

```
Last login: Mon Dec 19 17:43:27 on ttys000
(base) jinyanxiang@MacBook-Pro ~ % cd /Users/jinyanxiang/Desktop/Github/inequality_poverty
(base) jinyanxiang@MacBook-Pro inequality_poverty % cd /Users/jinyanxiang/Desktop/Github/inequality_poverty/
inequality_poverty
(base) jinyanxiang@MacBook-Pro inequality_poverty % python3 inequality_poverty_studies.py
The working directory is
/Users/jinyanxiang/Desktop/Github/inequality_poverty/inequality_poverty
```

:::STUDY DESIGNS & DATA CAN BE FOUND AT https://osf.io/pyuek/?view_only=1ffd9c21463d403dbef6fa9fbb74a2c8:::

Please provide the file paths of S1, S2, S3 as the second, third and fourth arguments

```
Example: python3 inequality_poverty_studies.py S1_inequality_poverty_survey.csv S2_inequality_poverty_experi
ment.csv S3_inequality_poverty_IAT.csv
(base) jinyanxiang@MacBook-Pro inequality_poverty % python3 inequality_poverty_studies.py S1_inequality_pove
rty_survey.csv S2_inequality_poverty_experiment.csv S3_inequality_poverty_IAT.csv
The working directory is
/Users/jinyanxiang/Desktop/Github/inequality_poverty/inequality_poverty
```

:::STUDY DESIGNS & DATA CAN BE FOUND AT https://osf.io/pyuek/?view_only=1ffd9c21463d403dbef6fa9fbb74a2c8:::

```
...Loading data...
STUDY1 - MULTI-LEVEL DESIGN SURVEY: S1_inequality_poverty_survey.csv
STUDY2 - MIXED DESIGN EXPERIMENT: S2_inequality_poverty_experiment.csv
STUDY3 - IAT :S3_inequality_poverty_IAT.csv
```

:::STUDY 1: DATA PROCESSING AND ANALYSIS:::

...transforming and processing the data of study 1...

```
inequality_poverty_studies.py:189: FutureWarning: The frame.append method is deprecated and will be removed
from pandas in a future version. Use pandas.concat instead.
df_survey_master_temp = transform_survey_data(df_sub1).append(transform_survey_data(df_sub2))
```

...running mixed-effects generalized liner model for the cross-country condition...
fixed effects of income group (i.e., rich, poor, vs. others), the Gini index (i.e., 0.2 to 0.7) and the inte
raction between income group and Gini index
random intercepts for participants to account for the clustering

Coding information of income group: 1 = rich, 2 = poor

		count	mean	std	min	25%	50%	75%	max	
income_group	gini									
	poor	0.2	504.0	30.679167	21.712846	0.0	20.0	25.0	40.00	100.0
		0.3	504.0	32.404762	20.151878	0.0	20.0	30.0	40.00	100.0
		0.4	504.0	33.906746	19.622784	0.0	20.0	30.0	40.00	100.0
		0.5	504.0	35.853175	21.347924	0.0	21.5	35.0	50.00	100.0
		0.6	504.0	37.955556	21.359535	0.0	25.0	36.0	50.00	100.0
		0.7	504.0	38.997222	23.579804	0.0	20.0	35.0	55.00	100.0
rich	0.2	504.0	26.050794	21.239395	0.0	10.0	20.0	40.00	100.0	

0.3	504.0	27.489683	20.849597	0.0	10.0	25.0	40.00	100.0
0.4	504.0	27.199802	20.155056	0.0	10.0	25.0	40.00	100.0
0.5	504.0	28.850397	21.900701	0.0	10.0	25.0	45.75	100.0
0.6	504.0	28.791667	22.049851	0.0	10.0	25.0	41.25	100.0
0.7	504.0	29.615873	24.614529	0.0	10.0	25.0	45.00	100.0

Mixed Linear

Model Regression Results

```

=====
Model:                MixedLM      Dependent Variable:    perception
No. Observations:    6048         Method:              REML
No. Groups:          504          Scale:               383.2199
Min. group size:     12           Log-Likelihood:     -26886.3818
Max. group size:     12           Converged:          Yes
Mean group size:     12.0
=====

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-----
              Coef.  Std.Err.   z    P>|z| [0.025 0.975]
-----
Intercept                24.993    1.082 23.103 0.000 22.873 27.114
C(income_group_code)[T.2]  2.234    1.419  1.575 0.115 -0.547  5.015
gini                     6.681    2.084  3.205 0.001  2.595 10.766
C(income_group_code)[T.2]:gini 10.516    2.948  3.567 0.000  4.739 16.294
id Var                   82.562    0.385
=====

```

...visualizing the results for the cross-country condition...

...running mixed-effects generalized liner model for the over-time condition & saving the figure...

Coding information of income group: 1 = rich, 2 = poor

		count	mean	std	min	25%	50%	75%	max
income_group	gini								
	poor	0.2	506.0	32.763834	20.833618	0.0	20.0	30.0	40.00
		0.3	506.0	33.968379	19.121265	0.0	20.0	30.0	40.00
		0.4	506.0	34.905138	18.657488	0.0	20.0	30.0	45.00
		0.5	506.0	37.416996	19.255706	0.0	25.0	35.0	50.00
		0.6	506.0	38.573123	20.228903	0.0	25.0	37.5	50.00
		0.7	506.0	40.084387	22.222524	0.0	25.0	35.0	54.75
rich		0.2	506.0	25.659091	20.385271	0.0	10.0	20.0	40.00
		0.3	506.0	26.586957	19.257745	0.0	10.0	25.0	35.00
		0.4	506.0	27.669960	19.919734	0.0	10.0	25.0	40.00
		0.5	506.0	28.922925	20.793754	0.0	10.0	25.0	45.00
		0.6	506.0	29.062253	21.211513	0.0	10.0	25.0	41.00
		0.7	506.0	29.574901	23.182911	0.0	10.0	25.0	43.75

Mixed Linear

Model Regression Results

```

=====
Model:                MixedLM      Dependent Variable:    perception
No. Observations:    6072         Method:              REML
No. Groups:          506          Scale:               349.0147
Min. group size:     12           Log-Likelihood:     -26694.8490
Max. group size:     12           Converged:          Yes
Mean group size:     12.0
=====

```

```

-----
              Coef.  Std.Err.   z    P>|z| [0.025 0.975]
-----
Intercept                24.280    1.025 23.693 0.000 22.271 26.288
C(income_group_code)[T.2]  5.201    1.351  3.848 0.000  2.552  7.849
gini                     8.074    1.985  4.067 0.000  4.183 11.965
C(income_group_code)[T.2]:gini 7.049    2.808  2.511 0.012  1.546 12.552
=====

```

id Var 69.338 0.346

=====

...visualizing the results for the over-time condition & saving the figure...

...getting the demographic information of Study 1...

demographic information for ideology:

	ideology	count	percent
0	Liberal	392	0.388
1	Neutral	289	0.286
2	Conservative	202	0.200
3	conservative	127	0.126

demographic information for education:

	education	count	percent
0	Four-year college degree	287	0.284
1	Some college	253	0.250
2	High school graduate	177	0.175
3	Professional degree	149	0.148
4	Two-year college degree	93	0.092
5	Doctorate	31	0.031
6	Less than high school	20	0.020

demographic information for income:

	income	count	percent
0	100,000 - 149,999	172	0.170
1	30,000 - 39,999	110	0.109
2	40,000 - 49,999	105	0.104
3	50,000 - 59,999	101	0.100
4	20,000 - 29,999	93	0.092
5	70,000 - 79,999	84	0.083
6	10,000 - 19,999	77	0.076
7	60,000 - 69,999	60	0.059
8	More than 150,000	59	0.058
9	90,000 - 99,999	55	0.054
10	Less than 10,000	50	0.050
11	80,000 - 89,999	44	0.044

demographic information for religion:

	religion	count	percent
0	Protestant	310	0.307
1	Catholic	253	0.250
2	No religion	218	0.216
3	Agnostic	71	0.070
4	Atheist	57	0.056
5	Other religion	49	0.049
6	Jewish	23	0.023
7	Muslim	16	0.016
8	Mormon	13	0.013

demographic information for gender:

	gender	count	percent
0	Female	510	0.505
1	Male	500	0.495

demographic information for age:

	age	stat
0	count	1010.000000
1	mean	111.347525
2	std	1445.402123
3	min	18.000000
4	25%	34.000000

```

5    50%    47.000000
6    75%    63.000000
7    max  37055.000000

```

demographic information for hispanic:

```

    hispanic  count  percent
0         No    924    0.915
1         Yes     86    0.085

```

demographic information for ethnicity:

```

    ethnicity  count  percent
0         White    765    0.757
1  Black or African American    111    0.110
2         Hispanic     86    0.085
3         Asian     28    0.028
4         Other     13    0.013
5  American Indian or Alaska Native     5    0.005
6  Native Hawaiian or Pacific Islander     2    0.002

```

...saving df_survey_master (full) for S1...

...saving df_survey_master_time (over time) for S1...

...saving df_survey_master_country (across country) for S1...

...saving df_survey_demo (demo information) for S1...

:::STUDY 2: DATA PROCESSING AND ANALYSIS:::

...transforming and processing the data of study 2...

...running mixed-design ANOVA...

within factor: income group (2 level), between-subject factor: economic inequality (3 level)

/opt/anaconda3/lib/python3.8/site-packages/pingouin/parametric.py:551: FutureWarning: Not prepending group keys to the result index of transform-like apply. In the future, the group keys will be included in the index, regardless of whether the applied function returns a like-indexed object.
To preserve the previous behavior, use

```
>>> .groupby(..., group_keys=False)
```

To adopt the future behavior and silence this warning, use

```

>>> .groupby(..., group_keys=True)
ss_resall = grp_with.apply(lambda x: (x - x.mean()) ** 2).sum()
/opt/anaconda3/lib/python3.8/site-packages/pingouin/parametric.py:992: FutureWarning: Not prepending group keys to the result index of transform-like apply. In the future, the group keys will be included in the index, regardless of whether the applied function returns a like-indexed object.
To preserve the previous behavior, use

```

```
>>> .groupby(..., group_keys=False)
```

To adopt the future behavior and silence this warning, use

```

>>> .groupby(..., group_keys=True)
sserror = grp.apply(lambda x: (x - x.mean()) ** 2).sum()

```

/opt/anaconda3/lib/python3.8/site-packages/pingouin/parametric.py:1512: FutureWarning: Not prepending group keys to the result index of transform-like apply. In the future, the group keys will be included in the index, regardless of whether the applied function returns a like-indexed object.
To preserve the previous behavior, use

```
>>> .groupby(..., group_keys=False)
```

To adopt the future behavior and silence this warning, use

```
>>> .groupby(..., group_keys=True)
ss_resall = grp.apply(lambda x: (x - x.mean()) ** 2).sum()
```

		count	mean	std	min	25%	50%	75%	max
inequality	income_group								
high	poor	70.0	42.185714	26.133599	0.0	20.0	40.0	60.0	100.0
	rich	70.0	14.307143	16.359479	0.0	4.0	8.5	20.0	70.0
low	poor	74.0	31.121622	27.219027	1.0	10.0	20.0	40.0	100.0
	rich	74.0	20.311486	28.116154	0.0	2.0	8.5	20.0	98.0
medium	poor	71.0	36.859155	23.317863	3.0	20.0	30.0	55.0	98.0
	rich	71.0	15.462394	16.125064	0.0	2.5	10.0	22.5	60.0

S	DF1	DF2	MS	F	p-unc	ng2	eps
0	inequality		519.157	2	212	259.579	0.452
1	income_group		42414.407	1	212	80.317	0.000
2	Interaction		5364.551	2	212	5.079	0.007

Source

S

...visualizing the results for the mixed-design experiment..

...getting the demographic information of Study 2...

demographic information for ideology:

	ideology	count	percent
0	Liberal	95	0.442
1	Conservative	71	0.330
2	Neutral	40	0.186
3	conservative	9	0.042

demographic information for income:

	income	count	percent
0	More than 150,000	70	0.326
1	100,000 - 149,999	52	0.242
2	Less than 10,000	27	0.126
3	90,000 - 99,999	14	0.065
4	50,000 - 59,999	10	0.047
5	70,000 - 79,999	10	0.047
6	60,000 - 69,999	9	0.042
7	80,000 - 89,999	8	0.037
8	30,000 - 39,999	6	0.028
9	10,000 - 19,999	4	0.019
10	20,000 - 29,999	3	0.014
11	40,000 - 49,999	2	0.009

demographic information for gender:

	gender	count	percent
0	Female	135	0.628
1	Male	80	0.372

demographic information for age:

	age	stat
0	count	215.000000
1	mean	20.483721
2	std	1.335519
3	min	18.000000
4	25%	20.000000

```
5 50% 20.000000
6 75% 21.000000
7 max 34.000000
```

```
...saving df_exp_transformed (long format)for S2...
```

```
:::STUDY 3: DATA PROCESSING AND POST-HOC ANALYSIS::
```

```
...getting the demographic information of Study 3...
```

```
demographic information for gender:
```

```
gender count percent
0 Male 69 0.69
1 Female 31 0.31
```

```
demographic information for age:
```

```
age stat
0 count 100.00000
1 mean 37.49000
2 std 7.75964
3 min 23.00000
4 25% 35.00000
5 50% 36.00000
6 75% 40.00000
7 max 69.00000
```

```
demographic information for hispanic:
```

```
hispanic count percent
0 0 98 0.98
1 Yes 2 0.02
```

```
demographic information for ethnicity:
```

```
ethnicity stat
0 count 98.000000
1 mean 1.357143
2 std 0.965914
3 min 1.000000
4 25% 1.000000
5 50% 1.000000
6 75% 1.000000
7 max 6.000000
```

```
demographic information for social class:
```

```
social class stat
0 count 100.000000
1 mean 2.330000
2 std 0.964575
3 min 1.000000
4 25% 1.750000
5 50% 2.000000
6 75% 3.000000
7 max 4.000000
```

```
demographic information for income:
```

```
income count percent
0 50,000 - 59,999 23 0.23
1 70,000 - 79,999 18 0.18
2 40,000 - 49,999 15 0.15
3 60,000 - 69,999 15 0.15
4 30,000 - 39,999 8 0.08
5 100,000 - 149,999 5 0.05
6 90,000 - 99,999 4 0.04
7 20,000 - 29,999 4 0.04
```

8	80,000 - 89,999	4	0.04
9	Less than 10,000	2	0.02
10	10,000 - 19,999	1	0.01
11	More than 150,000	1	0.01

demographic information for ideology:

	ideology	count	percent
0	Liberal	69	0.69
1	Conservative	14	0.14
2	conservative	10	0.10
3	Neutral	5	0.05
4	Not reported	2	0.02

demographic information for affiliation:

	affiliation	count	percent
0	Democratic	71	0.71
1	Republican	18	0.18
2	Indpendent	9	0.09
3	Others	1	0.01
4	Not Reported	1	0.01

...creating sub samples & saving the datasets: gender (male vs. female), political affiliation (republican v s. democratic)...

...main data analysis is conductd using the IAT open-source tool <http://iatgen.org/>...

...running the post-host t-test to detect group difference in D-score...

TEST 1: the difference between males and females (full sample) is 0.07 ($t(98) = 0.926$, $p = 0.357$, NOT statistically significant)

TEST 2: the difference between males and females (sub-sample with participants who passed the exclusion criteria) is 0.0 ($t(41) = 0.0$, $p = 1.0$, NOT statistically significant)

TEST 3: the difference between Republican and Democratic (full sample) is 0.35 ($t(87) = 3.711$, $p < 0.001$, statistically significant)

TEST 4: the difference between Republican and Democratic (sub-sample with participants who passed the exclusion criteria) is 0.19 ($t(32) = 1.864$, $p = 0.072$, NOT statistically significant)

:::THIS IS THE END!:::

(base) jinyanxiang@MacBook-Pro inequality_poverty %