Final PNN Analysis for Dr. Krishnan and Logan

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Objective: Compile all PNN analysis done for the Krishnan lab into a single, easy to integrate document for their publication

Step 1: Load needed packages. `ggplot2` is for plotting. `ggsignif` is used to add statistical results to ggplot plots. `gt` is used for making the nice tables. `ICC` is used to calculate the intraclass correlation coefficient to tell us if we can treat our predictors (variables) as independent or not. `magrittr` is a package that allows us to use pipes (%>%) in our code. `modelsummary` allows us to format our model output in a professional fashion. `nlme` is the package that performs the linear mixed effects (lme) model fits. `rstatix` is used to do the pairwise t-tests and p-value correction. `tidyverse` is used for data manipulation. `webshot` is used to save our gt tables as `.png` files.

Step 2a: Load first processed PNN cohort file we have

```
##   X Cohort Condition Hemisphere Map.ID  Weight.1  Weight.2   Mean.1   Mean.2
## 1 0 102319        NW       Left     29 0.6460285 0.3539715 35.06754 73.88547
## 2 1 102319        NW       Left     32 0.3285605 0.6714395 32.40356 75.80653
## 3 2 102319        NW       Left     32 0.5735341 0.4264659 36.88944 78.40746
## 4 3 102319        NW       Left     32 0.3220235 0.6779765 37.41312 76.51172
## 5 4 102319        NW       Left     32 0.3116526 0.6883474 31.54303 74.30833
## 6 5 102319        NW       Left     33 0.3187010 0.6812990 33.01917 75.01959
##   Variance.1 Variance.2      CV.1      CV.2 Index X..Delta..Mean
## 1  159.44134   557.2953 0.3600769 0.3195094     0       38.81793
## 2   62.44662   571.8678 0.2438719 0.3154578     1       43.40297
## 3  177.82457   617.3291 0.3614879 0.3168845     2       41.51802
## 4   84.95792   420.2687 0.2463644 0.2679388     3       39.09860
## 5   85.50925   521.2537 0.2931589 0.3072466     4       42.76530
## 6   93.50713   477.2267 0.2928574 0.2911975     5       42.00042
##   X..Delta..Weight
## 1       -0.2920570
## 2        0.3428789
## 3       -0.1470681
## 4        0.3559531
## 5        0.3766947
## 6        0.3625980
```

```
##   X Cohort Condition Hemisphere Map.ID  Weight.1  Weight.2   Mean.1   Mean.2
## 1 0 102319        NW       Left     29 0.6460285 0.3539715 35.06754 73.88547
## 2 1 102319        NW       Left     32 0.3285605 0.6714395 32.40356 75.80653
## 3 2 102319        NW       Left     32 0.5735341 0.4264659 36.88944 78.40746
## 4 3 102319        NW       Left     32 0.3220235 0.6779765 37.41312 76.51172
```

```
## 5 4 102319        NW       Left     32 0.3116526 0.6883474 31.54303 74.30833
## 6 5 102319        NW       Left     33 0.3187010 0.6812990 33.01917 75.01959
##   Variance.1 Variance.2      CV.1      CV.2 Index X..Delta..Mean
## 1  159.44134   557.2953 0.3600769 0.3195094     0       38.81793
## 2   62.44662   571.8678 0.2438719 0.3154578     1       43.40297
## 3  177.82457   617.3291 0.3614879 0.3168845     2       41.51802
## 4   84.95792   420.2687 0.2463644 0.2679388     3       39.09860
## 5   85.50925   521.2537 0.2931589 0.3072466     4       42.76530
## 6   93.50713   477.2267 0.2928574 0.2911975     5       42.00042
##   X..Delta..Weight
## 1       -0.2920570
## 2        0.3428789
## 3       -0.1470681
## 4        0.3559531
## 5        0.3766947
## 6        0.3625980
```

```
##    X Cohort Condition Hemisphere Map.ID  Weight.1  Weight.2   Mean.1   Mean.2
## 1 17 102319        NW      Right     29 0.3686094 0.6313906 31.88667 77.10322
## 2 18 102319        NW      Right     30 0.3755073 0.6244927 27.77808 72.87557
## 3 19 102319        NW      Right     30 0.3133544 0.6866456 22.05538 63.15352
## 4 20 102319        NW      Right     32 0.3004430 0.6995570 28.95412 71.24391
## 5 21 102319        NW      Right     32 0.3229722 0.6770278 25.90941 65.90958
## 6 22 102319        NW      Right     33 0.3946785 0.6053215 23.39292 65.03500
##   Variance.1 Variance.2      CV.1      CV.2 Index X..Delta..Mean
## 1   42.99344   695.6364 0.2056326 0.3420729    17       45.21655
## 2   37.52685   724.4395 0.2205306 0.3693338    18       45.09749
## 3   22.92325   774.2703 0.2170819 0.4406043    19       41.09814
## 4   51.16695   621.6029 0.2470498 0.3499522    20       42.28979
## 5   21.83549   917.8210 0.1803532 0.4596533    21       40.00018
## 6   27.75566   605.8830 0.2252119 0.3784838    22       41.64208
##   X..Delta..Weight
## 1        0.2627811
## 2        0.2489854
## 3        0.3732913
## 4        0.3991139
## 5        0.3540556
## 6        0.2106429
```

Step 2b: Load the second processed PNN cohort

```
##   X Cohort Condition Hemisphere Subregion Map.ID  Area  Weight.1  Weight.2
## 1 0 102319        NW       Left      S1FL     19 0.608 0.3264672 0.6735328
## 2 1 102319        NW       Left      S1FL     20 0.575 0.5702293 0.4297707
## 3 2 102319        NW       Left      S1FL     23 0.605 0.6851666 0.3148334
## 4 3 102319        NW       Left      S1FL     23 0.634 0.4198242 0.5801758
## 5 4 102319        NW       Left      S1FL     26 0.981 0.5507528 0.4492472
## 6 5 102319        NW       Left      S1FL     27 0.859 0.4506803 0.5493197
##     Mean.1   Mean.2 Variance.1 Variance.2      CV.1      CV.2 Index
## 1 31.44665 83.74333   45.36838   978.1752 0.2141915 0.3734721     0
## 2 35.11564 78.66299  128.35437   923.6765 0.3226300 0.3863576     1
## 3 35.70130 74.00314  150.39137   606.2471 0.3435005 0.3327168     2
## 4 32.65429 76.82328   73.23810   584.7635 0.2620767 0.3147728     3
## 5 29.19203 69.29975   82.13477   765.6620 0.3104555 0.3992885     4
## 6 30.28155 68.36056   52.49617   421.9306 0.2392686 0.3004796     5
```

```
##   X..Delta..Mean X..Delta..Weight
## 1       52.29668       0.34706560
## 2       43.54735      -0.14045851
## 3       38.30183      -0.37033319
## 4       44.16900       0.16035160
## 5       40.10773      -0.10150557
## 6       38.07901       0.09863946
```

```
##   X Cohort Condition Hemisphere Subregion Map.ID  Area  Weight.1  Weight.2
## 1 0 102319        NW       Left      S1FL     19 0.608 0.3264672 0.6735328
## 2 1 102319        NW       Left      S1FL     20 0.575 0.5702293 0.4297707
## 3 2 102319        NW       Left      S1FL     23 0.605 0.6851666 0.3148334
## 4 3 102319        NW       Left      S1FL     23 0.634 0.4198242 0.5801758
## 5 4 102319        NW       Left      S1FL     26 0.981 0.5507528 0.4492472
## 6 5 102319        NW       Left      S1FL     27 0.859 0.4506803 0.5493197
##     Mean.1   Mean.2 Variance.1 Variance.2      CV.1      CV.2 Index
## 1 31.44665 83.74333   45.36838   978.1752 0.2141915 0.3734721     0
## 2 35.11564 78.66299  128.35437   923.6765 0.3226300 0.3863576     1
## 3 35.70130 74.00314  150.39137   606.2471 0.3435005 0.3327168     2
## 4 32.65429 76.82328   73.23810   584.7635 0.2620767 0.3147728     3
## 5 29.19203 69.29975   82.13477   765.6620 0.3104555 0.3992885     4
## 6 30.28155 68.36056   52.49617   421.9306 0.2392686 0.3004796     5
##   X..Delta..Mean X..Delta..Weight
## 1       52.29668       0.34706560
## 2       43.54735      -0.14045851
## 3       38.30183      -0.37033319
## 4       44.16900       0.16035160
## 5       40.10773      -0.10150557
## 6       38.07901       0.09863946
```

```
##    X Cohort Condition Hemisphere Subregion Map.ID  Area  Weight.1  Weight.2
## 1 16 102319        NW      Right      S1FL     22 0.387 0.5023227 0.4976773
## 2 17 102319        NW      Right      S1FL     23 0.502 0.7836971 0.2163029
## 3 18 102319        NW      Right      S1FL     24 0.423 0.6552688 0.3447312
## 4 19 102319        NW      Right      S1FL     25 0.575 0.6962454 0.3037546
## 5 20 102319        NW      Right      S1FL     26 0.907 0.3544441 0.6455559
## 6 21 102319        NW      Right      S1FL     28 1.006 0.7537159 0.2462841
##     Mean.1   Mean.2 Variance.1 Variance.2      CV.1      CV.2 Index
## 1 23.80511 39.78428  40.855956   182.4416 0.2685082 0.3395084    16
## 2 31.47131 55.36478  73.202191   343.8632 0.2718612 0.3349340    17
## 3 31.79430 49.50681  68.258281   247.1982 0.2598534 0.3175833    18
## 4 23.51482 40.06174  38.087723   181.9308 0.2624526 0.3366846    19
## 5 19.31410 34.16273   7.363306   127.8337 0.1404953 0.3309559    20
## 6 26.96298 55.11385  71.585403   424.0424 0.3137938 0.3736319    21
##   X..Delta..Mean X..Delta..Weight
## 1       15.97917     -0.004645332
## 2       23.89347     -0.567394236
## 3       17.71252     -0.310537644
## 4       16.54692     -0.392490791
## 5       14.84863      0.291111734
## 6       28.15087     -0.507431855
```

Step 2b2: Load the third processed PNN cohort

```
##   X Cohort Condition Hemisphere Subregion Map.ID  Area  Weight.1  Weight.2
```

```
## 1 0 102319        NW       Left      S1FL     19 0.608 0.3245566 0.6754434
## 2 1 102319        NW       Left      S1FL     20 0.575 0.5673567 0.4326433
## 3 2 102319        NW       Left      S1FL     23 0.605 0.6756032 0.3243968
## 4 3 102319        NW       Left      S1FL     23 0.634 0.4198242 0.5801758
## 5 4 102319        NW       Left      S1FL     26 0.981 0.5554928 0.4445072
## 6 5 102319        NW       Left      S1FL     27 0.859 0.4482002 0.5517998
##     Mean.1   Mean.2 Variance.1 Variance.2      CV.1      CV.2 Index
## 1 31.38917 83.62301   44.50727   980.7819 0.2125375 0.3745074     0
## 2 35.03453 78.48021  126.79501   923.7263 0.3214066 0.3872679     1
## 3 35.48763 73.31898  146.44074   609.6326 0.3409997 0.3367578     2
## 4 32.65429 76.82328   73.23810   584.7635 0.2620767 0.3147728     3
## 5 29.30287 69.58893   83.94030   764.5529 0.3126620 0.3973412     4
## 6 30.23523 68.22703   51.93031   424.3622 0.2383401 0.3019339     5
##   X..Delta..Mean X..Delta..Weight
## 1       52.23384        0.3508869
## 2       43.44568       -0.1347134
## 3       37.83135       -0.3512064
## 4       44.16900        0.1603516
## 5       40.28606       -0.1109856
## 6       37.99180        0.1035996
```

```
##   X Cohort Condition Hemisphere Subregion Map.ID  Area  Weight.1  Weight.2
## 1 0 102319        NW       Left      S1FL     19 0.608 0.3245566 0.6754434
## 2 1 102319        NW       Left      S1FL     20 0.575 0.5673567 0.4326433
## 3 2 102319        NW       Left      S1FL     23 0.605 0.6756032 0.3243968
## 4 3 102319        NW       Left      S1FL     23 0.634 0.4198242 0.5801758
## 5 4 102319        NW       Left      S1FL     26 0.981 0.5554928 0.4445072
## 6 5 102319        NW       Left      S1FL     27 0.859 0.4482002 0.5517998
##     Mean.1   Mean.2 Variance.1 Variance.2      CV.1      CV.2 Index
## 1 31.38917 83.62301   44.50727   980.7819 0.2125375 0.3745074     0
## 2 35.03453 78.48021  126.79501   923.7263 0.3214066 0.3872679     1
## 3 35.48763 73.31898  146.44074   609.6326 0.3409997 0.3367578     2
## 4 32.65429 76.82328   73.23810   584.7635 0.2620767 0.3147728     3
## 5 29.30287 69.58893   83.94030   764.5529 0.3126620 0.3973412     4
## 6 30.23523 68.22703   51.93031   424.3622 0.2383401 0.3019339     5
##   X..Delta..Mean X..Delta..Weight
## 1       52.23384        0.3508869
## 2       43.44568       -0.1347134
## 3       37.83135       -0.3512064
## 4       44.16900        0.1603516
## 5       40.28606       -0.1109856
## 6       37.99180        0.1035996
```

```
##    X Cohort Condition Hemisphere Subregion Map.ID  Area  Weight.1  Weight.2
## 1 16 102319        NW      Right      S1FL     22 0.387 0.6761129 0.3238871
## 2 17 102319        NW      Right      S1FL     23 0.502 0.7836971 0.2163029
## 3 18 102319        NW      Right      S1FL     24 0.423 0.5834022 0.4165978
## 4 19 102319        NW      Right      S1FL     25 0.575 0.6962454 0.3037546
## 5 20 102319        NW      Right      S1FL     26 0.907 0.6627597 0.3372403
## 6 21 102319        NW      Right      S1FL     28 1.006 0.7797890 0.2202110
##     Mean.1   Mean.2 Variance.1 Variance.2      CV.1      CV.2 Index
## 1 26.39186 42.95850   63.66011   222.3294 0.3023178 0.3470958    16
## 2 31.47131 55.36478   73.20219   343.8632 0.2718612 0.3349340    17
## 3 30.78498 47.86471   58.16794   230.3869 0.2477439 0.3171125    18
## 4 23.51482 40.06174   38.08772   181.9308 0.2624526 0.3366846    19
```

```
## 5 23.65416 39.20854   40.45756   162.1801 0.2689010 0.3248016    20
## 6 27.37611 56.98398   77.66782   428.6706 0.3219206 0.3633365    21
##   X..Delta..Mean X..Delta..Weight
## 1       16.56664       -0.3522258
## 2       23.89347       -0.5673942
## 3       17.07973       -0.1668043
## 4       16.54692       -0.3924908
## 5       15.55438       -0.3255193
## 6       29.60787       -0.5595780
```

Step 2c: Combine all of the processed cohort files into a single dataset for later ICC analysis

```
## [1] 7070   18
```

Step 2d: Filtering the combined naive only processed cohort files to just S1BF subregion

Step 2e: Filtering the combined processed cohort files to just S1BF subregion

Step 3a: Subsetting to just the S1BF subregion for the second set of cohorts. We don't have a `Subregion` variable in the data for the first set of cohorts. I believe we talked about this before and the data was just for the S1BF region.

```
##     X Cohort Condition Hemisphere Subregion Map.ID  Area  Weight.1  Weight.2
## 1 147 102319        NW       Left      S1BF     29  1.25 0.6235009 0.3764991
## 2 148 102319        NW       Left      S1BF     32 1.335 0.3381178 0.6618822
## 3 149 102319        NW       Left      S1BF     32 1.273 0.4210402 0.5789598
## 4 150 102319        NW       Left      S1BF     32 1.514 0.2772633 0.7227367
## 5 151 102319        NW       Left      S1BF     33 1.621 0.3067939 0.6932061
## 6 152 102319        NW       Left      S1BF     35 1.895 0.3399320 0.6600680
##     Mean.1   Mean.2 Variance.1 Variance.2      CV.1      CV.2 Index
## 1 33.99810 72.14835  149.98444   567.6658 0.3602206 0.3302326   147
## 2 31.70975 75.73504   63.29630   570.1870 0.2508975 0.3152912   148
## 3 30.48670 69.95238   92.47583   671.0181 0.3154305 0.3703093   149
## 4 34.41096 74.94763   71.47141   501.3757 0.2456798 0.2987609   150
## 5 33.59143 74.97395   84.48543   475.2736 0.2736292 0.2907779   151
## 6 29.86194 75.10848   70.47529   666.4199 0.2811256 0.3437043   152
##   X..Delta..Mean X..Delta..Weight
## 1       38.15025       -0.2470018
## 2       44.02529        0.3237643
## 3       39.46568        0.1579195
## 4       40.53667        0.4454735
## 5       41.38252        0.3864121
## 6       45.24653        0.3201360
```

```
##     X Cohort Condition Hemisphere Subregion Map.ID  Area  Weight.1  Weight.2
## 1 163 102319        NW      Right      S1BF     28 0.891 0.2975009 0.7024991
## 2 164 102319        NW      Right      S1BF     29 1.055 0.3682627 0.6317373
## 3 165 102319        NW      Right      S1BF     30 1.089 0.3723044 0.6276956
## 4 166 102319        NW      Right      S1BF     32 1.071 0.2917137 0.7082863
## 5 167 102319        NW      Right      S1BF     35 1.531 0.3736429 0.6263571
## 6 168 102319        NW      Right      S1BF     35 1.487 0.3573896 0.6426104
##     Mean.1   Mean.2 Variance.1 Variance.2      CV.1      CV.2 Index
## 1 22.69605 64.47028   19.29672   723.4170 0.1935493 0.4171909   163
```

```
## 2 32.30599 78.37759   36.36898   634.3154 0.1866734 0.3213370   164
## 3 27.88355 72.98017   35.00683   715.3817 0.2121917 0.3664916   165
## 4 29.48112 72.18170   40.05733   578.5516 0.2146827 0.3332299   166
## 5 28.29831 64.72754   27.63111   463.0873 0.1857542 0.3324622   167
## 6 27.95592 68.29386   26.59462   492.7207 0.1844689 0.3250265   168
##   X..Delta..Mean X..Delta..Weight
## 1       41.77423        0.4049983
## 2       46.07161        0.2634746
## 3       45.09661        0.2553911
## 4       42.70058        0.4165726
## 5       36.42923        0.2527143
## 6       40.33795        0.2852208
```

Step 3a2: Subsetting to just the S1BF subregion for the third set of cohorts.

```
##     X Cohort Condition Hemisphere Subregion Map.ID  Area  Weight.1  Weight.2
## 1 147 102319        NW       Left      S1BF     29  1.25 0.6235009 0.3764991
## 2 148 102319        NW       Left      S1BF     32 1.335 0.3367283 0.6632717
## 3 149 102319        NW       Left      S1BF     32 1.273 0.4243216 0.5756784
## 4 150 102319        NW       Left      S1BF     32 1.514 0.2773727 0.7226273
## 5 151 102319        NW       Left      S1BF     33 1.621 0.3060725 0.6939275
## 6 152 102319        NW       Left      S1BF     35 1.895 0.3399320 0.6600680
##     Mean.1   Mean.2 Variance.1 Variance.2      CV.1      CV.2 Index
## 1 33.99810 72.14835  149.98444   567.6658 0.3602206 0.3302326   147
## 2 31.67444 75.66073   62.82403   571.8407 0.2502384 0.3160581   148
## 3 30.59543 70.09720   94.26717   670.4133 0.3173392 0.3693777   149
## 4 34.41893 74.95071   71.57488   501.4001 0.2458006 0.2987559   150
## 5 33.57209 74.93946   84.23612   476.0502 0.2733825 0.2911493   151
## 6 29.86194 75.10848   70.47529   666.4199 0.2811256 0.3437043   152
##   X..Delta..Mean X..Delta..Weight
## 1       38.15025       -0.2470018
## 2       43.98629        0.3265434
## 3       39.50177        0.1513568
## 4       40.53178        0.4452545
## 5       41.36737        0.3878550
## 6       45.24653        0.3201360
```

```
##     X Cohort Condition Hemisphere Subregion Map.ID  Area  Weight.1  Weight.2
## 1 163 102319        NW      Right      S1BF     28 0.891 0.2970497 0.7029503
## 2 164 102319        NW      Right      S1BF     29 1.055 0.3655407 0.6344593
## 3 165 102319        NW      Right      S1BF     30 1.089 0.3723044 0.6276956
## 4 166 102319        NW      Right      S1BF     32 1.071 0.2900316 0.7099684
## 5 167 102319        NW      Right      S1BF     35 1.531 0.3757586 0.6242414
## 6 168 102319        NW      Right      S1BF     35 1.487 0.3573896 0.6426104
##     Mean.1   Mean.2 Variance.1 Variance.2      CV.1      CV.2 Index
## 1 22.68457 64.44832   19.19932   723.7205 0.1931579 0.4174206   163
## 2 32.24267 78.21641   35.63941   637.8873 0.1851545 0.3229045   164
## 3 27.88355 72.98017   35.00683   715.3817 0.2121917 0.3664916   165
## 4 29.43933 72.09760   39.56214   580.3323 0.2136545 0.3341316   166
## 5 28.32515 64.83486   27.92460   461.0537 0.1865611 0.3311824   167
## 6 27.95592 68.29386   26.59462   492.7207 0.1844689 0.3250265   168
##   X..Delta..Mean X..Delta..Weight
## 1       41.76375        0.4059006
## 2       45.97374        0.2689186
## 3       45.09661        0.2553911
```

```
## 4       42.65827        0.4199369
## 5       36.50970        0.2484828
## 6       40.33795        0.2852208
```

Step 3b: Subsetting the S1BF subregion files to just NH and NW

Step 4a: Performing ICC analysis for each of our datasets. Here we are doing the ICC analysis comparing `Condition`, `Map`, and `Cohort` to the second mean (`Mean.2`) from the processed data that is subsetted to just `NH` and `NW` samples from the `S1BF` subregion

ICC for S1BF 1st Cohort Left Hemisphere

Condition	Cohort	Map
-0.01466777	0.6671297	0.08901912

Step 4b: ICC for first cohort set right hemisphere

ICC for S1BF 1st Cohort Right Hemisphere

Condition	Cohort	Map
-0.01651637	0.5287673	-0.09391798

Step 4c: ICC analysis for second cohort set left hemisphere

ICC for S1BF 2nd Cohort Left Hemisphere

Condition	Cohort	Map
-0.006000612	0.59472	0.1381532

Step 4d: ICC analysis for second cohort set right hemispehre

ICC for S1BF 2nd Cohort Right Hemisphere

Condition	Cohort	Map
-0.01478875	0.464205	0.0197977

Step 4e: ICC analysis of each set of first cohort set with hemispheres together

ICC for S1BF 1st Cohort Both Hemispheres

Condition	Cohort	Map	Hemisphere
0.1472303	0.6249718	0.09532901	-0.00434575

Step 4f: ICC analysis for second cohort set with hemispheres together

ICC for S1BF 2nd Cohort Both Hemispheres

Condition	Cohort	Map	Hemisphere
0.03065443	0.2574055	0.04675316	-0.0005928859

First Cohort Set Left Hemisphere

	Model 1
(Intercept)	69.5 *** [59.3, 79.6] p-value = 0.0 t = 13.6
Condition	−0.6 [−3.0, 1.8] p-value = 0.6 t = −0.5
Num.Obs.	107

Step 4g: Third cohort set ICC analysis

ICC for S1BF 3rd Cohort Set Left Hemisphere

Condition	Cohort	Map
0.005037945	0.5090678	0.05035955

Step 4h: ICC for third cohort set right hemisphere

ICC for S1BF 3rd Cohort Set Right Hemisphere

Condition	Cohort	Map
-0.01099275	0.4024758	-0.0009919655

Step 4i: ICC analysis of third set of cohorts hemispheres together

ICC for S1BF 3rd Cohort Both Hemispheres

Condition	Cohort	Map	Hemisphere
0.03774843	0.2019718	0.03535152	-0.0002677739

Step 5a: ICC Analysis Conclusion: Based on the ICC analysis we see that it appears `Cohort` is a possible source of confounding for the PNN data. Given this we will build a linear mixed effects model to account for the possible confounding of `Cohort` and see if it changes the signficance of the results. This continues to be seen in our third set of cohorts.

We start with the left hemisphere data from the first set of cohorts that has a `Cohort` ICC of 0.6671297

```
## Random effect variances not available. Returned R2 does not account for random effects.
```

Step 5b: LME for right hemisphere data from first set of cohorts with an ICC of 0.5287673

```
## Random effect variances not available. Returned R2 does not account for random effects.
```

First Cohort Set Right Hemisphere

	Model 1
(Intercept)	69.3 *** [60.7, 77.9] p-value = 0.0 t = 16.0
Condition	−0.7 [−3.3, 1.9] p-value = 0.6 t = −0.5
Num.Obs.	108

Second Cohort Set Left Hemisphere

	Model 1
(Intercept)	69.8 *** [63.0, 76.6] p-value = 0.0 t = 20.3
Condition	−0.5 [−2.4, 1.4] p-value = 0.6 t = −0.5
Num.Obs.	138

Step 5c: LME for left hemisphere data from second set of cohorts with an ICC of 0.59472

```
## Random effect variances not available. Returned R2 does not account for random effects.
```

Step 5d: LME for right hemisphere data from second set of cohorts with an ICC of 0.464205

```
## Random effect variances not available. Returned R2 does not account for random effects.
```

Step 5e: LME for both hemispheres together for second set of cohorts for figure 9c of the pre-print

```
## Random effect variances not available. Returned R2 does not account for random effects.
```

\begin{table}

\caption{Figure 9c LME with NO #021620 Cohort}

Second Cohort Set Right Hemisphere

	Model 1
(Intercept)	70.4 *** [64.1, 76.6] p-value = 0.0 t = 22.2
Condition	0.1 [−2.1, 2.3] p-value = 1.0 t = 0.1
Num.Obs.	137

Third Cohort Set Left Hemisphere

	Model 1
(Intercept)	70.5 *** [65.1, 75.8] p-value = 0.0 t = 26.1
Condition	−1.0 [−2.7, 0.7] p-value = 0.2 t = −1.2
Num.Obs.	185

Third Cohort Set Right Hemisphere

	Model 1
(Intercept)	70.3 *** [65.5, 75.2] p-value = 0.0 t = 28.7
Condition	0.1 [−1.7, 1.8] p-value = 0.9 t = 0.1
Num.Obs.	184

	Model 1
(Intercept)	70.1 *** [63.7, 76.5] p-value = 0.0 t = 21.6
Condition	−0.2 [−1.7, 1.2] p-value = 0.8 t = −0.3
Num.Obs.	275

\end{table}

Step 5f: LME for left hemisphere data from third set of cohorts with an ICC of 0.5090678

```
## Random effect variances not available. Returned R2 does not account for random effects.
```

Step 5g: LME for right hemisphere data from second set of cohorts with an ICC of 0.4024758

```
## Random effect variances not available. Returned R2 does not account for random effects.
```

Step 5h: LME for both hemispheres together for third set of cohorts for figure 9c of the pre-print

```
## Random effect variances not available. Returned R2 does not account for random effects.
```

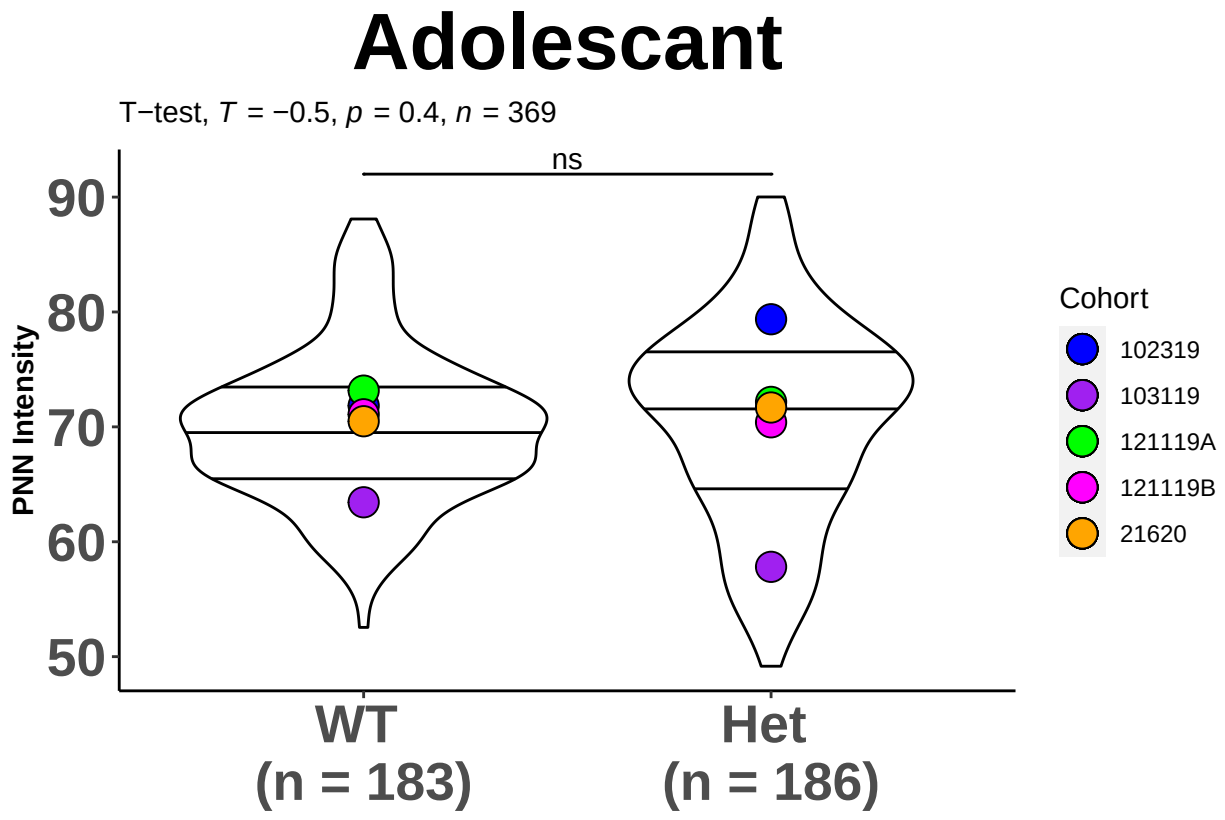
\begin{table}

\caption{Figure 9c LME with #021620 Data included}

	Model 1
(Intercept)	70.4 *** [65.4, 75.3] p-value = 0.0 t = 27.9
Condition	−0.5 [−1.7, 0.7] p-value = 0.4 t = −0.8
Num.Obs.	369

\end{table}

Step 6a: LME conclusion: Using LMEs does not change the statistics of the comparision between `NH` and `NW` when accounting for the confounding of `Cohort`. This could change once Logan uploads the additional cohorts but as of right now our PNN results still match theirs from Figure 9c in the pre-print to the level that we can match them. Our conclusions (and their conclusions) continue to hold after adding the #021620 cohort data and re-running the analysis (seen in the Figure 9c LME model results and its accompying plot).



Step 7a: Combining both hemispheres, all cohorts, and all conditions together to perform overall ICC analysis

ICC for all cohorts, both hemispheres, and all conditions

Condition	Cohort	Map	Hemisphere

All conditions, cohorts, and hemispheres LME

	Model 1
(Intercept)	66.1 *** [61.5, 70.7] p-value = 0.0 t = 28.0
NW	−1.8 *** [−2.4, −1.1] p-value = 0.0 t = −5.1
SH	2.0 *** [1.3, 2.6] p-value = 0.0 t = 5.8
SW	−2.6 *** [−3.3, −1.9] p-value = 0.0 t = −7.7
Num.Obs.	7070

0.0376636	0.232878	0.0422396	-0.0002343902

Step 7b: Combining both hemispheres and all cohorts for just the naive (NH, NW) samples to perform ICC analysis

ICC for all cohorts, both hemispheres, and just naive conditions

Condition	Cohort	Map	Hemisphere
0.01597987	0.2175072	0.034467	-0.0003819145

Step 7c: ICC analysis for all sets of cohorts with just S1BF subregion selected

ICC for all cohorts, both hemispheres, and all conditions with just S1BF subregion

Condition	Cohort	Map	Hemisphere
0.113281	0.4857711	0.1068378	0.005932002

Step 7d: ICC analysis for all sets of cohorts with just naive conditions and just S1BF subregion selected

ICC for all cohorts, both hemispheres, and just naive conditions with just S1BF subregion

Condition	Cohort	Map	Hemisphere
-7.340737e-05	0.4823209	0.09102385	0.002379348

Step 8a: LME for all cohorts, conditions, and hemispheres

```
## Random effect variances not available. Returned R2 does not account for random effects.
```

Step 8b: LME for all cohorts, hemispheres, and just naive samples

```
## Random effect variances not available. Returned R2 does not account for random effects.
```

All cohorts, hemispheres, and just naive conditions LME

	Model 1
(Intercept)	65.9 *** [61.5, 70.2] p-value = 0.0 t = 29.8
NW	−1.8 *** [−2.5, −1.2] p-value = 0.0 t = −5.3
Num.Obs.	3365