(m)  
w = 0.97461, p-value = 0.564

```
> lsmeans(artlm(m, "Device"), pairwise ~ Device)
NOTE: Results may be misleading due to involvement in interactions
$lsmeans
  Device    lsmean      SE df lower.CL upper.CL
mouse      6.50 1.971244 27  2.455342 10.54466
touchpad   23.75 1.971244 27 19.705342 27.79466
trackball  25.25 1.971244 27 21.205342 29.29466
```

Results are averaged over the levels of: Cursor  
Confidence level used: 0.95

```
$contrasts
  contrast      estimate      SE df t.ratio p.value
mouse - touchpad   -17.25 2.78776 18  -6.188  <.0001
mouse - trackball  -18.75 2.78776 18  -6.726  <.0001
touchpad - trackball -1.50 2.78776 18  -0.538  0.8538
```

Results are averaged over the levels of: Cursor  
P value adjustment: tukey method for comparing a family of 3 estimates

```
> lsmeans(artlm(m, "Cursor"), pairwise ~ Cursor)
NOTE: Results may be misleading due to involvement in interactions
$lsmeans
  Cursor    lsmean      SE df lower.CL upper.CL
area    26.250000 2.247083  9 21.166745 31.33326
bubble   7.166667 2.247083  9  2.083411 12.24992
point    22.083333 2.247083  9 17.000078 27.16659
```

Results are averaged over the levels of: Device  
Confidence level used: 0.95

```
$contrasts
  contrast      estimate      SE df t.ratio p.value
area - bubble   19.083333 3.177855  9   6.005  0.0005
area - point     4.166667 3.177855  9   1.311  0.4243
bubble - point  -14.916667 3.177855  9  -4.694  0.0029
```

Results are averaged over the levels of: Device  
P value adjustment: tukey method for comparing a family of 3 estimates

**Teaser (Within Factor Study) n = 20**

<b>Teaser</b>	<b>0</b>	<b>1</b>
action	1	19
comedy	14	6
horror	18	2
romance	8	12
thriller	4	16

**Order Effect Test**

	Chisq	Df	Pr(>Chisq)
(Intercept)	1.0392	1	0.3080
Order	3.9205	4	0.4169

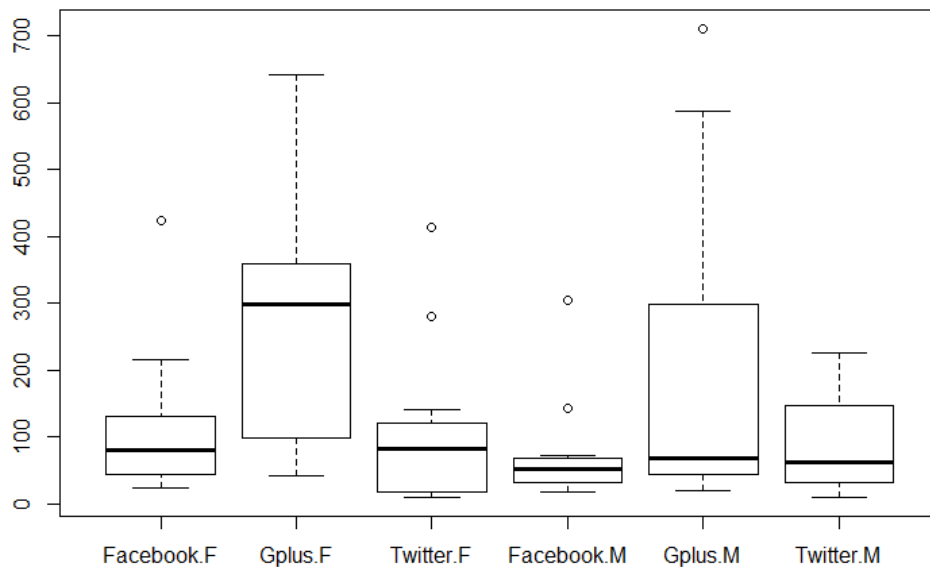
**GLMM Test**

	Chisq	Df	Pr(>Chisq)
(Intercept)	1.209	1	0.2715
<b>Teaser</b>	<b>26.695</b>	<b>4</b>	<b>2.291e-05</b>

**Vocab n = 30**

	<b>Sex</b>	<b>Social</b>	<b>Min.</b>	<b>Q1</b>	<b>Median</b>	<b>Mean</b>	<b>Q3</b>	<b>Max.</b>
<b>1</b>	F	Facebook	24	43.5	80	110.90	131.0	424
<b>2</b>	F	Gplus	42	98.0	298	252.80	359.0	642
<b>3</b>	F	Twitter	10	18.0	83	102.70	121.5	414
<b>4</b>	M	Facebook	18	32.0	52	84.40	67.5	305
<b>5</b>	M	Gplus	20	44.0	68	201.20	298.0	710
<b>6</b>	M	Twitter	10	32.0	62	87.33	146.0	226

	<b>Sex</b>	<b>Social</b>	<b>Vocab.mean</b>	<b>Vocab.sd</b>
<b>1</b>	F	Facebook	110.86667	105.01487
<b>2</b>	F	Gplus	252.80000	168.85124
<b>3</b>	F	Twitter	102.66667	112.58182
<b>4</b>	M	Facebook	84.40000	94.18356
<b>5</b>	M	Gplus	201.20000	224.12598
<b>6</b>	M	Twitter	87.33333	70.97350



## Ks.tests

data: data[data\$Social == "Facebook", ]\$Vocab  
D = 0.17655, p-value = 0.2734  
alternative hypothesis: two-sided

data: data[data\$Social == "Gplus", ]\$Vocab  
D = 0.37767, p-value = 0.0002359  
alternative hypothesis: two-sided

data: data[data\$Social == "Twitter", ]\$Vocab  
D = 0.097353, p-value = 0.9125  
alternative hypothesis: two-sided

## Order Effect

	Chisq	Df	Pr(>Chisq)
(Intercept)	1270.8564	1	<2e-16
Order	0.3903	2	0.8227

## GLLM

	Chisq	Df	Pr(>Chisq)	
(Intercept)	1408.6992	1	< 2.2e-16	***
Sex	0.9048	1	0.3415	
<b>Social</b>	<b>26.7159</b>	<b>2</b>	<b>1.58e-06</b>	<b>***</b>
Sex:Social	0.2426	2	0.8858	