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1 /Users/teebaobaid/PycharmProjects/pythonProject3/venv/bin/python "/Users/teebaobaid/PycharmProjects/pythonProject3/Altair
  Correlation between Variables among Groups.py"
2 /Users/teebaobaid/PycharmProjects/pythonProject3/venv/lib/python3.6/site-packages/scipy/stats/stats.py:4196:
  SpearmanRConstantInputWarning: An input array is constant; the correlation coefficient is not defined.
3   warnings.warn(SpearmanRConstantInputWarning())
4           Variable ... Correlation
5 0      Post-test: Voltage Drop non-normative ...    0.168345
6 1      Post-test: Voltage Drop non-normative ...    0.168345
7 2      Post-test: Voltage Drop non-normative ...   -0.052632
8 3          Post-test: Current non-normative ...   -0.350438
9 4          Post-test: Current non-normative ...    0.275010
10 ..          ... ..
11 85      Rule Current: Conservative Focusing ...   -0.076472
12 86      Rule Current: Conservative Focusing ...    0.204440
13 87 Rule Voltage Drop: Conservative Focusing ...   -0.132453
14 88 Rule Voltage Drop: Conservative Focusing ...    0.546119
15 89 Rule Voltage Drop: Conservative Focusing ...   -0.242536
16
17 [90 rows x 4 columns]
18 {
19   "$schema": "https://vega.github.io/schema/vega-lite/v4.8.1.json",
20   "config": {
21     "view": {
22       "continuousHeight": 300,
23       "continuousWidth": 400
24     }
25   },
26   "data": {
27     "name": "data-3a0864108ef21e3a07bca2fccb183d66"
28   },
29   "datasets": {
30     "data-3a0864108ef21e3a07bca2fccb183d66": [
31       {
32         "Comparison": "Control vs. Experimental 1",
33         "Correlation": 0.16834512458535864,
34         "P-value": 4.176134852243526e-05,
35         "Variable": "Post-test: Voltage Drop non-normative"
36       },
37       {
38         "Comparison": "Control vs. Experimental 2",
39         "Correlation": 0.16834512458535864,

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40      "P-value": 4.176134852243526e-05,  
41      "Variable": "Post-test: Voltage Drop non-normative"  
42  },  
43  {  
44      "Comparison": "Control vs. Experimental 1",  
45      "Correlation": -0.3504383220252312,  
46      "P-value": 2.601531066510439e-05,  
47      "Variable": "Post-test: Current non-normative"  
48  },  
49  {  
50      "Comparison": "Control vs. Experimental 2",  
51      "Correlation": 0.27500954910846337,  
52      "P-value": 0.00033496984633051274,  
53      "Variable": "Post-test: Current non-normative"  
54  },  
55  {  
56      "Comparison": "Control vs. Experimental 2",  
57      "Correlation": -0.10206207261596577,  
58      "P-value": 0.03136715679988927,  
59      "Variable": "Post-test: Voltage Drop partial"  
60  },  
61  {  
62      "Comparison": "Control vs. Experimental 1",  
63      "Correlation": 0.0,  
64      "P-value": 0.004658629170863672,  
65      "Variable": "Post-test: Current 2 Valid links"  
66  },  
67  {  
68      "Comparison": "Experimental 1 vs. Experimental 2",  
69      "Correlation": -0.22941573387056174,  
70      "P-value": 0.0018426341518924714,  
71      "Variable": "Post-test: Current 2 Valid links"  
72  },  
73  {  
74      "Comparison": "Control vs. Experimental 1",  
75      "Correlation": -0.2648102742111809,  
76      "P-value": 0.00014605330464929336,  
77      "Variable": "No action"  
78  },  
79  {  
80      "Comparison": "Control vs. Experimental 2",
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81      "Correlation": 0.43286294822981497,  
82      "P-value": 0.040567247317168334,  
83      "Variable": "No action"  
84  },  
85  {  
86      "Comparison": "Control vs. Experimental 1",  
87      "Correlation": null,  
88      "P-value": 2.2540493588290166e-06,  
89      "Variable": "No new comparative trial"  
90  },  
91  {  
92      "Comparison": "Control vs. Experimental 2",  
93      "Correlation": null,  
94      "P-value": 2.2540493588290166e-06,  
95      "Variable": "No new comparative trial"  
96  },  
97  {  
98      "Comparison": "Control vs. Experimental 2",  
99      "Correlation": 0.2996234910479854,  
100     "P-value": 0.015098819522526598,  
101     "Variable": "Prediction Current: same rule"  
102  },  
103  {  
104     "Comparison": "Experimental 1 vs. Experimental 2",  
105     "Correlation": -0.17298389047727913,  
106     "P-value": 0.04817844983846236,  
107     "Variable": "Prediction Current: same rule"  
108  },  
109  {  
110     "Comparison": "Control vs. Experimental 2",  
111     "Correlation": 0.5912419974655891,  
112     "P-value": 0.0012089206839003344,  
113     "Variable": "Confidence Current: verify prediction"  
114  },  
115  {  
116     "Comparison": "Control vs. Experimental 1",  
117     "Correlation": 0.10696053839506882,  
118     "P-value": 0.01971437907120613,  
119     "Variable": "Confidence Voltage Drop: verify prediction"  
120  },  
121  {
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122     "Comparison": "Control vs. Experimental 2",
123     "Correlation": 0.11819549448481362,
124     "P-value": 0.01971437907120613,
125     "Variable": "Confidence Voltage Drop: verify prediction"
126 },
127 {
128     "Comparison": "Control vs. Experimental 1",
129     "Correlation": -0.09967613634945116,
130     "P-value": 0.005941979244115076,
131     "Variable": "Rule Current: Confirming Redundancy"
132 },
133 {
134     "Comparison": "Control vs. Experimental 1",
135     "Correlation": 0.04233941626141616,
136     "P-value": 0.016647438147478055,
137     "Variable": "Rule Voltage Drop: Confirming Redundancy"
138 },
139 {
140     "Comparison": "Control vs. Experimental 2",
141     "Correlation": -0.191771825514758,
142     "P-value": 0.016647438147478055,
143     "Variable": "Rule Voltage Drop: Confirming Redundancy"
144 },
145 {
146     "Comparison": "Control vs. Experimental 1",
147     "Correlation": null,
148     "P-value": 2.2540493588290166e-06,
149     "Variable": "New comparative trial"
150 },
151 {
152     "Comparison": "Control vs. Experimental 2",
153     "Correlation": null,
154     "P-value": 2.2540493588290166e-06,
155     "Variable": "New comparative trial"
156 },
157 {
158     "Comparison": "Control vs. Experimental 1",
159     "Correlation": 0.008020610576500093,
160     "P-value": 8.091569177060982e-05,
161     "Variable": "Prediction Current: Fill up gaps"
162 },
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163      {
164          "Comparison": "Control vs. Experimental 1",
165          "Correlation": -0.17463585353654526,
166          "P-value": 0.0053447854115372204,
167          "Variable": "Prediction Voltage Drop: Fill up gaps"
168      },
169      {
170          "Comparison": "Control vs. Experimental 2",
171          "Correlation": 0.08699412836623048,
172          "P-value": 0.00023055774100779364,
173          "Variable": "Prediction Voltage Drop: Fill up gaps"
174      },
175      {
176          "Comparison": "Control vs. Experimental 1",
177          "Correlation": -0.26766534486575816,
178          "P-value": 0.002291838570938381,
179          "Variable": "Confidence Current: falsify prediction"
180      },
181      {
182          "Comparison": "Control vs. Experimental 1",
183          "Correlation": -0.25083737755409086,
184          "P-value": 0.006770108222365837,
185          "Variable": "Confidence Voltage Drop: falsify prediction"
186      },
187      {
188          "Comparison": "Control vs. Experimental 2",
189          "Correlation": 0.25565499628245686,
190          "P-value": 6.331605614321628e-05,
191          "Variable": "Confidence Voltage Drop: falsify prediction"
192      },
193      {
194          "Comparison": "Control vs. Experimental 1",
195          "Correlation": 0.0,
196          "P-value": 0.013685391274124638,
197          "Variable": "Identify problem: goal stated"
198      },
199      {
200          "Comparison": "Control vs. Experimental 1",
201          "Correlation": 0.34318647974858074,
202          "P-value": 0.013506362573534969,
203          "Variable": "Rule Current: Simultaneous scanning"
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204     },
205     {
206         "Comparison": "Control vs. Experimental 2",
207         "Correlation": 0.189673445662118,
208         "P-value": 4.537859113178232e-06,
209         "Variable": "Rule Current: Simultaneous scanning"
210     },
211     {
212         "Comparison": "Experimental 1 vs. Experimental 2",
213         "Correlation": -0.1125120682729936,
214         "P-value": 0.035659869914108064,
215         "Variable": "Rule Current: Simultaneous scanning"
216     },
217     {
218         "Comparison": "Control vs. Experimental 1",
219         "Correlation": 0.21453196764494614,
220         "P-value": 2.5468664554112702e-05,
221         "Variable": "Rule Voltage Drop: Simultaneous scanning"
222     },
223     {
224         "Comparison": "Control vs. Experimental 2",
225         "Correlation": 0.2182178902359924,
226         "P-value": 0.009056389477818224,
227         "Variable": "Rule Voltage Drop: Simultaneous scanning"
228     },
229     {
230         "Comparison": "Control vs. Experimental 1",
231         "Correlation": 0.11470786693528089,
232         "P-value": 2.1574476254469788e-05,
233         "Variable": "Rule Current: Successive scanning"
234     },
235     {
236         "Comparison": "Control vs. Experimental 2",
237         "Correlation": 0.16666666666666669,
238         "P-value": 3.2575613429515584e-05,
239         "Variable": "Rule Current: Successive scanning"
240     },
241     {
242         "Comparison": "Control vs. Experimental 1",
243         "Correlation": 0.20121090914638348,
244         "P-value": 0.0055655634588870125,
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245     "Variable": "Rule Voltage Drop: Successive scanning"
246   },
247   {
248     "Comparison": "Control vs. Experimental 2",
249     "Correlation": 0.1256520392647229,
250     "P-value": 1.8625991522143659e-06,
251     "Variable": "Rule Voltage Drop: Successive scanning"
252   },
253   {
254     "Comparison": "Experimental 1 vs. Experimental 2",
255     "Correlation": 0.2721035633711405,
256     "P-value": 0.04616906755900403,
257     "Variable": "Rule Voltage Drop: Successive scanning"
258   },
259   {
260     "Comparison": "Control vs. Experimental 1",
261     "Correlation": 0.14852213144650114,
262     "P-value": 0.02331993398782928,
263     "Variable": "Rule Current: Conservative Focusing"
264   },
265   {
266     "Comparison": "Experimental 1 vs. Experimental 2",
267     "Correlation": 0.20443988269091456,
268     "P-value": 0.010994495707424052,
269     "Variable": "Rule Current: Conservative Focusing"
270   }
271 ]
272 },
273 "encoding": {
274   "color": {
275     "field": "Comparison",
276     "scale": {
277       "domain": [
278         "Control vs. Experimental 1",
279         "Control vs. Experimental 2",
280         "Experimental 1 vs. Experimental 2"
281       ],
282       "range": [
283         "red",
284         "green",
285         "blue"
```

```
286     ]
287     },
288     "type": "nominal"
289 },
290 "size": {
291     "field": "Correlation",
292     "title": "Magnitude of Correlation",
293     "type": "quantitative"
294 },
295 "tooltip": [
296     {
297         "field": "Variable",
298         "type": "nominal"
299     },
300     {
301         "field": "Comparison",
302         "type": "nominal"
303     },
304     {
305         "field": "Correlation",
306         "type": "quantitative"
307     },
308     {
309         "field": "P-value",
310         "type": "quantitative"
311     }
312 ],
313 "x": {
314     "axis": {
315         "grid": true,
316         "labelAngle": -90,
317         "labelFontSize": 10,
318         "labelLimit": 800
319     },
320     "field": "Variable",
321     "sort": [
322         "Post-test: Voltage Drop non-normative",
323         "Post-test: Current non-normative",
324         "Post-test: Current partial",
325         "Post-test: Voltage Drop partial",
326         "Post-test: Current 1 Valid link",
```



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327     "Post-test: Voltage Drop 1 Valid link",
328     "Post-test: Current 2 Valid links",
329     "Post-test: Voltage Drop 2 Valid links",
330     "No action",
331     "No new comparative trial",
332     "Prediction Current: same rule",
333     "Prediction Voltage Drop: same rule",
334     "Confidence Current: verify prediction",
335     "Confidence Voltage Drop: verify prediction",
336     "Rule Current: Confirming Redundancy",
337     "Rule Voltage Drop: Confirming Redundancy",
338     "New comparative trial",
339     "Prediction Current: Fill up gaps",
340     "Prediction Voltage Drop: Fill up gaps",
341     "Confidence Current: falsify prediction",
342     "Confidence Voltage Drop: falsify prediction",
343     "Identify problem: goal stated",
344     "Rule Current: Simultaneous scanning",
345     "Rule Voltage Drop: Simultaneous scanning",
346     "Rule Current: Successive scanning",
347     "Rule Voltage Drop: Successive scanning",
348     "Rule Current: Focus gambling",
349     "Rule Voltage Drop: Focus gambling",
350     "Rule Current: Conservative Focusing",
351     "Rule Voltage Drop: Conservative Focusing"
352 ],
353 "title": "Variable Name",
354 "type": "nominal"
355 },
356 "y": {
357     "field": "Correlation",
358     "scale": {
359         "domain": [
360             -1,
361             1
362         ]
363     },
364     "title": "Correlation",
365     "type": "quantitative"
366 }
367 },

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368   "height": 400,  
369   "mark": "circle",  
370   "selection": {  
371     "selector001": {  
372       "bind": "scales",  
373       "encodings": [  
374         "x",  
375         "y"  
376       ],  
377       "type": "interval"  
378     }  
379   },  
380   "title": "Correlations between Variables for Different Groups",  
381   "width": 800  
382 }  
383  
384 Process finished with exit code 0  
385
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