

Table 6: Naturalistic examples in English, including human compositionality (HC). Results for BERT model at NC level ( $\text{sim}_{\text{NC}}^{(P)}$ ) together with GloVe results for the same measure. Average (Avg) values were calculated with BERT using the three NAT/NEU sentences for the same NC.

Probe	Sentence (original compound in bold)	HC	Probe-specific results		
			$\text{NC}_{\text{syn}}$	$\text{sim}_{\text{NC}}^{(P1)}$	GloVe
P1	He later became a <b>music journalist</b> covering the new wave and punk rock explosion [...]	4.54	music reporter	0.98	0.89
	The UN also held a <b>world conference</b> on Human Rights in Vienna.	3.96	global meeting	0.97	0.77
	The 3 month limit though is not a <b>brick wall</b> , if circumstances demand an extension of time [...]	3.79	obstacle	0.64	0.31
P2			$W_i$	$\text{sim}_{\text{NC}}^{(P2)}$	GloVe
	Allowing young people to opt out of the basic state pension is giving them a <b>poison pill</b> .	0.96	pill	0.92	0.85
	Arguably the king of comedy for the last ten years, Jim Carrey is <b>box office</b> gold.	0.88	box	0.81	0.81
P3			$\text{NC}_{\text{syn}W}$	$\text{sim}_{\text{NC}}^{(P3)}$	GloVe
	It is not right that criminal enterprises try to use <b>dirty money</b> with a clean face.	2.21	smotty cash	0.93	0.63
	Formal evenings require a suit or dinner jacket for men and a <b>cocktail dress</b> for ladies.	3.04	appetizer costume	0.92	0.65
	If you burn coal without any kind of pollution control you get large amounts of ash and sulphur (and <b>radioactive waste</b> from natural Uranium decay in the coal).	4.58	dangerous rubbish	0.84	0.54
P4			$\text{sim}_{\text{in-out}}^{(P4)}$	Avg $\text{sim}_{\text{in-out-NAT}}^{(P4)}$	Avg $\text{sim}_{\text{in-out-NEU}}^{(P4)}$
	The roll-on/roll-off nuclear cargo ferry Atlantic Osprey suffered an <b>engine room</b> fire on Monday.	4.93	0.66	0.68	0.89
	And we had to explain to her the difference between <b>rice paper</b> and ordinary paper.	4	0.83	0.84	0.86
	However, it will not work unless every single person does it, because one <b>bad apple</b> ruins the whole barrel.	1.13	0.82	0.83	0.89
	The jury heard the evidence presented, that he was general <b>bad hat</b> .	0.62	0.76	0.76	0.83
	Yet its heyday was down with the epochal <b>melting pot</b> of punk/funk/art/jazz/dub [...]	0.54	0.73	0.73	0.89

Table 7: Naturalistic examples in Portuguese, including human compositionality (HC). Results for BERT model at NC level ( $\text{sim}_{\text{NC}}^{(P)}$ ) together with GloVe results for the same measure. Average (Avg) values were calculated with BERT using the three NAT/NEU sentences for the same NC. English translations are in italic, together with the literal translation of the compounds where they are not word-to-word equivalents.

Probe	Sentence (original compound in bold)	HC	Probe-specific results		
			$\text{NC}_{\text{syn}}$	$\text{sim}_{\text{NC}}^{(P1)}$	GloVe
P1	Normalmente, os restaurantes encontram-se dentro de <b>centros comerciais</b> . <i>Restaurants are usually located inside <b>shopping malls</b> (lit. comercial centres).</i>	3.68	shoppings	0.94	0.45
	Foi um dia pesaroso, um <b>sexto sentido</b> me alertava que uma coisa ruim puxa outra. <i>It was a sorrowful day, a <b>sixth sense</b> alerted me that one bad thing pulls another.</i>	1.4	intuição <i>intuition</i>	0.79	0.11
	Existe mesmo no serviço secreto inglês um <b>agente secreto</b> com licença para matar! <i>There really is in the English secret service a <b>secret agent</b> licensed to kill!</i>	4.58	espião <i>spy</i>	0.81	0.56
P2			$W_i$	$\text{sim}_{\text{NC}}^{(P2)}$	GloVe
	Alguns dos estádios novos foram criticados por se tornarem “ <b>elefantes brancos</b> ” após a Copa. <i>Some of the new stadiums were criticized for becoming “<b>boondoggles</b>” (lit. white elephants) after the World Cup.</i>	0.16	elefantes <i>elephants</i>	0.96	0.81
	As espécies de <b>mar aberto</b> têm por princípio a natação contínua. <i>The <b>open sea</b> species have as a principle the continuous swimming.</i>	4.03	aberto <i>open</i>	0.9	0.79
P3			$\text{NC}_{\text{synW}}$	$\text{sim}_{\text{NC}}^{(P3)}$	GloVe
	Foices e facões são <b>armas brancas</b> de uso corriqueiro. <i>Scythes and machetes are commonplace <b>white weapons</b>.</i>	0.65	pistolas alvas <i>untanned guns</i>	0.92	0.50
	Não deu quase ninguém, só alguns <b>gatos-pingados</b> ! <i>There’s hardly anybody, just a <b>few people</b> (lit. dripping cats)!</i>	0	felinos chuviscados <i>drizzled felines</i>	0.92	0.01
P4			$\text{sim}_{\text{in-out}}^{(P4)}$	Avg $\text{sim}_{\text{in-out-NAT}}^{(P4)}$	Avg $\text{sim}_{\text{in-out-NEU}}^{(P4)}$
	Troque o <b>leite integral</b> pelo desnatado e economize nas calorias. <i>Replace <b>whole milk</b> (lit. integral milk) with skimmed milk and save on calories.</i>	4.67	0.86	0.84	0.79
	Ganhou até uma fama de “ <b>pé-frio</b> ”, por ter alguns rebaixamentos em seu currículo [...] <i>He even gained a reputation as an “<b>unlucky person</b>” (lit. cold foot), for having some downgrades in his resume [...]</i>	0.09	0.84	0.89	0.87
	Para muitos povos antigos, um novo mês era anunciado na passagem da <b>lua nova</b> para a lua crescente. <i>For many ancient peoples, a new month was announced as the <b>new moon</b> passed into the crescent moon.</i>	1.4	0.77	0.74	0.84
	Esse diagnostico é realizado através de <b>exame clínico</b> e radiográfico. <i>This diagnosis is made through <b>clinical</b> and radiographic <b>examination</b>.</i>	4.75	0.84	0.84	0.92