

Appendix

Appendix A1: Full set of parameters for the LMM analysis of RTs for Experiment 1

Parameter	Estimate	SEM	df	t	p	95% CI	
						Lower	Upper
Constant Term	<u>2008.033333</u>	<u>134.477797</u>	<u>3156.000</u>	<u>14.932</u>	<u>.000</u>	<u>1744.360573</u>	<u>2271.706094</u>
GROUP	<u>-630.791954</u>	<u>155.949466</u>	<u>3156.000</u>	<u>-4.045</u>	<u>.000</u>	<u>-936.564557</u>	<u>-325.019351</u>
BLOCK	<u>-300.133333</u>	<u>190.180325</u>	<u>3156.000</u>	<u>-1.578</u>	<u>.115</u>	<u>-673.022927</u>	<u>72.756261</u>
QUANTIFIER	<u>-8.613978</u>	<u>188.640378</u>	<u>3156.000</u>	<u>-.046</u>	<u>.964</u>	<u>-378.484174</u>	<u>361.256217</u>
GROUP × BLOCK	<u>355.259770</u>	<u>220.545850</u>	<u>3156</u>	<u>1.611</u>	<u>.107</u>	<u>-77.167992</u>	<u>787.687532</u>
GROUP × QUANTIFIER	<u>360.554417</u>	<u>219.057629</u>	<u>3156.000</u>	<u>1.646</u>	<u>.100</u>	<u>-68.955367</u>	<u>790.064202</u>
BLOCK × QUANTIFIER	<u>453.920875</u>	<u>269.030377</u>	<u>3156.000</u>	<u>1.687</u>	<u>.092</u>	<u>-73.571273</u>	<u>981.413023</u>
GROUP × BLOCK × QUANTIFIER	<u>-305.950060</u>	<u>311.966061</u>	<u>3156.000</u>	<u>-.981</u>	<u>.327</u>	<u>-917.626889</u>	<u>305.726769</u>
[PROPORTION=20]	<u>-124.885185</u>	<u>195.391710</u>	<u>3156</u>	<u>-.639</u>	<u>.523</u>	<u>-507.992824</u>	<u>258.222454</u>
[PROPORTION=30]	<u>29.395238</u>	<u>193.546610</u>	<u>3156</u>	<u>.152</u>	<u>.879</u>	<u>-350.094684</u>	<u>408.885160</u>
[PROPORTION=40]	<u>85.735897</u>	<u>197.359450</u>	<u>3156</u>	<u>.434</u>	<u>.664</u>	<u>-301.229922</u>	<u>472.701717</u>
[PROPORTION=50]	<u>239.600000</u>	<u>190.180325</u>	<u>3156.000</u>	<u>1.260</u>	<u>.208</u>	<u>-133.289594</u>	<u>612.489594</u>
[PROPORTION=60]	<u>-43.343678</u>	<u>191.812804</u>	<u>3156</u>	<u>-.226</u>	<u>.821</u>	<u>-419.434100</u>	<u>332.746743</u>
[PROPORTION=70]	<u>-100.783333</u>	<u>187.185172</u>	<u>3156</u>	<u>-.538</u>	<u>.590</u>	<u>-467.800283</u>	<u>266.233616</u>
[PROPORTION=80]	<u>0^b</u>	<u>0</u>	<u>.</u>	<u>.</u>	<u>.</u>	<u>.</u>	<u>.</u>
GROUP × [PROPORTION=20]	<u>412.896679</u>	<u>225.055184</u>	<u>3156.000</u>	<u>1.835</u>	<u>.067</u>	<u>-28.372607</u>	<u>854.165966</u>
GROUP × [PROPORTION=30]	<u>198.556564</u>	<u>223.296535</u>	<u>3156</u>	<u>.889</u>	<u>.374</u>	<u>-239.264512</u>	<u>636.377640</u>
GROUP × [PROPORTION=40]	<u>315.999735</u>	<u>226.765668</u>	<u>3156.000</u>	<u>1.394</u>	<u>.164</u>	<u>-128.623326</u>	<u>760.622795</u>
GROUP × [PROPORTION=50]	<u>345.599097</u>	<u>221.050186</u>	<u>3156.000</u>	<u>1.563</u>	<u>.118</u>	<u>-87.817525</u>	<u>779.015719</u>
GROUP × [PROPORTION=60]	<u>400.613927</u>	<u>222.118389</u>	<u>3156.000</u>	<u>1.804</u>	<u>.071</u>	<u>-34.897139</u>	<u>836.124992</u>
GROUP × [PROPORTION=70]	<u>194.093678</u>	<u>217.968356</u>	<u>3156</u>	<u>.890</u>	<u>.373</u>	<u>-233.280352</u>	<u>621.467709</u>
BLOCK × [PROPORTION=20]	<u>768.630346</u>	<u>271.593653</u>	<u>3156</u>	<u>2.830</u>	<u>.005</u>	<u>236.112343</u>	<u>1301.148350</u>
BLOCK × [PROPORTION=30]	<u>478.642262</u>	<u>269.255601</u>	<u>3156.000</u>	<u>1.778</u>	<u>.076</u>	<u>-49.291486</u>	<u>1006.576010</u>
BLOCK × [PROPORTION=40]	<u>541.401140</u>	<u>277.720494</u>	<u>3156.000</u>	<u>1.949</u>	<u>.051</u>	<u>-3.129859</u>	<u>1085.932138</u>

Many or few? Quantifier flexibility in aphasia.

BLOCK × [PROPORTION=50]	<u>197.153846</u>	<u>274.079019</u>	<u>3156.000</u>	<u>.719</u>	<u>.472</u>	<u>-340.237254</u>	<u>734.544946</u>
BLOCK × [PROPORTION=60]	<u>485.015107</u>	<u>272.493012</u>	<u>3156.000</u>	<u>1.780</u>	<u>.075</u>	<u>-49.266286</u>	<u>1019.296499</u>
BLOCK × [PROPORTION=70]	<u>268.607471</u>	<u>268.012015</u>	<u>3156.000</u>	<u>1.002</u>	<u>.316</u>	<u>-256.887958</u>	<u>794.102901</u>
QUANTIFIER × [PROPORTION=20]	<u>-56.534170</u>	<u>272.739268</u>	<u>3156.000</u>	<u>-.207</u>	<u>.836</u>	<u>-591.298398</u>	<u>478.230059</u>
QUANTIFIER × [PROPORTION=30]	<u>-365.054593</u>	<u>276.879645</u>	<u>3156.000</u>	<u>-1.318</u>	<u>.187</u>	<u>-907.936926</u>	<u>177.827740</u>
QUANTIFIER × [PROPORTION=40]	<u>67.987605</u>	<u>275.368260</u>	<u>3156.000</u>	<u>.247</u>	<u>.805</u>	<u>-471.931332</u>	<u>607.906542</u>
QUANTIFIER × [PROPORTION=50]	<u>-187.259355</u>	<u>274.537072</u>	<u>3156.000</u>	<u>-.682</u>	<u>.495</u>	<u>-725.548567</u>	<u>351.029857</u>
QUANTIFIER × [PROPORTION=60]	<u>136.995752</u>	<u>271.420482</u>	<u>3156.000</u>	<u>.505</u>	<u>.614</u>	<u>-395.182713</u>	<u>669.174217</u>
QUANTIFIER × [PROPORTION=70]	<u>144.963978</u>	<u>265.750787</u>	<u>3156.000</u>	<u>.545</u>	<u>.585</u>	<u>-376.097825</u>	<u>666.025782</u>
GROUP × BLOCK × [PROPORTION=20]	<u>-714.033186</u>	<u>314.410039</u>	<u>3156</u>	<u>-2.271</u>	<u>.023</u>	<u>-1330.501960</u>	<u>-97.564412</u>
GROUP × BLOCK × [PROPORTION=30]	<u>-434.007858</u>	<u>312.044143</u>	<u>3156</u>	<u>-1.391</u>	<u>.164</u>	<u>-1045.837782</u>	<u>177.822067</u>
GROUP × BLOCK × [PROPORTION=40]	<u>-410.056312</u>	<u>319.487878</u>	<u>3156.000</u>	<u>-1.283</u>	<u>.199</u>	<u>-1036.481287</u>	<u>216.368663</u>
GROUP × BLOCK × [PROPORTION=50]	<u>-228.523085</u>	<u>316.793883</u>	<u>3156</u>	<u>-.721</u>	<u>.471</u>	<u>-849.665899</u>	<u>392.619730</u>
GROUP × BLOCK × [PROPORTION=60]	<u>-537.978753</u>	<u>315.184542</u>	<u>3156.000</u>	<u>-1.707</u>	<u>.088</u>	<u>-1155.966108</u>	<u>80.008603</u>
GROUP × BLOCK × [PROPORTION=70]	<u>-269.251541</u>	<u>310.971717</u>	<u>3156.000</u>	<u>-.866</u>	<u>.387</u>	<u>-878.978743</u>	<u>340.475661</u>
GROUP × QUANTIFIER × [PROPORTION=20]	<u>-353.647649</u>	<u>315.055037</u>	<u>3156</u>	<u>-1.122</u>	<u>.262</u>	<u>-971.381082</u>	<u>264.085785</u>
GROUP × QUANTIFIER × [PROPORTION=30]	<u>97.341427</u>	<u>318.423586</u>	<u>3156.000</u>	<u>.306</u>	<u>.760</u>	<u>-526.996773</u>	<u>721.679627</u>
GROUP × QUANTIFIER × [PROPORTION=40]	<u>-342.622702</u>	<u>317.564758</u>	<u>3156.000</u>	<u>-1.079</u>	<u>.281</u>	<u>-965.276985</u>	<u>280.031581</u>
GROUP × QUANTIFIER × [PROPORTION=50]	<u>59.545106</u>	<u>317.692001</u>	<u>3156</u>	<u>.187</u>	<u>.851</u>	<u>-563.358664</u>	<u>682.448877</u>
GROUP × QUANTIFIER × [PROPORTION=60]	<u>-232.153701</u>	<u>314.263084</u>	<u>3156.000</u>	<u>-.739</u>	<u>.460</u>	<u>-848.334339</u>	<u>384.026937</u>
GROUP × QUANTIFIER × [PROPORTION=70]	<u>-29.107304</u>	<u>309.142298</u>	<u>3156.000</u>	<u>-.094</u>	<u>.925</u>	<u>-635.247535</u>	<u>577.032926</u>
BLOCK × QUANTIFIER × [PROPORTION=20]	<u>-547.317888</u>	<u>383.097966</u>	<u>3156.000</u>	<u>-1.429</u>	<u>.153</u>	<u>-1298.464177</u>	<u>203.828400</u>

BLOCK × QUANTIFIER × [PROPORTION=30]	<u>-14.823137</u>	<u>385.347607</u>	<u>3156</u>	<u>-.038</u>	<u>.969</u>	<u>-770.380331</u>	<u>740.734057</u>
BLOCK × QUANTIFIER × [PROPORTION=40]	<u>-680.405613</u>	<u>390.905506</u>	<u>3156</u>	<u>-1.741</u>	<u>.082</u>	<u>-1446.860269</u>	<u>86.049044</u>
BLOCK × QUANTIFIER × [PROPORTION=50]	<u>-54.355234</u>	<u>392.295430</u>	<u>3156</u>	<u>-.139</u>	<u>.890</u>	<u>-823.535136</u>	<u>714.824668</u>
BLOCK × QUANTIFIER × [PROPORTION=60]	<u>-596.577781</u>	<u>387.209096</u>	<u>3156</u>	<u>-1.541</u>	<u>.123</u>	<u>-1355.784827</u>	<u>162.629265</u>
BLOCK × QUANTIFIER × [PROPORTION=70]	<u>-342.637870</u>	<u>381.443991</u>	<u>3156.000</u>	<u>-.898</u>	<u>.369</u>	<u>-1090.541183</u>	<u>405.265442</u>
GROUP × BLOCK × QUANTIFIER × [PROPORTION=20]	<u>309.691528</u>	<u>443.541687</u>	<u>3156</u>	<u>.698</u>	<u>.485</u>	<u>-559.967728</u>	<u>1179.350783</u>
GROUP × BLOCK × QUANTIFIER × [PROPORTION=30]	<u>-185.662307</u>	<u>445.491948</u>	<u>3156.000</u>	<u>-.417</u>	<u>.677</u>	<u>-1059.145470</u>	<u>687.820856</u>
GROUP × BLOCK × QUANTIFIER × [PROPORTION=40]	<u>509.784629</u>	<u>450.381122</u>	<u>3156.000</u>	<u>1.132</u>	<u>.258</u>	<u>-373.284815</u>	<u>1392.854072</u>
GROUP × BLOCK × QUANTIFIER × [PROPORTION=50]	<u>-56.874740</u>	<u>452.425564</u>	<u>3156.000</u>	<u>-.126</u>	<u>.900</u>	<u>-943.952754</u>	<u>830.203274</u>
GROUP × BLOCK × QUANTIFIER × [PROPORTION=60]	<u>399.103546</u>	<u>447.419777</u>	<u>3156</u>	<u>.892</u>	<u>.372</u>	<u>-478.159543</u>	<u>1276.366634</u>
GROUP × BLOCK × QUANTIFIER × [PROPORTION=70]	<u>288.928875</u>	<u>442.111964</u>	<u>3156.000</u>	<u>.654</u>	<u>.513</u>	<u>-577.927100</u>	<u>1155.784849</u>

Appendix A2: ANOVA for Acceptability Ratings for Experiment 1

In line with the analysis of the previous studies (Heim et al. 2015; 2016; 2020a,b), the participants' acceptability judgments of the presented quantifier at certain proportions were first aggregated per participant, quantifier, experimental block, and proportion of circles in the target color. Then they were aggregated a second time for the latter three factors obtaining data for the descriptive analyses. The aggregated values were subjected to a 2×2 ANOVA with factors QUANTIFIER (many/few)

Many or few? Quantifier flexibility in aphasia.

and BLOCK (baseline/test). Factors were examined at proportion 40% at which a change in acceptability due to adaptation was most likely to occur. In this way, the data of the whole group as well as that of PWFA and PWNFA were analyzed.

The 2×2 ANOVA for the entire group revealed a significant main effect for QUANTIFIER ($F(1,14) = 20.194$; $p < 0.001$), whereas the main effect BLOCK ($F(1,14) = 0.267$; $p = 0.614$) and the interaction (QUANTIFIER $\times$ BLOCK: $F(1,14) = 0.444$; $p = 0.516$) were not significant. The identically designed ANOVAs for PWFA and PWNFA yielded the following results: PWFA showed a significant main effect QUANTIFIER ($F(1,10) = 36.352$; $p < 0.001$) and non-significant main effect BLOCK ($F(1,10) = 0.008$; $p = 0.929$) and interaction (QUANTIFIER $\times$ BLOCK: $F(1,10) = 1.290$; $p = 0.283$). For PWNFA, all three results were non-significant (QUANTIFIER: $F(1,3) = 0.232$; $p = 0.663$; BLOCK: $F(1,3) = 4.654$; $p = 0.120$; interaction QUANTIFIER $\times$ BLOCK: $F(1,3) = 0.944$; $p = 0.403$). Hence no adaptation occurred in all three groups: all PWA and the subgroups PWFA and PWNFA (cf. Figure 4). Neither the criterion for “many” nor that for “few” could be shifted. Experiment 1 thus shows no evidence of semantic flexibility in PWA.

Appendix B1: Full set of parameters for the LMM analysis of RTs for Experiment 2

<u>Parameter</u>	<u>Estimate</u>	<u>SEM</u>	<u>df</u>	<u>t</u>	<u>p</u>	<u>95% CI</u>	
						<u>Lower</u>	<u>Upper</u>
<u>Constant Term</u>	<u>1714.166667</u>	<u>103.240427</u>	<u>4715</u>	<u>16.604</u>	<u>.000</u>	<u>1511.767192</u>	<u>1916.566141</u>
<u>GROUP</u>	<u>-.331.575758</u>	<u>118.532501</u>	<u>4715.000</u>	<u>-2.797</u>	<u>.005</u>	<u>-563.954844</u>	<u>-99.196671</u>
<u>BLOCK</u>	<u>353.023810</u>	<u>146.004012</u>	<u>4715</u>	<u>2.418</u>	<u>.016</u>	<u>66.787727</u>	<u>639.259892</u>
<u>QUANTIFIER</u>	<u>264.961538</u>	<u>148.785290</u>	<u>4715.000</u>	<u>1.781</u>	<u>.075</u>	<u>-26.727150</u>	<u>556.650227</u>

Many or few? Quantifier flexibility in aphasia.

<u>GROUP × BLOCK</u>	<u>-436.167749</u>	<u>167.630271</u>	<u>4715.000</u>	<u>-2.602</u>	<u>.009</u>	<u>-764.801404</u>	<u>-107.534093</u>
<u>GROUP × QUANTIFIER</u>	<u>163.742126</u>	<u>170.289953</u>	<u>4715.000</u>	<u>.962</u>	<u>.336</u>	<u>-170.105748</u>	<u>497.590000</u>
<u>BLOCK × QUANTIFIER</u>	<u>-217.890110</u>	<u>208.456792</u>	<u>4715.000</u>	<u>-1.045</u>	<u>.296</u>	<u>-626.562822</u>	<u>190.782602</u>
<u>GROUP × BLOCK × QUANTIFIER</u>	<u>178.307657</u>	<u>238.953083</u>	<u>4715.000</u>	<u>.746</u>	<u>.456</u>	<u>-290.152034</u>	<u>646.767349</u>
<u>[PROPORTION=20]</u>	<u>88.190476</u>	<u>146.004012</u>	<u>4715.000</u>	<u>.604</u>	<u>.546</u>	<u>-198.045606</u>	<u>374.426558</u>
<u>[PROPORTION=30]</u>	<u>169.883333</u>	<u>147.817796</u>	<u>4715</u>	<u>1.149</u>	<u>.251</u>	<u>-119.908613</u>	<u>459.675280</u>
<u>[PROPORTION=40]</u>	<u>486.083333</u>	<u>151.965793</u>	<u>4715</u>	<u>3.199</u>	<u>.001</u>	<u>188.159373</u>	<u>784.007294</u>
<u>[PROPORTION=50]</u>	<u>151.345528</u>	<u>146.891582</u>	<u>4715.000</u>	<u>1.030</u>	<u>.303</u>	<u>-136.630607</u>	<u>439.321664</u>
<u>[PROPORTION=60]</u>	<u>219.443089</u>	<u>146.891582</u>	<u>4715</u>	<u>1.494</u>	<u>.135</u>	<u>-68.533046</u>	<u>507.419225</u>
<u>[PROPORTION=70]</u>	<u>-124.532520</u>	<u>146.891582</u>	<u>4715</u>	<u>-.848</u>	<u>.397</u>	<u>-412.508656</u>	<u>163.443615</u>
<u>GROUP × [PROPORTION=20]</u>	<u>288.562126</u>	<u>167.707472</u>	<u>4715</u>	<u>1.721</u>	<u>.085</u>	<u>-40.222879</u>	<u>617.347131</u>
<u>GROUP × [PROPORTION=30]</u>	<u>163.792933</u>	<u>169.288881</u>	<u>4715.000</u>	<u>.968</u>	<u>.333</u>	<u>-168.092374</u>	<u>495.678240</u>
<u>GROUP × [PROPORTION=40]</u>	<u>98.056527</u>	<u>172.998594</u>	<u>4715.000</u>	<u>.567</u>	<u>.571</u>	<u>-241.101551</u>	<u>437.214604</u>
<u>GROUP × [PROPORTION=50]</u>	<u>407.863562</u>	<u>168.558738</u>	<u>4715.000</u>	<u>2.420</u>	<u>.016</u>	<u>77.409678</u>	<u>738.317447</u>
<u>GROUP × [PROPORTION=60]</u>	<u>210.897299</u>	<u>168.480745</u>	<u>4715.000</u>	<u>1.252</u>	<u>.211</u>	<u>-119.403683</u>	<u>541.198282</u>
<u>GROUP × [PROPORTION=70]</u>	<u>183.262222</u>	<u>168.480745</u>	<u>4715.000</u>	<u>1.088</u>	<u>.277</u>	<u>-147.038761</u>	<u>513.563205</u>

Many or few? Quantifier flexibility in aphasia.

BLOCK × [PROPORTION=20]	<u>146.547619</u>	<u>206.480853</u>	<u>4715.000</u>	<u>.710</u>	<u>.478</u>	<u>-258.251331</u>	<u>551.346569</u>
BLOCK × [PROPORTION=30]	<u>154.003114</u>	<u>209.731169</u>	<u>4715</u>	<u>.734</u>	<u>.463</u>	<u>-257.167974</u>	<u>565.174201</u>
BLOCK × [PROPORTION=40]	<u>-152.073810</u>	<u>211.999300</u>	<u>4715</u>	<u>-.717</u>	<u>.473</u>	<u>-567.691492</u>	<u>263.543873</u>
BLOCK × [PROPORTION=50]	<u>161.694765</u>	<u>209.079410</u>	<u>4715.000</u>	<u>.773</u>	<u>.439</u>	<u>-248.198569</u>	<u>571.588099</u>
BLOCK × [PROPORTION=60]	<u>-418.292102</u>	<u>207.736068</u>	<u>4715.000</u>	<u>-2.014</u>	<u>.044</u>	<u>-825.551858</u>	<u>-11.032346</u>
BLOCK × [PROPORTION=70]	<u>75.528091</u>	<u>206.510131</u>	<u>4715.000</u>	<u>.366</u>	<u>.715</u>	<u>-329.328257</u>	<u>480.384438</u>
QUANTIFIER × [PROPORTION=20]	<u>-132.093681</u>	<u>209.731169</u>	<u>4715</u>	<u>-.630</u>	<u>.529</u>	<u>-543.264769</u>	<u>279.077406</u>
QUANTIFIER × [PROPORTION=30]	<u>-384.678205</u>	<u>209.731169</u>	<u>4715.000</u>	<u>-1.834</u>	<u>.067</u>	<u>-795.849292</u>	<u>26.492882</u>
QUANTIFIER × [PROPORTION=40]	<u>-530.836538</u>	<u>213.924272</u>	<u>4715</u>	<u>-2.481</u>	<u>.013</u>	<u>-950.228067</u>	<u>-111.445010</u>
QUANTIFIER × [PROPORTION=50]	<u>-228.863977</u>	<u>209.700179</u>	<u>4715</u>	<u>-1.091</u>	<u>.275</u>	<u>-639.974309</u>	<u>182.246354</u>
QUANTIFIER × [PROPORTION=60]	<u>-29.737961</u>	<u>209.079410</u>	<u>4715.000</u>	<u>-.142</u>	<u>.887</u>	<u>-439.631295</u>	<u>380.155373</u>
QUANTIFIER × [PROPORTION=70]	<u>298.867730</u>	<u>209.700179</u>	<u>4715</u>	<u>1.425</u>	<u>.154</u>	<u>-112.242602</u>	<u>709.978062</u>

Many or few? Quantifier flexibility in aphasia.

GROUP × BLOCK × [PROPORTION=20]	<u>-122.254883</u>	<u>237.229591</u>	<u>4715</u>	<u>-.515</u>	<u>.606</u>	<u>-587.335725</u>	<u>342.825959</u>
GROUP × BLOCK × [PROPORTION=30]	<u>-176.118774</u>	<u>239.955255</u>	<u>4715.000</u>	<u>-.734</u>	<u>.463</u>	<u>-646.543191</u>	<u>294.305643</u>
GROUP × BLOCK × [PROPORTION=40]	<u>111.335465</u>	<u>241.994526</u>	<u>4715</u>	<u>.460</u>	<u>.645</u>	<u>-363.086877</u>	<u>585.757806</u>
GROUP × BLOCK × [PROPORTION=50]	<u>-13.800438</u>	<u>239.605334</u>	<u>4715.000</u>	<u>-.058</u>	<u>.954</u>	<u>-483.538847</u>	<u>455.937972</u>
GROUP × BLOCK × [PROPORTION=60]	<u>476.451309</u>	<u>238.267755</u>	<u>4715</u>	<u>2.000</u>	<u>.046</u>	<u>9.335179</u>	<u>943.567438</u>
GROUP × BLOCK × [PROPORTION=70]	<u>-21.826899</u>	<u>237.199670</u>	<u>4715.000</u>	<u>-.092</u>	<u>.927</u>	<u>-486.849083</u>	<u>443.195285</u>
GROUP × QUANTIFIER × [PROPORTION=20]	<u>-348.108533</u>	<u>240.283712</u>	<u>4715</u>	<u>-1.449</u>	<u>.147</u>	<u>-819.176881</u>	<u>122.959814</u>
GROUP × QUANTIFIER × [PROPORTION=30]	<u>23.615057</u>	<u>240.228159</u>	<u>4715</u>	<u>.098</u>	<u>.922</u>	<u>-447.344379</u>	<u>494.574494</u>
GROUP × QUANTIFIER × [PROPORTION=40]	<u>154.323980</u>	<u>244.061654</u>	<u>4715</u>	<u>.632</u>	<u>.527</u>	<u>-324.150899</u>	<u>632.798859</u>
GROUP × QUANTIFIER × [PROPORTION=50]	<u>69.541415</u>	<u>240.425040</u>	<u>4715</u>	<u>.289</u>	<u>.772</u>	<u>-401.804001</u>	<u>540.886832</u>
GROUP × QUANTIFIER × [PROPORTION=60]	<u>-166.819482</u>	<u>239.715036</u>	<u>4715</u>	<u>-.696</u>	<u>.487</u>	<u>-636.772958</u>	<u>303.133995</u>
GROUP × QUANTIFIER × [PROPORTION=70]	<u>-245.227883</u>	<u>240.146379</u>	<u>4715</u>	<u>-1.021</u>	<u>.307</u>	<u>-716.026993</u>	<u>225.571227</u>

Many or few? Quantifier flexibility in aphasia.

BLOCK × QUANTIFIER	<u>58.898559</u>	<u>294.756631</u>	<u>4715</u>	<u>.200</u>	<u>.842</u>	<u>-518.962161</u>	<u>636.759280</u>
× [PROPORTION=20]							
BLOCK × QUANTIFIER	<u>340.640965</u>	<u>298.693536</u>	<u>4715</u>	<u>1.140</u>	<u>.254</u>	<u>-244.937928</u>	<u>926.219857</u>
× [PROPORTION=30]							
BLOCK × QUANTIFIER	<u>593.781326</u>	<u>300.618056</u>	<u>4715.000</u>	<u>1.975</u>	<u>.048</u>	<u>4.429474</u>	<u>1183.133179</u>
× [PROPORTION=40]							
BLOCK × QUANTIFIER	<u>336.986780</u>	<u>296.582751</u>	<u>4715.000</u>	<u>1.136</u>	<u>.256</u>	<u>-244.453989</u>	<u>918.427549</u>
× [PROPORTION=50]							
BLOCK × QUANTIFIER	<u>454.352096</u>	<u>296.730277</u>	<u>4715</u>	<u>1.531</u>	<u>.126</u>	<u>-127.377892</u>	<u>1036.082085</u>
× [PROPORTION=60]							
BLOCK × QUANTIFIER	<u>-273.264094</u>	<u>296.878872</u>	<u>4715</u>	<u>-.920</u>	<u>.357</u>	<u>-855.285398</u>	<u>308.757211</u>
× [PROPORTION=70]							
GROUP × BLOCK × QUANTIFIER × [PROPORTION=20]	<u>-149.126658</u>	<u>338.044533</u>	<u>4715</u>	<u>-.441</u>	<u>.659</u>	<u>-811.851893</u>	<u>513.598577</u>
GROUP × BLOCK × QUANTIFIER × [PROPORTION=30]	<u>-273.775307</u>	<u>341.367242</u>	<u>4715.000</u>	<u>-.802</u>	<u>.423</u>	<u>-943.014604</u>	<u>395.463990</u>
GROUP × BLOCK × QUANTIFIER × [PROPORTION=40]	<u>-480.530772</u>	<u>343.207460</u>	<u>4715</u>	<u>-1.400</u>	<u>.162</u>	<u>-1153.377754</u>	<u>192.316210</u>
GROUP × BLOCK × QUANTIFIER × [PROPORTION=50]	<u>-321.546755</u>	<u>339.914232</u>	<u>4715.000</u>	<u>-.946</u>	<u>.344</u>	<u>-987.937473</u>	<u>344.843964</u>

<u>GROUP × BLOCK ×</u> <u>QUANTIFIER ×</u> <u>[PROPORTION=60]</u>	<u>-338.778461</u>	<u>339.728135</u>	<u>4715</u>	<u>-.997</u>	<u>.319</u>	<u>-1004.804341</u>	<u>327.247420</u>
<u>GROUP × BLOCK ×</u> <u>QUANTIFIER ×</u> <u>[PROPORTION=70]</u>	<u>204.361606</u>	<u>339.857931</u>	<u>4715</u>	<u>.601</u>	<u>.548</u>	<u>-461.918735</u>	<u>870.641947</u>

Appendix B2: ANOVA for Acceptability Ratings for Experiment 2

For Experiment 2 we proceeded with the analysis in the same way as for Experiment 1.

The 2×2 ANOVA regarding acceptability in Experiment 2 yielded different results depending on participant group. The analysis of the whole group showed similar results to Experiment 1, i.e. only the main effect QUANTIFIER ($F(1,14) = 27.440$; $p < 0.001$) reached significance, whereas main effect BLOCK ($F(1,14) = 2.055$; $p = 0.174$) and the interaction ($F(1,14) = 2.911$; $p = 0.110$) were not significant. PWNFA demonstrated no significant interaction either (QUANTIFIER $\times$ BLOCK: $F(1,3) = 0.311$; $p = 0.616$), a non-significant main effect BLOCK ($F(1,3) = 0.275$; $p = 0.636$) but also a non-significant main effect QUANTIFIER ($F(1,3) = 0.539$; $p = 0.516$).

In contrast, the ANOVA for PWFA revealed a significant interaction (QUANTIFIER $\times$ BLOCK: $F(1,10) = 9.819$; $p = 0.011$) in addition to a significant main effect QUANTIFIER ($F(1,10) = 56.063$; $p < 0.001$) and a non-significant main effect BLOCK ($F(1,10) = 2.351$, $p = 0.156$). As opposed to PWNFA, acceptability of quantifiers at 40% target color actually changed in PWFA.

Post-hoc t-tests showed that this change in acceptability ratings extended to both the positive quantifier “many” ($t(10) = -3.127$; $p = 0.005$ one-tailed) and the negative quantifier “few” ($t(10) = 1.865$; $p = 0.046$ one-tailed). The descriptive analysis confirms a shift in acceptability at proportion

Many or few? Quantifier flexibility in aphasia.

40% in the trained direction from baseline block to test block (cf. Figure 6): The acceptability of “many” increased while that of “few” decreased.

Appendix C: Further analysis: Investigation of a relationship between experiment (learning method) and occurrence of a semantic shift.

In addition to the non-participant analysis, we also added another test regarding acceptability judgments. Because of a significant interaction in the 2×2 ANOVA of the PWFA in Experiment 2 (feedback) but a non-significant interaction in the very same group in Experiment 1 (adaptation) we wanted to investigate the influence of experiment choice. To assess this influence on the PWFA, we conducted a $2 \times 2 \times 2$ ANOVA with factors QUANTIFIER, BLOCK and EXPERIMENT (Feedback/Adaptation). Besides main effect QUANTIFIER ($F(1,10) = 53.159$; $p = 0.001$) the three-way interaction was also significant (QUANTIFIER $\times$ BLOCK $\times$ EXPERIMENT: $F(1,10) = 8.570$; $p = 0.015$). Main effect BLOCK ($F(1,10) = 0.836$; $p = 0.382$) and EXPERIMENT ($F(1,10) = 0.263$; $p = 0.619$) as well as all two-way interactions were non-significant (QUANTIFIER $\times$ BLOCK: $F(1,10) = 0.863$; $p = 0.375$; QUANTIFIER $\times$ EXPERIMENT: $F(1,10) = 0.417$; $p = 0.533$; BLOCK $\times$ EXPERIMENT: $F(1,10) = 1.808$; $p = 0.208$). This means that for PWFA the type of experimental manipulation in Block 2, i.e., the type of learning method, was indeed relevant for the presence or absence of a semantic shift.