ARTICLE

Landslide metaphor: a cross-linguistic examination

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In prior natural disasters metaphor and Mandarin corpus analysis, Mandarin滑坡(huá pō) (*Landslide* in English) stood out and got salient in metaphorical percentage (53.5%) among top ten frequently used natural disaster frames. Departing from this, we made a comparative study between English *Landslide* and Mandarin滑坡and their metaphorical implications in both languages. In this article, it was shown that there was a widespread metaphorical usage of English *Landslide* and Mandarin滑坡 in both languages, supported by the highly metaphorical percentage of 82.9% and 53.5% respectively. Differences as well as similarities were identified in metaphorical target domains between English *Landslide* and Mandarin滑坡, with English *Landslide* mapping on *victory* (*political victory* especially), *amount, decline* and Mandarin 滑坡mapping exclusively on *decline or downturn* (*economic decline* mainly). We have referred to research on *framing* and *to frame* to explain why this might be the case concerning different target domains within and across languages.

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Introduction

Recent years has seen an increasing focus on metaphorical frame in cognitive linguistics. It is reported that metaphorical frames bring about framing effect, which refers to the power to influence the way we think and behave by eliciting knowledge structures that are consistent with the frame and inviting structurally consistent inferences (e.g., Thibodeau and Boroditsky, 2011, 2013, 2015; Landau et al., 2014; Thibodeau et al., 2017; Thibodeau and Flusberg, 2017; Joris et al., 2019; Hart, 2021; Benczes and Ságvári, 2022; Brugman et al., 2022; Tao et al., 2023). Therefore, metaphorical frame is a point which undertakes the joint study of cognitive linguistics, psychological studies such as decision-making and judgments and communication studies. In light of Embodied Cognition (Johnson, 1987; Barsalou, 2008), our mental representations consist of some conceptual notions that are deeply grounded in our body, our experiences and interactions with the physical world. Conceptual Metaphor Theory (Lakoff and Johnson, 1980) holds the belief that understanding and reasoning are realized through the mappings from concrete concepts (source domains) to abstract ones (target domains), especially from the perceptible concepts and sensorimotor experience deriving from daily life like spatial orientation, containment, force and temperature, to the imperceptible ones like time, emotions, power etc. (Lakoff, 1987; Lakoff and Johnson, 1980). Conceptual metaphors consist of mappings, or sets of correspondences from source domains (e.g., WAR) to target domains (e.g., ARGUMENT). Typically, target domains are more subjective, abstract, complex, and poorly delineated than source domains, which are typically more intersubjectively accessible, concrete, simple, and image-rich (Potts and Semino, 2019). Therefore, metaphor is not just a figurative expression, but a way of conceptualizing and accessing abstract notions.

Since metaphor pervades our lives and structures our thoughts as a way of thought (Lakoff and Johnson, 1980), many news reports and media discourse favor metaphorical expression, especially metaphorical use of natural disasters in risk warning and communication like financial crisis, epidemic, climate change etc. (Semino, 2021; Piromalli, 2021; Ho, 2019). As a major perceptible concepts and sensorimotor experience deriving from physical world, natural disasters are usually employed to access abstract notions through metaphorical mappings.The unpredictable, catastrophic, changing and scary features of natural disasters are more or less mapped onto the target domains like crisis, pandemic, so as to highlight targets' feature of being unavoidable, scary, nature-made rather than man-made.

Meanwhile, environmental linguistics hold the belief that "language not only encodes the landscape but also arises out of it, and they are reciprocally shaped".(Harrison, 2023:116) All levels of language ranging from phonemes, morphemes, grammar to syntax, from lexicon, prosody to metaphors and texts of all lengths undertake to decode almost all environmental knowledge such as plants, animals, mountains, lakes rivers and spirits among them (Harrison, 2006). In the mean time, environmental species and phenomenon in nature constructs the linguistic expression system and their rich implications that conveyed to humanity. Natural disasters, inseparable to natural environment, are where the nature and humanity are. As a result, for one thing, language constructs natural disasters and presents the spirits and implication of natural disasters; for another, natural disasters render linguistic implications to human being through their own spirits in various linguistic forms (Harrison, 2023).

Regarding the natural disasters study from the linguistic perspective, Yell (2012) made a research into the affect and emotions draw from coverage of the 2009 Australian bushfires and the 2010 Haiti earthquake against the theoretical background of discursive psychology and systemic-functional linguistics. It denotes that news reporting, together with emotions and affects within, shapes local and global public. Chua (2015) attempts to find ways to survive and recover from natural disasters through study into ecopoetry which is vivid depiction of local natural disasters suffering in Philippines. Battle (2015) addresses the needs of people with disabilities who may be affected by natural disasters. And the author aims to ensure that they do not experience injustices during natural catastrophes and conflict and that emergency plans acknowledge and address the communication and other needs of displaced persons with disabilities. McKee (2014) notices that sign language interpreters appears on television during natural disasters in New Zealand and Australia, which the author believes is rather significant for reforming the deaf in danger. Among above studies, it is demonstrated the natural disaster experience would shape the general public's emotions and minds, while linguistic reports and communication might help the natural disasters-stricken ones to recover, and even to save their lives.

There are amounting studies diving into the language of natural disasters itself, into the multiple meaning natural disasters conveyed to us and their convenience brought to our humanity in communication. Trckova (2012) examined metaphoric conceptualization of a natural phenomenon employed in newspaper discourse on natural catastrophes through a data-driven analysis. Focusing on reports on 2004 Indian Ocean tsunami and 2005 Hurricane Katrina in three Western newspapers, the author found that major metaphoric themes ANIMATE BEING, a MONSTER and a WARRIOR are employed to depict natural phenomenon like tsunami and hurricane. Also in the aim of conceptualizing a natural phenomenon, Matlock et al. (2017) identified the metaphor WILDFIRE IS MONSTER in the wildfire discourse and wildfire is frequently framed as monster in news reports. In another two cases, flood is framed as "a scary and terrifying event" by high school students (Kilinc, 2013) and GOD'S ANGER AND WRATH through a examination of media discourses in Malaysia (Chonga et al., 2020). In the above studies, natural disasters serve as the metaphorical target domains where monster, God's anger are frames employed to better access natural disasters.

Along with target domains, natural disasters frames are working as source domains to access abstract conceptualizations for its omnipresence and effect on life experience of humanity. Through an investigation into lyrics of Turkish love songs, Adıgüzel (2020) identified that suffering in love is metaphorically conceptualized in natural phenomena and disasters in the following three salient metaphors: 1) LOVE PAIN/SUFFERING IS NATURAL PHENOMENA, 2) LOVE PAIN/SUFFERING IS NATURAL DISASTERS, 3)) LOVER'S BODY IS A LANDSCAPE. Among these metaphors, such natural phenomenon or disaster frames as volcano, earthquake, flood, storm and wind are identified and adopted to metaphorically convey the suffering in love. Another important and salient metaphorical conceptualization domain where natural disasters serve as source domain to access more abstract one is financial or economic crisis, which is demonstrated in metaphors like ECONOMIC DECCLINE/ CRISIS IS NATURAL PHENOMENON OR DISASTERS (Piromalli, 2021; Zeng et al., 2021; Negro, 2016; Wang et al., 2013; de los Ríos, 2010; Charteris-Black and Musolff, 2003; Charteris-Black and Ennis, 2001). In the metaphors, such natural phenomena or disasters as flood, storm, wind, water, tsunami, hurricane and earthquake are used to capture metaphorically negative impact and construct collective illusion that financial crisis was unavoidable and not caused by anyone (Ho, 2019).

On February 28, 2024, the Ministry of Natural Resources issued the "China Natural Resources Bulletin 2023", displaying that in 2023, a total of 3668 geological disasters occurred in the country, including 925 landslides, which suggests that landslide eruption occupies one quarter of the geological disasters in China. In the mean time, in our prior study conducted to explore the most frequent natural disaster metaphor in Mandarin and to detect its metaphorical framing effect, it turned out that 滑坡(huá pō) (*Landslide* in English) was the most salient natural disaster in linguistic metaphorical use (53.5%) in Mandarin, with *Tsunami* ranking the second in metaphorical use (8%) when carrying out a corpus analysis into CCL (Center for Chinese Linguistics) (Zhang and Yang, 2023). Landslide's high frequency of metaphorical use in corpus reveals the frequent landslide striking and eruption in our lives. The great salience displayed in the Mandarin corpus studies, together with the frequent eruption disclosed in Chinese Ministry of Natural Resources arouses our interest in initiating a comparison of *Landslide* metaphors between Mandarin and English. Such a research would might unveil the cross-linguistic, social and cultural differences and underpinnings in metaphorical usage of landslide disaster, even the landslide eruption frequency between China and English-speaking countries. Additional discussion of *Landslide* frame from metaphorical perspective would also add more understanding of philosophy of embodied cognition.

More specifically, we aim to answer the following questions through a corpora-based comparison study:

- *What's the difference of Landslide metaphors between Mandarin and English? What does the difference reveal?*

The second section approaches the theoretical concept briefly. The third section introduces data and methodology. The fourth section presents our corpora comparison of *Landslide* metaphors and our classification of target domains respectively in two languages. The fifth section addresses our research discussions concerning the reasons underlying the statistical and target domain categorization differences as well as similarities. We present conclusions as well as limitations of this study in the sixth section.

Framing and *to frame*

Framing, seen as a function of metaphor (Semino, Demjén and Demmen, 2018), finds its origins in both psychology and sociology (Pan & Kosicki, 1993) in three interrelated—cognitive, discourse and practice-based perspectives (Semino et al., 2018). Frame is regarded as cognitive schema and a pattern of language use (Ritchie, 2013). The oft-quoted definition of *framing* and *to frame* goes as follows:

> Framing essentially involves *selection* and *salience*. To frame is to *select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation* for the item described. (Entman, 1993:52)

As a result, different source domains "frame" the target domain in different ways, highlighting some aspects and backgrounding others (Potts & Semino, 2019). In communication, frame highlights the frame-congruent features (Entman, 1993). For instance, when Covid-19 pandemic is framed as war, war frame highlights Covid-19's opposing, malevolent, dangerous and urgent nature. War frame would dramatically arouse awareness of urgency, unity and successfully persuades citizens into following the policies and orders. However, Entman (1993) also mentions that metaphorical frames would omit frame-incongruent features of

metaphorical targets. Thus also in the case of metaphorically framing Covid-19 into war, war frame omits the need of tracing the cause, recovery phase and keeping social distance in combating Covid-19 (Semino, 2021). Therefore, appropriateness of a metaphorical frame depends greatly on the communicator, context, purpose and audience (Semino et al., 2018). In this study, we will refer to the selection and salience gist of *framing* and *to frame* in particular to illustrate the rationale of similarities and differences behind metaphorical conceptions of English *Landslide* and Mandarin滑坡.

Data collection and methodology

Data selection. In order to fulfill the comparison study of *Landslide* metaphors between Mandarin and English. We decide to utilize three corpora: British National Corpus (BNC), Corpus of Contemporary American English (COCA), Center for Chinese Linguistics (CCL). The following table describes some detailed information regarding these three corpora. Despite the linguistic data of CCL starts from the 11th BC, only lines with *Landslide* frame from the contemporary times were downloaded with the *Contemporary Chinese Option* being chosen and thus excluding 滑坡sentences from ancient Chinese in the present study. Therefore, Mandarin corpus CCL and English corpora BNC, COCA are comparable in their time periods for their common collection of linguistic use of *Landslide* frame since modern times. And these downloaded sentences went through the metaphor identification procedures.

The analysis of both COCA and BNC gives full considerations of minor difference between American English and Britain English for one thing, and display a general and honest landscape of English language use chronologically from late 1980s to 2019 for another. These two English corpora make a comparable and relatively full picture of English *Landslide* metaphors use in English when compared with Mandarin 滑坡 metaphors use in CCL in time periods, sizes and genres Figs. 1–3.

We identify and annotate metaphors in the following processes:

(1) Enter the search term "landslide" in both COCA and BNC, and enter "滑坡(huá pō)" into CCL with *Contemporary Chinese* option selected;
(2) Extract concordance lines containing "landslide" and "滑坡(huá pō)" (with metadata) in three corpora to spreadsheets respectively;
(3) Identify the metaphorical instances of "landslide" and "滑坡(huá pō)" based on the Metaphor Identification Procedure (MIP) developed by the Pragglejaz Group (2007) and refer to context and the Comprehensive Dictionary of Chinese Language (汉语大词典), Longman Dictionary of Contemporary English and Oxford Advanced Learner's Dictionary.
(4) Annotate and classify the metaphorical "landslide" and "滑坡(huá pō)" semantically by allocating them to different target domains categorization with the assistance of context and dictionaries of both languages;
(5) Compare the metaphorical usage and target domains categorization difference between "landslide" in British English and American English, between "landslide" in English as a whole and Chinese"滑坡(huá pō) through some examples from corpora. The following are three annotated samples in these three corpora:

Data description. In order to get a comprehensive picture of *Landslide* metaphors both in English and Mandarin, we reviewed all the concordance lines in COCA, BNC and CCL resulting from our

The annotated sample concordance lines of *landslide* in BNC

number	Meaning of *landslide*	sample concordance lines of landslide
1	political vic(.noun)	the week's news from I T N. Official Romanian election results have confirmed a **landslide** win for President
2	literal	in long, flat terraces of rock. I found a niche where a small **landslide** had left a level lawn with a backing of tur
3	amount(. of)	sweets called cachous from her cuff and gave him one. And that started a **landslide** of children scrambling an
4	literal	' clyst' -- a huge gorge which was evidently the result of some ancient **landslide**. It was glorious to stand on thi
5	literal	" We only got halfway. The road was blocked after that, a **landslide** or something. Has Richard been looking a
6	overwhelmingly	sensed his irrational violence in the air about him. Sometimes he fell in a **landslide** on Finn, clouting him round t
7	political vic(.noun)	should one? Getting nagging letters in one's own house. During the Labour **landslide** they used to be love letter
8	political vic(.noun)	reminding me. He's trying to break into me." Which Labour **landslide**?' Len said softly.' Ramsay MacDonald's
9	literal	in the district knows, the path was destroyed many years ago by the Great **Landslide**. That was a terrible disas
10	literal	his time praying. He died in 1720. Of course that was before the **landslide** destroyed the path to Adwy-yr-Ery
12	sports vic(.)	stop goals like these... Tommy Mooney the scorer... what happened next was a **landslide**... everything Souther
13	sports vic(.)	the net 5 times. Martin Ling got the first after 29 minutes. The **landslide** was beginning to roll. Notts County a
14	amount(. of)	... as chance after chance was missed... The Luton goal was hit by a **landslide** of shots... crosses and headers
15	amount(. of)	County Ground the swindon fans were ready for a runaway win; ready for a **landslide** of goals, after Nicky Su
16	sports vic(.)	was soldiers returning from the battlefields who're credited with making that election a labour **landslide**. The m
18	political vic(.noun)	# LONG TO REIGN OVER US! # YES You want Queen Di # Your **landslide** vote of confidence for love ta
19	political p(.)	out, the published biographies contain no mention whatever of CND membership. A Labour **landslide** would p
20	political vic(.noun)	main political parties, the Socialist Party and the Democratic Party, which won a **landslide** victory in last month

Fig. 1 Annotated sample of BNC.

The annotated sample concordance lines of landslide in COCA

number	Meaning of *landslide*	sample concordance lines of *landslide*
	political vic(.)	that God will hear our cry, for our children. I pray for the **landslide** of the 80s and another reaganesk 8 years. My faith is in God
2	overwhelmingly(in a .)	and as to persecution or being derived of rights, we Christians win in a **landslide**. See Roman Empire and currently other nations
3	political vic.(.noun)	low, low " several thousand, " which gives the sand grain folks a **landslide** victory. But we're not limiting ourselves to what an or
4	overwhelmingly(in a .)	dithers while Tel Aviv burns and American airliners explode, he may lose in a **landslide**. Either way, the ride is about to get bum
5	name.	going to win, everybody else was sure it was going to be a Romney **landslide** " -- stuff like that. It was like Ralphie discovering t
6	overwhelmingly(in a .)	week for who should be the Rockies' manager, Giambi won out in a **landslide**. # Days before he arrived in 2009, a poster mentic
8	political vic(.)	from former Democratic speaker Sam Rayburn demonstrates this principle; when faced with a coming **landslide** for his party ar
9	political vic.(.noun)	2008 vote totals were lower than might have been expected given the Democrats' Congressional **landslide** victory. They conclu
10	political vic.(.noun)	allies still nurture their grievance over the issue three years later, after Labour's **landslide** victory and Mr Brown's appointment a
11	political vic(.)	67% Gov Romney won! 25% Obama won! That is what you called a **landslide**. Assuming Obama has 48% of the Country supp
12	political vic(.)	've even been to conferences -- and we conferees voted, and it was a **landslide**: Everyone beside the
13	overwhelmingly(by a .)	the Maryland Dream Act ballot initiative, Question 4, will likely pass by a **landslide**. The approval of Question 4 will make Maryl
14	political vic(.noun)	sentence very carefully because in my opinion it tells the story. All of the **landslide** majority did not vote against the conservative
15	political vic(.)	do with it. HERE'S your first hint: IF it had been a **landslide** for your leader, he'd have gotten the HOUSE too. THINKABOUT
16	overwhelmingly(by a .)	. If they were really out of touch, Obama would have won by a **landslide**. Just goes to show how ignorant most liberals are. # L
17	overwhelmingly(in a .)	Dave might really go negative. But the hand-writing is clear, Phil in a **landslide** and Dave ain't no dummy. He doesn't want to up
18	political vic(.)	vulnerable. But hey, that politics. # It's Phil in a major **landslide** with no primary. You heard it here first. # You all are right
19	political vic(.)	am glad that you have come to see that the cost of a Democratic party **landslide** may be potentially very devastating to America
20	political vic (.noun)	happen. I just hope to God that it's Romney beating obama in a **landslide** election. I'm about speechless at anyone who would ev

Fig. 2 Annotated sample of COCA.

searches of "landslide" and "滑坡" respectively. It turned out that there were 2829 and 147 concordance lines in COCA and BNC respectively and 3763 concordance lines in CCL for Mandarin "滑坡". Concordance lines of *Landslide* in COCA complements BNC for BNC's modest size in Landslide concordance and might also reveal some minor differences between American English and British English. In the process of metaphorical identification of "Landslide" and "滑坡", we, two authors (both authors are Chinese native, one lecturer in the English language and another is a professor in the English language with one-year overseas study experience in English-speaking country) each began with English and Mandarin corpora and independently completed stages 1–4. Along with two authors, two graduate (majoring in the Chinese language) and one English professor (who had worked and stayed in United States for more than ten years) were invited to check Chinese "滑坡" and English "landslide " respectively in stages 3–4 several times until the final categorizations were agreed, coding was

settled, and interrater consistency was assured. After mutual agreement has been achieved concerning the metaphorical and literal identification both in English corpora and Mandarin corpus, the two researchers collaborated on the stage 5 through discussion and agreement on the categorization of target domains of *Landslide* in English and 滑坡in Mandarin. Before the metaphorical comparison usage between English and Mandarin, a minor and detailed difference of *Landslide* metaphorical usage and concordance lines between American English and British English could be found in Table 1. Given the fact the there is size difference between COCA (1 billion) and BNC (100 million), the discussion of Landslide frame in COCA and BNC below have been based on the normalized size of corpora, with frequency in BNC multiplying 10 for the reason COCA is ten times bigger than BNC, which would make these two corpora comparable in size.

As shown in Table 2, there presents the normalized ratio of frequency of Landslide in COCA and BNC, with 1470

1	The annotated sample concordance lines of 滑坡 in CCL.	
2	Meaning of 滑坡	sample concordance lines of 滑坡
3	literal	1:...他们必须从当腰穿过，这个壑腰的上面伸出飞檐，下面是几尺倾斜的[滑坡]，[滑坡]下就是望不到底的深渊。王银生领着七个侦察员
4	literal	3:...十四联队工人梁伯琴创造了高架线自动卸土法；二十三联队的工人把[滑坡]轨道的十字道岔改为人字形道岔，采用了这些方法，使工...
5	literal	4:...谷脑河流域施工前进行了路线改测，因而避免了大量的废方、坍方以[滑坡]，减少了涵洞、半山洞、山洞，给国家节省数十亿元。其...
6	decline (education)	1:...的差距不断拉大' 大学英语教学很难组织和实施，教学质量面临严重[滑坡]的危险。为克服这些困难，2001年教育部开始启动大学英语
7	decline (economy)	2:...居高不下，这不仅使产品失去竞争能力，而且也是导致企业经济效益[滑坡]的重要方面。同时，成本失控造成物价上涨，物价上涨又...
8	decline (economy)	3:...正飞，魏涛. 2006.配股后业绩下降:盈余管理后果与真实业绩[滑坡]. 会计研究, 8美国财务与会计准则委员会. 1984. 财务与会计概...
9	decline (economy)	36:...金的力推新人，可是从张学友的第三张专辑开始，唱片的销量就直线[滑坡]。1987年，是当时两大天王谭咏麟、张国荣竞争最为激烈
10	decline (economy)	37:...损失每月就高达几百万元人民币。这也直接导致了保健品市场的迅速[滑坡]，集团资金周转非常困难。而这时依旧冒着极大的风险将
11	decline (economy)	41:...0年代，工业生产总值已大大超过了农业生产总值，农业开始呈现出[滑坡]的趋势。具体表现为：
12	decline (economy)	42: 造成台湾农业[滑坡]的原因是复杂的，主要是：
13	decline (economy)	43:..."土改"并不能改变台湾小自耕农经济的实质，所以，它未能使处在[滑坡]状态的农业摆脱困境。
14	decline (economy)	44:...本与技术密集型为主的重工业同样劳力欠缺形成新瓶颈；农业出现[滑坡]，等等。面对因国际经济风暴所造成的严重经济衰退，来
15	decline (economy)	45:...老板如何求贤若渴。而在于李嘉诚早在五金厂的生产与销售双双开始[滑坡]之时，就已经开始考虑自己将来的前途了。李嘉诚自知他
16	decline (health)	49:身体和皮肤。不修边幅的美容路线最终会让你的身体从内到外"大[滑坡]"，而用那些昂贵的面霜来掩盖你喜欢吃大包薯片的事实，
17	decline (economy)	50:...国务院的经济工作，又正是中国经济增长率跌人低谷之时，工业生产[滑坡]，中央财政吃紧，摆在他面前的，仅全国累约"三角债
18	decline (economy)	54:第一，经济不能[滑坡]。凡是能够积极争取的发展速度还是要积极争取，当然不要求像过去想的那么高。现在主要是我们基础工业薄弱
19	decline (economy)	55:...下去。为什么？道理很简单，不搞改革开放就不能继续发展，经济要[滑坡]。走回头路，人民生活要下降。改革的趋势是改变不了的
20	decline (arts)	60:近两年，全国电影业严重[滑坡]，但他们转变观念，面向市场，勇于竞争，收入年年递增，去年1至7...
21	decline (morality)	62:...确提出了青少年教育的宏观指导思想，但近年来，在智育升值、德育[滑坡]，以及现在社会中某些失衡现象的影响和误导下，青少年
22	decline (morality)	64:个别人的道德水准确实有[滑坡]的现象，有的将个人的物质利益放在了全社会的利益之上，放在军民关...

Fig. 3 Annotated sample of CCL.

Table 1 Detailed information of three corpora.

Name of corpora	Time	Language	size	genre
BNC (British National corpus)	1980s–1990s	British English	100 million words	a wide range of genres (e.g. spoken, fiction, magazines, newspapers, and academic)
COCA (Corpus of Contemporary American English)	1990–2019	American contemporary English	1 billion words	spoken, fiction, popular magazines, newspapers, academic texts, TV and movies subtitles, blogs, and other web pages
CCL (Center for Chinese Linguistics)	11th BC century to contemporary times	Mandarin	783,463,175 characters	books and newspapers, academic texts, TV and movies subtitles, web pages

Table 2 Top three phrases concerning *Landslide* in COCA and BNC.

Clusters ranking	COCA			BNC		
	Cluster item	Frequency	% in total	Cluster item	Frequency*10	% in total
1	In/ by a landslide	788	27.9%	Landslide victory(ies)	460	31.3%
2	Win(s) /won a landslide	543	19.2%	Win (s)/ won a landslide	240	16.3%
3	Landslide victory(ies)	309	10.9%	In/ by a landslide	200	13.6%
Total		1640	58.0%		900	61.2%

concordance lines in normalized BNC and 2829 lines in COCA. The top three phrases in BNC overlap with those in COCA. As can be seen from Table 2, phrases *in/ by a landslide, win(s)/ won a landslide* and *landslide victory (victories)* ranked the three highest frequency both in COCA and BNC. In spite of the different corpus size in COCA and BNC, the research demonstrates that these three phrases took up 58% and 61.2% of the total concordance lines in COCA and BNC respectively. The minor difference between these two corpora lied in the different rankings among these tree semantic structures: *In/ by a landslide* ranks first in COCA and third in BNC; *Landslide victory(ies)* ranks third in COCA while first in BNC; *Win(s) /won a landslide* ranks the second both in COCA and BNC. The common top three phrase structures and their total percentage in the total concordance lines displayed the consistency and agreement in *Landslide* usage between American and British English. Therefore, in the subsequent comparison analysis of English *Landslide* and Mandarin滑坡, we will cap American and British English with the umbrella term "English", with COCA as a main comparison corpus for its relative bigger size in *Landslide* usage

and frequency. Moreover, the English categorization and comparison analysis of *Landslide* might extract concordance lines from both BNC and COCA as a whole for the English part.

Metaphorical analysis and comparison of English *Landslide* and Mandarin滑坡(huá pō)

Natural disasters, as cognitive schema deriving from daily interaction with the physical world, are perceptible concepts frequently used to convey imperceptible notions (Lakoff, 1987). The frequent metaphorical usage of natural disasters to convey abstract concepts could be found in Charteris-Black and Ennis (2001), Charteris-Black and Musolff (2003), de los Ríos (2010), Piromalli (2021),Wang, Runtsova and Chen (2013). Based on our comprehensive corpus analysis of top ten frequent natural disaster frames in Mandarin (earthquake, flood, fire hazard, drought, typhoon, landslide, volcano, sandstorm, tsunami, debris flow), metaphorical usage of 滑坡 in Mandarin was salient and enjoyed an overwhelmingly high percentage in its metaphorical usage (53.5%) among total usage of 滑坡 in CCL (Zhang & Yang, 2023).

Table 3 Categorization of English *Landslide* and Mandarin 滑坡 in COCA and CCL.

Items	COCA (2829 total frequency)	CCL (3763 total frequency)
Literal frequency of "landslide"(滑坡)	485 (17.1%)	1750 (46.5%)
Metaphorical frequency of "landslide"(滑坡)	2344 (82.9%)	2013 (53.5%)
Metaphorical target domain categorization	**Victory (2307) in:**	**Decline in:**
	Political election (2305)	Economy (1372)
	Sports (2)	Health and environment (44) Quality and management (125)
	Amount (26) in:	Morality and values (188)
	Hope, food, time, economy etc.	Arts and education (284)
	Decline (3) in:	
	Economy	
	Physical strength	
	Morality	
	Something like landslide (8):	
	Voice	
	Laugh	
	Feeling	
	Weight	

Departing from this high percentage of metaphorical usage of 滑坡 frame in Mandarin, we initiated this cross-language metaphorical comparison of *Landslide* frame in English and 滑坡in Mandarin.

As shown from Table 3, there were a total of 3763 滑坡frequencies in CCL and 2829 *Landslide* frequencies in COCA, with 2013 (53.5%) and 2344 (82.9%) being metaphorical in CCL and COCA respectively, which demonstrated that English *Landslide* enjoyed an overwhelmingly higher percentage of metaphorical usage compared with Mandarin滑坡. In addition, there was a metaphorical percentage of 79.6% of English *Landslide* in BNC after an investigation. High percentage of landslide metaphors both in English and Mandarin reveals frequent visiting of natural disaster---landslide in both countries because of its familiarity in daily experiences for one thing, also showcases the frequent employment of daily perceptible notions to convey abstract concepts both in English and Mandarin through metaphorical mappings, which echoes the Embodied Cognition philosophy, Conceptual Metaphor Theory and beliefs of environmental linguistics for another (Lakoff, 1987; Johnson, 1987; Lakoff and Johnson, 1980; Harrison, 2023). In the following part, we will have a detailed analysis and comparison of the metaphorical target domains categorization of *Landslide* in English and 滑坡in Mandarin. The data of 滑坡from CCL is from a previous study of Zhang and Yang (2023).

As depicted in Table 3, 2344 (82.9%) concordance lines of *Landslide* were used metaphorically in COCA. Its metaphorical target domains categorizations were listed as follows: (1) **victory** in political election (2305 frequencies, fre. in the following) and sports (2 fre.), (2) **amount** (26 fre.) in hope, food, time, economy etc., (3) **decline** (3 fre.) in economy and physical strength, (4) **something like landslide** (8 fre.) such as voice, laugh, feelings and weight. In CCL, 2013 (53.5%) concordance lines of 滑坡 were employed metaphorically. Its metaphorical target domains categorization was exclusively **decline** (2013 fre.) in the following aspects: economy (1372 fre.), health and environment (44 fre.), quality and management (125 fre.), morality and values (188 fre.), arts and education (284 fre.).

As a result, *Landslide*'s metaphorical usage in COCA tended to be more diverse in metaphorical target domains categorization like *victory, amount and decline* compared with 滑坡's only metaphorical target domain in *decline* of various fields. However, there were some overlaps between *Landslide*'s and 滑坡's metaphorical usage, such as their common metaphorical target of economic decline. In order to get a more comprehensive

understanding of *Landslide* and 滑坡's metaphorical target domain categorizations, we presented a detailed analysis and comparison of their metaphorical usage through examples extracted from corpora in the rest of this study.

Landslide's metaphorical analysis in COCA. After careful investigation and classification, there were four categories in metaphorical target domains of *Landslide* in COCA. In the following section, we would discuss these four categories one by one with our carefully chosen examples from corpora.

Victory. After corpora analysis, *Landslide* as a natural disaster presented a massive majority of metaphorical mappings in *victory*, especially in political victory (2305 fre., accounting for a percentage of 98.3% in the total metaphorical usage of *Landslide* in COCA), with sports victory being a modest number (2 fre.). The following were four examples of *Landslide* mapping victory both in political and sports sectors.

Examples (1)–(4)

(1) *2008 vote totals were lower than might have been expected given the Democrats' Congressional landslide victory.*
(2) *Franklin Delano Roosevelt at the height of the Great Depression. Roosevelt won by a landslide.*
(3) *As an example look at 1984. It was a landslide for Reagan by any count.*
(4) *Her teammates at the camp, winning the two-day meet by 0.650 points, a landslide in gymnastics.*

Grammatically, above *landslide*s functioned as an adjective, an adverb with prepositions and noun consecutively in examples (1)–(3). However, regardless of their different grammatical functions in these three typical examples, above *landslide*s exclusively symbolized victories and triumph in political arena. In the same vein, landslide signified victory in sports in example (4). Natural disaster is often endowed with psychological representation with disastrous features, catastrophic aftermath and negative valence, carrying suffering image and impression. *Landslide* in this categorization, however, offered us a fresh perspective, symbolizing fantastically positive aspects of its target domains. Under a careful and comprehensive observation of *Landslide*'s own definition, landslide refers to the downward movement of a mass of rock, debris, earth, or soil (soil being a mixture of earth and debris). Landslides occur when gravitational and other types of shear stresses within a slope exceed the shear

strength (resistance to shearing) of the materials that form the slope (Britannica, 2023). Therefore, in the victory-landslide metaphor, the physical features of landslide's massiveness, grandness and magnificence of the rock, earth and soil get salient and map perfectly on the overwhelming and weight of victories. This metaphorical mapping between landslide' massiveness and overwhelming victory is in line with definition of framing and to frame (Entman, 1993), both of which stress the selection and omission. In this victory-landslide metaphor, the grandness and massiveness of landslide gets salient and selected by victory. The usual mental representation of its disastrous and negative characteristics get omitted in this metaphor. In the end, landslide symbolizes victory and presents a wholly positive and exciting image schema and metaphorical mapping.

Besides, victory-landslide metaphor is effective in communicating victories in various field in the following three aspects: landslide, as the source domain, brings to mind the salient knowledge structure and emotions. Just what have been mentioned above, landslide' massiveness and overwhelming are highlighted and well mapped onto the target domain victory; the knowledge regarding victory and landslide is well known to English speakers; and comparison of the target (victory) to the source domain (landslide) is apt in English culture because its frequent metaphorical usage in daily life (Flusberg, Matlock and Thibodeau, 2018).

Amount. Examples (5)–(7):

(5) *His story touched off a small landslide of letters here at Prime time, too- letters from lawyers and waitresses, students.*

(6) *That could be a problem, given the landslide of last-minute rules that seems to be coming.*

(7) *Tears of joy. Tears of relief. A stunning, whopping landslide of hope in a time of deep despair.*

Grammatically, examples (5)–(7) present themselves in the structure "landslide + of " and landslide refers to "amount" from the contextual clues. In the above examples of victory-landslide metaphor analysis, the structure of landslide eruption being overwhelming and massiveness is selected and highlighted. In present examples, the physical features of landslide's massiveness, grandness and magnificence of the rock, earth and soil converts into the feature of amount in this amount-landslide metaphor. The concrete concept of "number or amount" of landslide eruption is highlighted and mapped onto the actual amount or number of various fields such as *letters, rules, hope* etc. In this landslide-amount metaphor, the negative emotions and urgency evoked by natural disaster landslide is omitted and "filtered". Furthermore, the emphasis on massiveness of landslide and de-emphasis on its negative disastrous and threatening nature is apt in the English culture, just like the case in landslide-victory metaphor. The usage-based theory of language might explain the omission of negative disastrous and threatening feature.

Decline. Examples (8)–(10):

(8) *The quickest way to stop the physiological landslide—and conserve your energy for better things—is to correct the poor breathing.*

(9) *That could be enough to set off an economic landslide even if the ratings remain unchanged.*

(10) *He knew there would be a moral landslide, that humanity would wax worse and worse.*

From examples (8)–(10), *Landslide*s were definitely in their metaphorical usage and their target domains were self-evident: physiological decline, economic decline and moral decline—the

exact domain presented before the word "landslide". Turning back to the definition of *landslide* "the downward movement of a mass of rock etc.", apparently, the mass feature of landslide has been weakened or even omitted in these cases. However, the downward movement feature of landslide has been salient and highlighted in examples (8)–(10) based on the decline-landslide metaphor. And the downward feature means abstract decrease and decline in the development of respective areas. As is depicted in the examples, the downward movement of concrete "landslide" frame is mapped onto abstract physical loss, economic concession and morality deterioration in these metaphorical usage.

Simile (something like landslide). Examples (11)–(13):

(11) *but Holly laughed, as loud as a landslide.*

(12) *Stone-Made-Soft said, its voice low and rough as a landslide. "They don't appear to have impressed each other favorably".*

(13) *The weight of Milton's family fell on his back like a landslide.*

There are three influential models describing how metaphors and similes are processed: Comparison (Miller, 1979), Categorization (Glucksberg, 2003), and Career of Metaphor (COM) (Bowdle and Gentner, 2005) models. Though processing models, they would give us some hints about simile and metaphor. According to the gist of Comparison model (Miller, 1979), simile and metaphor offer an explicit and implicit comparison between source and target domain respectively. Although there are doubts whether metaphors have to be translated into similes before metaphor processing, similes and metaphors reveal the same fundamental comprehension processes and conceptual mapping between source and target (Pambuccian and Raney, 2021).

In the examples of 11–12, the laugh and voice are compared to landslide. After close observation of the contexts, it is demonstrated that similar overwhelming loudness between voice and landslide serves as the common ground for these simile. In addition, synaesthesia between landslide's overwhelming weight and voice's loudness might also explain these similes. Regarding example 13, it is apparent that the weight of earth and rocks in a landslide is mapped onto the weight or burden of family, which results in a explicit comparison and mapping between family burden and landslide. As is revealed that there are dramatically less amount in simile after corpus analysis, simile might be more flexible and a result of sudden thought, whereas metaphor is conceptual and might be ingrained as a cognitive schema and their understanding is realized through concrete metaphors (Gibbs, 1994).

滑坡(huá pō)'s metaphorical analysis in CCL
Decline. It was argued that metaphorical usage of Mandarin滑坡 was salient and enjoyed an overwhelmingly higher percentage in its metaphorical usage (53.5%, 2013 metaphorical usage frequency) among total usage in CCL than other top nine frequent natural disaster frames in Mandarin (earthquake, flood, fire hazard, drought, typhoon, landslide, volcano, sandstorm, tsunami, debris flow) (Zhang and Yang, 2023). Among all of these metaphorical usage, their metaphorical target domain is exclusively *decline* in various sectors. The following are some metaphorical usages of 滑坡 in Mandarin extracted from CCL.

(14) 由于 *1989*年下半年后的 经济*[*滑坡*],*

As a result of second half of 1989 the economic [landslide],
使 许多 实力不甚雄厚的饮料厂 都关了门。
let many less powerful beverage factories closed their doors.)
' *As a result of the economic [recession] after the second half of 1989, many of the less powerful beverage factories closed their doors'.*

(15) 教学质量 面临 严重 [滑坡]的 危险。

The quality of teaching face serious [landslide] danger
'The quality of teaching is in serious danger of [decline].'

(16) 只要 思想 不[滑坡], 办法 总比 困难多。

As long as the mindset does not [landslide], solutions more than difficulties. 'As long as the mindset does not deteriorate, there are always more solutions than difficulties'.

(16) 抓获 一批 各类 犯罪分子,
arrest a batch different kinds criminals,
有力地 遏制了 乐平 社会治安的 严重[滑坡]。
strongly curbed Leping social security serious [landslide].
'*The arrest of a number of criminals of various types has strongly curbed the serious [decline] of social security in Leping*'.

Examples 14–17 are some cases of metaphorical usage of Mandarin滑坡(The translation of Mandarin滑坡 is not equivalent to "landslide" exactly in English in some examples. The final presented translation version with "landslide" only indicates the location and counterpart of Mandarin滑坡in these examples.).滑坡(huá pō) "landslide" refers usually to a downward movement of earth, rocks, debris and so on, which usually brings danger to the lives right below the landslide and causes blocking and traffic congestion. The landslide frame in these examples transfers and maps downward and sliding structure perfectly onto economic development, the quality of teaching, mindset, social security. Therefore, that "*decline of economic development/ quality/ mindset/ social security is 滑坡(huá pō)* " serves as the conceptual metaphor between natural disaster *landslide* frame and all these target domains. This is well-defined schematic knowledge for a prototypical landslide in Mandarin.

In these Mandarin cases, the downward movement of landslide frame is selected and highlighted to indicate the downturn or decline of target domains. What is also highlighted and selected is the negative aftermath of landslide. Furthermore, knowledge of a prototypical landslide is widespread in Chinese culture, especially its emotions, urgency and disastrous and threatening structures. Therefore, landslide is rarely related with something positive for its frequent and exclusive metaphorical mapping with disaster and decline in Mandarin. In addition, the decline and recession in various fields resemble the eruption of landslide in downward movement of landslide and economy etc.

Discussion

Various natural disaster frames like volcano, storm, earthquake, tsunami etc. are more or less employed to grasp abstract notions through metaphors in English, Spanish and so on in prior studies (Charteris-Black and Ennis, 2001; Charteris-Black and Musolff, 2003; de los Ríos, 2010; Piromalli, 2021; Wang, Runtsova and Chen, 2013). Meanwhile, Mandarin滑坡possesses an incredibly high usage and metaphorical percentage among the top ten frequent natural disaster frames in Mandarin (Zhang and Yang, 2023). The questions regarding metaphorical salience of English *Landslide*, its differences as well as similarities with Mandarin 滑坡 arise, which is our starting point. Our cross-linguistic analysis of both English *Landslide* and Mandarin滑坡indicates that landslide is used fairly regular as a metaphor in contemporary English and Mandarin, as indicated in our corpora analysis, and enabled us to answer the research questions with which we started: *What's the difference of Landslide metaphors between Mandarin and English? What does the difference reveal?*

To begin with, comparatively speaking, our corpora-based study demonstrates that the similarities weighs much more than the differences in *Landslide* metaphor in COCA and BNC. Indeed, there is a difference in the size of landslide in COCA (2829 fre. in 1 billion words) and BNC(147 fre. In 100 million words). However, landslides in American and British English

share the following two apparent similarities: the common top three phrase items and high metaphorical percentage use of *landslide*. Despite the various structure of landslide, the following phrase items (with a minor ranking differences between BNC and COCA) rank the top three in both corpora: *in/ by landslide, win(s)/ won a landslide, landslide victory*. In addition, that the metaphorical percentage use of *landslide* is overwhelmingly high both in COCA (82.9%) and BNC (79.6%) indicates a shared higher percentage of metaphorical usage of *Landslide* frame both in American English and British English.

Moreover, both English *Landslide* and Mandarin滑坡exhibit high percentage of metaphorical usage. Landslide, an often-prone natural disaster around the world, whose features have been mentally represented as a cognitive schema, is employed to construct vocabulary "landslide" itself and its implications, also employed to access abstract notions metaphorically. On the other hand, the word "landslide" itself undertakes the role of presenting its schema and communicating its image to human beings. From the perspective of metaphorical mapping, landslide's downward movement feature is mapped onto *decline* both in English and Mandarin. Its massive weight and velocity has been mapped onto *victory* and *amoun*t in English. Though differences across English and Mandarin, similarities exist between metaphorical usage in these two languages, which demonstrates the universal philosophy of Embodied Cognition in both Chinese and English culture (Johnson, 1987; Lakoff, 1987), the gist that the metaphor functions as a way of thought in Conceptual Metaphor Theory (Lakoff and Johnson, 1980), and displays the mutual and reciprocal construction between language and environment (Harrison, 2023), to which natural disasters belong and being omnipresent. Therefore, the difference of landslide metaphors in English and Mandarin indicates that the specific meaning of a landslide metaphor and its entailment depend on the context in which it is used ((Flusberg, Matlock & Thibodeau, 2018). In Chinese context, landslide metaphors illustrate the negative consequences and social issues. Whereas in English context, landslide metaphors are adopted to abstract exhilarating and fantastic victory and the negative emotions are greatly weakened and "filtered".

In addition, it is apparent that there is substantial difference in the target domains and metaphorical implications between English landslide and Mandarin 滑坡 even though English landslide and Mandarin 滑坡 refer to the same natural disaster. The major difference between English *Landslide* and Mandarin滑坡lies in the difference in metaphorical mapping in target domains, with English landslide symbolizing various target domains like *victory, amount* and *decline*, especially in *political victory*. Mandarin滑坡 undertakes metaphorical mapping exclusively in target domain *decline, economic decline or recession* specifically. The target domain difference between English and Mandarin lies mainly in the political election and economy, with English emphasizing political election victory and Mandarin on economy recession. Therefore, in order to find a possible cause to illustrate the difference, we attempted to search "economy" and "election" in English COCA and "经济" and "选举" in Chinese CCL and compare these two searching items in their own languages. We found a frequency of 126,868 "economy" and 117,214 "election" in English, and a frequency of 1,918,402 "经济" and 130, 151 "选举" in Chinese. The frequency of these key words might reveal their trend in topics and further illustrate why English and Mandarin landslides have different emphasis in their metaphorical use. According to the statistics in key words searching, there is little difference in frequency in "economy" and "election" in English and huge difference in the frequency of "经济" and "选举". Even though the difference in English can not reveal why landslide metaphor target domain is mainly on political election victory, the difference in Mandarin demonstrates that people talk

about economy overwhelmingly more frequent than election. Therefore, we believe that different social focus might explain the difference in the landslide metaphorical uses in English and Mandarin. Taking all the metaphorical usage in both language as a whole, different target domain selects and omits different features of *Landslide* out of cognitive and understanding facilitation. Moreover, *Landslide* metaphors in English and Mandarin endow audience with both positive and negative valence. Semino (2021) has pointed out that metaphors can be deceptive and prevaricating, and they can also be enlightening and comforting. Therefore, appropriateness of a metaphorical frame depends greatly on the communicator, context, purpose and audience (Semino et al., 2018), and also depend on the particular features extracted from the metaphorical frame.

Furthermore, Whether English *landslide*'s metaphorical mappings onto *victory, amount, decline* or Mandarin 滑坡's mapping exclusively on *decline*, these metaphorical usages select and highlight only some features while omit other features of this natural disaster *landslide* frame, which unveils the underlying functioning of *framing* and *to frame* in metaphor, about selection and salience gist of metaphorical framing (Entman, 1993). Landslide serves a metaphorical frame in our research. Framing, seen as a function of metaphor (Semino et al., 2018), involves selection, salience as well as omission. Landslide is featured with being massive in weight and size, being downward in moving direction, rapid in moving speed and negatively disastrous in its aftermath. However, not all features are selected in one landslide metaphor. One metaphorical usage of landslide only reveals a tip of iceberg of this metaphor. To be specific, in Mandarin, decline--landslide metaphor selected the downward and disastrously negative features of landslide frame and mapped to various areas like economy, health, quality, morality, education, etc. while omitting its grandness, loudness and magnificence. In English, victory--landslide and amount-victory metaphors selected the weight, velocity and overwhelming aspects of landslide and corresponded them with victory and amount; decline--landslide metaphor also chose disastrous and negative aspects of landslide to be salient just like it did in Mandarin. English's overwhelmingly high percentage mapping on election and landslide Mandarin' exclusive mapping on decline display the linguistic relativity (Wolff, Holmes (2011)). The long-term usage of a specific vocabulary would affect one's way of thought. For instance, the usage of metaphorical landslide frame in English shape its interpretation as something overwhelming and exciting, especially in political election. Whereas Mandarin's metaphorical usage of 滑坡 determine its negative and dramatic decline in various fields.

Lastly, in the usage-based theory, it is believed that symbolic structure or language knowledge is formed based on three conditions: language device, internal cognitive ability like abstraction and external high token frequency in daily life (Langacker, 2008). The frequent metaphorical usage of English landslide on victory and Mandarin滑坡on decline demonstrate their frequent usage of these two metaphors in their respective languages in daily life, thus leading to the formation of symbolic structure in these two languages. From this perspective, it is again believed that language would shape humanity's thought to a great extent. The mentioned metaphors of different target domains above facilitate our understanding of these targets with the linguistic appliance of *Landslide* frame, especially the selection and omission of features of the frame. And both metaphorical usages analysis in one language and cross-language comparison usage of a frame would compose a larger picture, if not the whole picture of *Landslide* frame. In the case of *Landslide* frame, its English and Mandarin metaphorical usage renders us a broader view of *Landslide* metaphor.

Conclusion

In this article, it is shown that there is a widespread metaphorical usage of English *Landslide* and Mandarin滑坡in both languages, supported by the dramatically high metaphorical percentage compared with literal ones. Differences as well as similarities have been identified regarding metaphorical target domains between English *Landslide* and Mandarin滑坡. We have referred to research on *framing* and *to frame, linguistic relativity* and *usage-based theory* to explain why this might be the case concerning different conceptualizations and target domains within and across languages. However, there are certainly a couple of limitations in this study. There is a shortage of evidence whether English *Landslide* metaphor stands out and gets salient among the most frequent natural disaster frames in the English language just like Mandarin 滑坡frame does. What's more, when it comes to metaphorical framing, a comparison of English *Landslide* (in victory conceptualizations) and Mandarin 滑坡(in decline or downturn conceptualizations) metaphorical framing effect would present us a more comprehensive and clear-cut understanding of metaphorical framing effect.

Data availability

Data used in this study are available from the corresponding author upon reasonable request.

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Author contributions

We declare that each of us made a significant contribution to conducting this work. YZ drafted the design and work. YZ and WXY revised the work. All authors were involved in collecting and interpreting the data for the paper. All authors approved the final version.

Competing interests

The authors declare no competing interests.

Ethical approval

This article does not involve any human participants performed by any of the authors.

Informed consent

This article does not contain any studies with human participants performed by any of the authors.

Additional information