Basic_Analyses

December 6, 2017

1 Basic Analyses:

To-DO: - decide which subjects to exclude.

- replot the regression coefficients.
- correlate intercept model parameters across sessions
- read in the stai data.

```
GIT SHA: b'd26123c51d42279ad06c89eb8e51fba9f5a7c78f'
```

```
/Users/chris/anaconda/lib/python3.6/site-packages/statsmodels/compat/pandas.py:56: FutureWarnin
  from pandas.core import datetools
```

2 read in data + nobrainer

2.1 gainloss

2.2 shock

3 Model fit - individual subjects

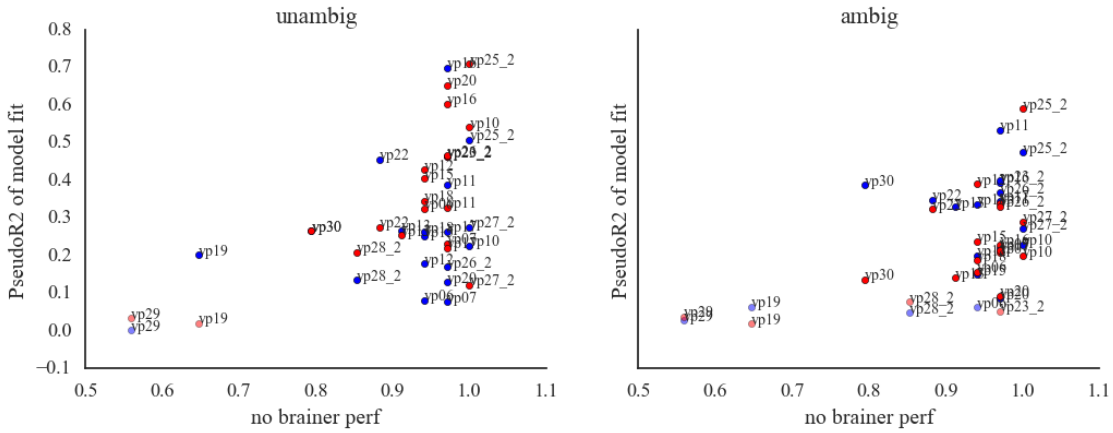
3.1 gainloss

3.2 shock

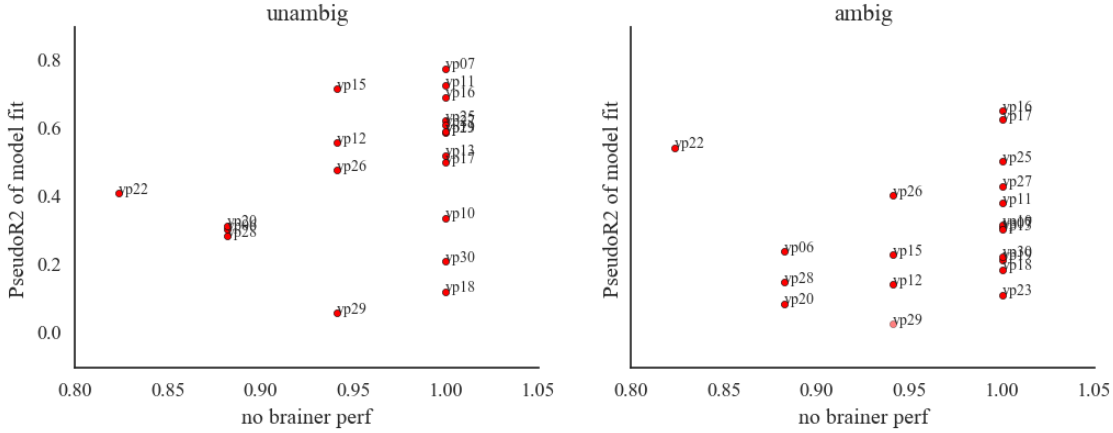
3.2.1 scatterplots for model fit and significance

gainloss

```
C:\Users\Hanna\Anaconda2\lib\site-packages\matplotlib\axes\_axes.py:531: UserWarning: No labell
  warnings.warn("No labelled objects found. "
```

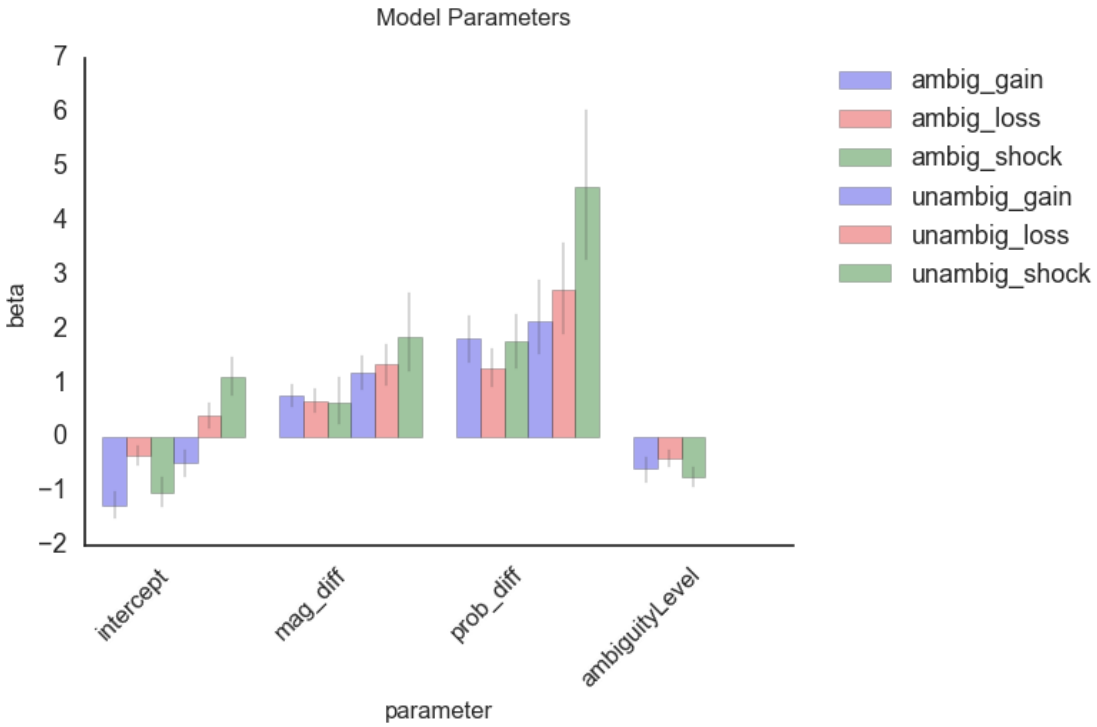


shock



- what the hell is going on with the subjects that have .95 no brainer and <0.1 R2.

3.2.2 bargraph for parameters

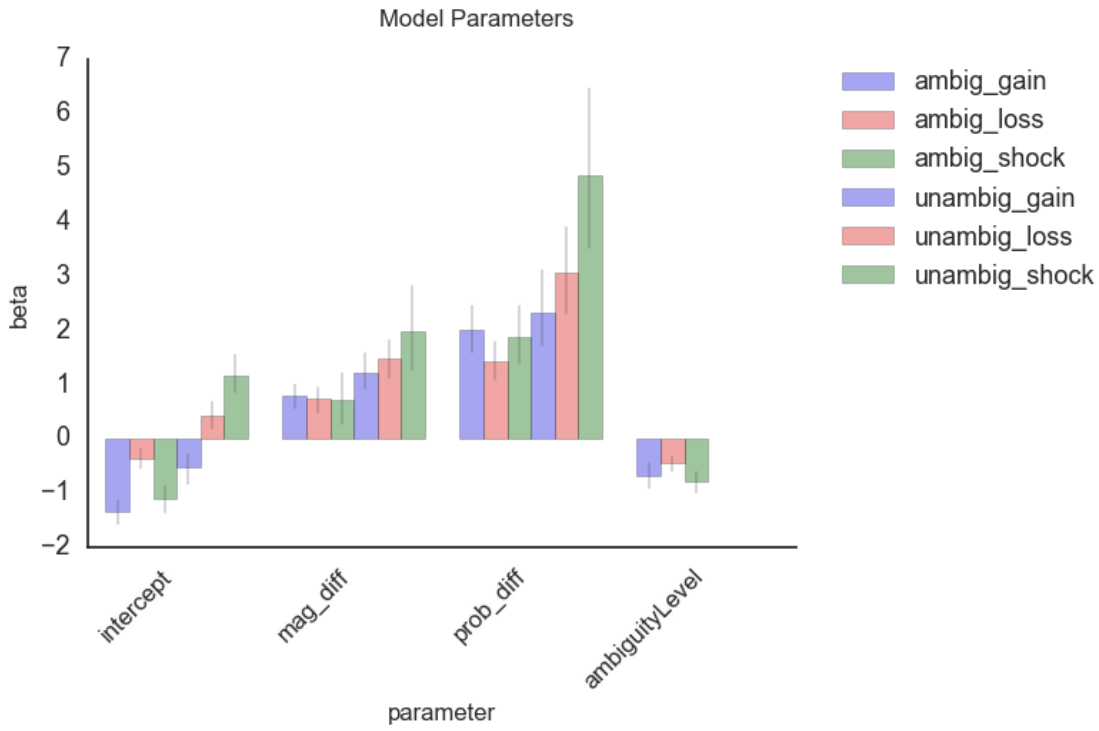


- remove bad fitting subjects - vp19 and vp29

140
126

280
252

420
378



4 Plot individual parameter per task

- add x axis labels

5 Triplet dataframe

5.1 ambiguous trials

5.2 unambiguous trials

- needs to be adjusted/completed in .py file

6 subject count per order of task

-function need to go to a .py file

```
Out[32]: lsg    10
         lgs     7
         slg     1
         Name: order, dtype: int64

Out[33]: sgl    7
         gls    5
```

```
gsl    3
lgs    2
slg    1
Name: order, dtype: int64
```

Out[34]:
```
gls    7
lsg    3
sgl    2
lgs    2
slg    2
gsl    2
Name: order, dtype: int64
```

Out[35]:
```
gls    6
lsg    5
lgs    3
gsl    2
slg    1
sgl    1
Name: order, dtype: int64
```

Out[36]:

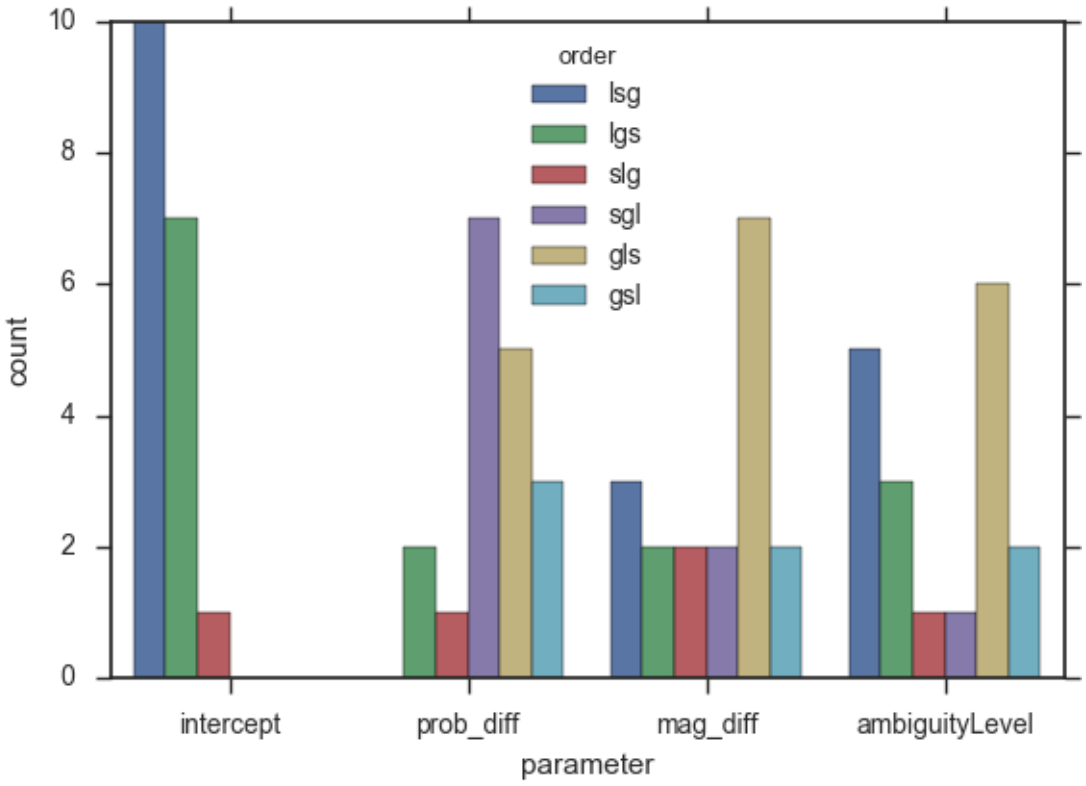
	MID	gain	se_gain	loss	se_loss	shock	se_shock	order
0	vp06	0.618895	0.39654069989	0.171944	0.302125573416	1.654646	0.424077566921	sgl
1	vp07	1.156406	0.40292163675	1.251173	0.389190478561	1.871591	0.478225225102	slg
2	vp10	1.631189	0.447625740324	1.461982	0.403165070184	1.241292	0.429255250639	gls
3	vp11	4.201267	1.09595628298	2.184089	0.512258574857	2.164188	0.524700221893	gls
4	vp12	1.411448	0.427845850988	2.093028	0.496851595753	0.877154	0.35425932307	lgs

Out[39]:

order	gls	gsl	lgs	lsg	sgl	slg
parameter						
ambiguityLevel	6.0	2.0	3.0	5.0	1.0	1.0
intercept	0.0	0.0	7.0	10.0	0.0	1.0
mag_diff	7.0	2.0	2.0	3.0	2.0	2.0
prob_diff	5.0	3.0	2.0	0.0	7.0	1.0

Out[43]:
```
Power_divergenceResult(statistic=array([  7.33333333,  32.        ,   6.66666667,  11
        4.51571721e-02]))
```

Out[44]:
```
<matplotlib.axes._subplots.AxesSubplot at 0xe73f610>
```

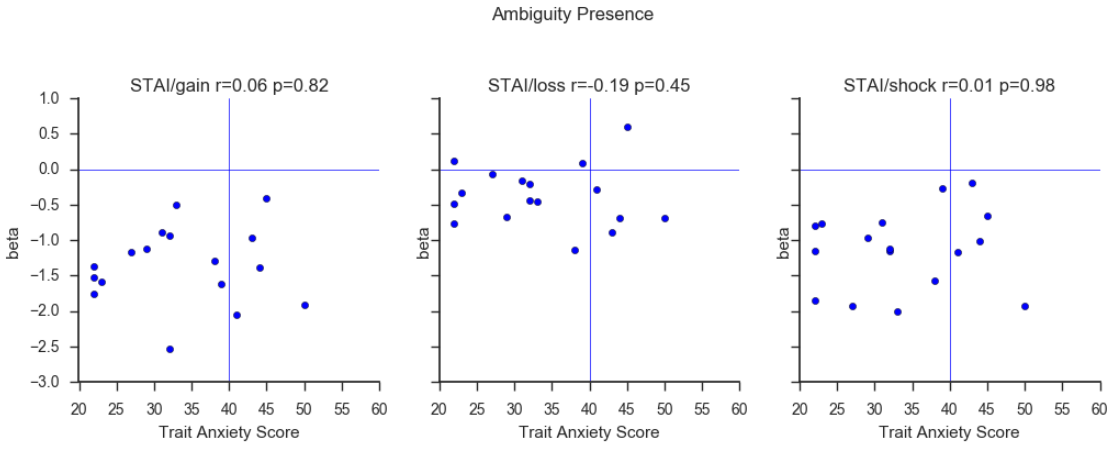


7 Traits (STAI)

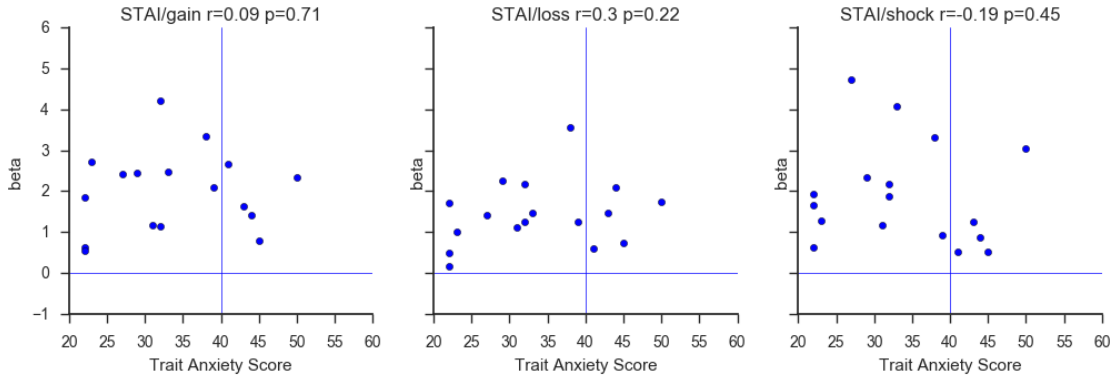
7.1 read in data and prepare dataframe

7.2 Plot STAI and Triplet (Ambiguous)

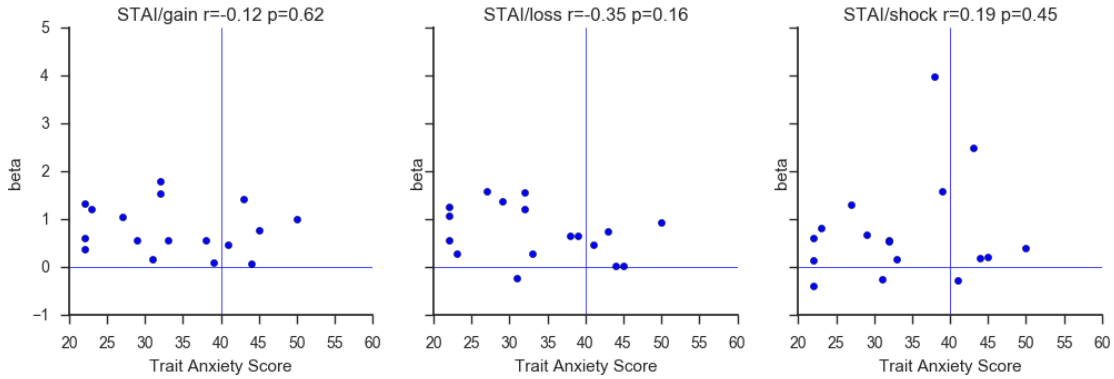
- why can't I set x axis limits?
- apparently it makes it so that both axes are of the same length, also true if figsize is not set



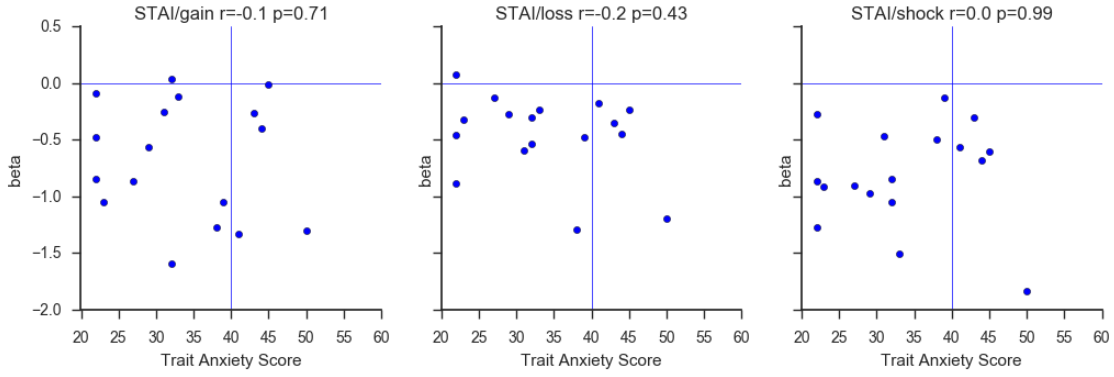
ProbabilityDifference



mag_diff



ambiguityLevel



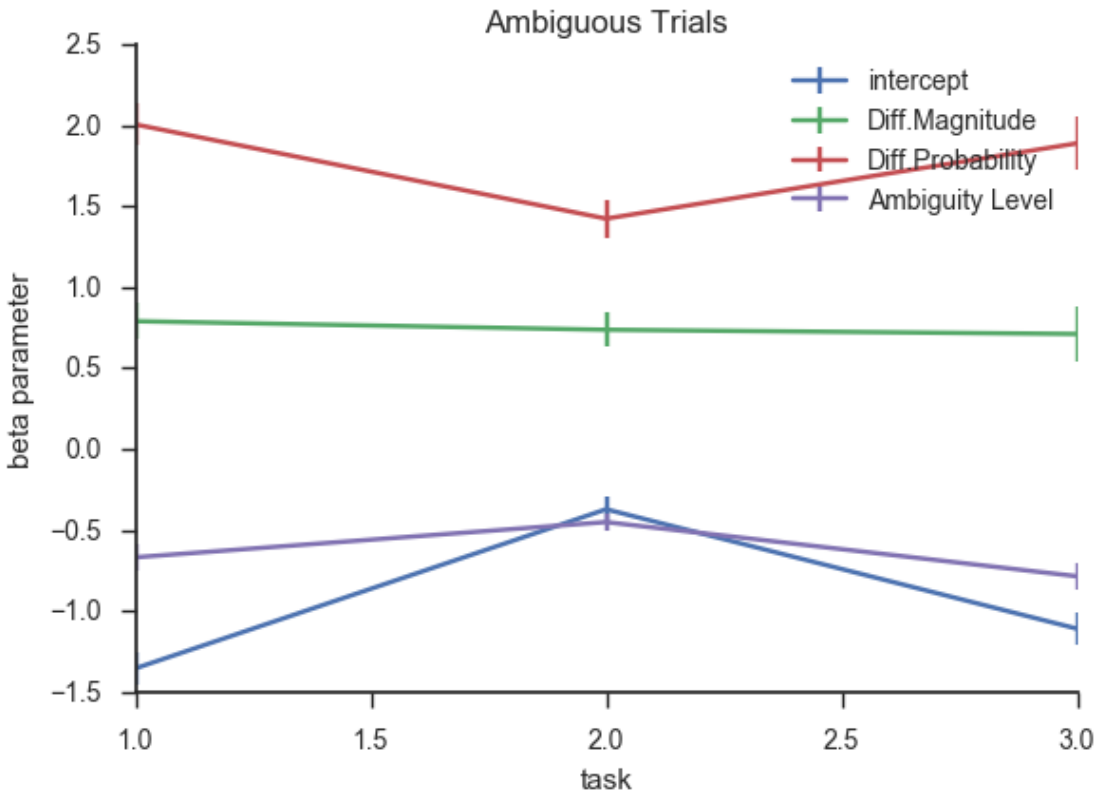
8 Mean parameters per task (gain, loss, shock)

8.1 Ambiguous Trials

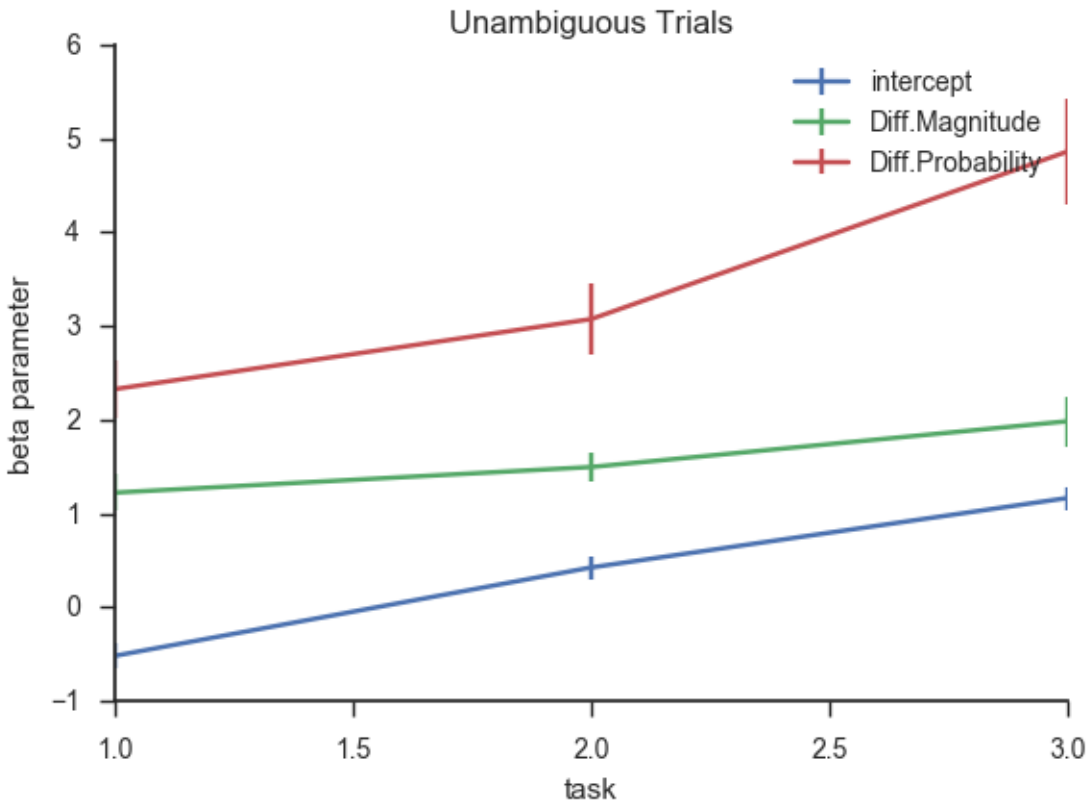
8.1.1 plot mean parameter per task

plot mean parameter per task with errorbars adjusted between gain, loss, and shock

Out[54]: <Container object of 3 artists>



Out[55]: <Container object of 3 artists>



8.1.2 plot scatterplot showing the spearman correlation (r and pvalue) of tasks for each parameter

8.1.3 function to work on for plots (not in .py yet)

- errorbars don't work yet. They have to be specified differently and I couldn't find out how
- diagonal lines

Code snippet for trying to make errorbars work

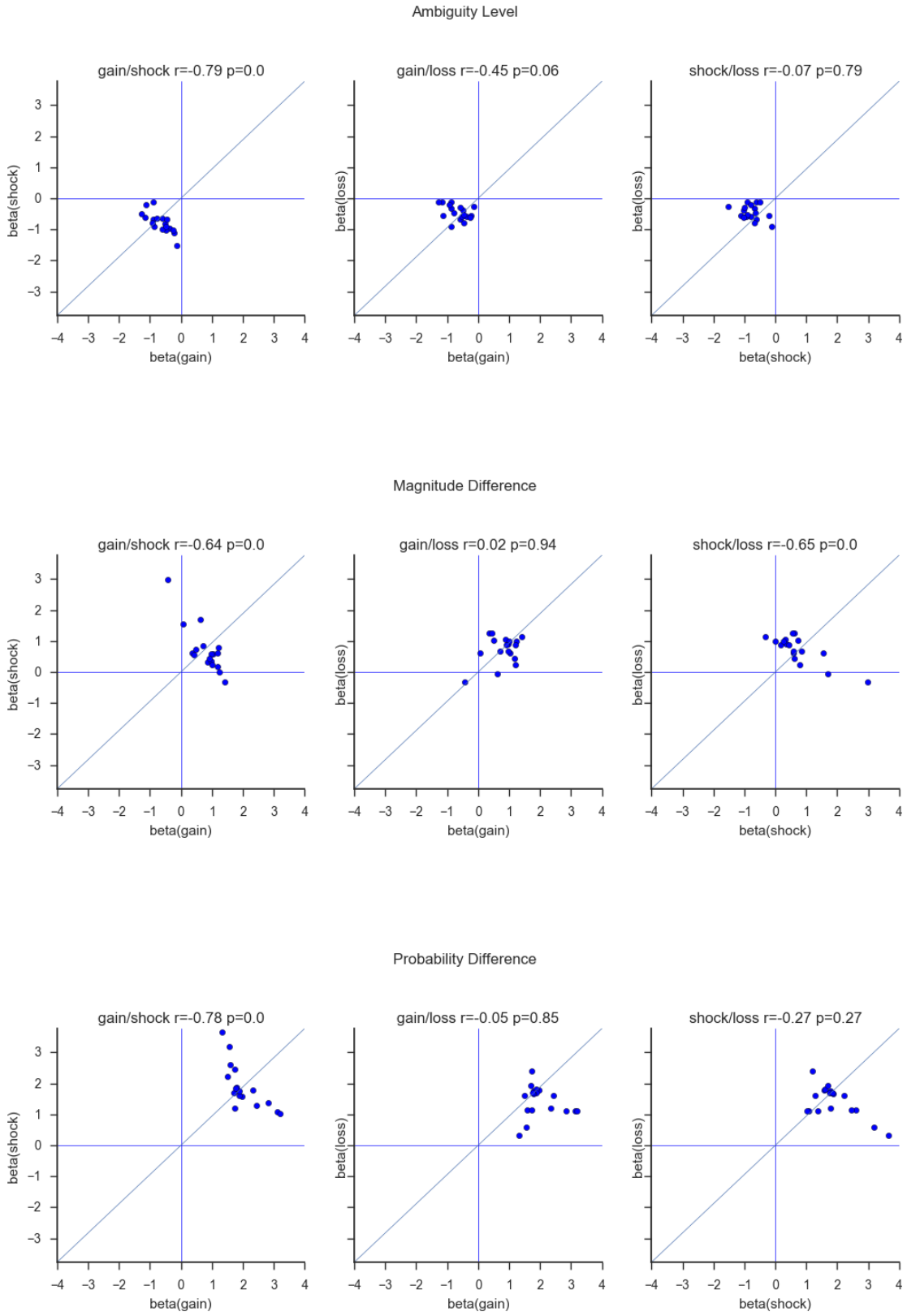
- error message: err must be a scalar, the same dimensions as x, or 2xN., but they are all 18
- tried within the pandas dataframe as well as as_matrix()

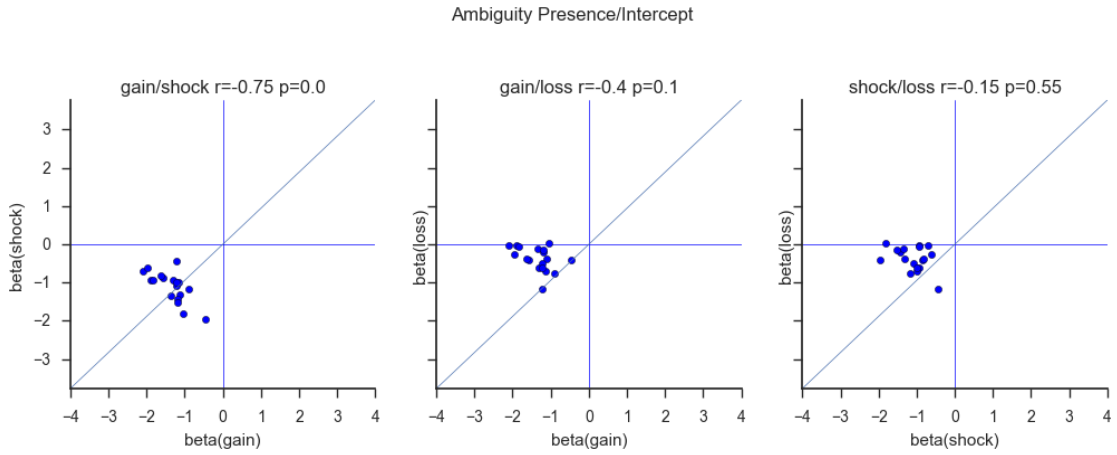
yerr = triplet_intercept['se_shock'].as_matrix() xerr = triplet_intercept['se_gain'].as_matrix() x = triplet_intercept['gain'].as_matrix() y = triplet_intercept['shock'].as_matrix() fig,axes = plt.subplots(1,3,figsize=(12,4),sharey=True,sharex=True) axes[0].scatter(x,y) axes[0].errorbar(x,y, xerr=xerr, yerr=yerr) axes[0].axhline(y=0.000,c="blue",linewidth=0.5,zorder=0) axes[0].axvline(x=0.000,c="blue",linewidth=0.5,zorder=0)

Function to modify

- add errorbars (not done)

- add horizontal and vertical lines (done)
- add diagonal lines (not done)





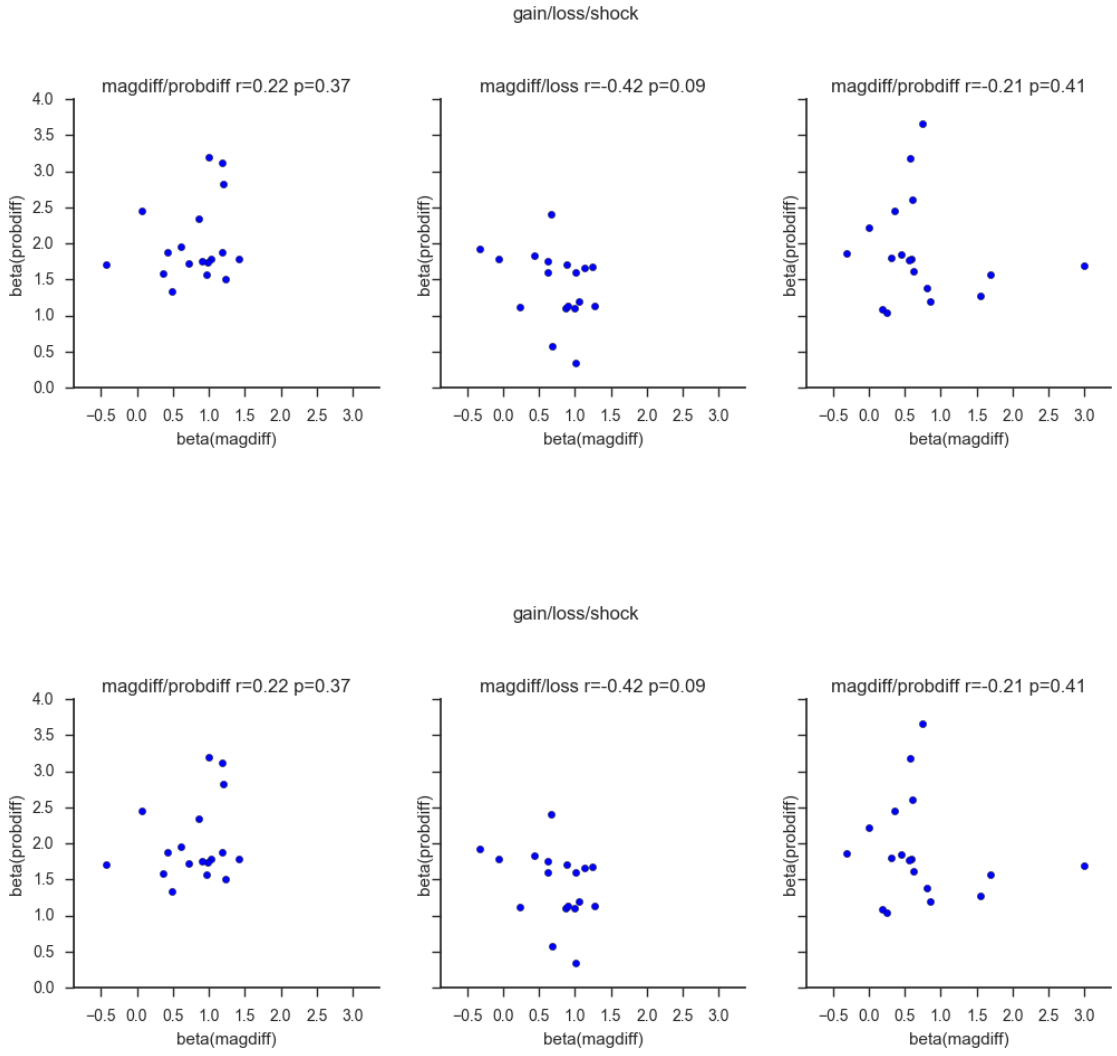
correlation between magdiff and probdiff for every task

Out[67]:

	MID	gain	se_gain	loss	se_loss	shock	se_shock	order
0	vp06	0.366461	0.373872390106	1.270487	0.397230853501	0.602149	0.340973983094	lsg
1	vp07	1.235052	0.500751241075	1.007034	0.448858198922	-0.002988	0.350742462653	gls
2	vp10	0.616540	0.471796507085	-0.059910	0.350738826281	1.682467	0.607684259638	sgl
3	vp11	1.190468	0.570428761953	0.864671	0.455677006624	0.183958	0.361630378166	gls
4	vp12	0.714948	0.326222167367	0.677174	0.364067239233	0.846975	0.311961116926	sgl
5	vp13	0.866847	0.371510227865	1.060894	0.351103925664	0.311356		
6	vp15	1.026639	0.300999452458	0.618214	0.308330344047	0.594244		
7	vp16	0.973662	0.371408478842	0.686024	0.313982927669	0.579411		
8	vp17	0.487127	0.434771384462	1.014686	0.459401118695	0.737283		
9	vp18	0.062016	0.363747371708	0.620377	0.343782687546	1.556705		
10	vp20	1.182881	0.334838532673	0.431423	0.280910566251	0.624793		
11	vp22	0.979105	0.443079916251	0.900631	0.402826997701	0.359361		
12	vp23	0.994921	0.395538428921	0.997404	0.294355619924	0.246772		
13	vp25	-0.424506	0.389128860625	-0.328864	0.431970684469	2.992467		
14	vp26	0.433216	0.362321313843	1.249877	0.476093117545	0.556005		
15	vp27	1.412369	0.476558135705	1.138681	0.413672162174	-0.311953		
16	vp28	0.910447	0.346726123353	0.881337	0.320636647955	0.447313		
17	vp30	1.195446	0.475774761712	0.244071	0.29284864353	0.799580		

```
5    0.333461005008   lgs
6    0.321908540456   gls
7    0.539998302049   gls
8    0.549959950479   lsg
9     0.44872521146   slg
10   0.292330140334   gsl
11   0.423284980761   gls
12   0.326472703359   lgs
13    1.02615885213   slg
14   0.377026099795   lsg
15   0.423355508437   gls
16   0.321390785517   gls
17   0.367379060758   gsl
```

Out[109]:



9 Statistics

9.1 prepare dataframe

9.2 define function for graphs

9.3 Group Ambiguity Differences Across Tasks

9.3.1 Task differences in ambiguity level

Gain as reference

Loss as reference

shock as reference

9.3.2 Task differences in ambiguity presence

Gain as reference

Loss as reference

shock as reference

9.4 Risk Preference Differences Across Tasks

9.4.1 Magnitude

Gain as reference

Loss as reference

Shock as Reference

9.4.2 Probability

Gain as Reference

Loss as Reference

Shock as Reference

```
[NbConvertApp] Converting notebook Basic_Analyses.ipynb to pdf
[NbConvertApp] Support files will be in Basic_Analyses_files/
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