

Explaining \mathcal{ELH} Concept Descriptions
through Counterfactual Reasoning:
Algorithm's and Participants' Decisions

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Table 1. .

Ratings of counterfactual explanations (Wilcoxon signed-rank test of deviation from center). The test statistics μ , Z , and p refer to the user preferences of a intersected concept C_i that is part of the named concept in the first column (e.g., *Mother* is equivalent to *Female* \sqcap *hasChild*. \top). ES stands for Effect Size. Concepts in *italic* were chosen by algorithm with likeliness variant min. Concepts in **bold** were chosen with variant mean. The star(*) indicates $p < .01$ and double-star(**) indicates $p < .001$. Concepts with significantly positive user ratings (* or **) are evaluated as chosen by participants. I.e. the results table in the paper shows the alignment between concepts marked with */** and concepts marked in bold or italic, respectively.

Name	C_i	μ	Z	p	ES
Mother	Female	4.3	-1.16	.25	
Mother	<i>hasChild</i> . \top	6.1	-4.83	.001**	0.84
Father	Male	4.1	-0.24	.81	
Father	<i>hasChild</i> . \top	6.2	-5.07	<.001**	0.81
Sister	Female	4.5	-1.73	.08	
Sister	<i>hasSibling</i> . \top	5.9	-4.11	<.001**	0.71
Brother	Male	4.3	-1.02	.31	
Brother	<i>hasSibling</i> . \top	5.9	-4.88	<.001**	0.78
Grandmother	Female	4.3	-0.87	.38	
Grandmother	<i>hasChild</i> .Parent	6.1	-4.88	<.001**	0.78
Grandfather	Male	4.3	-0.79	.43	
Grandfather	<i>hasChild</i> .Parent	6.0	-4.51	<.001**	0.79
Name	C_i	μ	Z	p	ES
Girl	<i>HasLegs</i>	4.3	-1.67	.09	
Girl	residence. \top	4.6	-2.70	<.01*	0.32
Snake	<i>HasEggs</i>	4.6	-2.99	<.01*	0.35
Snake	<i>habitat</i> .Land	3.6	-0.04	.97	
Snake	<i>hasCovering</i> .Scales	5.0	-4.36	<.001**	0.51
Penguin	HasEggs	4.9	-4.07	<.001**	0.48
Penguin	homeothermic	4.0	-0.65	.50	
Penguin	HasLegs	4.4	-2.08	.04	0.25
Penguin	<i>habitat</i> .Water	4.3	-1.82	.07	
Penguin	<i>hasCovering</i> .Feathers	4.5	-2.49	.01	
Eagle	HasEggs	5.0	-4.56	<.001**	0.54
Eagle	homeothermic	3.9	-0.32	.75	
Eagle	HasLegs	4.1	-0.79	.43	
Eagle	<i>habitat</i> .Air	5.2	-5.21	<.001**	0.61
Eagle	<i>hasCovering</i> .Feathers	5.5	-5.92	<.001**	0.70
Turtle	HasEggs	4.7	-3.90	<.001**	0.46
Turtle	<i>HasLegs</i>	4.1	-1.14	.25	
Turtle	<i>hasCovering</i> .Scales	3.6	-0.04	.96	
Crocodile	HasEggs	4.6	-2.87	<.01*	0.34
Crocodile	<i>HasLegs</i>	4.3	-1.50	.13	
Crocodile	<i>hasCovering</i> .Scales	4.7	-3.42	<.001**	0.40