Verb	(‘ChoppingSomething’, `subClassOf`, Object)	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#CuttingInPieces’.
	(‘Cracking’, `subClassOf`, Object).	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#PreparingFoodOrDrink’; Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#SeparationEvent’;
	(‘OpeningSomething’, `subClassOf`, Object).	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#ActionOnObject’; Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#IntrinsicStateChangeEvent’; Object = ‘_:file:///knowrob.owl#_:Description89’; Object = ‘_:file:///knowrob.owl#_:Description90’.
	(‘ClosingSomething’, `subClassOf`, Object).	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#ActionOnObject’; Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#IntrinsicStateChangeEvent’; Object = ‘_:file:///knowrob.owl#_:Description18’; Object = ‘_:file:///knowrob.owl#_:Description19’.
	(‘BakingFood’, `subClassOf`, Object).	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#Baking-Hardening’ Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#CookingFood’; Object = ‘_:file:///knowrob.owl#_:Description5’; Object = ‘_:file:///knowrob.owl#_:Description6’; Object = ‘_:file:///knowrob.owl#_:Description7’.
	(‘Boiling’, `subClassOf`, Object).	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#Vaporization’ Object = ‘_:file:///knowrob.owl#_:Description8’.
	(‘CookingFood’, `subClassOf`, Object).	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#HeatingProcess’; Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#PreparingFoodOrDrink’; Object = ‘_:file:///knowrob.owl#_:Description31’; Object = ‘_:file:///knowrob.owl#_:Description32’.
	(‘Mixing’, `subClassOf`, Object).	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#Incorporation-Physical’; Object = ‘_:file:///knowrob.owl#_:Description83’; Object = ‘_:file:///knowrob.owl#_:Description84’.
	(‘Stirring’, `subClassOf`, Object).	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#PreparingFoodOrDrink’.
	(‘CuttingSomething’, `subClassOf`, Object).	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#SeparationEvent’.
Noun	(‘Bag’, `subClassOf`, Object)	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#PackagingContainerProduct’.
	(‘Box’, `subClassOf`, Object)	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#SpatialThingTypeByShape’.
	(‘Chair’, `subClassOf`, Object)	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#SupportingFurniture’.
	(‘Cup’, `subClassOf`, Object)	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#DrinkingVessel’.
	(‘Door’, `subClassOf`, Object)	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#DoorwayCovering’.
	(‘Drawer’, `subClassOf`, Object)	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#StorageConstruct’.
	(‘Egg-Chicken’, `subClassOf`, Object)	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#Food’.
	(‘Meat’, `subClassOf`, Object).	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#Perishable’ Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#MeatOrLegumeFood’;
	(‘Soup’, `subClassOf`, Object).	Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#Food’ Object = ‘http://ias.cs.tum.edu/kb/knowrob.owl#LiquidTangibleThing’;

Table 9: The KNOWROB Ontology retrieval results with SWI-Prolog for the action verb_noun pairs. `subClassOf` means that the subject is a subclass of a class. The second column represents the query format in SWI-Prolog, and the third column shows the retrieved Object information, which can be used as the external knowledge text.

Verb	Triples	Triples with selected relations	Noun	Triples	Triples with selected relations	Action	Triples	Triples with selected relations
bowl	133	70	skin	116	13	open window	3	3
paper	519	47	saw	72	4	beat eggs	1	1
shirt	78	46	lock	82	3	carry umbrella	1	1
box	295	35	crash	6	2	scratch knee	1	1
tree	305	34	cut	273	1	shut window	1	1
wood	419	33	coil	66	1	open door	4	0
key	86	30	park	63	1	burn book	3	0
cup	74	28	kick	38	1	lock door	2	0
car	343	27	tear	31	1	break egg	1	0
shoe	176	27	open	27	1	crash car	1	0
window	290	25	grind	8	1	park car	1	0
hair	110	24	scratch	5	1	peel potato	1	0
meat	93	24	crack	4	1	saw wood	1	0
drawer	40	24	shave	1	1	tie shoe	1	0
apple	394	23	spill	1	1			
door	397	22	crop	285	0			
balloon	80	21	break	254	0			
glass	414	20	roll	217	0			
baseball	76	20	twist	182	0			
umbrella	60	19	smash	170	0			
bicycle	66	18	burn	169	0			
bottle	66	17	hang	148	0			
frisbee	34	16	ride	120	0			
bag	90	15	carry	104	0			
egg	423	12	chop	85	0			
books	109	12	boil	48	0			
rope	39	5	close	48	0			
potato	167	2	peel	43	0			
coffee	110	2	slice	42	0			
flowers	84	2	beat	41	0			
football	46	2	tie	39	0			
chairs	34	2	bite	34	0			
soup	270	1	split	29	0			
orange	69	1	mash	27	0			
knee	40	1	wrap	26	0			
eggs	37	1	stain	19	0			
banana	23	1	throw	17	0			
boxes	16	1	grate	16	0			
onion	41	0	trim	12	0			
cabinet	34	0	knot	11	0			
carrot	18	0	squeeze	11	0			
			block	10	0			
			pile	10	0			
			rip	8	0			
			bind	4	0			
			label	4	0			
			shut	3	0			
			bend	2	0			
			strip	2	0			
			arrange	1	0			
			bake	1	0			
			burst	1	0			
			fold	1	0			
			fry	1	0			
			ignite	1	0			
			insert	1	0			
			mix	1	0			
			soak	1	0			

Table 10: Statistical analysis of The Conceptnet Triples retrieval results for 140 actions, only entities with triples are listed here. For verb nodes, the selection relations are `CapableOf, Causes, MotivatedByGoal`; For noun nodes, the selection relations are `MadeOf, UsedFor`;For action phrass nodes, we consider`CapableOf, Causes, Desires, HasA, MotivatedByGoal, UsedFor, MotivatedByGoal`.

Action	Start	Relation	End
ride bicycle	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/care_about_environment
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/don't_own_car
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/enjoy_riding_bicycle
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/environmentally_conscientious
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/exercise
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/get_in_shape
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/get_to_work
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/go_somewhere
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/have_car_repaired
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/it's_good_for_environment
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/keeps_fit
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/move_faster_than_walking
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/prove_can_do
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/ride
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/wind_in_hair
	/c/en/ride_bicycle	/r/MotivatedByGoal	/c/en/you're_out_of_shape
open window	/c/en/open_window	/r/CapableOf	/c/en/air_out_room
	/c/en/open_window	/r/CapableOf	/c/en/air_room_of_odor
	/c/en/open_window	/r/CapableOf	/c/en/airing_room
shut window	/c/en/shut_window	/r/MotivatedByGoal	/c/en/room_cold
scratch knee	/c/en/scratch_knee	/r/MotivatedByGoal	/c/en/knee_had_itch
carry umbrella	/c/en/carry_umbrella	/r/MotivatedByGoal	/c/en/might_rain
beat eggs	/c/en/beat_eggs	/r/MotivatedByGoal	/c/en/bake_cake

Table 11: The Conceptnet Triples retrieval results for 140 actions phrases. Only 6 actions has triplets with the relations `CapableOf`, `Causes`, `Desires`, `HasA`, `MotivatedByGoal`, `UsedFor`, `MotivatedByGoal`.

Metrics	Model	0-shot	1-shot	2-shot	4-shot	8-shot	10-shot
BLEU_1	Davinci	0.264	0.598	0.635	0.594	0.738	0.730
	Ada	0.276	0.395	0.463	0.554	0.646	0.624
	GPT-2	0.226	0.299	0.338	0.386	0.435	0.425
BLEU_2	Davinci	0.133	0.446	0.484	0.445	0.602	0.595
	Ada	0.108	0.238	0.304	0.395	0.493	0.475
	GPT-2	0.099	0.181	0.199	0.261	0.315	0.301
BLEU_3	Davinci	0.031	0.308	0.373	0.335	0.487	0.482
	Ada	0.029	0.135	0.200	0.284	0.381	0.362
	GPT-2	0.033	0.106	0.124	0.185	0.233	0.219
BLEU_4	Davinci	0.000	0.213	0.257	0.234	0.365	0.363
	Ada	0.000	0.077	0.111	0.172	0.252	0.228
	GPT-2	0.000	0.056	0.067	0.117	0.147	0.134
METEOR	Davinci	0.143	0.289	0.354	0.323	0.378	0.373
	Ada	0.158	0.202	0.249	0.303	0.330	0.325
	GPT-2	0.121	0.203	0.222	0.259	0.287	0.282
ROUGE_L	Davinci	0.193	0.511	0.614	0.542	0.673	0.668
	Ada	0.226	0.340	0.426	0.523	0.615	0.599
	GPT-2	0.155	0.308	0.325	0.410	0.423	0.448
CIDEr	Davinci	0.233	1.038	1.250	0.976	1.547	1.587
	Ada	0.147	0.510	0.558	0.910	1.332	1.261
	GPT-2	0.144	0.323	0.152	0.231	0.482	0.389

Table 12: Few-shot learning results for inputs with ConceptNet prompt prefix with question answering format. The Model column indicates the choice of GPT-3 models with different size.

Metrics	Model	0-shot			1-shot		
		/	ConceptNet	KNOWROB	/	ConceptNet	KNOWROB
Bleu_1	Davinci	0.499	0.309	0.560	0.601	0.560	0.609
	Ada	0.283	0.347	0.416	0.362	0.393	0.478
	GPT-2	0.341	0.367	0.421	0.370	0.417	0.512
Bleu_2	Davinci	0.349	0.189	0.425	0.466	0.417	0.473
	Ada	0.136	0.168	0.246	0.223	0.238	0.323
	GPT-2	0.126	0.170	0.230	0.229	0.249	0.359
Bleu_3	Davinci	0.248	0.121	0.324	0.358	0.303	0.356
	Ada	0.070	0.062	0.149	0.137	0.136	0.203
	GPT-2	0.054	0.077	0.134	0.142	0.154	0.239
Bleu_4	Davinci	0.143	0.053	0.195	0.223	0.196	0.248
	Ada	0.032	0	0.064	0.073	0.082	0.124
	GPT-2	0.028	0	0.069	0.076	0.079	0.152
Meteor	Davinci	0.235	0.132	0.266	0.336	0.282	0.327
	Ada	0.162	0.139	0.200	0.233	0.208	0.280
	GPT-2	0.124	0.141	0.181	0.207	0.208	0.286
Rouge_L	Davinci	0.454	0.261	0.516	0.578	0.471	0.550
	Ada	0.311	0.238	0.382	0.378	0.329	0.445
	GPT-2	0.251	0.267	0.380	0.353	0.366	0.468
Cider	Davinci	0.688	0.341	0.891	1.103	0.804	1.008
	Ada	0.176	0.251	0.442	0.396	0.421	0.708
	GPT-2	0.127	0.217	0.373	0.345	0.429	0.763

Table 13: Few-shot learning results with linguistic fact probing format across choices of the training examples. The Model column indicates the choice of GPT-3 models with different size. The /, ConceptNEt, and KNOWROB columns shows the generation results for pure LM no knowledge prompts, with ConceptNet knowledge prompt prefix with `Causes` relation, and with KNOWROB prompt prefix results.