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Corpus-Based Metaphorical Framing Analysis: WAR Metaphors in Hong Kong Public Discourse

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ABSTRACT

This study proposes an operational approach to a metaphorical framing analysis using large-scale data. We conducted a case analysis of how WAR metaphors are framed to address various societal issues in a corpus of public speeches by Hong Kong government officials. By investigating patterns of lexical choices under the source domain of WAR and the underlying reasons for the source-target domain mappings (i.e. Mapping Principles), we found that the target domain of SOCIAL ISSUES in Hong Kong is primarily conceptualized in terms of a COMBAT frame, and GOVERNMENTAL ISSUES are primarily talked about in terms of a PROTECTION frame, both of which are positively evaluated. Additionally, ECONOMIC ISSUES are primarily addressed in terms of a STRATEGY frame, which is both positively and negatively evaluated. We show that analyzing the Mapping Principles of these conceptual metaphors captures the “selection” process of framing at the dimensions of frame frequency and frame sentiment, allowing for a principled way to propose a metaphorical framing analysis in corpora-based studies. The proposed approach enriches Critical Discourse Analysis studies of metaphorical framing and bridges the link between metaphor analysis at a conceptual level and framing analysis at a communication level.

Introduction

Framing is one part of the communication process that uses language to facilitate and reveal various ways of understanding and reasoning. As defined by Entman (1993), 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” (p. 52). The concept of “framing” is commonly discussed in communication science studies (Entman, 1993, 2004, 2007; Kosicki & Pan, 2001; Pan & Kosicki, 1993) but has only recently gained the attention of researchers in discourse-based studies. For instance, Burgers, Konijn, and Steen (2016) pointed out that metaphors function as both framing devices and reasoning devices. Other studies have focused on how metaphors are deployed in public discourse for particular framing purposes (Burgers & Ahrens, 2020; Lakoff, 2004/2014; Zeng, Burgers, & Ahrens, 2021) or have provided systematic reviews of metaphorical framing effects in political discourse (Boeynaems, Burgers, Konijn, & Steen, 2017; Brugman, Burgers, & Steen, 2017; Brugman, Burgers, & Vis, 2019). Yet only a few studies to date have focused on developing approaches to a metaphorical framing analysis. For instance, Semino, Demjén, and Demmen (2018) presented an integrated approach to metaphor and framing from three dimensions: cognitive, discourse-based, and practice-based. They offered an integrated multi-level framework by emphasizing framing at different levels of generality in metaphor analysis (i.e., conceptual metaphor, metaphor scenarios, and linguistic

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metaphors). However, proposals regarding how to identify or generate specific metaphorical frames from corpora-based analyses is a topic that requires further exploration.

Since an essential part of framing in communication is the process of “selection” and “salience” (Entman, 1993, p. 53), it is plausible that patterns of the salient lexical items and source-target domain pairings of metaphors may reflect the selection and salient process of metaphorical framing, leading to the generation of specific frame categories in discourse. Drawing on the Conceptual Mapping Model (Ahrens, 2010), which uses a similar argument that patterns of particular lexical usage in real-life discourse can reflect cognitive models and express speakers’ ideologies, this study proposes a practical method for metaphorical framing analysis in real-life corpora. We show that by examining the prominent linguistic mappings in a particular source-target domain pairing and evaluating the underlying reason for the high occurrence of this conceptual mapping (i.e., Mapping Principles), we can identify specific metaphorical frames and explain their functions in the discourse. Based on evidence from large sets of empirical data focusing on Hong Kong public discourse, this study proposes an analysis method that will enrich Critical Discourse Analysis (CDA) research on the connection between metaphor and framing.

In what follows, we first review research related to the existing CDA approach to metaphorical framing analysis, followed by an introduction to Conceptual Mapping Model and Mapping Principles for conceptual metaphors. We then select *WAR* metaphors as examples to illustrate how to apply the Conceptual Mapping Model to a corpus-based metaphorical framing analysis.

Critical metaphor analysis

Conceptual Metaphor Theory (Lakoff, 1993; Lakoff & Johnson, 1980/2003) defines metaphors as cross-domain mappings in our conceptual system, where more abstract target domains (e.g., *ANTI-CORRUPTION*) are understood in terms of more concrete source domains (e.g., *WAR*). The selection of a source domain highlights specific aspects of the target domain and, at the same time, downplays other aspects (Lakoff & Johnson, 1980/2003, p. 10). This function makes metaphor an important linguistic device for framing in both communication and cognition (Burgers et al., 2016; Lakoff, 2004/2014, 2008; Semino et al., 2018).

Within studies that adopt a CDA approach to metaphors in public discourse, many are based on the framework of Critical Metaphor Analysis (CMA) proposed in Charteris-Black (2004, 2005/2011, 2006, 2013). CMA identifies, interprets, and explains metaphors that are used to create a discourse of legitimization or delegitimization. CMA studies argue that metaphors can transfer inequality because they highlight certain aspects while downplaying others. CMA aims to discover how the lexical choices of metaphors influence people’s views; this is done by providing a positive representation of the preferred speakers and their policies or a negative representation of their opponents and policies (Charteris-Black, 2013, p. 174).

Since the development of corpus-based approaches to metaphor analysis (Deignan, 2005; Stefanowitsch, 2004, 2005, 2006a, 2006b), extensive studies have applied CMA in political corpora across different topics and regions. For instance, Charteris-Black analyzed the rhetorical purposes of metaphors in corpora of British party manifestos (Charteris-Black, 2004, p. 65) and US presidential speeches (Charteris-Black, 2004, 2013). Gender issues have been discussed in US presidential candidate speeches (Ahrens, 2019), US senatorial speeches (Ahrens & Lee, 2009), speeches by Chancellors of Germany (Koller & Semino, 2009) and Italian Prime Ministers (Philip, 2009; Semino & Koller, 2009). The cognitive models of moral politics have been explored in US presidential speeches (Ahrens, 2011; Lim, 2004). EU politics (Charteris-Black, 2004; Chilton & Ilyin, 1993; Musolff, 2000, 2004) and immigration issues in Britain (Charteris-Black, 2006) and the US (Quinsaat, 2014) have also been investigated.

Compared to the literature on Western politics, the number of studies that focus on Asian politics is still scarce. In the relevant existing work, Lu and Ahrens (2008) examined the ideological influence of *BUILDING* metaphors in the speeches of Taiwanese political leaders. They found two culture-specific

metaphors (the retrospective BUILDING metaphors and the RECONSTRUCTION metaphors) as being more productive during 1954–1975 than the later period due to the change in leadership and the ideologies of those leaders. Zeng, Tay, and Ahrens (2020) looked at gendered metaphor usage in different sections of public speeches by the principal officials in the Hong Kong government. Ahrens and Zeng (2022) found considerable differences in the use of metaphors (PRODUCT, BUILDING, OBJECT, BUSINESS, and SYSTEM) in framing the EDUCATION issues between Hong Kong policy addresses and the Chinese Premiers' government work reports. Metaphors related to corruption issues in China's official anti-corruption discourse have also been studied by Jing-Schmidt and Peng (2017).

An essential tool in CMA is the keyword approach. In corpus linguistics, the term “keyword” is defined as “a word which occurs with unusual frequency in a given text [...] in comparison with a reference corpus of some kind” (Scott, 1997, p. 236). CMA examines the patterns of lexical items used as metaphors (i.e., metaphorical keywords) in corpora at the linguistic level and the associated source domains at the conceptual level. In the current study, we adopt the concept of keyword from CMA that “metaphorical keyword” refers to “lexical items that have been used as metaphors in the context.” The analytical procedure of CMA primarily uses a top-down approach to search a list of common metaphorical keywords in politics in a given corpus (Charteris-Black, 2004, 2005/2011, 2009; Deignan, 1995; Kövecses, 2003). Charteris-Black (2009, p. 147), for instance, selected four source domains of metaphors with lists of keywords for analysis based on his previous findings of the most frequent source domains and keywords that occurred in other political corpora. However, the frequent lexical items of metaphor vary in different corpora; some frequent source domains might be overlooked if the keyword search is based solely on a unified lexical list.

Although Charteris-Black (2004) examined specific source domains and keyword lists in a given corpus, he did not systematically analyze which target domain corresponds to which source domain; therefore, the patterns of the conceptual-level mappings and the underlying reasons for the mappings are not explicated. For instance, Charteris-Black (2004) presented the frequencies of the common source domains (e.g., CONFLICT, BUILDING, JOURNEY, PLANT, RELIGIOUS, LIGHT, and FIRE) in the corpora of New Labor manifestos and other British political party manifestos. American presidential speeches and a comparison of the lexical choices under each source domain were also included, but there was no discussion regarding the target domain patterns. In addition to the lack of discussion surrounding target domain patterns and frequent source-target pairings, previous CMA studies have not explicated the underlying reasons for the mappings between a specific source domain to a specific target domain. A few studies, such as Koller (2004), discussed the ideological effects of source-target mappings and mentioned that ideology manifested in metaphor is inculcated both socially and cognitively.

In this study, we argue that target domain choices and patterns of source-target pairings have the potential to shed light on the ideologies or viewpoints of a speaker, especially in cases of politicians using the same source domain in the conceptualization of different target domains. For instance, in TRADE IS A WAR and ELECTION IS A WAR metaphors, whether TRADE and ELECTION use the WAR source domain similarly remains unknown. In the current study, we will address this issue by examining the patterns of source-target pairings using the Conceptual Mapping Model (Ahrens, 2010).

Metaphorical framing analysis

The works that draw connections between metaphor and framing are limited to listing metaphors as a framing resource or framing as one of the functions of metaphors. For instance, Burgers et al. (2016) argued that metaphors could fulfill one or more of the functions of framing by working as both framing devices (serving as linguistic packaging cues) and as reasoning devices (containing important conceptual content). They pointed out that metaphorical frames can foreground a particular problem definition, give a causal interpretation, address a problem evaluation, and/or promote a possible solution. Semino, et al. (2018) examined the notion of framing as a function of metaphor from the

perspectives of cognition (i.e., conceptual metaphors), discourse (i.e., metaphor scenarios), and practice (i.e., specific linguistic expressions). They propose that the framing implications of metaphors in discourse can be explained by analyzing elements in sub-domains/scenarios and the actual data in the discourse. Another recent study by Flusberg, Matlock, and Thibodeau (2018) discussed the structure and function of the WAR metaphor in public discourse based on a review of previous literature. They concluded that the use of WAR metaphors might result in either positive or negative outcomes, which are closely tied to the specific contexts. These studies have focused on the topic of metaphorical framing from both theoretical and practical aspects, but no operational methods for identifying specific metaphorical frames in corpora are given, leading to the research gap that we explore herein.

Drawing on the Conceptual Mapping Model (Ahrens, 2010), we propose an operational method specifically for corpus-based metaphorical framing analysis by focusing on the Mapping Principles between source-target domain pairings in corpora. As the nature of framing refers to the processes of “selection” and “salience,” we propose that by examining the prominent linguistic mappings in a particular source-target domain pairing and evaluating the underlying reason for the high occurrence of this conceptual mapping (i.e., by identifying the Mapping Principles), we can identify specific metaphorical frames and explain their functions in the discourse.

Mapping principles for conceptual metaphors

Although Conceptual Metaphor Theory claims that there is a general principle constraining the source to the target mapping in metaphors, Lakoff (1993) has said that this principle cannot be precisely formulated because it is conceptually based. However, the framework of the Conceptual Mapping Model (Ahrens, 2010) proposes that Mapping Principles can be identified by examining the patterns and frequencies of the source to target domain mappings that occur for a given conceptual metaphor. This notion of Mapping Principle is different from the general principles that Lakoff (1993) postulates since he hypothesizes that these general principles are part of the conceptual system but not part of the grammar or lexicon. However, Ahrens (2010) suggests that linguistic correspondences can and should be considered to identify lexical patterns that help postulate mapping principles (Ahrens, 2002; Huang, Chung, & Ahrens, 2006). For instance, in the IDEA IS BUILDING metaphor, it is found that the expressions relating to the concepts of “foundation,” “stability,” and “construction” were mapped, while concepts relating to other aspects, e.g., “the position of the building,” “internal wiring” and “plumbing,” “the exterior of the buildings,” “windows,” and “doors” were not mapped, so the target domain of idea uses the source domain of building to emphasize the concept of “structure.” The Mapping Principle for IDEA IS A BUILDING metaphor is that IDEA is understood as a BUILDING because buildings have a (physical) structure while ideas have an (abstract) structure (Ahrens, 2010, p. 10).

Mapping Principles can be formulated by “examining the linguistic evidence (i.e., the entities, qualities, and functions that map between the source and target domains) or the corpus evidence for the frequency of mappings” (Ahrens, 2010, p. 30). The validity of Mapping Principles across different conceptual metaphors has been tested in psycholinguistic experiments (Ahrens, 2010, p. 13), and also verified on the grounds of evidence from frequency-based data in large-scale corpora (Ahrens, Chung, & Huang, 2004; Chung, Ahrens, & Huang, 2004; Gong & Ahrens, 2007) that is, the most frequently occurring lexical item in a source-target domain pairing is postulated to correspond to the Mapping Principle.

Previous studies have shown that the variation or similarity patterns of the Mapping Principles of specific metaphors may reflect implicit political ideologies. Based on Mapping Principles, studies that focus on the variations between the source domain and/or target domain in political corpora have explored how politicians from both Western and Eastern countries select specific source domains to conceptualize specific target domains in order to present their implicit ideologies (Ahrens, 2011, 2019; Ahrens & Zeng, 2022; Lu & Ahrens, 2008). For instance, Ahrens (2011) investigated the source

domains related to the Nurturant Parent and Strict Father cognitive models proposed by Lakoff (1996, 2002). She found the source domains related to the Nurturant Parent cognitive model underlying the US Democrats' speeches and the source domains related to the Strict Father model underlying the US Republicans' speeches. Ahrens (2011) demonstrated that different lexical patterns reflected the contrasting ideologies between Democratic and Republican politicians. In the context of Asian political discourse, Ahrens and Zeng (2022) compared the lexical choices of different source domains in the conceptualization of the target domain of EDUCATION between Hong Kong policy addresses and Chinese Premiers' reports of government work. They found that Chinese Premiers primarily use the source domain of BUILDING with an emphasis on "structure" and "foundation" when addressing the issue of EDUCATION, while Hong Kong Governors and Chief Executives primarily talk about EDUCATION in terms of a PRODUCT that can be "promoted" or "advertised," and its "quality" and "quantity" should be "improved." These studies have argued that patterns of lexical usage in real-life corpora underpin cognitive models that, in turn, provide insight into the ideology of the speaker or speakers.

A Mapping Principle analysis focuses on the most frequent lexical words selected from the source domains and the reasons for the high occurrence of these lexical words in the context. In terms of the "framing" analysis in communication, the focus is put on the processes of "selection" and "salience" (Entman, 1993). We propose that Mapping Principles lend themselves well to a framing analysis as in both models, it is critical to identify both what keywords are used in a given source domain (i.e., "selection") and how frequently they occur (i.e., "salience"). Both pieces of information speak to the process involved in creating a frame. We further suggest that these frequency patterns may reflect the metaphorical framing process and shed light on implicit political viewpoints or ideologies. In this paper, a case study focusing on a corpus of Hong Kong public speeches was conducted to demonstrate the proposed approach. The following three research questions are addressed:

- RQ1. Which target domains are associated with WAR metaphors used in Hong Kong public speeches?
- RQ2. What are the Mapping Principles between the WAR source domain and its associated target domains?
- RQ3. How do patterns of Mapping Principles for WAR metaphors reflect the ways in which metaphors are used in the framing of different societal issues?

Corpus creation

The corpus utilized in this study was collected from public speeches by politicians in Hong Kong. Instead of focusing on public speeches by politicians at the highest level of the government as many metaphor studies have done (Ahrens, 2011; Charteris-Black, 2004, 2005/2011, 2006) this study examines speeches by Hong Kong principal officials who have served as Secretaries of Department during the first decade of post-colonial Hong Kong.

Hong Kong has been a Special Administrative Region (SAR) of China since the transfer of its sovereignty from Britain to China on 1 July 1997. Governed under the "One country, Two Systems" principle, Hong Kong was granted a high degree of autonomy for 50 years. Since the handover in 1997, the social, economic, and political development of Hong Kong has received widespread attention. According to the Basic Law, the principal officials are appointed by the Central People's Government of China after being nominated by the Chief Executive, who is the head of the Hong Kong government. The Secretaries of Departments, including the Chief Secretary for Administration (CSA), the Financial Secretary (FS), and the Secretary for Justice (SJ), are leaders

Table 1. Corpus of Hong Kong public speeches.

Political Positions	Speakers	Time in office	No. of speeches	No. of words
Chief Secretary for Administration (CSA)	Anson Chan Fang On-sang	01.07.1997–30.04.2001	16 (163)	54,498
	Donald Tsang Yam-kuen	01.05.2001–31.05.2005	10 (96)	
	Henry Tang Ying-yen	01.07.2007–30.09.2011	9 (93)	
	Carrie Lam Cheng Yuet-ngor	01.07.2012–16.01.2017	14 (144)	
	CSA Total		49 (496)	
Financial Secretary (FS)	Donald Tsang Yam-kuen	01.07.1997–30.04.2001	16 (162)	50,685
	Antony Leung Kam-chung	01.05.2001–16.07.2003	7 (66)	
	Henry Tang Ying-yen	17.07.2003–30.06.2007	10 (95)	
	John Tsang Chun-wah	01.07.2007–16.01.2017	10 (104)	
	FS Total		43 (427)	
Secretary for Justice (SJ)	Elsie Leung Oi-sie	01.07.1997–19.10.2005	10 (89)	54,336
	Wong Yan-lung	20.10.2005–30.06.2012	7 (72)	
	Rimsky Yuen Kwok-keung	01.07.2012–06.01.2018	16 (164)	
	SJ Total		33 (325)	
Total			125 (1,248)	159,519

of the various service components of the government, responsible for duties related to the social, economic and political development, and thus having influential roles in Hong Kong.¹

For the corpus building, we first collected all the speeches from 1 July 1997 to 31 December 2017, including 1,248 speeches by the 11 principal officials who have served as the Secretaries of the Departments during the period. These speeches were primarily delivered at various societal events, such as business forums, university anniversary ceremonies, legislative council meetings, etc. Secondly, we randomly selected 10% of the total speeches totaling 125 speeches, with 159,519 words as the final corpus for analysis.² Detailed information on the corpus can be found in Table 1.

Methods and findings

Step 1. Data coding

The first step of the proposed approach is data coding, including the identification of metaphor source and target domains. For the case analysis of WAR metaphorical frames, we identified all the metaphorical keywords under the source domain of WAR and their associated target domains following the procedures below.

Metaphor identification

Following Metaphor Identification Procedure VU University Amsterdam (MIPVU) (Steen et al., 2010), two analysts conducted a bottom-up analysis of metaphorical keywords on a word-by-word basis in the entire corpus. We determined if a keyword is metaphorical or literal based on whether cross-domain mappings existed between the basic meaning and the contextual meaning of the word. The online databases of WordNet (<http://wordnetweb.princeton.edu/perl/webwn>) (Fellbaum, 2005) and SUMO-Suggested Upper Merged Ontology (<https://www.ontologyportal.org/>) (Niles & Pease, 2001) were used as the first option for checking word meanings.

WordNet is a large lexical database of English in which nouns, verbs, and adjectives are organized into synonyms (synsets) that are interlinked by means of conceptual-semantic and lexical relations. SUMO is the largest formal ontology (i.e., formalized descriptions of the structure of knowledge bases) and also the only formal ontology that has been mapped to all of the WordNet lexicons. Previous

¹For a detailed introduction to the role of CSA, FS, and SJ in Hong Kong, refer to the webpages at <https://www.cso.gov.hk/eng/role/role.htm>, <https://www.fso.gov.hk/eng/role.htm> and <https://www.doj.gov.hk/eng/about/soj.html> accordingly.

²Considering the nature of the corpus, this study may be subject to the limitation that confounding variables such as speech genre, background of the speakers (e.g., political role, gender, etc.) may affect language use, and metaphor use in particular. However, since the focus of this study is proposing an operational approach to metaphorical framing analysis in large-scale data left it for future researchers to explore the effects of multiple factors on metaphor use in discourse.

metaphor studies have shown that SUMO, as a proposed representation of shared human knowledge, is a good candidate for providing mapping information about the source domain (Ahrens, Chung, & Huang, 2003; Ahrens et al., 2004, Chung & Ahrens, 2006). Therefore, we select WordNet-SUMO as our first option for checking the word meanings of the keywords. As some keywords are not found in WordNet-SUMO, we turn to the second option of using online dictionaries. Based on the priority order of the dictionaries recommended in MIPVU (Steen et al., 2010, pp. 185–186), we primarily referred to the Macmillan Dictionary, supplemented by the Longman Dictionary of Contemporary English when a second opinion was needed, followed by the Oxford English Dictionary for the rare cases when a third opinion was necessary.

Source domain verification

After obtaining all the potential keywords of WAR metaphors from the corpus, we further verified if the keywords can indeed be categorized under the WAR source domain. We followed the source domain verification procedures proposed in previous literature (Ahrens & Jiang, 2020). Specifically, we searched for the semantic links between the keywords and the WAR source domain by checking if the word senses and categories of the keywords in WordNet-SUMO or dictionaries relate to the WAR source domain. We also referred to collocation searches of the keywords in Sketch Engine (<https://www.sketchengine.eu/>) to see if there are any frequent collocations of the keywords related to the WAR source domain.

For instance, “violence” and “turmoil” are categorized under the WAR source domain based on the semantic links between the keywords “violence,” “turmoil,” and “war” in SUMO. By searching the three keywords in SUMO, we found that both “war” and “violence” are related to the SUMO node - “violent contest.” The word senses of “turmoil” in SUMO are “violent disturbance” and “violent agitation,” which are also related to “violence.” The keywords “violence,” “turmoil,” and “war” are thus conceptually and semantically interlinked in SUMO. Therefore, “violence” and “turmoil” can be grouped under the WAR source domain.

Target domain identification

For target domain identification, we read through the contexts surrounding each metaphorical keyword and identified the target issues that each keyword relates to. A large number of specific target domain types were identified during the bottom-up analysis. We further grouped these specific target domains into five broad target domains to see the general patterns of the source-target domain mappings in the corpus. The five broad target domains were identified as ECONOMIC ISSUES, SOCIAL ISSUES, GOVERNMENTAL ISSUES, PERSONAL ISSUES, and MISCELLANEOUS ISSUES.

For instance, issues related to economy or trade are classified into the category of “economic issues;” issues regarding civil services, environmental protection, housing, or education are included in “social issues;” issues discussing the legal system, universal suffrage, or elections are classified into “governmental issues,” and, personal issues, such as the speakers’ political career or life experiences are in the “personal issues” category. A few cases referring to more than two of the above issues are subsumed under the category of “miscellaneous issues” (see Example 1).

- (1) The Basic Law not only *safeguards* the legal system and the political structure, but also policies in the economy, education, science, culture, sports, religion, labor and social services. (Wong Yan-lung, SJ, 18 November 2005)

The WAR metaphorical keyword “safeguard” in Example (1) is associated with the governmental issues of the legal system and political structure, the economy as the economic issue, and the social issues of education, science, culture, sports, religion, labor, and social services in Hong Kong. The target domain for “safeguard” is thus categorized as “miscellaneous issues.” Lists of the specific target issues under the five broad target domains are presented in [Appendix 1](#).

The identifications of source domains and associated target domains in WAR metaphors were conducted by two analysts who are experienced metaphor researchers. A subset of 10% of the data was randomly selected for testing the inter-coder reliability (Wimmer & Dominick, 2013, p. 175). We ran reliability tests in SPSS to see if the data codings were reliable. Cohen's kappa results show the reliability is "almost perfect" for coding the source domains of WAR (Cohen's $\kappa = .865$, qualification from Landis & Koch, 1977) and the target domains of ECONOMIC ISSUES (Cohen's $\kappa = .923$), PERSONAL ISSUES (Cohen's $\kappa = .955$), and MISCELLANEOUS ISSUES (Cohen's $\kappa = .871$). The reliability is "substantial" for the coding of SOCIAL ISSUES (Cohen's $\kappa = .766$) and GOVERNMENTAL ISSUES (Cohen's $\kappa = .769$). All of the data and analyses are on the Open Science Framework and are available at <https://cutt.ly/yBBWND7>.

Regarding the first research question, which asked which target domains are associated with the WAR source domain in the corpus, in total, we obtained 5,091 metaphors used for conceptualizing the target domains of SOCIAL ISSUES (928 instances), ECONOMIC ISSUES (2,128 instances), GOVERNMENTAL ISSUES (1,652 instances), PERSONAL ISSUES (142 instances), and MISCELLANEOUS ISSUES (241 instances). Among the 5,091 metaphors, 246 instances were identified as WAR metaphors, including 31 instances of SOCIAL ISSUES ARE A WAR metaphors, 107 instances of ECONOMIC ISSUES ARE A WAR metaphors, 106 instances of GOVERNMENTAL ISSUES ARE A WAR metaphors, one instance of MISCELLANEOUS ISSUES ARE A WAR metaphors, and one instance of PERSONAL ISSUES ARE A WAR metaphor.

In the following case analysis, we coded the one MISCELLANEOUS ISSUES ARE A WAR metaphors as belonging to both the ECONOMIC ISSUES ARE A WAR metaphor and GOVERNMENTAL ISSUES ARE A WAR metaphor, and excluded the one instance of PERSONAL ISSUES ARE A WAR metaphor due to the low frequency, leaving 245 WAR metaphors for analysis.

Step 2. Frequency analysis of metaphorical frame

Identify high-frequency metaphorical keywords in the corpus

The next step of the proposed approach refers to frequency analysis of metaphorical framing based on source-target Mapping Principles. As the most frequently occurring lexical item in a source-target domain pairing is postulated as the Mapping Principle, we first examine the keywords under WAR source domains in the corpus. Table 2 lists all the metaphorical keywords under the SOCIAL ISSUES ARE A WAR metaphor, along with their frequencies, percentages, cumulative frequencies, cumulative percentages,

Table 2. Frequencies of the metaphorical keywords (lemmatized) under SOCIAL ISSUES are a WAR metaphor.

SOCIAL ISSUES ARE A WAR				
Metaphorical keywords	Frequency	Percentage %	Cumulative frequency	Cumulative percentage %
<i>combat*</i>	5	17.24	5	16.13
<i>strategy*</i>	5	17.24	10	32.26
<i>protect*</i>	4	13.79	14	45.16
<i>strike</i>	3	13.79	18	58.06
<i>spearhead</i>	3	6.90	20	64.52
<i>threaten</i>	1	3.45	21	67.74
<i>vigilant</i>	1	3.45	22	70.97
<i>at bay</i>	1	3.45	23	74.19
<i>break down</i>	1	3.45	24	77.42
<i>defend</i>	1	3.45	25	80.65
<i>equip</i>	1	3.45	26	83.87
<i>frontline</i>	1	3.45	27	87.10
<i>killer</i>	1	3.45	28	90.32
<i>safeguard</i>	1	3.45	29	93.55
<i>survive</i>	1	3.45	30	96.77
<i>weapon</i>	1	3.45	31	100.00
Total	31	100.00		

Table 3. Frequencies of the metaphorical keywords (lemmatized) under ECONOMIC ISSUES are a WAR metaphors.

ECONOMIC ISSUES ARE A WAR				
Metaphorical keywords	Freq.	Perc. %	Cumu. freq.	Cumu. perc. %
<i>strategy*</i>	27	25.00	27	25.00
<i>front*</i>	14	12.96	41	37.96
<i>turmoil*</i>	9	8.33	50	46.30
<i>attack</i>	7	6.48	57	52.78
<i>protection</i>	4	3.70	61	56.48
<i>threat</i>	4	3.70	68	62.96
<i>damage</i>	3	2.78	64	59.26
<i>fortify</i>	2	1.85	70	64.81
<i>secure</i>	2	1.85	72	66.67
<i>in violation of</i>	2	1.85	74	68.52
<i>beachhead</i>	2	1.85	76	70.37
<i>march</i>	2	1.85	78	72.22
<i>spearhead</i>	2	1.85	80	74.07
<i>trigger</i>	2	1.85	82	75.93
<i>aligned with</i>	1	0.93	83	76.85
<i>back up</i>	1	0.93	84	77.78
<i>be alert to</i>	1	0.93	85	78.70
<i>beat</i>	1	0.93	86	79.63
<i>fend off</i>	1	0.93	87	80.56
<i>fight</i>	1	0.93	88	81.48
<i>realignment</i>	1	0.93	89	82.41
<i>safeguard</i>	1	0.93	90	83.33
<i>shied away from</i>	1	0.93	91	84.26
<i>shot</i>	1	0.93	92	85.19
<i>target</i>	1	0.93	93	86.11
<i>unrivalled</i>	1	0.93	94	87.04
<i>wipe-out</i>	1	0.93	95	87.96
<i>against</i>	1	0.93	96	88.89
<i>burst</i>	1	0.93	97	89.81
<i>captive</i>	1	0.93	98	90.74
<i>capture</i>	1	0.93	99	91.67
<i>deployed</i>	1	0.93	100	92.59
<i>havoc</i>	1	0.93	101	93.52
<i>incursion</i>	1	0.93	102	94.44
<i>ravages</i>	1	0.93	103	95.37
<i>rivalries</i>	1	0.93	104	96.30
<i>struggle</i>	1	0.93	105	97.22
<i>turbulence</i>	1	0.93	106	98.15
<i>under attack</i>	1	0.93	107	99.07
<i>footing</i>	1	0.93	108	100.00
In total	108	100.00		

and frequency levels. The frequent keywords marked with asterisks are determined based on a cutoff of the cumulative percentage up to 50% (see also in Tables 3–4). Since the motivation to analyze the most frequently occurring metaphorical keywords is to postulate the Mapping Principle for metaphors in specific contexts, following Zeng et al. (2021), we choose a suitable cumulative percentage threshold based on the keyword patterns in the data. We observed the patterns in the corpus and the results from the quantitative analyses and chose 50% as the cumulative percentage threshold to include enough interpretable and interesting keywords for discussion. In the data of this study, if a small percentage (e.g., 10%) were selected as the threshold, it would leave out some keywords with high frequencies. If a large percentage (e.g., 80%) were selected, it would include too many different keywords with low frequencies, making the identification of framing patterns challenging. All the keywords are lemmatized, e.g., when calculating the frequency of the lexeme *protect*, the frequencies of *protect*, *protects*, *protected*, and *protection* is all included.

Table 4. Frequencies of the metaphorical keywords (lemmatized) under GOVERNMENTAL ISSUES are a WAR metaphors.

GOVERNMENTAL ISSUES ARE A WAR				
Metaphorical keywords	Frequency	Percentage %	Cumulative frequency	Cumulative percentage %
<i>protect*</i>	27	25.23	27	25.23
<i>safeguard*</i>	19	17.76	46	42.99
<i>defend</i>	8	7.48	54	50.47
<i>secure</i>	8	7.48	62	57.94
<i>strategy</i>	8	7.48	70	65.42
<i>front</i>	7	6.54	77	71.96
<i>attack</i>	5	4.67	82	76.64
<i>strike</i>	3	2.80	85	79.44
<i>vigilant</i>	3	2.80	88	82.24
<i>fight</i>	2	1.87	90	84.11
<i>offense</i>	2	1.87	92	85.98
<i>battle</i>	1	0.93	93	86.92
<i>breach</i>	1	0.93	94	87.85
<i>campaign</i>	1	0.93	95	88.79
<i>combative</i>	1	0.93	96	89.72
<i>conflicts with</i>	1	0.93	97	90.65
<i>damage</i>	1	0.93	98	91.59
<i>destroy</i>	1	0.93	99	92.52
<i>fierce</i>	1	0.93	100	93.46
<i>opponents</i>	1	0.93	101	94.39
<i>peace</i>	1	0.93	102	95.33
<i>posse</i>	1	0.93	103	96.26
<i>turbulent</i>	1	0.93	104	97.20
<i>undermine</i>	1	0.93	105	98.13
<i>unimpregnable</i>	1	0.93	106	99.07
<i>withstand</i>	1	0.93	107	100.00
Total	107	100.00		

Table 2 shows that the frequently occurring keywords are *combat*, *strategy*, and *protect*, indicating that Hong Kong secretaries frequently used these lexemes within the WAR source domain to reason about social issues.

Similarly, we obtained the most frequent keywords under the ECONOMIC ISSUES ARE A WAR metaphors. *Strategy*, *front*, and *turmoil* are the top three lexical items used, as shown in Table 3.

For GOVERNMENTAL ISSUES ARE A WAR metaphors, we can see from Table 4 that the keywords *protect* and *safeguard* are the most frequent keywords.

Below we further examine instances in which these frequent keywords occur to understand why the preference for these mappings exists between the WAR source domains and the three target domains (i.e., we postulate Mapping Principles for WAR metaphors).

Analyze mapping principles based on the contexts involving the high-frequency keywords

We identify the most frequently mapped keywords to extrapolate the Mapping Principles. The patterns show that the target domain of SOCIAL ISSUES frequently uses the lexemes *combat*, *strategy*, and *protect* from the WAR source domain, while ECONOMIC ISSUES frequently uses *strategy*, *front*, and *turmoil* and GOVERNMENTAL ISSUES frequently uses *protect* and *safeguard*. Based on this evidence and the information gained from the context surrounding these keywords (i.e., the sentential context), we generate the Mapping Principle for the three types of WAR metaphors as follows.

The Mapping Principle for SOCIAL ISSUES ARE A WAR metaphor is: social issues are understood as a war, in that combating enemies with strategies is needed to protect the country during the war, and combating crimes with strategies is needed to protect Hong Kong citizens. Example (2) is presented for illustration.

- (2) During the 1998–99 session, the Administration introduced into the Legislative Council three bills to *combat* sexual offenses. (Elsie Leung, SJ, 23 October 1999)

In Example (2), the social issues of “combating the sexual offense” are conceptualized as a war, in that war harms civilians who are the victims of the war, and sexual violence negatively affects Hong Kong people who are the victims of sexual violence.

The Mapping Principle for ECONOMIC ISSUES ARE A WAR metaphor is: economic issues are conceptualized as a war, in that (military) strategizing is needed to win a war, and (economic) strategizing is needed to advance an economic agenda. Example (3) is illustrative:

- (3) Our main *strategies* include cooling the property market, preventing excessive credit growth, and pursuing a prudent fiscal policy. We shall monitor the situation closely and implement appropriate measures, when necessary, to maintain macroeconomic and financial stability. (John Tsang, FS, 11 May 2011)

In Example (3), the economic issue of “maintaining macroeconomic and financial stability” is conceptualized as a war, in that a specific (military) strategy is needed to win a war, and the strategy of “cooling the property market, preventing excessive credit growth, and pursuing a prudent fiscal policy” is needed to maintain its economic and financial stability in Hong Kong. “Strategy” refers to the nonviolent aspects of the WAR domain (Koller, 2004). By emphasizing the nonviolent aspect of war, the politicians thus adopted a neutral tone to talk about the issue, which resonates with other types of metaphors with more positive connotations in the example, such as the metaphors of WEATHER (“cooling”), PLANT (“growth”), and BUILDING (“stability”). The context surrounding the keyword of *strategies* provides the scope for the Mapping Principle, i.e., that the issue is economic and financial stability.

The Mapping Principle for GOVERNMENTAL ISSUES ARE A WAR metaphor is: governmental issues are understood as war, in that civilians should be protected by the country during a war, and the rights of citizens should be protected by the legal system of the government. Example (4) is illustrative:

- (4) Human rights are therefore *protected* at the domestic, constitutional and international levels. Again, this is not merely theoretical *protection*. Here are some examples of court challenges concerning the *protection* of human rights made in the past seven years. (Wong Yan-lung, SJ, 18 November 2005)

In Example (4), the governmental issue of “human rights protection” is understood in terms of a war, in that the country’s resources are protected by the soldiers during a war, and human rights are protected by the Hong Kong government at the domestic, constitutional and international levels. Note that it is the context surrounding the source domain words that allows us to extrapolate the scope of the Mapping Principle, in this case, the scope within which human rights are protected.

From mapping principles to frame frequency

In SOCIAL ISSUES ARE A WAR metaphors, the framing process of “selection” refers to the specific use of the “combat,” “strategy,” and “protect” aspects of the WAR source domain to talk about various social issues. The high occurrence of these keywords highlights the shared aspects of strategies used for combating violent crimes and the protection of the crime victims between the source-target pairing of WAR-SOCIAL ISSUES. These shared aspects, which are also part of the rationale underlying the source-target domain mapping (i.e., Mapping Principles), shed light on the WAR metaphors’ impact in the framing of SOCIAL ISSUES. Based on the contextual information in the corpus, we generalize a COMBAT frame which is highlighted in the mappings from WAR to SOCIAL ISSUES. The shared attributes from the COMBAT frame are selected and emphasized by the politicians to reason about various social issues for particular purposes, such as to define a social problem (e.g., the social issue of crime in Hong Kong is

violent) or provide evaluations and solutions (e.g., legitimizing relevant policies or agenda to combat crimes). These shared attributes demonstrate the framing functions of SOCIAL ISSUES ARE A WAR metaphors in the public discourse. The analysis of the metaphorical context allows us to extrapolate the Mapping Principle and its associated frame, which in turn provide an opportunity to hypothesize a specific viewpoint or ideology being promoted by the speaker.

In ECONOMIC ISSUES ARE A WAR metaphors, the choice of the concepts of “strategy,” “forefront,” and “turmoil” from the WAR source domain demonstrates a “selection” framing process. Based on the specific contextual information in the corpus, we identify a STRATEGY frame, which is highlighted in the mapping from the source domain of WAR to the target domain of ECONOMIC ISSUES. STRATEGY frames are often adopted by political leaders to talk about Hong Kong’s economic issues. The keywords of “strategy,” “forefront,” and “turmoil” are highlighted by political leaders to define the financial crisis as a war and to emphasize the importance of using economic strategies to overcome financial turmoil during a period of economic distress.

For instance, when using WAR metaphors to frame economic issues, Hong Kong secretaries emphasize the *strategies* for the economic agenda of maintaining economic competitiveness in the global marketplace (Example 5). They also talk about the financial crisis as the *turmoil* that had affected Hong Kong’s economy (Example 6), and moreover, that this turmoil, as in wartime, had occurred when Hong Kong *marched* (a keyword under both the JOURNEY and WAR source domains) into the *frontline* of the world economy (Example 7).

- (5) The companies behind them are putting more emphasis on smart design and advanced technology, with targeted branding and marketing *strategies* that are essential to staying competitive in the global marketplace. (John Tsang, FS, 20 April 2015)
- (6) Hong Kong has undergone some severe economic setbacks since the Asian financial *turmoil*. (Antony Leung, FS, 26 November 2001)
- (7) But we live in unchain [sic] and unusual times and Hong Kong has found itself thrust into the epicenter of a financial and currency crisis, the likes of which the region has not witnessed in its postwar *march* to the *front line* of world economies. (Anson Chan, CSA, 16 January 1998)

In terms of GOVERNMENTAL ISSUES ARE A WAR metaphors, the framing process of “selection” refers to the frequent use of *protect* and *safeguard*. The high occurrence of these keywords highlights the shared aspects between WAR and GOVERNMENTAL ISSUES. Accordingly, based on relevant contextual information, we propose a PROTECTION frame for the conceptualization of GOVERNMENTAL ISSUES with an emphasis on “protect” and “safeguard.” In Examples (8)–(9), Hong Kong secretaries use the PROTECTION frame from the WAR metaphors to deliver a message that Hong Kong leaders and civilians need to protect the political system in Hong Kong.

- (8) Within Greater China I believe there is a growing consensus on what that purpose should be – to contribute to political stability and social order, and to *protect* the basic rights of the citizen. (Elsie Leung, SJ, 09 November 2004)
- (9) In order to *safeguard* people’s democracy, the legal system must be strengthened. (Elsie Leung, SJ, 9 November 2004)

The speakers implant the concept of “protection” by frequently using these keywords in their speeches, such as “protect the basic rights of the citizen” in Example (8) and “safeguard democracy” in Example (9). The high occurrence of these keywords allows the political leaders to appeal to the public to protect Hong Kong alongside them, just like soldiers safeguard their own countries during a war. Thus, using a PROTECTION frame when discussing governmental issues is an effective way to legitimize the political agenda of maintaining the peace and stability of Hong Kong’s legal system while propagating the government’s strategies or policies, e.g., ruling the country in accordance with the Basic Law.

The analysis in this section focused on the role of Mapping Principles in the analysis of WAR metaphorical framing in the corpus of Hong Kong public discourse and explained how these Mapping Principles might be seen as a framing device related to the “selection” process of framing. Based on the variations of the Mapping Principles postulated between the WAR source domain and the three different target domains, we identified three different metaphorical frames with various framing functions in the corpus. We found that Hong Kong secretaries primarily use the COMBAT frame to construct social issues in order to emphasize the need to combat the violent social crimes that negatively affect Hong Kong people. They generally adopt the STRATEGY frame to address economic issues with an emphasis on the importance of using economic strategies to advance particular economic agendas. When discussing about the governmental issues, Hong Kong secretaries primarily employ the PROTECTION frame to emphasize the rights of citizens should be protected by the legal system of the government. As the current study focuses on what sub-topics have been discussed or framed by the most frequent types of metaphorical keywords which are determined based on the criteria of cumulative percentage up to 50%, patterns of results may be a function of the relative frequency with which sub-topics are discussed within the three broad target domains of SOCIAL ISSUES, ECONOMIC ISSUES, and GOVERNMENTAL ISSUES.

Step 3. Sentiment analysis of metaphorical frame

In the third step, we focus on evaluations of metaphorical frames at the level of sentiment analysis. A source domain may have both positive and negative connotations. For instance, the source domain of JOURNEY can reflect both the positive experiences of “progressing,” or negative ones, e.g., losing one’s direction or meeting a dead end (Charteris-Black, 2004). The source domain of WAR can also present both the positive aspects of “protection” and “safeguard,” or negative aspects of “threat” and “damage.” It is only by evaluating the underlying keyword mappings between the source to target domain that we can discover the evaluations of the metaphorical frames and their associated target domains. We thus continue with a WAR metaphorical framing analysis by examining whether more positive, negative, or neutral aspects of the WAR source domain have been selected when framing different societal issues found in the corpus.

Evaluate keywords based on the contexts involving the high-frequency keywords

We start the third step by evaluating the metaphorical keywords under the three types of WAR metaphors. Sentiment analysis is a complex issue and can be conducted by a variety of approaches (Boukes, van de Velde, Araujo, & Vliegthart, 2020; van Atteveldt, van der Velden, & Boukes, 2021). We used a manual annotation approach considering the small size of the data being analyzed. Two coders were instructed to determine the polarity of the total 309 WAR metaphorical instances with surrounding contexts (approximately 50 words extracted from the corpus). The instruction was: “What is the polarity of the keyword in this context?” Three options were given to the coders: Positive, Negative, and Neutral. In this way, we obtained a general evaluation of the WAR metaphorical frames with regard to social, economic, or governmental issues in specific contexts.³

Example (10)–(12) below are illustrative of how the WAR metaphors were evaluated with positive, negative, and neutral connotations, respectively.

- (10) But, as noted by the World Bank, economic integration has become a necessity for all regions to cope with the challenges of the world economy. And that is precisely the *strategy* Hong Kong is following. (Donald Tsang, 21 November 2003)

³We conducted inter-coder reliability tests for WAR metaphor evaluations between the two analysts. The reliability results are “almost perfect” for the evaluation of positive (Cohen’s $K = .954$) and negative (Cohen’s $K = .964$) metaphorical keywords, and “substantial” for neutral (Cohen’s $K = .757$) metaphorical keywords. The results show that the two coders mostly agreed with each other about the polarities of the metaphorical frames. All of the data and analyses on the Open Science Framework are available at <https://cutt.ly/yBBWND7>.

The results indicate that most of the keywords involve either positive or negative connotations, with only a small percentage evaluated as neutral (3.23%, 12.04%, and 8.41% for each of the three types of WAR metaphors), indicating that the WAR source domain is used when the speaker desires a dichotomous choice between the positive or negative evaluation of a given issue. The majority of the instances of keywords related to SOCIAL ISSUES (87.10%) and GOVERNMENTAL ISSUES (77.57%) have positive connotations, while around half of the keywords related to ECONOMIC ISSUES have positive connotations (53.70%), and less than half of the keywords have negative connotations (34.26%).

The patterns demonstrate that WAR metaphors have been used overall in positive ways in the framing of SOCIAL ISSUES and GOVERNMENTAL ISSUES and both positive and negative ways in the framing of ECONOMIC ISSUES. We postulate that the variability for the positive or negative aspects of the WAR source domain potentially reflects on Hong Kong politicians' implicit worldview with respect to social issues, governmental issues, and economic issues. Based on our corpus of speeches given by Hong Kong political leaders, we find the tendency to use POSITIVE frames for reasoning about SOCIAL ISSUES and GOVERNMENTAL ISSUES and both POSITIVE and NEGATIVE frames for reasoning about ECONOMIC ISSUES.

Discussion and conclusion

The present study proposed that investigating patterns of the high-frequency lexical choices under metaphor source domains and the underlying reasons for the source-target domain mappings (i.e., Mapping Principles) offers a principled way to provide support for a metaphorical framing analysis in corpus-based studies. Using the empirical data from a corpus of Hong Kong public speeches, we conducted a case study of WAR metaphors in the framing of three broad target domains (i.e., SOCIAL ISSUES, ECONOMIC ISSUES, and GOVERNMENTAL ISSUES) in Hong Kong. The study demonstrates the framework that analyzing Mapping Principles for metaphors captures the "selection" process of framing at the level of "frame frequency" and "frame sentiment." Based on this finding, we propose that using a corpus-based approach to determining Mapping Principles provides linguistic evidence for metaphorical framing functions in discourse.

The proposed method for metaphorical frame analysis applies to both a "frequency analysis" and a "sentiment analysis." First, in the frequency analysis of WAR metaphorical frames, we examined the corpus data, identified the keywords that were mapped, and postulated Mapping Principles for three types of WAR metaphors. We found the predominant use of a COMBAT frame associated with SOCIAL ISSUES, a STRATEGY frame associated with ECONOMIC ISSUES, and a PROTECTION frame associated with GOVERNMENTAL ISSUES. Different metaphorical frame types reflect different framing functions in the corpus. Hong Kong secretaries primarily used the COMBAT frame to talk about combating the violent social crimes that negatively affect Hong Kong people. They generally adopted the STRATEGY frame to emphasize the importance of using economic strategies for advancing particular economic agendas, and they primarily employed the PROTECTION frame to highlight the importance of protecting the rights of citizens via the legal systems provided by the government. In short, WAR metaphors and frames were used to legitimize political agendas and promote social, economic, and political policies.

Second, in the sentiment analysis of WAR metaphorical frames, we compared WAR metaphors with keywords implying positive, negative, and neutral meanings in context. Overall, SOCIAL ISSUES and GOVERNMENTAL ISSUES were found to be addressed in positive ways, and ECONOMIC ISSUES were discussed in both positive and negative ways. The evaluation analysis reveals politicians' overall evaluation of and attitudes toward specific societal issues. Combining both frequency level and sentiment level analyses provides a comprehensive investigation of the metaphorical framing functions in corpus-based studies.

We have argued that the Conceptual Mapping Model provides a linguistically grounded paradigm for examining the frequency patterns found in a corpus and postulating associated Mapping Principles, which in turn, may be used to reflect the associated framing functions of a given metaphor (Ahrens, 2010). That is, specific keywords are identified from the frequent mappings between source-

target domain pairings, reflecting specific framing functions at the discourse level. This leads to the generation of specific metaphorical frames and sheds light on the framing functions at the communicative level.

Thus, Mapping Principles show a rationale for metaphorical framing at a cognitive level (identification of conceptual mappings between source-target domain pairings) and a discourse-based level (corpus evidence of frequently occurring metaphorical keywords in these mappings). Metaphorical framing functions (e.g., defining issues, causal interpretations, evaluations, proposing solutions to issues), which are analyzed at a practice-based or communication-based level, derive their functionality from the analyses done at the lower levels. The analysis in this study explicitly links the concepts of framing with Mapping Principles and argues that it is advantageous to make this linkage explicit at the cognitive and discourse levels before moving into the higher-order analyses of framing.

The demonstration of the multilevel view of metaphor in this study parallels with Kövecses (2017), Kövecses (2020) view of a metaphorical schematicity hierarchy. In our study of WAR metaphors, the hierarchy is governed by the generic-level metaphor SOLVING PROBLEMS IS (PHYSICAL) STRUGGLE. Less schematically, we identify the domain-level metaphors (SOCIAL ISSUES ARE A WAR, ECONOMIC ISSUES ARE A WAR, and GOVERNMENTAL ISSUES ARE A WAR). At the frame level, three different aspects, or “meaning foci,” of the WAR domain are elaborated: COMBAT, STRATEGY, and PROTECTION, resulting in three metaphors COMBATING SOCIAL CRIMES ARE COMBATING WAR ENEMIES, ECONOMIC POLICY IS WAR STRATEGY, and POLITICAL PROTECTION IS PROTECTION FROM DAMAGE IN WAR. At the fourth level of mental space, specific aspects of the frames for purposes of achieving various communicative goals are elaborated: the “combat,” “strategy,” and “protection” aspects of social issues were frequently mentioned to emphasize the need to combat social crimes that negatively affect the people of Hong Kong; the aspects of “strategy,” “forefront” and “turmoil” of economic issues were talked about to refer to the economic strategies for advancing particular economic agenda; the aspects of “protect” and “safeguard” of governmental issues were addressed to highlight the concept of protecting the rights of citizens by the legal system of the government.

Approaching metaphorical framing at the three levels of cognitive (cross-domain mappings), discourse (corpus evidence), and communication (framing functions) also aligns with the three-dimensional model of metaphor proposed in Deliberate Metaphor Theory, which emphasizes metaphor analysis at the levels of thought, language, and communication (Steen, 2008, 2017). This three-dimensional model extends the two-dimensional view of metaphor at thought and language postulated by the Conceptual Metaphor Theory (Lakoff, 1993; Lakoff & Johnson, 1980/2003).

This study, however, is subject to limitations as we focused solely on analyzing discourse-based (observational) data. We did not test or measure the effects of metaphorical framing on recipients. However, the “saliency” process of framing, the other central part of the formation of the framing process, is associated with recipients’ responses to the metaphorical framing effect. In framing theory (Entman, 1993; Pan & Kosicki, 1993, Scheufele, 1999), “saliency” is defined as cognitive salience, meaning that when certain aspects of an issue are selectively communicated, these aspects may become more salient in recipients’ interpretations of that issue when exposed to the frame. Future studies may combine both discourse-based analyses with experimental studies to fully investigate the selection and saliency processes, which will provide a more holistic picture of the two aspects of the framing process. At this juncture, the advantages of using the Conceptual Mapping Model have paved the way for a linguistic approach to metaphorical framing analysis and provide a basis for future studies, e.g., in considering the high-frequency keywords found in the source-target mappings as potential stimuli in response-elicitation research.

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Appendix

Appendix 1. Lists of the five broad target domains and the relevant specific target domains

SOCIAL ISSUES	ECONOMIC ISSUES	GOVERNMENTAL ISSUES	PERSONAL ISSUES	MISCELLANEOUS ISSUES
(Social) Development	(Economic) Development	(Political) Development	(Personal) Development	(General) Development
Arts	Downturn issues	Constitution	Personal life experience	Cultural and creative industries
Civil service	E-commerce	Democracy		Globalization and integration
Culture	Economic growth	Election		
Crime	Economic stability	Governance		
Education	Economic integration	Handover		
Environmental issues	Economic recovery	Institution		
Family	Economic reform	Judicial system		
Food issues	Film industry	Legislation		
Healthcare	Finance	Political reform		
Housing	Food supply	Universal suffrage		
Human equality	Free economy			
Immigration	Industrialization			
Minorities	Inflation			
Medical service	Intellectual property			
Natural disasters	Logistics development			
Population	Manufacturing industry			
Poverty	Real estate			
Safety issues	Technological development			
Sports	Telecommunication			
Transportation	Tourism			
Youth	Trade			