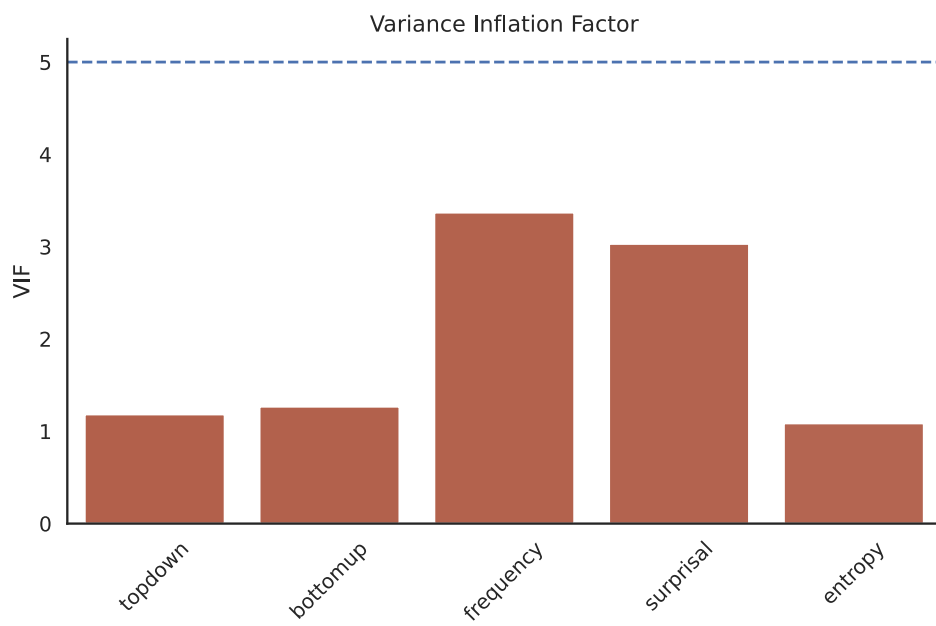
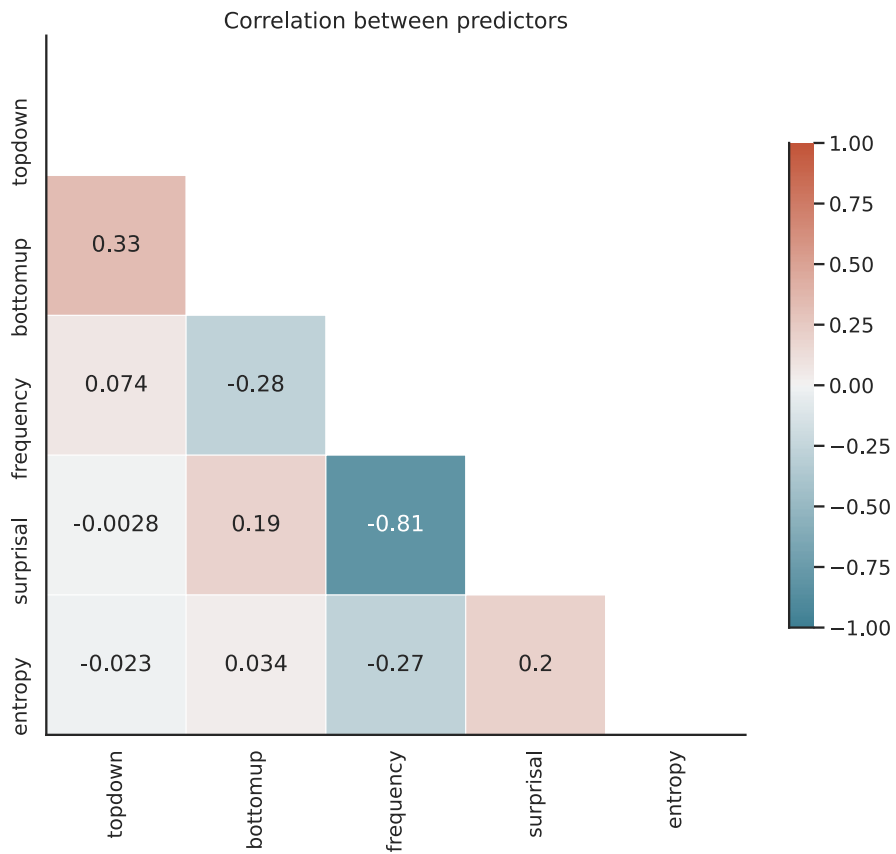
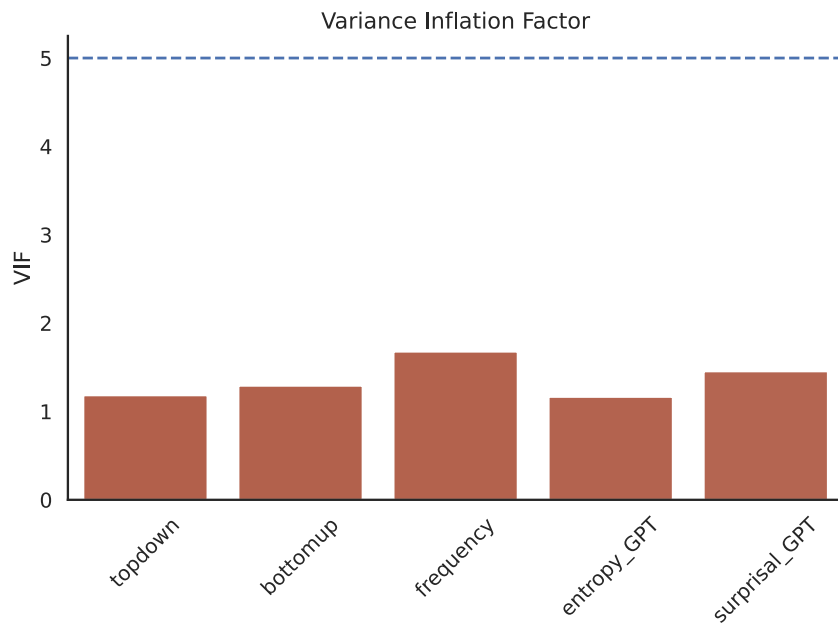
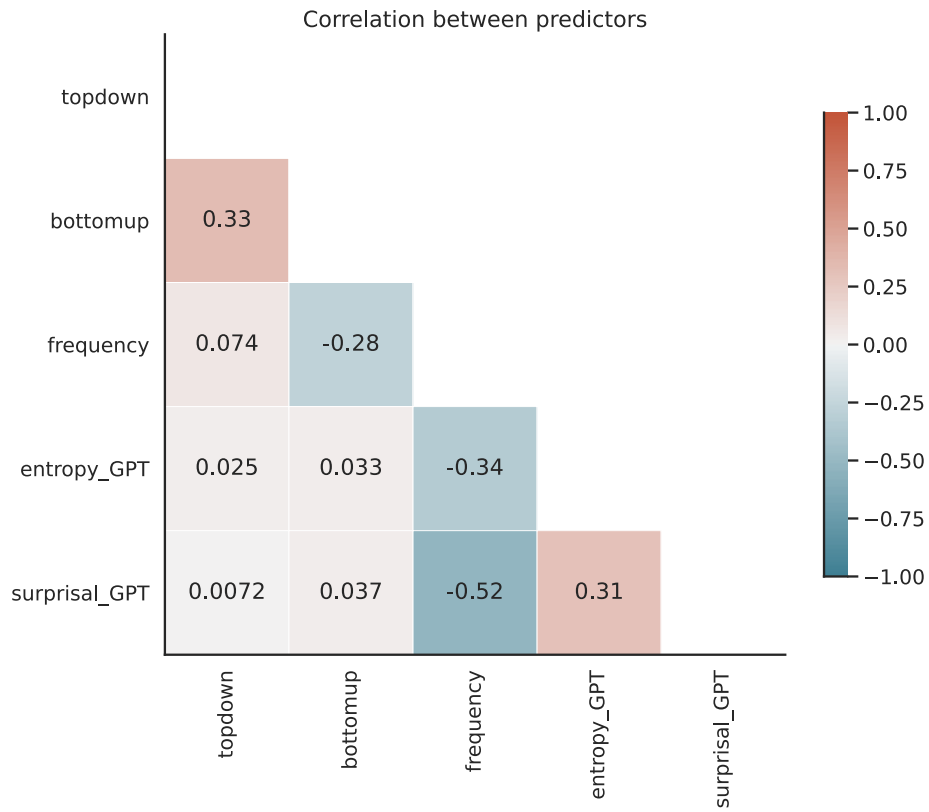


## Appendix A. Correlation matrices for feature values

### 1. Trigram models



## 2. GPT2-models



**Appendix B. Model comparison statistics as output by *step* (LmerTest) from the ‘Main effects’ analysis**

**1. Trigram models**

**1.1. Random effects structure: 1 + top down \* bottom up \* surprisal | participant**

1.1.1. Random effects

Effect	Eliminated params	npar	logLik	AIC	LRT	df	p value ( $\chi^2$ )
<none>		53	2177.04	-4248.07			
topdown * bottomup * surprisal in (1 + topdown * bottomup * surprisal   subject)	0	45	2163.49	-4236.99	27.08	8	6.84e <sup>-04</sup>

1.1.2. Fixed effects

Effect	Elimin. params	Sum.Sq	NumDF	DenDF	F value	p value
entropy surprisal * topdown * bottomup	1	7.52e <sup>-08</sup>	1	226.28	0.80	0.37
entropy * surprisal * bottomup	2	1.00e <sup>-08</sup>	1	253.98	0.11	0.74
entropy * surprisal * topdown	3	1.33e <sup>-08</sup>	1	232.02	0.14	0.71
surprisal * topdown * bottomup	4	1.44e <sup>-08</sup>	1	40.41	0.15	0.70
entropy * topdown * bottomup	5	2.43e <sup>-08</sup>	1	233.10	0.26	0.61
surprisal * bottomup	6	6.15e <sup>-08</sup>	1	50.27	0.67	0.42
entropy * bottomup	7	1.20e <sup>-07</sup>	1	235.96	1.30	0.26
entropy * surprisal	0	6.06e <sup>-06</sup>	1	236.97	65.60	2.92e <sup>-14</sup>
entropy * topdown	0	5.33e <sup>-07</sup>	1	236.97	5.77	0.02
surprisal * topdown	0	1.59e <sup>-06</sup>	1	24.72	17.19	3.47e <sup>-04</sup>
topdown * bottomup	0	9.03e <sup>-06</sup>	1	43.25	97.85	1.12e <sup>-12</sup>

## 1.2. Random effects structure: 1 + top down \* bottom up \* entropy | participant

### 1.2.1. Random effects

Effect	Eliminated				LRT	df	p value ( $\chi^2$ )
	params	npar	logLik	AIC			
<none>		53	2097.24	-4088.48			
topdown * bottomup * entropy in (1 + topdown * bottomup * entropy   subject)	1	45	2097.08	-4104.16	0.32	8	1.00
topdown * entropy in (topdown + bottomup + entropy + topdown * bottomup + topdown * entropy + bottomup * entropy   subject)	2	38	20967.00	-4118.00	0.16	7	1.00
bottomup * entropy in (topdown + bottomup + entropy + topdown * bottomup + bottomup * entropy   subject)	3	32	2096.57	-4129.14	0.85	6	0.99
topdown * bottomup in (topdown + bottomup + entropy + topdown * bottomup   subject)	4	27	2094.84	-4135.68	3.47	5	0.63
topdown in (topdown + bottomup + entropy   subject)	0	23	2050.64	-4055.27	88.41	4	2.87e <sup>-18</sup>
bottomup in (topdown + bottomup + entropy   subject)	0	23	1893.74	-3741.49	402.19	4	9.35e <sup>-86</sup>
entropy in (topdown + bottomup + entropy   subject)	0	23	2088.14	-4130.27	13.40	4	9.46e <sup>-03</sup>

### 1.2.2. Fixed effects

Effect	Elimin. params	Sum.Sq	NumDF	DenDF	F value	p value
entropy * surprisal * topdown * bottomup	1	7.52e <sup>-08</sup>	1	276.00	0.38	0.54
entropy * surprisal * bottomup	2	1.00e <sup>-08</sup>	1	277.00	0.05	0.82
entropy * surprisal * topdown	3	1.33e <sup>-08</sup>	1	298.59	0.05	0.82
surprisal * topdown * bottomup	4	2.03e <sup>-08</sup>	1	279.00	0.10	0.75
entropy * topdown * bottomup	5	2.43e <sup>-08</sup>	1	298.53	0.09	0.76
surprisal * bottomup	6	6.15e <sup>-08</sup>	1	281.00	0.32	0.57
entropy * bottomup	7	1.20e <sup>-07</sup>	1	282.00	0.62	0.43
entropy * topdown	8	5.33e <sup>-07</sup>	1	283.00	2.77	0.10
entropy * surprisal	0	6.06e <sup>-06</sup>	1	284.00	31.31	5.19e <sup>-08</sup>
surprisal * topdown	0	2.78e <sup>-06</sup>	1	284.00	14.36	1.84e <sup>-04</sup>
topdown * bottomup	0	1.42e <sup>-05</sup>	1	284.00	73.22	7.39e <sup>-16</sup>

### 1.3. Random effects structure: 1 + top down \* surprisal \* entropy | participant

#### 1.3.1. Random effects

Effect	Eliminated				LRT	df	p value ( $\chi^2$ )
	params	npar	logLik	AIC			
<none>		53	1898.36	-3690.72			
topdown * surprisal * entropy in (1 + topdown * surprisal * entropy   subject)	1	45	1898.31	-3706.63	0.09	8	1
surprisal * entropy in (topdown + surprisal + entropy + topdown * surprisal + topdown * entropy + surprisal * entropy   subject)	2	38	1898.29	-3720.59	0.04	7	1
topdown * entropy in (topdown + surprisal + entropy + topdown * surprisal + topdown * entropy   subject)	3	32	1898.28	-3732.56	0.02	6	1
topdown * surprisal in (topdown + surprisal + entropy + topdown * surprisal   subject)	4	27	1898.17	-3742.34	0.22	5	1
entropy in (topdown + surprisal + entropy   subject)	5	23	1897.68	-3749.35	0.99	4	0.91
topdown in (topdown + surprisal   subject)	0	20	1889.76	-3739.52	15.83	3	1.23e <sup>-03</sup>
surprisal in (topdown + surprisal   subject)	0	20	1893.43	-3746.85	8.50	3	0.04

#### 1.3.2. Fixed effects

Effect	Elimin. params	Sum.Sq	NumDF	DenDF	F value	p value
entropy * surprisal * topdown * bottomup	1	7.52e <sup>-08</sup>	1	322.00	0.08	0.77
entropy * surprisal * bottomup	2	1.00e <sup>-08</sup>	1	263.16	0.01	0.92
entropy * surprisal * topdown	3	1.33e <sup>-08</sup>	1	324.00	0.01	0.90
surprisal * topdown * bottomup	4	2.03e <sup>-08</sup>	1	325.00	0.02	0.88
entropy * topdown * bottomup	5	2.43e <sup>-08</sup>	1	326.00	0.03	0.87
surprisal * bottomup	6	6.15e <sup>-08</sup>	1	327.00	0.07	0.79
entropy * bottomup	7	1.20e <sup>-07</sup>	1	328.00	0.14	0.71
entropy * topdown	8	5.33e <sup>-07</sup>	1	329.00	0.60	0.44
surprisal * topdown	9	2.78e <sup>-06</sup>	1	330.00	3.14	0.08
entropy * surprisal	0	6.06e <sup>-06</sup>	1	287.85	6.53	0.01
topdown * bottomup	0	1.42e <sup>-05</sup>	1	287.85	15.27	1.16e <sup>-04</sup>

## 1.4. Random effects structure: 1 + bottom up \* surprisal \* entropy | participant

### 1.4.1. Random effects

Effect	Eliminated		logLik	AIC	LRT	df	p value ( $\chi^2$ )
	params	npar					
<none>		53	2091.65	-4077.30			
bottomup * surprisal * entropy in (1 + bottomup * surprisal * entropy   subject)	0	45	1967.07	-3844.15	249.15	8	2.61e <sup>-49</sup>

### 1.4.2. Fixed effects

Effect	Elimin. params	Sum.Sq	NumDF	DenDF	F value	p value
entropy * surprisal * topdown * bottomup	1	7.52e <sup>-08</sup>	1	275.92	0.38	0.54
entropy * surprisal * bottomup	2	9.90e <sup>-09</sup>	1	224.52	0.05	0.82
entropy * surprisal * topdown	3	1.33e <sup>-08</sup>	1	277.97	0.07	0.79
surprisal * topdown * bottomup	4	2.03e <sup>-08</sup>	1	278.98	0.10	0.75
entropy * topdown * bottomup	5	2.43e <sup>-08</sup>	1	279.99	0.13	0.72
surprisal * bottomup	6	5.78e <sup>-08</sup>	1	110.22	0.30	0.59
entropy * bottomup	7	1.13e <sup>-07</sup>	1	157.34	0.59	0.44
entropy * topdown	8	5.33e <sup>-07</sup>	1	282.84	2.77	0.10
entropy * surprisal	0	5.04e <sup>-06</sup>	1	62.02	26.06	3.39e <sup>-06</sup>
surprisal * topdown	0	2.78e <sup>-06</sup>	1	283.81	14.37	1.83e <sup>-04</sup>
topdown * bottomup	0	1.42e <sup>-05</sup>	1	283.81	73.27	7.24e <sup>-16</sup>

## 1.5. Best models for every random effects structure configuration & their AIC-value

Largest model	Chosen model	df	AIC
r_values ~ entropy * surprisal * topdown * bottomup + (1 + topdown * bottomup * surprisal   subject)	r_values ~ entropy + surprisal + topdown + bottomup + entropy * surprisal + surprisal * topdown + topdown * bottomup + (1 + topdown * bottomup * surprisal   subject)	46	-4372.50
r_values ~ entropy * surprisal * topdown * bottomup + (1 + topdown * bottomup * entropy   subject)	r_values ~ entropy + surprisal + topdown + bottomup + entropy * surprisal + surprisal * topdown + topdown * bottomup + (topdown + bottomup + entropy   subject)	19	-4273.29
r_values ~ entropy * surprisal * topdown * bottomup + (1 + topdown * surprisal * entropy   subject)	r_values ~ entropy * surprisal + topdown * bottomup + (topdown + surprisal   subject)	14	-3885.84
r_values ~ entropy * surprisal * topdown * bottomup + (1 + bottomup * surprisal * entropy   subject)	r_values ~ entropy * surprisal + topdown * bottomup + surprisal * topdown (1 + bottomup * surprisal * entropy   subject)	45	-4214.86

## 2. GPT2 models

### 2.1. Random effects structure: 1 + top down \* bottom up \* surprisal | participant

#### 2.1.1. Random effects

Effect	Eliminated				LRT	df	p value ( $\chi^2$ )
	params	npar	logLik	AIC			
<none>		53	2122.21	-4138.41			
topdown * bottomup * surprisal in (1 + topdown * bottomup * surprisal   subject)	1	45	2121.76	-4153.52	0.89	8	1.00
topdown * bottomup in (topdown + bottomup + surprisal + topdown * bottomup + topdown * surprisal + bottomup * surprisal   subject)	2	38	2120.75	-4165.49	2.03	7	0.96
topdown * surprisal in (topdown + bottomup + surprisal + topdown * surprisal + bottomup * surprisal   subject)	3	32	2118.98	-4173.96	3.53	6	0.74
topdown in (topdown + bottomup + surprisal + bottomup * surprisal   subject)	0	27	2062.52	-4071.05	112.91	5	9.94e <sup>-23</sup>
bottomup * surprisal in (topdown + bottomup + surprisal + bottomup * surprisal   subject)	0	27	2113.00	-4172.00	11.96	5	0.04

#### 2.1.2. Fixed effects

Effect	Elimin. params	Sum.Sq	NumDF	DenDF	F value	p value
entropy * surprisal * topdown * bottomup	1	5.46e <sup>-08</sup>	1	276.00	0.39	0.53
entropy * surprisal * topdown	2	3.29e <sup>-09</sup>	1	295.37	0.01	0.90
surprisal * topdown * bottomup	3	5.97e <sup>-09</sup>	1	300.20	0.03	0.87
entropy * topdown * bottomup	4	5.48e <sup>-08</sup>	1	278.99	0.39	0.53
entropy * surprisal * bottomup	5	4.59e <sup>-07</sup>	1	302.44	2.08	0.15
surprisal * bottomup	6	1.03e <sup>-08</sup>	1	37.23	0.07	0.79
entropy * bottomup	7	2.98e <sup>-07</sup>	1	281.83	2.13	0.15
entropy * surprisal	0	1.63e <sup>-06</sup>	1	282.83	11.60	7.54e <sup>-04</sup>
entropy * topdown	0	9.27e <sup>-07</sup>	1	282.83	6.59	0.01
surprisal * topdown	0	5.58e <sup>-07</sup>	1	282.83	3.97	0.05
topdown * bottomup	0	1.71e <sup>-05</sup>	1	282.83	121.30	1.04e <sup>-23</sup>

## 2.2. Random effects structure: 1 + top down \* bottom up \* entropy | participant

### 2.2.1. Random effects

Effect	Eliminated				LRT	df	p value ( $\chi^2$ )
	params	npar	logLik	AIC			
<none>		53	1999.12	-3892.23			
topdown * bottomup * entropy in (1 + topdown * bottomup * entropy   subject)	0	45	1990.44	-3890.87	17.36	8	0.03

### 2.2.2. Fixed effects

Effect	Elimin. params	Sum.Sq	NumDF	DenDF	F value	p value
entropy * surprisal * topdown * bottomup	1	5.46e <sup>-08</sup>	1	275.97	0.15	0.70
entropy * surprisal * topdown	2	3.29e <sup>-09</sup>	1	272.02	8.28e <sup>-02</sup>	0.93
surprisal * topdown * bottomup	3	5.97e <sup>-09</sup>	1	277.99	0.02	0.90
entropy * topdown * bottomup	4	5.18e <sup>-08</sup>	1	110.16	0.14	0.71
entropy * surprisal * bottomup	5	4.59e <sup>-07</sup>	1	279.02	1.23	0.27
surprisal * bottomup	6	1.59e <sup>-08</sup>	1	280.96	0.04	0.84
entropy * bottomup	7	2.42e <sup>-07</sup>	1	98.84	0.62	0.43
surprisal * topdown	8	5.58e <sup>-07</sup>	1	282.71	1.51	0.22
entropy * topdown	9	9.31e <sup>-07</sup>	1	127.57	2.37	0.13
entropy * surprisal	0	1.63e <sup>-06</sup>	1	283.96	4.40	0.04
topdown * bottomup	0	1.63e <sup>-05</sup>	1	171.87	44.00	4.10e <sup>-10</sup>



### 2.3. Random effects structure: 1 + top down \* surprisal \* entropy | participant

#### 2.3.1. Random effects

Effect	Eliminated		logLik	AIC	LRT	df	p value ( $\chi^2$ )
	params	npar					
<none>		53	1899.59	-3693.18			
topdown * surprisal * entropy in (1 + topdown * surprisal * entropy   subject)	1	45	1899.48	-3708.96	0.23	8	1.00
surprisal * entropy in (topdown + surprisal + entropy + topdown * surprisal + topdown * entropy + surprisal * entropy   subject)	2	38	1899.47	-3722.94	0.02	7	1.00
topdown * entropy in (topdown + surprisal + entropy + topdown * surprisal + topdown * entropy   subject)	3	32	1899.41	-3734.83	0.11	6	1.00
topdown * surprisal in (topdown + surprisal + entropy + topdown * surprisal   subject)	4	27	1899.15	-3744.3	0.53	5	0.99
entropy in (topdown + surprisal + entropy   subject)	5	23	1897.15	-3748.29	4.00	4	0.41
topdown in (topdown + surprisal   subject)	6	20	1894.13	-3748.27	6.02	3	0.11
surprisal in (surprisal   subject)	0	18	1876.60	-3717.20	35.07	2	2.42e <sup>-08</sup>

#### 2.3.2. Fixed effects

Effect	Elimin. params	Sum.Sq	NumDF	DenDF	F value	p value
entropy * surprisal * topdown * bottomup	1	5.46e <sup>-08</sup>	1	322.00	0.06	0.80
entropy * surprisal * topdown	2	3.29e <sup>-09</sup>	1	323.00	3.72e <sup>-02</sup>	0.95
surprisal * topdown * bottomup	3	5.97e <sup>-09</sup>	1	324.00	6.75e <sup>-02</sup>	0.93
entropy * topdown * bottomup	4	5.48e <sup>-08</sup>	1	325.00	0.06	0.80
entropy * surprisal * bottomup	5	4.59e <sup>-07</sup>	1	326.00	0.52	0.47
surprisal * bottomup	6	1.59e <sup>-08</sup>	1	327.00	0.02	0.89
entropy * bottomup	7	2.98e <sup>-07</sup>	1	328.00	0.34	0.56
surprisal * topdown	8	5.58e <sup>-07</sup>	1	329.00	0.64	0.42
entropy * topdown	9	9.27e <sup>-07</sup>	1	330.00	1.06	0.30
entropy * surprisal	10	1.63e <sup>-06</sup>	1	331.00	1.87	0.17
entropy	11	2.47e <sup>-06</sup>	1	332.00	2.83	0.09
surprisal	0	4.65e <sup>-05</sup>	1	23.00	52.93	2,1e <sup>-07</sup>
topdown * bottomup	0	1.71e <sup>-05</sup>	1	333.00	19.41	1,43e <sup>-05</sup>

## 2.4. Random effects structure: 1 + bottom up \* surprisal \* entropy | participant

### 2.4.1. Random effects

Effect	Eliminated				LRT	df	p value ( $\chi^2$ )
	params	npar	logLik	AIC			
<none>		53	2085.14	-4064.29			
bottomup * surprisal * entropy in (1 + bottomup * surprisal * entropy   subject)	1	45	2084.99	-4079.98	0.30	8	1.00
surprisal * entropy in (bottomup + surprisal + entropy + bottomup * surprisal + bottomup * entropy + surprisal * entropy   subject)	2	38	2083.37	-4090.75	3.24	7	0.86
bottomup * entropy in (bottomup + surprisal + entropy + bottomup * surprisal + bottomup * entropy   subject)	3	32	2081.03	-4098.06	4.68	6	0.58
bottomup * surprisal in (bottomup + surprisal + entropy + bottomup * surprisal   subject)	4	27	2077.69	-4101.38	6.68	5	0.25
bottomup in (bottomup + surprisal + entropy   subject)	0	23	1895.11	-3744.23	365.15	4	9.38e <sup>-78</sup>
surprisal in (bottomup + surprisal + entropy   subject)	0	23	1980.33	-3914.66	194.72	4	5.12e <sup>-41</sup>
entropy in (bottomup + surprisal + entropy   subject)	0	23	2059.91	-4073.82	35.56	4	3.57e <sup>-07</sup>

### 2.4.2. Fixed effects

Effect	Elimin. params	Sum.Sq	NumDF	DenDF	F value	p value
entropy * surprisal * topdown * bottomup	1	5.46e <sup>-08</sup>	1	276.00	0.28	0.60
entropy * surprisal * topdown	2	3.29e <sup>-09</sup>	1	277.00	0.02	0.90
surprisal * topdown * bottomup	3	5.97e <sup>-09</sup>	1	278.00	0.03	0.86
entropy * topdown * bottomup	4	5.48e <sup>-08</sup>	1	279.00	0.28	0.60
entropy * surprisal * bottomup	5	4.59e <sup>-07</sup>	1	280.00	2.36	0.13
surprisal * bottomup	6	1.59e <sup>-08</sup>	1	281.00	0.08	0.78
entropy * bottomup	7	2.98e <sup>-07</sup>	1	282.00	1.53	0.22
surprisal * topdown	8	5.58e <sup>-07</sup>	1	283.00	2.86	0.09
entropy * surprisal	0	1.63e <sup>-06</sup>	1	284.00	8.29	4.28e <sup>-03</sup>
entropy * topdown	0	9.27e <sup>-07</sup>	1	284.00	4.71	0.03
topdown * bottomup	0	1.71e <sup>-05</sup>	1	284.00	86.70	3.6e <sup>-18</sup>

## 2.5. Best models for every random effects structure configuration & their AIC-value

Largest model	Chosen model	df	AIC
r_values ~ entropy * surprisal * topdown * bottomup + (1 + topdown * bottomup * surprisal   subject)	r_values ~ entropy + surprisal + topdown + bottomup + entropy * surprisal + entropy * topdown + surprisal * topdown + topdown * bottomup + (topdown + bottomup * surprisal   subject)	25	-4292.74
r_values ~ entropy * surprisal * topdown * bottomup + (1 + topdown * bottomup * entropy   subject)	r_values ~ entropy + surprisal + topdown + bottomup + entropy * surprisal + topdown * bottomup (1 + topdown * bottomup * entropy   subject)	44	-4041.09
r_values ~ entropy * surprisal * topdown * bottomup + (1 + topdown * surprisal * entropy   subject)	r_values ~ surprisal + topdown * bottomup + (surprisal   subject)	9	-3924.08
r_values ~ entropy * surprisal * topdown * bottomup + (1 + bottomup * surprisal * entropy   subject)	r_values ~ entropy + surprisal + topdown + bottomup + entropy * surprisal + entropy * topdown + topdown * bottomup + (bottomup + surprisal + entropy   subject)	19	-4235.94

### 3. Trigram vs GPT2

In the tables below, the variable 'lm' stands for 'language model'.

#### 3.1. Random effects structure: 1 + entropy \* surprisal | participant

##### 3.1.1. Random effects

Effect	Eliminated params	npar	logLik	AIC	LRT	df	p value ( $\chi^2$ )
<none>		19	985.01	-1932.02			
entropy * surprisal in (1 + entropy * surprisal   subject)	1	15	984.90	-1939.80	0.22	4	0.99
entropy in (entropy + surprisal   subject)	2	12	984.31	-1944.61	1.19	3	0.76
surprisal in (surprisal   subject)	0	10	972.00	-1924.01	24.61	2	4.54e <sup>-06</sup>

##### 3.1.2. Fixed effects

Effect	Elimin. params	Sum.Sq	NumDF	DenDF	F value	p value
lm * entropy * surprisal	1	5.49e <sup>-07</sup>	1	138.00	1.84	0.18
lm * entropy	2	8.78e <sup>-07</sup>	1	139.00	2.93	0.09
entropy * surprisal	3	1.08e <sup>-06</sup>	1	140.00	3.56	0.06
entropy	0	4.74e <sup>-06</sup>	1	141.00	15.34	1.40e <sup>-04</sup>
lm * surprisal	0	6.69e <sup>-06</sup>	1	141.00	21.63	7.55e <sup>-06</sup>

#### 3.2. Random effects structure: 1 + model \* entropy | participant

##### 3.2.1. Random effects

Effect	Eliminated params	npar	logLik	AIC	LRT	df	p value ( $\chi^2$ )
<none>		19	977.36	-1916.71			
lm * entropy in (1 + lm * entropy   subject)	1	15	975.83	-1921.66	3.06	4	0.55
entropy in (lm + entropy   subject)	2	12	974.77	-1925.55	2.11	3	0.55
lm in (lm   subject)	0	10	972.00	-1924.01	5.54	2	0.06

##### 3.2.2. Fixed effects

Effect	Elimin. params	Sum.Sq	NumDF	DenDF	F value	p value
lm * entropy * surprisal	1	5.49e <sup>-07</sup>	1	138.00	1.52	0.22
lm * entropy	2	8.78e <sup>-07</sup>	1	139.00	2.42	0.12
entropy * surprisal	3	1.08e <sup>-06</sup>	1	140.00	2.96	0.09
entropy	0	4.74e <sup>-06</sup>	1	141.00	12.77	4.82e <sup>-04</sup>
lm * surprisal	0	6.69e <sup>-06</sup>	1	141.00	18.01	3.96e <sup>-05</sup>

### 3.3. Random effects structure: 1 + model \* surprisal | participant

#### 3.3.1. Random effects

Effect	Eliminated		logLik	AIC	LRT	df	p value ( $\chi^2$ )
	params	npar					
<none>		19	1023.36	-2008.73			
lm * surprisal in (1 + lm * surprisal   subject)	0	15	999.73	-1969.47	47.26	4	1.35e <sup>-09</sup>

#### 3.3.2. Fixed effects

Effect	Elimin. params	Sum.Sq	NumDF	DenDF	F value	p value
lm * entropy * surprisal	0	5.49e <sup>-07</sup>	1	115.00	4.27	0.04

### 3.4. Best models for every random effects structure configuration and their AIC-value

Largest model	Chosen model	df	AIC
r_values ~ lm * entropy * surprisal + (1 + entropy * surprisal   subject)	r_values ~ lm * surprisal + entropy + (surprisal   subject)	9	-1987.92
r_values ~ lm * entropy * surprisal + (1 + lm * entropy   subject)	r_values ~ lm * surprisal + entropy + surprisal + (lm   subject)	9	-1969.71
r_values ~ lm * entropy * surprisal + (1 + lm * surprisal   subject)	r_values ~ lm * entropy * surprisal + (1 + lm * surprisal   subject)	19	-2007.73