

## Envy 2 V4 & Envy 2 V6

*Note: Envy 2 V6 is just V4 with the addition of debrief questions, so the data collection portion can be combined*

In our main run of envy studies, the primary/"first" design consisted of asking participants to complete a task counting the number of zeros in a grid, rating 10 paintings, then soliciting their WTP (in # of tasks performed) to obtain the painting.

Subjects were then presented with two potential scenarios (so this is within subject), the first of them being the possibility that another participant with a higher WTP than their own would receive the painting for free. Below are the summary stats for the main version of this experiment.

### Summary Stats and Results

Variable name	Storage type	Display format	Value label	Variable label
PROLIFIC_PID	str24	%24s		PROLIFIC_PID
hypothetical	byte	%10.0g		=1 if other particip High WTP =0 if Low
WTP	int	%10.0g		WTP for favorite painting
Envy_Level	byte	%10.0g		Envy Level (0-10) if other participant received for free (hypo)
WTP_Prevent	int	%10.0g		WTP in tasks to prevent other participant from receiving for free
WTP_high	int	%10.0g		WTP of High WTP participant
WTP_low	int	%10.0g		WTP of Low WTP participant

-> hypothetical = 0

Stats	WTP_Pr~t	Envy_L~1
Mean	10.58586	4.444444
SD	18.01644	3.363132
Min	0	0
Max	100	10
N	99	99

-> hypothetical = 1

Stats	WTP_Pr~t	Envy_L~1
Mean	26.73737	3.252525
SD	54.54592	2.918426
Min	0	0
Max	400	10
N	99	99

. ttest Envy\_Level, by(hypothetical)

Two-sample t test with equal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
0	99	4.444444	.3380075	3.363132	3.77368	5.115209
1	99	3.252525	.2933129	2.918426	2.670455	3.834595
Combined	198	3.848485	.2271984	3.196964	3.400432	4.296538
diff		1.191919	.4475282		.3093303	2.074508

diff = mean(0) - mean(1)

t = 2.6633

H0: diff = 0

Degrees of freedom = 196

Ha: diff < 0

Ha: diff != 0

Ha: diff > 0

Pr(T < t) = 0.9958

Pr(|T| > |t|) = 0.0084

Pr(T > t) = 0.0042

```
. ttest WTP_Prevent, by(hypothetical)
```

Two-sample t test with equal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
0	99	10.58586	1.81072	18.01644	6.992543	14.17917
1	99	26.73737	5.482071	54.54592	15.85838	37.61636
Combined	198	18.66162	2.936274	41.31704	12.87105	24.45218
diff		-16.15152	5.773371		-27.53742	-4.765613

diff = mean(0) - mean(1) t = -2.7976  
H0: diff = 0 Degrees of freedom = 196

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.0028 Pr(|T| > |t|) = 0.0057 Pr(T > t) = 0.9972

```
. reg WTP_Prevent c.Envy_Level##i.hypothetical WTP
```

Source	SS	df	MS	Number of obs	=	198
Model	32017.2068	4	8004.3017	F(4, 193)	=	5.08
Residual	304281.121	193	1576.58612	Prob > F	=	0.0007
				R-squared	=	0.0952
				Adj R-squared	=	0.0765
Total	336298.328	197	1707.09811	Root MSE	=	39.706

WTP_Prevent	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
Envy_Level	.8951902	1.19882	0.75	0.456	-1.469281	3.259661
1.hypothetical	4.871065	8.943105	0.54	0.587	-12.7677	22.50984
hypothetical# c.Envy_Level						
1	3.796264	1.819837	2.09	0.038	.2069416	7.385586
WTP	-.0085132	.0260883	-0.33	0.745	-.0599681	.0429416
_cons	6.844659	6.63743	1.03	0.304	-6.246553	19.93587

## Summary of the Results

The WTP to prevent the other hypothetical participant from receiving the painting was significantly higher when the "other participant" being prevented had a higher WTP than the real participant. However, the level of envy (on a scale of 0-10) was higher when directed towards the other participant who had a lower WTP than the real participant. This result held across multiple runs of the experiment.

Another consistent result was that participants who were envious of the other participant only increased their willingness to pay/destroy in tandem with their envy levels if they were considering the hypothetical involving the other participant with a higher WTP.

## Main Result

Evidence that participants will do more to prevent participants who would work hard for a painting from getting it but are less envious of them than in other situations.

## Envy 2 V7

This study consists of the following: participant's envy levels are solicited in the hypothetical of a high/low WTP participant receiving the painting for free, they are told that the other participant has received the painting for free, and now the other participant has the opportunity receive the real participant's second favorite painting for free. Subjects are asked their WTP to prevent this participant from receiving their second favorite painting.

## Summary Stats and Results

```
. describe, full
```

```
Contains data from ..\Clean STATA Files\Envy_2_V7_clean.dta
Observations:      100
Variables:         7      5 Oct 2024 22:31
```

Variable name	Storage type	Display format	Value label	Variable label
PROLIFIC_PID	str24	%24s		PROLIFIC_PID
hypothetical	byte	%10.0g		=1 if other particip High WTP =0 if Low
WTP	byte	%10.0g		WTP for favorite painting
Envy_Level	byte	%10.0g		Envy Level (0-10) if other participant received for free (hypo)
WTP_Prevent	int	%10.0g		WTP in tasks to prevent participant from receiving for free
WTP_high	int	%10.0g		WTP of High WTP participant
WTP_low	byte	%10.0g		WTP of Low WTP participant

```
. bysort hypothetical: tabstat WTP_Prevent Envy_Level, stats(mean sd min max n)
```

```
-> hypothetical = 0
```

Stats	WTP_Prvt	Envy_Lvl
Mean	6.52	4.28
SD	11.80149	3.213746
Min	0	0
Max	50	10
N	50	50

```
-> hypothetical = 1
```

Stats	WTP_Prvt	Envy_Lvl
Mean	21.56	3.74
SD	103.6557	3.355227
Min	0	0
Max	731	10
N	50	50

```
. reg WTP_Prevent c.Envy_Level##i.hypothetical WTP
```

Source	SS	df	MS	Number of obs	=	100
Model	62750.3261	4	15687.5815	F(4, 95)	=	3.13
Residual	476209.514	95	5012.73172	Prob > F	=	0.0183
				R-squared	=	0.1164
				Adj R-squared	=	0.0792
Total	538959.84	99	5444.03879	Root MSE	=	70.801

WTP_Prevent	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
Envy_Level	.2674727	3.164056	0.08	0.933	-6.013972	6.548918
1.hypothetical	12.91352	22.74519	0.57	0.572	-32.24139	58.06843
hypothetical#c.Envy_Level						
1	.6071967	4.433843	0.14	0.891	-8.195094	9.409488
WTP	1.068099	.3528135	3.03	0.003	.3676752	1.768522
_cons	-15.26045	17.63774	-0.87	0.389	-50.27579	19.7549

```
. ttest Envy_Level, by(hypothetical)
```

Two-sample t test with equal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
0	50	4.28	.4544923	3.213746	3.366663	5.193337
1	50	3.74	.4745008	3.355227	2.786455	4.693545
Combined	100	4.01	.3279859	3.279859	3.359205	4.660795
diff		.54	.6570497		-.7638937	1.843894

diff = mean(0) - mean(1) t = 0.8219  
H0: diff = 0 Degrees of freedom = 98

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.7934 Pr(|T| > |t|) = 0.4132 Pr(T > t) = 0.2066

```
. ttest WTP_Prevent, by(hypothetical)
```

Two-sample t test with equal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
0	50	6.52	1.668982	11.80149	3.166054	9.873946
1	50	21.56	14.65912	103.6557	-7.898613	51.01861
Combined	100	14.04	7.378373	73.78373	-.6002927	28.68029
diff		-15.04	14.75383		-44.31849	14.23849

diff = mean(0) - mean(1) t = -1.0194  
H0: diff = 0 Degrees of freedom = 98

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.1553 Pr(|T| > |t|) = 0.3105 Pr(T > t) = 0.8447

## Summary of the Results

There is suggestive evidence that the WTP to prevent the other participant from receiving the painting differs between the two conditions, but there is little evidence to suggest that higher reported envy levels are driving this difference.

## Envy 2 V9

This study was a variation of Envy 2 V4, but here all mentions of envy are removed and the slider question (0-10) is phrased as a participants "desire to prevent". The studies following this study also generally moved to be between subject rather than within subject.

This study was an effort to see if the seemingly contradictory results with Envy 2 V4 would be replicated without envy i.e. we would observe the ordering of the desire to prevent another participant from receiving a piece of artwork for free be the same as the WTP to prevent.

## Summary Stats and Results

Contains data from ..\Clean STATA Files\Envy_2_V9_clean.dta				
Observations:	51			
Variables:	17		4 Oct 2024 14:36	
Variable name	Storage type	Display format	Value label	Variable label
WTP	byte	%10.0g		WTP for favorite painting
DPH	byte	%10.0g		Desire to Prevent High from getting painting for free on a scale of 1-10
WTP_PH	byte	%10.0g		# of tasks to prevent other (non prev) particip after High got for free
DPL	byte	%10.0g		Desire to Prevent High from getting painting for free on a scale of 1-10
WTP_PL	byte	%10.0g		# of tasks to prevent other (non prev) particip after Low got for free
PROLIFIC_PID	str24	%24s		PROLIFIC_PID
WTP_high	int	%10.0g		WTP of High WTP participant
WTP_low	byte	%10.0g		WTP of Low WTP participant
wtpHighLowCondition	byte	%10.0g		1 if High condition, 0 if low condition
someone_else	float	%9.0g		
v9	float	%9.0g		
destroy_var	float	%9.0g		WTP to Prevent, both treatments
destroy_dummy	float	%9.0g		1 if High treatment, 0 if Low
destroy_v_dum	float	%9.0g		destroy_var*destroy_dummy
dp_var	float	%9.0g		Desire to Prevent, both treatments
dp_dummy	float	%9.0g		1 if High treatment, 0 if Low
dp_v_dum	float	%9.0g		dp_var*dp_dummy

Stats	WTP	WTP_PH	DPH	WTP_PL	DPL	v9	someone~e	WTP_high
Mean	13.15686	11.34615	3.115385	6.04	5.04	1	0	131.5686
SD	18.89484	21.0427	2.790368	7.557998	2.850146	0	0	188.9484
Min	1	0	1	0	1	1	0	10
Max	100	100	10	28	9	1	0	1000
N	51	26	26	25	25	51	51	51

Stats	WTP_low	wtpHig~n
Mean	6.352941	.5098039
SD	9.501207	.5048782
Min	0	0
Max	50	1
N	51	51

```
. reg destroy_var c.dp_var##i.wtpHighLowCondition WTP
```

Source	SS	df	MS	Number of obs	=	51
Model	7137.25022	4	1784.31256	F(4, 46)	=	14.50
Residual	5662.43605	46	123.096436	Prob > F	=	0.0000
				R-squared	=	0.5576
				Adj R-squared	=	0.5191
Total	12799.6863	50	255.993725	Root MSE	=	11.095

destroy_var	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
dp_var	.9212791	.7946119	1.16	0.252	-.6781917	2.52075
1.wtpHighLowCondition	-7.498854	5.657497	-1.33	0.192	-18.88681	3.889098
wtpHighLowCondition# c.dp_var						
1	4.269901	1.12436	3.80	0.000	2.006682	6.53312
WTP	.2960462	.0836364	3.54	0.001	.1276949	.4643975
_cons	-1.847913	4.673158	-0.40	0.694	-11.25449	7.558666



```
. ttest dp_var, by(wtpHighLowCondition)
```

Two-sample t test with equal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
0	25	5.04	.5700292	2.850146	3.863517	6.216483
1	26	3.115385	.5472362	2.790368	1.988331	4.242439
Combined	51	4.058824	.4138881	2.955752	3.227505	4.890142
diff		1.924615	.7898553		.3373416	3.511889

```
diff = mean(0) - mean(1)                                t = 2.4367
H0: diff = 0                                             Degrees of freedom = 49
```

```
Ha: diff < 0                Ha: diff != 0                Ha: diff > 0
Pr(T < t) = 0.9907          Pr(|T| > |t|) = 0.0185        Pr(T > t) = 0.0093
```

```
. ttest destroy_var, by(wtpHighLowCondition)
```

Two-sample t test with equal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
0	25	6.04	1.5116	7.557998	2.920212	9.159788
1	26	11.34615	4.126814	21.0427	2.846822	19.84549
Combined	51	8.745098	2.240421	15.9998	4.245081	13.24512
diff		-5.306154	4.463292		-14.27547	3.663167

```
diff = mean(0) - mean(1)                                t = -1.1888
H0: diff = 0                                             Degrees of freedom = 49
```

```
Ha: diff < 0                Ha: diff != 0                Ha: diff > 0
Pr(T < t) = 0.1201          Pr(|T| > |t|) = 0.2402        Pr(T > t) = 0.8799
```

## Summary of the Results

Instead of observing the desire to prevent a participant from receiving a painting comport with the order of the WTP to prevent, we see a strongly significant result that participants will pay/do more to prevent a High WTP participant from receiving a painting compared to a low WTP participant even though they "want" to prevent the low WTP participant from receiving the painting more.

## Envy 2 V10

This study involved the same counting zeros task, solicitation of WTP for their favorite painting, but in this study, the favorite painting was given away to the high/low WTP participant for free. Participants were asked how envious they were of this participant, and then an addendum to the hypothetical was proposed wherein the real participant's second favorite painting would be given away to this other participant.

Both of the other participant's WTP for this second favorite painting were higher than the real participant's, but they were lower than the WTP of the High WTP participant for the real participant's favorite painting. Participants were then asked how much they would be willing to work to ensure this did not happen.

## Summary Stats and Results

Note: destroy\_var is winsorized (trimmed) at the 5th and 95th percentiles

Variable name	Storage type	Display format	Value label	Variable label
WTP	int	%10.0g		WTP for favorite painting
HEL	byte	%10.0g		Envy Level w/ higher WTP received painting for free on a scale of 1-10
WTP_PH	int	%10.0g		# of tasks to prevent other (non prev) particip after High got for free
LEL	byte	%10.0g		Envy Level w/ lower WTP received painting for free on a scale of 1-10
WTP_PL	int	%10.0g		# of tasks to prevent other (non prev) particip after Low got for free
PROLIFIC_PID	str24	%24s		PROLIFIC_PID
WTP_high	int	%10.0g		WTP of High WTP participant
WTP_low	int	%10.0g		WTP of Low WTP participant
wtpHighLowCondition	byte	%10.0g		1 if High condition, 0 if low condition
someone_else	float	%9.0g		
v10	float	%9.0g		
destroy_var	float	%9.0g		WTP to Prevent, both treatments
destroy_dummy	float	%9.0g		1 if High treatment, 0 if Low
destroy_v_dum	float	%9.0g		destroy_var*destroy_dummy
envy_var	float	%9.0g		Envy, both treatments
envy_dummy	float	%9.0g		1 if High treatment, 0 if Low
envy_v_dum	float	%9.0g		envy_var*envy_dummy

Stats	WTP	HEL	WTP_PH	LEL	WTP_PL	v10	someone~e	WTP_high
Mean	24.8932	4.117647	464.0588	4.730769	28.09615	1	1	248.932
SD	100.082	2.875045	2794.366	3.017046	78.19163	0	0	1000.82
Min	1	1	0	1	0	1	1	10
Max	1000	9	20000	10	401	1	1	10000
N	103	51	51	52	52	103	103	103

Stats	WTP_low	wtpHig~n
Mean	12.19417	.4951456
SD	50.08817	.5024213
Min	0	0
Max	500	1
N	103	103

```
. reg destroy_var c.envy_var##i.wtpHighLowCondition WTP
```

Source	SS	df	MS	Number of obs	=	98
Model	137004.127	4	34251.0318	F(4, 93)	=	13.67
Residual	232979.873	93	2505.15992	Prob > F	=	0.0000
				R-squared	=	0.3703
				Adj R-squared	=	0.3432
Total	369984	97	3814.26804	Root MSE	=	50.052

destroy_var	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
envy_var	.4132123	2.336834	0.18	0.860	-4.227277	5.053701
1.wtpHighLowCondition	-12.90327	18.52381	-0.70	0.488	-49.68788	23.88135
wtpHighLowCondition# c.envy_var 1	10.17815	3.630128	2.80	0.006	2.969438	17.38687
WTP	1.281337	.2444204	5.24	0.000	.7959667	1.766708
_cons	-1.050526	13.47616	-0.08	0.938	-27.81151	25.71046

```
.  
. ttest destroy_var, by(wtpHighLowCondition)
```

Two-sample t test with equal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
0	51	20.78431	8.165605	58.31409	4.383213	37.18541
1	47	39.70213	9.40417	64.47174	20.77252	58.63174
Combined	98	29.85714	6.238678	61.75976	17.47509	42.23919
diff		-18.91781	12.40325		-43.53808	5.702448

diff = mean(0) - mean(1) t = -1.5252  
H0: diff = 0 Degrees of freedom = 96

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.0652 Pr(|T| > |t|) = 0.1305 Pr(T > t) = 0.9348

```
. ttest envy_var, by(wtpHighLowCondition)
```

Two-sample t test with equal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
0	52	4.730769	.4183889	3.017046	3.890818	5.57072
1	51	4.117647	.4025868	2.875045	3.309028	4.926266
Combined	103	4.427184	.2905983	2.94925	3.850784	5.003585
diff		.6131222	.5808993		-.5392259	1.76547

```
diff = mean(0) - mean(1)                                t = 1.0555
H0: diff = 0                                             Degrees of freedom = 101
```

```
Ha: diff < 0
Pr(T < t) = 0.8531
```

```
Ha: diff != 0
Pr(|T| > |t|) = 0.2937
```

```
Ha: diff > 0
Pr(T > t) = 0.1469
```

## Summary of the Results

The differences in the levels of envy based on the WTP of the other participant are not as high in this sample as the others (the experiment up to and including solicitation of envy levels was the same as Envy 2 V4); however, we do still see that higher levels of envy are related positively with WTP to destroy/prevent at high levels of statistical significance.

An important aspect to take note of in this experiment is that the envy level solicited is of the other participant **prior** to the consideration of the hypothetical of that other participant receiving yet another painting for free. One could imagine that soliciting that level of envy might have led to different results.

Something to explore in Envy 3: whether or not we get different results for levels of envy if the gifting of the painting for free has already happened or not

## Envy 2 V11

This study is a version of Envy 2 V7 wherein participants envy levels are solicited, they are told that the other participant has received the painting for free, and now a different participant has the opportunity **to work for** the real participant's second favorite painting. Subjects are asked their WTP to prevent this new, different participant from receiving their second favorite painting.

## Summary Stats and Results

WTP	byte	%10.0g	WTP for favorite painting
HEL	byte	%10.0g	Envy Level w/ higher WTP received painting for free on a scale of 1-10
WTP_PH	int	%10.0g	# of tasks to prevent other (non prev) particip after High got for free
LEL	byte	%10.0g	Envy Level w/ lower WTP received painting for free on a scale of 1-10
WTP_PL	byte	%10.0g	# of tasks to prevent other (non prev) particip after Low got for free
PROLIFIC_PID	str24	%24s	PROLIFIC_PID
WTP_high	int	%10.0g	WTP of High WTP participant
WTP_low	byte	%10.0g	WTP of Low WTP participant
wtpHighLowCondition			
	byte	%10.0g	1 if High condition, 0 if low condition
someone_else	float	%9.0g	
v11	float	%9.0g	
destroy_var	float	%9.0g	WTP to Prevent, both treatments
destroy_dummy	float	%9.0g	1 if High treatment, 0 if Low
destroy_v_dum	float	%9.0g	destroy_var*destroy_dummy
envy_var	float	%9.0g	Envy, both treatments
envy_dummy	float	%9.0g	1 if High treatment, 0 if Low
envy_v_dum	float	%9.0g	envy_var*envy_dummy

```
. tabstat `select_vars', stats(mean sd min max n) columns(var)
```

Stats	WTP	HEL	WTP_PH	LEL	WTP_PL	v11	someone~e	WTP_high
Mean	12.48	3.72	10.48	4.8	3.72	1	1	124.8
SD	19.93381	2.525206	19.93974	3.291403	7.18517	0	0	199.3381
Min	1	1	0	1	0	1	1	10
Max	100	10	101	10	33	1	1	1000
N	50	25	25	25	25	50	50	50

Stats	WTP_low	wtpHig~n
Mean	6.02	.5
SD	10.04376	.5050763
Min	0	0
Max	50	1
N	50	50

```
. reg destroy_var c.envy_var##i.wtpHighLowCondition WTP
```

Source	SS	df	MS	Number of obs	=	50
Model	2422.589	4	605.647251	F(4, 45)	=	3.05
Residual	8929.911	45	198.442467	Prob > F	=	0.0262
				R-squared	=	0.2134
				Adj R-squared	=	0.1435
Total	11352.5	49	231.683673	Root MSE	=	14.087

destroy_var	Coefficient	Std. err.	t	P> t	[95% conf. interval]
envy_var	1.198406	.9570137	1.25	0.217	-.7291188 3.12593
1.wtpHighLowCondition	-.8006874	7.173561	-0.11	0.912	-15.24898 13.64761
wtpHighLowCondition#					
c.envy_var					
1	2.377439	1.436024	1.66	0.105	-.5148615 5.26974
WTP	-.1361476	.1172146	-1.16	0.252	-.3722299 .0999347
_cons	-.3277798	5.068434	-0.06	0.949	-10.53613 9.88057

```
. ttest destroy_var, by(wtpHighLowCondition)
```

Two-sample t test with equal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
0	25	3.72	1.437034	7.18517	.7541076	6.685892
1	25	10.48	3.987949	19.93974	2.249279	18.71072
Combined	50	7.1	2.152597	15.22116	2.774195	11.42581
diff		-6.76	4.238962		-15.283	1.763005

diff = mean(0) - mean(1) t = -1.5947  
H0: diff = 0 Degrees of freedom = 48

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.0587 Pr(|T| > |t|) = 0.1173 Pr(T > t) = 0.9413

```
. ttest envy_var, by(wtpHighLowCondition)
```

Two-sample t test with equal variances

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
0	25	4.8	.6582806	3.291403	3.441376	6.158624
1	25	3.72	.5050413	2.525206	2.677646	4.762354
Combined	50	4.26	.4177784	2.954139	3.420443	5.099557
diff		1.08	.8296987		-.5882211	2.748221

diff = mean(0) - mean(1) t = 1.3017  
H0: diff = 0 Degrees of freedom = 48

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
Pr(T < t) = 0.9004 Pr(|T| > |t|) = 0.1992 Pr(T > t) = 0.0996

## Summary of the Results

We again see the same result where higher levels of envy are positively correlated, all else equal, with higher WTP to prevent a participant from receiving a painting, although not as significant in this paradigm/sample.

## Envy 3 V1

Envy 3 V1 is a between subject design where participants are sorted into 4 different scenarios. See the below screenshot from Slack for the original design: \*\*

8:11 Consider 4 possible endowment transitions through which person (i) could acquire the good when there is a single other person (j) truthful WTP in the 4 scenarios

(0,0) to (1,1) measures  $v_i$  --- case a

(0,0) to (1,0) measures  $v_i$  + superiority --- case b

(0,1) to (1,1) measures  $v_i$  + envy --- case c

(0,1) to (1,0) measures  $v_i$  + envy + superiority. --- case d

We would need to do WTP rather than effort

Case a is basically asking for the participant's allocation when they and the other participant can pay for their favorite artwork

case b is when the participant can pay for their favorite artwork but their partner cannot acquire it

case c is when the other person gets the artwork for free and you have to pay in order to get it too

case d is when the other person gets the artwork for free and you can get it instead of them if your WTP is high enough

## Summary Stats and Results

. describe, full

Contains data from ../Clean STATA Files/Envy\_3\_V1\_clean.dta

Observations: 198

Variables: 18 4 Oct 2024 14:19

Variable name	Storage type	Display format	Value label	Variable label
case_a_envy_1	byte	%10.0g		case_a_envy_1
case_a_wtp	int	%10.0g		case_a_wtp
case_b_envy_1	byte	%10.0g		case_b_envy_1
case_b_wtp	int	%10.0g		case_b_wtp
case_c_envy_1	byte	%10.0g		case_c_envy_1
case_c_wtp	byte	%10.0g		case_c_wtp
case_d_envy_1	byte	%10.0g		case_d_envy_1
case_d_wtp	byte	%10.0g		case_d_wtp
PROLIFIC_PID	str24	%24s		PROLIFIC_PID
WTP	str3	%9s		WTP (Tasks) for favorite artwork
case_a_tag	float	%9.0g		(0,0) -> (1,1)
case_b_tag	float	%9.0g		(0,0) -> (1,0)
case_c_tag	float	%9.0g		(0,1) -> (1,1)
case_d_tag	float	%9.0g		(0,1) -> (1,0)
general_envy	float	%9.0g		Envy Level 0-10 of other participant
general_wtp	float	%9.0g		WTP to obtain, destroy, or steal painting depending on cond.
cases	str1	%9s		
cases_numeric	long	%8.0g	cases_numeric	

## Winsorized Summary Stats:



```

. winsor2 general_wtp, trim cuts(5 95)

.
.
. summarize case* general_wtp general_envy if !missing(general_wtp_tr)

```

Variable	Obs	Mean	Std. dev.	Min	Max
case_a_env~1	45	3.088889	3.396671	0	10
case_a_wtp	45	9.688889	12.8926	0	50
case_b_env~1	47	1.765957	3.12224	0	10
case_b_wtp	47	7.12766	9.453817	0	50
case_c_env~1	47	5.06383	3.109622	0	10
case_c_wtp	47	11.04255	19.09696	0	97
case_d_env~1	50	4.08	3.231478	0	10
case_d_wtp	50	7.1	10.90824	0	50
case_a_tag	189	.2380952	.427049	0	1
case_b_tag	189	.2486772	.4333944	0	1
case_c_tag	189	.2486772	.4333944	0	1
case_d_tag	189	.2645503	.442265	0	1
cases	0				
cases_num~c	189	2.539683	1.122669	1	4
general_wtp	189	8.703704	13.5618	0	97
general_envy	189	3.513228	3.41556	0	10

```

. reg general_wtp_tr case_b_tag case_c_tag case_d_tag

```

Source	SS	df	MS	Number of obs	=	189
Model	546.114027	3	182.038009	F(3, 185)	=	0.99
Residual	34031.2934	185	183.952937	Prob > F	=	0.3989
Total	34577.4074	188	183.92238	R-squared	=	0.0158
				Adj R-squared	=	-0.0002
				Root MSE	=	13.563

general_wtp~r	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
case_b_tag	-2.561229	2.828734	-0.91	0.366	-8.141953	3.019495
case_c_tag	1.353664	2.828734	0.48	0.633	-4.22706	6.934388
case_d_tag	-2.588889	2.786916	-0.93	0.354	-8.087112	2.909334
_cons	9.688889	2.021841	4.79	0.000	5.700059	13.67772



```
. anova general_wtp_tr cases_numeric
```

```
Number of obs =      189    R-squared      =  0.0158
Root MSE      =    13.5629    Adj R-squared = -0.0002
```

Source	Partial SS	df	MS	F	Prob>F
Model	546.11403	3	182.03801	0.99	0.3989
cases_numvc	546.11403	3	182.03801	0.99	0.3989
Residual	34031.293	185	183.95294		
Total	34577.407	188	183.92238		

```
. pwcompare cases_numeric, mcompare(bonferroni)
```

Pairwise comparisons of marginal linear predictions

Margins: asbalanced

	Number of comparisons
cases_numeric	6

	Contrast	Std. err.	Bonferroni [95% conf. interval]	
cases_numeric				
b vs a	-2.561229	2.828734	-10.10525	4.982796
c vs a	1.353664	2.828734	-6.190361	8.897689
d vs a	-2.588889	2.786916	-10.02139	4.843611
c vs b	3.914894	2.797818	-3.54668	11.37647
d vs b	-.0276596	2.755531	-7.376458	7.321139
d vs c	-3.942553	2.755531	-11.29135	3.406245

```
. reg general_wtp_tr c.general_envy##case_b_tag c.general_envy#case_c_tag c.general_envy#case_d_tag
```

Source	SS	df	MS	Number of obs	=	189
				F(5, 183)	=	1.77
Model	1595.55476	5	319.110952	Prob > F	=	0.1209
Residual	32981.8526	183	180.228703	R-squared	=	0.0461
				Adj R-squared	=	0.0201
Total	34577.4074	188	183.92238	Root MSE	=	13.425

general_wtp_tr	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
general_envy	.7993203	.5128966	1.56	0.121	-.2126309	1.811271
1.case_b_tag	.2000556	2.881233	0.07	0.945	-5.484651	5.884763
case_b_tag#						
c.general_envy						
1	-.4371548	.8154615	-0.54	0.593	-2.04607	1.17176
case_c_tag#						
c.general_envy						
1	.2827692	.5492087	0.51	0.607	-.8008261	1.366364
case_d_tag#						
c.general_envy						
1	-.5617899	.5713872	-0.98	0.327	-1.689144	.5655638
_cons	6.288035	1.792606	3.51	0.001	2.751201	9.824869

## Summary of the Results

Overall results were inconclusive from this design, but the mean for Case C (which is supposed to measure only envy), was the highest. There is suggestive evidence that higher envy levels led to higher WTP in Case C.

## Envy 3 V2

This design is a modification of Envy 3 V1 to be within subject where all subjects first consider Case A and then are randomized to a follow-up of Case B, C, or D.

### Summary Stats and Results

Note: variables ending in "tr" are winsorized versions

```
. sum case_a_envy_1 case_b_envy_1 case_c_envy_1 case_d_envy_1 case_a_wtp case_b_wtp case_c_wtp case_d_wtp
```

Variable	Obs	Mean	Std. dev.	Min	Max
case_a_envy_1	197	3.258883	3.058775	0	10
case_b_envy_1	65	1.369231	2.288348	0	9
case_c_envy_1	66	4.015152	3.652154	0	10
case_d_envy_1	66	4.818182	3.490246	0	10
case_a_wtp	197	10.33503	18.4529	0	150
case_b_wtp	65	11.18462	21.31966	0	150
case_c_wtp	66	12.39394	22.9507	0	105
case_d_wtp	66	7.378788	9.739318	0	40

```
. sum case_a_envy_1 case_b_envy_1 case_c_envy_1 case_d_envy_1 case_a_wtp_tr case_b_wtp_tr case_c_wtp_tr case_d_wtp_tr
```

Variable	Obs	Mean	Std. dev.	Min	Max
case_a_envy_1	197	3.258883	3.058775	0	10
case_b_envy_1	65	1.369231	2.288348	0	9
case_c_envy_1	66	4.015152	3.652154	0	10
case_d_envy_1	66	4.818182	3.490246	0	10
case_a_wtp_tr	188	7.053191	6.96802	0	30
case_b_wtp_tr	60	8.7	11.01201	1	50
case_c_wtp_tr	63	8.142857	12.16401	0	75
case_d_wtp_tr	64	6.4375	8.244045	0	30

```
.
```

```
. gen case_a_b = case_a_wtp_tr-case_b_wtp_tr
(140 missing values generated)
```

```
. gen case_a_c = case_a_wtp_tr-case_c_wtp_tr
(136 missing values generated)
```

```
. gen case_a_d = case_a_wtp_tr-case_d_wtp_tr
(133 missing values generated)
```

```
. ttest case_a_b == 0
```

One-sample t test

Variable	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
case_a_b	57	-.0175439	.6966134	5.259316	-1.413028	1.37794

```
mean = mean(case_a_b)                                t = -0.0252
H0: mean = 0                                           Degrees of freedom = 56
```

```
Ha: mean < 0                Ha: mean != 0                Ha: mean > 0
Pr(T < t) = 0.4900          Pr(|T| > |t|) = 0.9800          Pr(T > t) = 0.5100
```

```
. ttest case_a_c == 0
```

One-sample t test

Variable	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
case_a_c	61	-.5409836	.4086321	3.191519	-1.35837	.2764023

```
mean = mean(case_a_c)                                t = -1.3239
H0: mean = 0                                           Degrees of freedom = 60
```

```
Ha: mean < 0                Ha: mean != 0                Ha: mean > 0
Pr(T < t) = 0.0953          Pr(|T| > |t|) = 0.1906          Pr(T > t) = 0.9047
```

```
. ttest case_a_d == 0
```

One-sample t test

Variable	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
case_a_d	64	.75	.7120003	5.696002	-.6728191	2.172819

```
mean = mean(case_a_d)                                t = 1.0534
H0: mean = 0                                           Degrees of freedom = 63
```

```
Ha: mean < 0                Ha: mean != 0                Ha: mean > 0
Pr(T < t) = 0.8519          Pr(|T| > |t|) = 0.2962          Pr(T > t) = 0.1481
```

```
. ttest case_a_b==case_a_c, unpaired
```

Two-sample t test with equal variances

Variable	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
case_a_b	57	-.0175439	.6966134	5.259316	-1.413028	1.37794
case_a_c	61	-.5409836	.4086321	3.191519	-1.35837	.2764023
Combined	118	-.2881356	.3962927	4.304841	-1.072973	.4967013
diff		.5234397	.7949679		-1.051094	2.097974

```
diff = mean(case_a_b) - mean(case_a_c)          t = 0.6584
H0: diff = 0                                     Degrees of freedom = 116
```

```
Ha: diff < 0          Ha: diff != 0          Ha: diff > 0
Pr(T < t) = 0.7442    Pr(|T| > |t|) = 0.5116    Pr(T > t) = 0.2558
```

```
. ttest case_a_b==case_a_d, unpaired
```

Two-sample t test with equal variances

Variable	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
case_a_b	57	-.0175439	.6966134	5.259316	-1.413028	1.37794
case_a_d	64	.75	.7120003	5.696002	-.6728191	2.172819
Combined	121	.3884298	.4986721	5.485393	-.5989062	1.375766
diff		-.7675439	1.000736		-2.7491	1.214013

```
diff = mean(case_a_b) - mean(case_a_d)          t = -0.7670
H0: diff = 0                                     Degrees of freedom = 119
```

```
Ha: diff < 0          Ha: diff != 0          Ha: diff > 0
Pr(T < t) = 0.2223    Pr(|T| > |t|) = 0.4446    Pr(T > t) = 0.7777
```

```
. ttest case_a_c==case_a_d, unpaired
```

Two-sample t test with equal variances

Variable	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
case_a_c	61	-.5409836	.4086321	3.191519	-1.35837	.2764023
case_a_d	64	.75	.7120003	5.696002	-.6728191	2.172819
Combined	125	.12	.4179211	4.6725	-.707183	.947183
diff		-1.290984	.8313653		-2.93662	.354653

```
diff = mean(case_a_c) - mean(case_a_d)          t = -1.5528
H0: diff = 0                                Degrees of freedom = 123
```

```
Ha: diff < 0                                Ha: diff != 0                                Ha: diff > 0
Pr(T < t) = 0.0615                        Pr(|T| > |t|) = 0.1230                        Pr(T > t) = 0.9385
```

```
.
.
. ttest case_a_b==case_a_c if case_c_envy_1>3, unpaired
```

Two-sample t test with equal variances

Variable	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
case_a_b	57	-.0175439	.6966134	5.259316	-1.413028	1.37794
case_a_c	27	-1.555556	.7886902	4.098155	-3.176732	.0656204
Combined	84	-.5119048	.5394623	4.944253	-1.584873	.561064
diff		1.538012	1.149647		-.7490032	3.825027

```
diff = mean(case_a_b) - mean(case_a_c)          t = 1.3378
H0: diff = 0                                Degrees of freedom = 82
```

```
Ha: diff < 0                                Ha: diff != 0                                Ha: diff > 0
Pr(T < t) = 0.9077                        Pr(|T| > |t|) = 0.1847                        Pr(T > t) = 0.0923
```

## Summary of the Results

The difference in the WTP between Case A and Case C (again within subject) is the only difference approaching significance, and is also close to significance when comparing this difference between Case A and Case C to the difference between Case A and Case B/D. If we restrict the consideration of the difference between Case A and Case C to only be for subjects whose reported envy levels were above the median envy levels for subjects who considered Case C, the difference compared to the only differences is greater.




## Envy 3 V3

This study eliminated Case B and only had participants engage in Case A and then randomized between a follow-up of Case C and Case D.

Additionally, the language on Case D was changed to make it less about stealing the painting in response to some participants commenting that they felt bad about "stealing" the painting from the other participant. Language was also added to indicate that the participant that they would be taking the painting away from did **not** know yet that they could potentially receive the painting for free.

### Old Case D:

case\_d\_wtp

Imagine that the experimenter has decided to provide you with an opportunity to complete a certain number of tasks in return for taking away the painting from this other participant and giving it to you.




If you complete a number of tasks above a certain threshold (which is unknown to you), you will receive the painting and the other participant will not.

Recall that you were willing to complete  $\$e://Field/case\_a\_wtp\_eb$  tasks in the first scenario to obtain a print of the painting.

What is the highest number of tasks would you be willing to complete in order to obtain the painting? In other words, enter the number such that if the experimenter required just one more task completed to "steal" the painting, you would refuse the deal.

### New Case D:

case\_d\_wtp

Imagine that the experimenter has decided to provide you with an opportunity to complete a certain number of tasks in return for obtaining the painting instead of the other participant.

If you complete a number of tasks above a certain threshold (which is unknown to you), you will receive the painting instead of the other participant.

Recall that you were willing to complete  $\$e://Field/case\_a\_wtp\_eb$  tasks in the first scenario to obtain a print of the painting.

What is the highest number of tasks would you be willing to complete in order to obtain the painting? In other words, enter the number such that if the experimenter required just one more task completed to "steal" the painting, you would refuse the deal.

## Summary Stats and Results

```
. sum case_a_envy_1 case_c_envy_1 case_d_envy_1 case_a_wtp case_c_wtp case_d_wtp
```

Variable	Obs	Mean	Std. dev.	Min	Max
case_a_envy_1	120	3.291667	2.988482	0	10
case_c_envy_1	60	4.083333	3.401354	0	10
case_d_envy_1	60	4.566667	3.4216	0	10
case_a_wtp	120	15.91667	36.96253	0	300
case_c_wtp	60	21.18333	57.35808	0	400
case_d_wtp	60	15.7	30.7253	0	199

```
.
. sum case_a_envy_1 case_c_envy_1 case_d_envy_1 case_a_wtp_tr case_c_wtp_tr case_d_wtp_tr
```

Variable	Obs	Mean	Std. dev.	Min	Max
case_a_envy_1	120	3.291667	2.988482	0	10
case_c_envy_1	60	4.083333	3.401354	0	10
case_d_envy_1	60	4.566667	3.4216	0	10
case_a_wtp_tr	109	9.458716	12.63045	1	75
case_c_wtp_tr	57	10.80702	19.29511	0	100
case_d_wtp_tr	54	10.24074	11.59365	1	51

```
. ttest case_a_c==0
```

One-sample t test

Variable	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
case_a_c	53	-2.716981	1.924439	14.01013	-6.578651	1.144689

```
mean = mean(case_a_c) t = -1.4118
H0: mean = 0 Degrees of freedom = 52
```

```
Ha: mean < 0 Ha: mean != 0 Ha: mean > 0
Pr(T < t) = 0.0820 Pr(|T| > |t|) = 0.1640 Pr(T > t) = 0.9180
```

```
. ttest case_a_d==0
```

One-sample t test

Variable	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
case_a_d	54	-1.222222	.6779273	4.981728	-2.581972	.1375277

```
mean = mean(case_a_d) t = -1.8029
H0: mean = 0 Degrees of freedom = 53
```

```
Ha: mean < 0 Ha: mean != 0 Ha: mean > 0
Pr(T < t) = 0.0385 Pr(|T| > |t|) = 0.0771 Pr(T > t) = 0.9615
```



```
. reg general_wtp c.general_envy##i.case_c_tag i.case_c_tag#c.case_a_wtp
```

Source	SS	df	MS	Number of obs	=	120
Model	233606.875	5	46721.375	F(5, 114)	=	311.46
Residual	17100.7168	114	150.006288	Prob > F	=	0.0000
				R-squared	=	0.9318
				Adj R-squared	=	0.9288
Total	250707.592	119	2106.78648	Root MSE	=	12.248

general_wtp	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
general_envy	.7002528	.4662	1.50	0.136	-.2232858	1.623791
1.case_c_tag	4.189195	3.74179	1.12	0.265	-3.223262	11.60165
case_c_tag#c.general_envy						
1	-1.215825	.6617124	-1.84	0.069	-2.526672	.0950224
case_a_wtp	.9375685	.0517526	18.12	0.000	.835047	1.04009
case_c_tag#c.case_a_wtp						
1	.3744396	.0639644	5.85	0.000	.2477267	.5011526
_cons	-2.155143	2.755014	-0.78	0.436	-7.612804	3.302518

## Summary of the Results

Both Case C and Case D's difference to Case A is close to significance, and both indicate that Case C and Case D's WTP are higher than Case A's. Additionally, it seems that envy levels are more strongly positively correlated with the WTP to prevent in Case C than in Case D.