

# **Is the social unrest like COVID-19 or is COVID-19 like the social unrest? A case study of source-target reversibility**

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## **Is the social unrest like COVID-19 or is COVID-19 like the social unrest? A case study of source-target reversibility**

Hong Kong is undergoing two overlapping crises: social unrest over anti-government protests, and COVID-19. The media has linked these events in both objective and subjective ways. While some liken the social unrest to COVID-19, others do the opposite. This is an intriguing real-world instance of ‘source-target reversibility’ with interchangeable source and target resulting in two apt variants. This paper reports a survey study of the links between crisis perceptions and the aptness of metaphor variants. Participants (N=93) rated 30 matched items on the effects of both crises on trust in governance, interpersonal relations, the economy, physical/mental health, and Hong Kong’s future. This determined, for each participant, a correlation coefficient reflecting perceived structural similarity, and absolute/raw difference scores reflecting perceived substantive similarity of the crises. They then explained which (or neither) of two constructed headlines depicting the SOCIAL UNREST as COVID-19 or COVID-19 as the SOCIAL UNREST was more apt. Logistic regression analyses showed that i) metaphor aptness was predictable from structural but not substantive similarity, and ii) the worse crisis was preferred as source domain, but only for its more experientially concrete aspects. The study exemplifies ‘socio-culturally situated’ theoretical investigation and how metaphor research can shed light on crisis perceptions.

## Introduction

Hong Kong is undergoing two overlapping crises from mid-2019 to the present day, namely a protracted social unrest over anti-government protests and COVID-19. Political tensions in Hong Kong arguably date back to its handover from the UK to China in 1997. Since mid-2019, however, they have escalated over a proposed extradition bill to transfer fugitives to jurisdictions including the Chinese Mainland, and the more recent Hong Kong national security law that criminalizes acts of secession, subversion, terrorism, and collusion with external forces against the Chinese central government. Pro-democracy factions accuse Chief Executive Carrie Lam's government of undermining Hong Kong's autonomy under the 'one country, two systems' constitutional principle, demanding full withdrawal of the extradition bill, universal suffrage, inquiry into police brutality, amnesty for arrested protestors, and retraction of their classification as rioters. Protests grew increasingly large and violent towards the end of 2019 amidst growing international concern and sharply declining public confidence in the Hong Kong government<sup>1</sup>. Meanwhile, COVID-19 is taking its toll and adversely affecting Hong Kong in ways that are comparable with the social unrest. These include people's trust in the government's ability to handle both crises, the quality of interpersonal relationships, the economy, the mental and physical well-being of its people, and the future in general.

Mainstream and social media alike have tried to associate these overlapping crises in objective as well as subjective ways. A South China Morning Post<sup>2</sup> article describes them as a "one-two punch" on the mental health of residents. Subjective conceptualizations of both crises, independently or in association, are even more pervasive. For example, color has been a salient symbol of different political factions. The pro-democracy camp is nicknamed 黃絲 (*yellow ribbons*), the pro-establishment 藍絲 (*blue ribbons*), and the police 黑警 (*black cops*). Protestors have also been

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<sup>1</sup> According to periodic surveys by the Hong Kong Public Opinion Research Institute ([www.pori.hk](http://www.pori.hk)).

<sup>2</sup> <https://www.scmp.com/news/hong-kong/health-environment/article/3096326/one-two-punch-protests-coronavirus-playing-havoc> (accessed 6 Aug 2020).

labeled 甲由 (*cockroaches*) for their signature black attire and perceived unsavory behavior (See Figure 1). Metaphorical slogans related to COVID-19 like 同心同行同抗疫 (*together we fight against COVID-19*) are likewise commonplace like elsewhere in the world.

Most interesting, however, have been metaphors used to associate aspects of the social unrest with COVID-19, and vice-versa. Figure 1 is an example of a typical meme created by the pro-democracy faction. The text 康復香港 時代抗疫 (*recover Hong Kong, the fight against COVID-19 of our times*) is a play on the popular protest slogan 光復香港 時代革命 (*liberate Hong Kong, the revolution of our times*), likening the struggle against COVID-19 to the political struggle. Pictorially, Chief Executive Carrie Lam is depicted as the virus ‘disinfected’ by the black-clad masked protestor. Masks provide another interesting connection between the two crises. They were banned at the height of the unrest to identify radical protestors, but in an ironic twist it is now mandatory to wear them in public. An example of a metaphor from the pro-establishment faction can be seen from a comment on a newspaper article on the effects of COVID-19. 香港真正的病毒是甲由 (*the real viruses in Hong Kong are the cockroaches*) implies that the damage done by protestors to Hong Kong outweighs COVID-19.



**Figure 1** A metaphorical meme

We observe from these cursory examples that the overarching (conceptual) metaphors COVID-19 IS THE SOCIAL UNREST and THE SOCIAL UNREST IS COVID-19 present a socially situated case of ‘reversible’ sources and targets (Ortony, 1979), often discussed with constructed examples like ‘butchers are like surgeons/surgeons are like butchers’. THE SOCIAL UNREST IS COVID-19 in particular illustrates the well-known use of a general virus/illness frame to construe socio-political crises (Bradford-Watts, 2007; Musolff, 2012; Sontag, 1979). In Figure 1, fighting COVID-19 (target) is like fighting the government (source), while the example comment likens protestors (target) to the COVID-19 virus (source). Conversely, it is also reasonable to interpret Figure 1 as depicting fighting the government (target) as fighting COVID-19 (source), and the comment as likening the virus (target) to protestors (source). Since both crises are happening simultaneously, these examples reciprocally illustrate ‘topic-triggered metaphors’ (Koller, 2004; Semino, 2008; Tay & Jordan, 2015) where sources are partly motivated by their literal relevance to some aspect of the target. Furthermore, both positive and negative mappings are possible, with political stance a likely predictor. While COVID-19 is probably construed negatively by all, the two factions would depict protestors, police, and the government with opposite valences, strategically highlighting and hiding elements (Lakoff, 1993). Some might eschew metaphorical conceptualizations altogether as overly contrived.

In such a situation where source and target are equally salient “culturally defined units of experience” (Frank, 2008:10), questions arise regarding the aptness of metaphor, its different variants, and how this might be linked to people’s understanding and experiences of the crises. These questions, to be addressed in this paper, can be framed with reference to the broad theoretical notions of source-target reversibility and aptness as discussed below.

### **Source-target reversibility and aptness**

Source-target reversibility (STR) is defined here as the ability to interchange a metaphor’s source and target with both resulting variants being apt. Aptness is in turn typically understood as the extent to which the source captures important features of the target, resulting in a ‘good’ metaphor (Chiappe et al., 2003; Glucksberg & McGlone, 1999; Thibodeau & Durgin, 2011). The two variants of the famous example ‘this

surgeon is a butcher' and 'this butcher is a surgeon' both seem to be apt despite their opposing meanings of incompetence and skill (Grady et al., 1999; Ortony, 1979). Aptness of both variants is an important qualification of STR because we could in principle reverse all metaphors and force an interpretation no matter how contrived. For example, 'love is war' is common but 'war is love' seems far less apt.

Major metaphor theories differ in how they would predict the prevalence of STR. Conceptual metaphor theory would generally not predict STR since conceptual metaphors are unidirectional mapping systems from experientially concrete source domains to abstract target domains (Lakoff & Johnson, 1999). If conceptual domains are stable as claimed, concrete sources should always capture important features of abstract targets better. Hence, 'life is a journey' should always be more apt than 'a journey is life'. This is countered by different views united on the general front that STR and aptness depend not on a parasitic relationship of relative concreteness between source and target, but on how source and target are perceived as structurally and/or substantively similar. Structural similarity exists when the logical or 'syntactic' relations structuring one domain are homologous with and thus coherently transferrable to the other (Gentner, 1983; Jackendoff, 2002; Murphy, 1996). Related theories such as Gentner's (1983) structure-mapping model would predict that structural similarity can generate an apt metaphor independent of the substantive contents of the domains. Exemplifying in context, a metaphorical comparison between COVID-19 and the unrest with either as source would be apt if the government is deemed to have let down Hong Kongers (i.e. a government → people relation) in both crises, even though the specifics of the domains might differ. Another set of views focuses on substance rather than structure. Also known as 'superficial similarity' (Ross, 1989), substantive similarity exists when the entities and properties of source and target are deemed to resemble one another. The aptness of our comparison between COVID-19 and the unrest would thus depend more on the perceived similarity of the agents, circumstances, effects etc. of both crises. Related theories would predict that substantive similarity can generate an apt metaphor independent of domain homology. These include interactionist theories with dynamic mappings across domains (Black, 1962; Fauconnier & Turner, 2002), class-inclusion theories that emphasize holistic source-target similarity (Glucksberg & McGlone, 1999), as well as theories of visual metaphor (Carroll, 1994; Forceville, 2009; Indurkha & Ojha, 2017). The relative roles of structure and substance in

influencing aptness is keenly debated often using psycholinguistic experiments divorced from a specific socio-cultural context (Blanchette & Dunbar, 2000; Kotovsky & Gentner, 1996). Moreover, in STR cases like the present where both variants seem apt, there is the further question of contextual, cultural, and personal factors that may underlie source selection; i.e. preference for either. If THE SOCIAL UNREST IS COVID-19 is preferred, it could be because COVID-19 better exemplifies a context-specific, *ad hoc* feature of the unrest (Glucksberg & McGlone, 1999), or because disease is a more entrenched cultural model of politics (Quinn, 1991), or due to individual-specific understandings of the issues at hand (Burgers et al., 2016). A real-life example of STR in public discourse provides an important opportunity to examine these issues in a unique light, complementing the typical approach of eliciting responses to constructed or even computer-generated examples (Littlemore et al., 2018).

### **Towards a socio-culturally situated perspective**

As argued for cognitive linguistics in general (Frank, 2008; Geeraerts et al., 2010), STR and aptness research would benefit from more ‘socio-culturally situated’ case studies grounded upon situational knowledge of real-life stakeholders, events, and implications. Both crises at hand arose and overlapped due to volatile circumstances leading to a unique and directionally ambiguous metaphor (Figure 1). Of particular interest is how Hong Kongers understand key aspects of these crises, the extent to which the two resulting conceptual domains exhibit structural and/or substantive similarity, and how this influences aptness judgments of metaphor as a link between them, as well as relative preferences for its variants. This paper reports a survey study on Hong Kongers’ views of the social unrest and COVID-19 to answer the following research questions

1. To what extent are understandings of the two crises structurally and/or substantively aligned, and how does this influence the perceived aptness of metaphor?
2. Which survey-informed factors influence the relative aptness of the two variants: COVID-19 IS THE SOCIAL UNREST and THE SOCIAL UNREST IS COVID-19?

RQ1 is posed at a more general level and asks how structural similarity vs. substantive similarity between the two crises/domains influences judgments on whether metaphor is apt as a conceptualization strategy. As detailed below, novel measures of structural and substantive similarity based on correlations and comparisons of questionnaire scores are introduced. Existing measures of these constructs often use coding schemes for linguistic and other content features that reflect similarities in subject-produced metaphors (Blanchette & Dunbar, 2000; Tay et al., 2019). For comprehension studies, they are usually defined and constructed as experimental stimuli (Kotovsky & Gentner, 1996). The present measures differ by independently and directly accessing the conceptual structure underlying each crisis as defined by the questionnaire. In addition, correlation and comparison scores among the items allow a more specific quantification of structural similarity and substantive similarity along a numerical scale, beyond constructed categories like similar/not similar. This in turn allows more explicit modeling of the scores and metaphor choices with logistic regression models. Subsequently, RQ2 moves to a more specific level of analysis by investigating how, and why, different aspects of the survey scores predict the relative aptness of the two metaphor variants.

The study involves three components as elaborated in the next section: i) a questionnaire on crisis perceptions, ii) a discrete stimulus choice indicating preference for either/neither variant, and iii) open-ended elaboration of choice. The questionnaire consists of six components each representing an aspect of life affected by both crises. In ii), metaphor aptness is determined at categorical level where participants choose which variant (or neither) is more apt instead of rating them on a scale as commonly seen. This forced-choice approach fits the socio-culturally situated nature of the study. In a real-life setting where the two variants vie for attention, with some sceptical about metaphor in the first place, it is more intuitive for participants to point out which contender is preferred than compare them along arbitrary scales. Aptness is thus characterized here in a slightly different way than its usual association with (psycho)linguistic variables like salience, concreteness, and conventionality (Giora, 2003), but is instead based on participants' situated understanding of the attendant conceptual domains. The survey responses and aptness judgments are then analyzed by regressing aspects of the latter on the former, with supporting qualitative analysis of selected extracts.



## Method

### *Participants*

The population of interest is adult Hong Kong residents who have experienced both crises. Participants (N=93) were university students or their friends and family members. Their mean age is 31.9 years (SD=8.7). All have been in Hong Kong since June 2019, the start of the social unrest. The study was conducted in Cantonese, the native language of all participants.

### *Questionnaire*

Participants answered a 30-item questionnaire (see Appendix) on a scale of 1 to 7 (higher = worse) on six key aspects – trust in the city’s governance, interpersonal relationships, the economy, mental health, physical health, and the future of Hong Kong<sup>3</sup>. Each aspect was represented by five items. The items were ‘matched’ in that they were identical and applicable to both crises. They were presented in counterbalanced sequence - participant A answered all COVID-19 items first, participant B vice-versa. Table 1 shows the internal consistency (Cronbach’s  $\alpha$ ) of responses for both overall (30 items) and each of the five-item components. They range from acceptable to good based on conventional standards.

	COVID-19	Social unrest
Overall	0.86	0.88
Trust in governance	0.72	0.77
Interpersonal relationships	0.68	0.74
Economy	0.84	0.68
Mental health	0.72	0.80
Physical health	0.77	0.74
Future of HK	0.69	0.70

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<sup>3</sup> The questionnaire were modeled after opinion polls conducted by the Hong Kong Public Opinion Research Institute ([www.pori.hk](http://www.pori.hk)) and the Li Ka Shing Faculty of Medicine at the University of Hong Kong (<https://www.psychiatry.hku.hk/flow.html>).

**Table 1** Internal consistency of questionnaire

The questionnaire scores were used to compute the following key measures for each participant.

- a spearman correlation coefficient<sup>4</sup> ( $-1 < r_s < 1$ ) between the 30 COVID-19 and unrest items. A large value implies that high/low items for one crisis are correspondingly high/low for the other. This is the proposed measure of *structural similarity*; i.e. homologous relations between domains
- an absolute difference score ( $0 < \text{Abs\_diff} < 6$ ) between the means of the 30 COVID-19 and unrest items. A large difference implies that one crisis is seen as more severe and hence different than the other. This is the proposed measure of *substantive similarity*; i.e. resemblance among entities and properties of domains

The spearman correlation coefficient captures structural similarity by quantifying ‘syntactic’ strength *between* items. For example, one might rate COVID-19 as much worse than the unrest and give it higher scores in general. However, if he feels that in both crises the government has not listened (item 2) and could *therefore* do much more (item 1), the correlation between items will be high even if the raw scores for COVID-19 are higher. On the other hand, the absolute difference score quantifies substantive similarity by comparing averaged and hence more holistic perceptions of either crisis. The two measures are therefore independent and reflect the fact that two domains can have high structural but low substantive similarity (e.g. the hydrogen atom is like our solar system) (Gentner, 1983), and vice-versa (e.g. we should try to be the Silicon Valley of the East) (Wee, 2006). The two measures are in fact not significantly correlated in the present study ( $r(91) = .183, p = .079$ ).

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<sup>4</sup> Pearson coefficients were not used because of the questionnaire scores were ordinal

Note that the absolute difference score is a non-directional measure that only considers magnitude. For example, +1 (COVID-19 is worse) and -1 (the unrest is worse) are considered equal similarity scores. Directionality is unimportant for RQ1 because the question is how substantive similarity in general influences metaphor aptness. However, it becomes important for RQ2 to investigate how the worse crisis, overall as well as for each of the six questionnaire aspects, influences preference for either metaphor variant. Therefore, in addition to the absolute difference score, directional raw difference scores were also computed. Each subject therefore has seven raw difference scores: overall (mean of 30 COVID-19 items – mean of 30 unrest items), and one for each component (e.g. mean of 5 economy items for COVID-19 - mean of 5 economy items for the unrest). These will be further described when addressing RQ2.

### ***Discrete choice of preferred stimulus***

Participants were then shown two constructed news article headlines depicting the two metaphor variants: THE SOCIAL UNREST IS COVID-19 (COVID-19 as source) and COVID-19 IS THE SOCIAL UNREST (unrest as source). The bullet points following the headlines imitate the style of local newspapers and provide further context. The first point emphasizes the headline as a deliberate metaphorical comparison. The second point reinforces the source domain with appropriate lexis (*infecting, destabilizing*), and *who is responsible for X?* avoids painting either crisis in an obvious positive or negative light. This minimized the likelihood for aptness judgments to be influenced by personal political stance, the latter being a variable that could not be reliably measured because several participants declined to state it.

#### **Stimulus 1: COVID-19 as source**

##### **社會運動如同新冠病毒持續困擾香港**

- 一波未平一波又起，有香港人將兩者對比起來。
- 社運籠罩之下 究竟是誰「感染」了香港社會？

##### **Social unrest sweeps across HK ‘like the COVID-19 virus’**

- One crisis after another invite comparisons between the two

- Who is responsible for ‘infecting’ a Hong Kong society surrounded by the unrest?

### Stimulus 2: Unrest as source

#### 新冠病毒如同社會運動持續困擾香港

- 一波未平一波又起，有香港人將兩者對比起來。
- 病毒籠罩之下 究竟是誰「動搖」了香港社會？

#### **COVID-19 sweeps across HK ‘like the social unrest’**

- One crisis after another invite comparisons between the two
- Who is responsible for ‘destabilizing’ a Hong Kong society surrounded by COVID-19?

Participants were asked to choose the more apt stimulus/variant. The Cantonese word used for ‘apt’ was 恰當, roughly synonymous with ‘suitable’ or ‘fitting’. They could also decide that neither stimulus was apt. They were then invited to elaborate the reasons for their choice, assisted by the researcher who prompted them to explore metaphorical inferences for either choice, or why neither was suitable. These discrete choices (COVID-19 as source / unrest as source / neither) comprise the main outcome variable to be regressed on different aspects of the survey ratings as detailed next. The open-ended elaboration also offered qualitative data for supporting analysis.

### **Results and discussion**

Statistical analyses ( $\alpha=0.05$  throughout) were performed with *scipy*, *scikit-learn*, and *statsmodels* in Python 3.7. Table 2 shows descriptive statistics of overall and component questionnaire scores for each crisis, with means plotted in Figure 2 (error bars=95% CI).

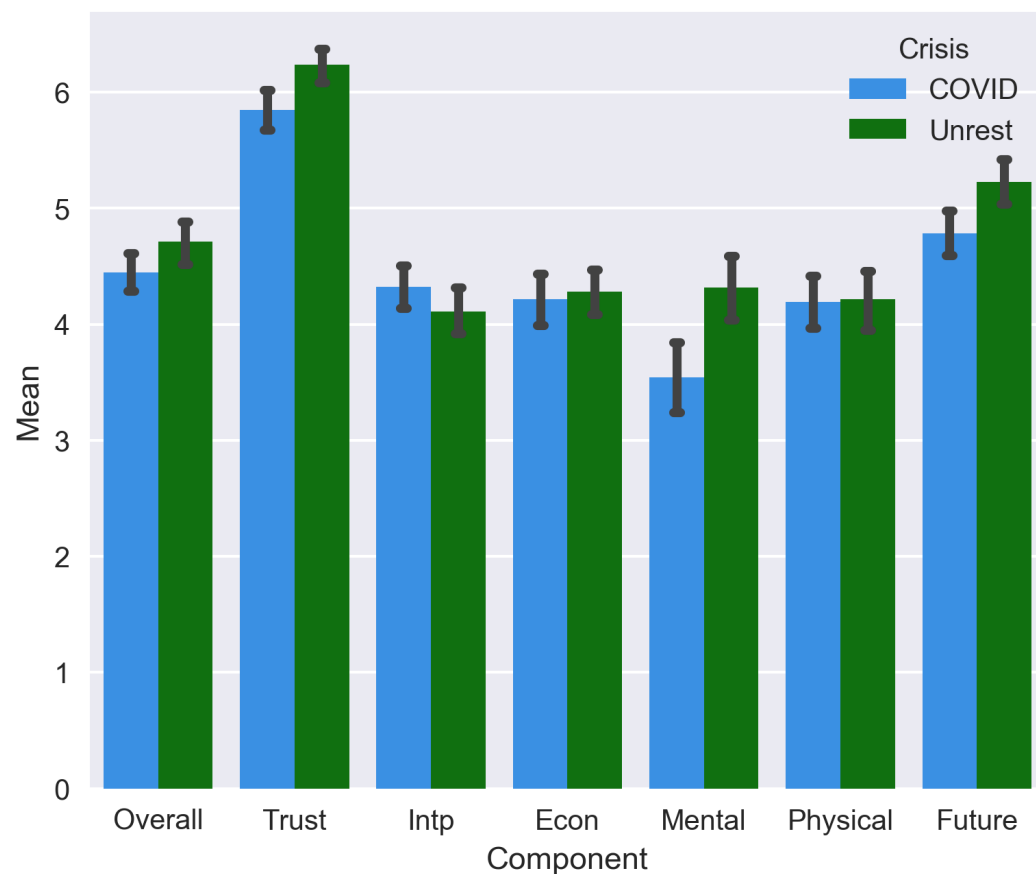
COVID-19 (N=93)

	Overall	Trust	Interp	Econ	Mental	Physical	Future
Mean	4.444	5.847	4.323	4.217	3.542	4.194	4.785
SD	0.846	0.849	0.935	1.115	1.478	1.109	0.998
Min	1.584	3.800	2.200	2.200	1.000	1.400	2.200
Max	5.800	6.800	6.200	6.400	6.200	6.400	6.600

Social unrest (N=93)

	Overall	Trust	Interp	Econ	Mental	Physical	Future
Mean	4.710	6.234	4.112	4.280	4.314	4.215	5.229
SD	0.898	0.768	0.996	0.983	1.338	1.299	0.978
Min	1.564	4.000	1.400	2.600	1.000	1.000	2.167
Max	5.900	7.000	6.200	6.400	6.600	6.200	6.500

**Table 2.** Descriptive statistics of questionnaire scores

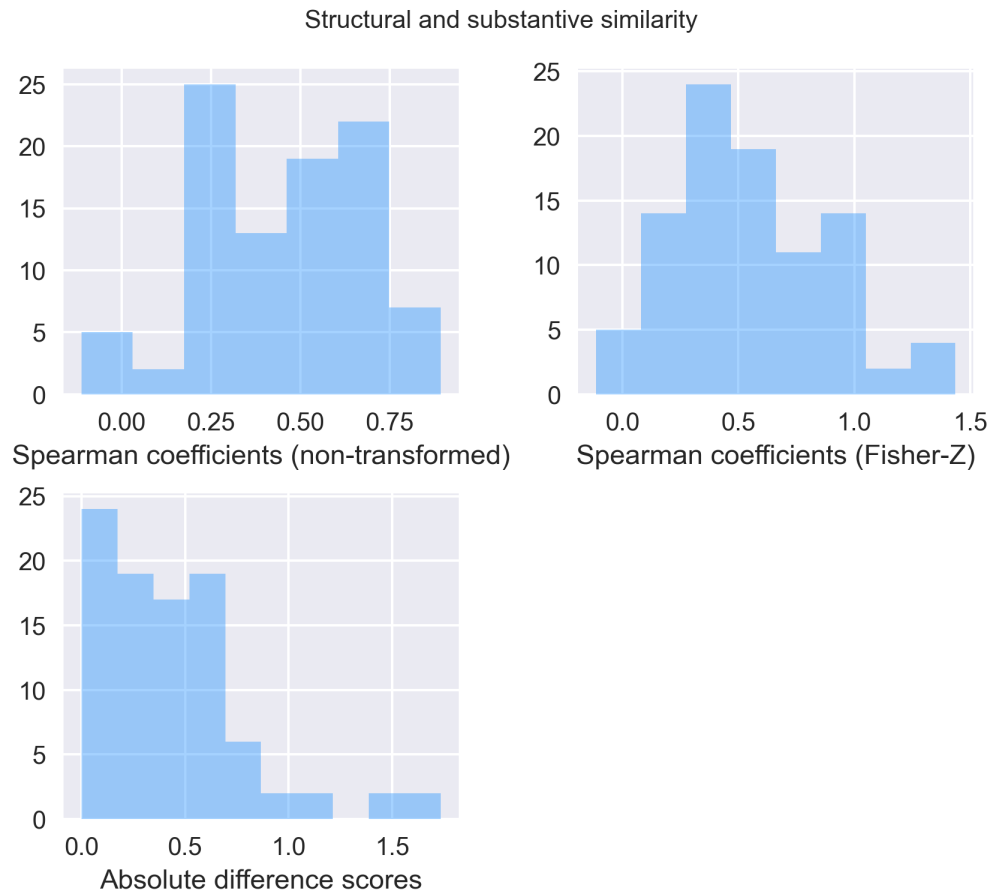


**Figure 2.** Mean questionnaire scores by component

Participants rated the social unrest as overall significantly worse than COVID-19 ( $t(92)=4.16, p<.001$ ). This could reflect the sentiment that COVID-19, while devastating, is a shared global crisis but the social unrest is one of the worst political crises in Hong Kong history. In terms of structural similarity, the mean spearman correlation coefficient<sup>5</sup> was 0.46 (SD=0.23). The two crises were thus perceived as structurally aligned to a low-to-medium extent on the whole. In terms of substantive similarity, the mean absolute difference score was 0.424 (min=0, max=1.733, SD=0.375). Figure 3 shows the distributions of the two measures. As explained above, raw difference scores were also computed for each specific component for later examination of the relationship between specific perceptions and preference for either metaphor variant. The means of these raw difference scores are trust=-0.351, interpersonal=0.117, economy=-0.160, mental=-0.772, physical=0.181, future=-0.844.

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<sup>5</sup> The Fisher-Z transformed mean spearman correlation coefficient was 0.556 (SD=0.321), which can be used for inferential purposes (e.g. constructing confidence intervals).



**Figure 3.** Distribution of structural and substantive similarity measures

In terms of stimulus choice, 20 participants chose stimulus 1 (COVID-19 as source), 25 chose stimulus 2 (unrest as source), and 48 neither. Participants are thus significantly more likely to eschew metaphor ( $\chi^2(2, N=93) = 14.39, p = .0008$ ). This is somewhat surprising given their discursive salience and previous observations that metaphors are not uncommon in newspapers (Krennmayr, 2014). Nevertheless, it suggests that there might be considerable local scepticism towards metaphors in news report in general, and/or their use to associate the two crises in particular. This relationship between Hong Kongers' perceptions of the crises and metaphor aptness is explicitly modeled next.

### *Relationship between perceptions of crises and metaphor aptness*

To explore if the choice of metaphorical vs. non-metaphorical stimuli is predictable from perceptions of structural and substantive similarity between the two crises, a logistic regression model was fitted with stimulus choice as the binary outcome (1=

metaphor, 0=non-metaphor), and  $r_s$  and absolute difference scores as predictors. Key results are shown in Table 3.

Outcome	Predictors	Coefficient	p-value
Stimulus_choice	$R_s$	7.7508	0.0000
	Abs_diff	0.1654	0.8536
<b>Model fit</b>			
Pseudo R-squared = 0.441			
LLR p-value = 4.667e-13			

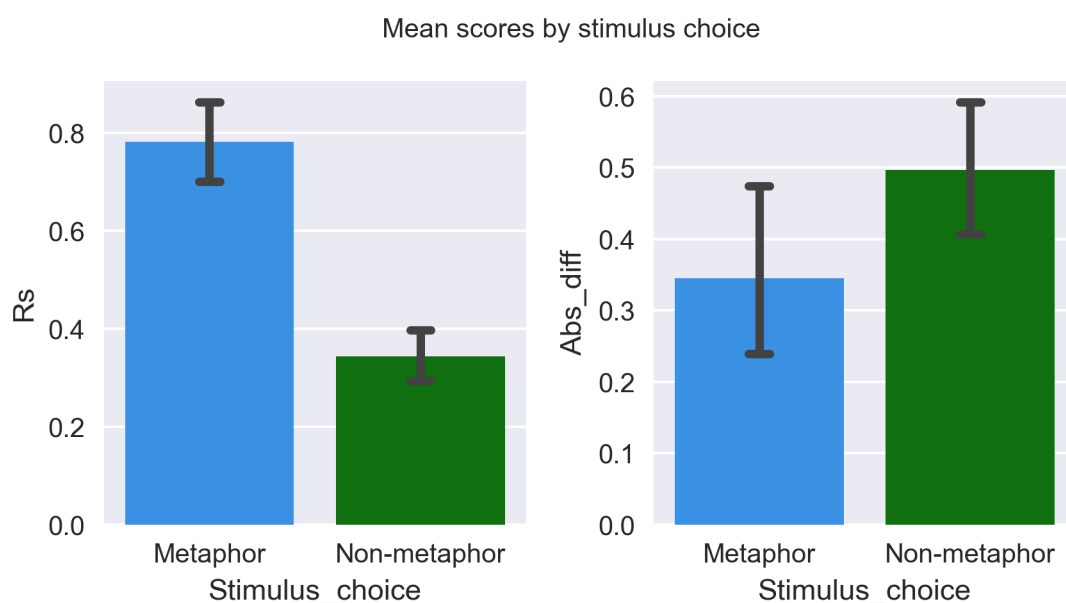
**Table 3** Predicting stimulus choice from structural and substantive similarity

Model fit statistics (pseudo R-squared=0.441, LLR  $p < .001$ ) suggest a good fit between the data and model (McFadden, 1974). The model coefficients<sup>6</sup> indicate that the spearman correlation coefficient ( $R_s$ ) significantly predicts stimulus choice ( $p < .001$ ), but the absolute difference score (Abs\_diff) does not ( $p = .8536$ ). This implies that stimulus choice is closely associated with perceptions of structural similarity, but not substantive similarity between the two crises. Figure 4 is an alternative visualization of mean  $R_s$  and Abs\_diff by stimulus choice (error bars=95% CI), showing that  $R_s$  is a far better discriminant of the latter ( $t(91) = 8.94, p < .001$ ). The difference in Abs\_diff between metaphor and non-metaphor is not significant ( $t(91) = -1.98, p = .051$ ).

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<sup>6</sup> The coefficients are reported in log-odds terms; i.e. the log of the odds ratio. A one-unit change in  $R_s$  increases the log-odds of choosing a metaphorical stimulus by 7.7508. We can convert this to the more intuitive odds ratio by taking the exponent of the log-odds. Therefore, a one-unit change in  $R_s$  increases the odds of choosing a metaphorical stimulus by  $e^{7.7508} = 2323.4$  times.





**Figure 4** Mean structural and substantive similarity scores by stimulus choice

On an abstract theoretical level, the results underline the structural view which maintains that metaphors arise from perceptions of homologous relationships between source and target domain, over the substantive view which predicts that metaphors arise from perceptions of similarity. Participants' follow-up elaboration of their choices, which is grounded upon first-hand experience of the crises rather than typically constructed examples or experimental stimuli, could further reveal how these abstract metaphor principles are instantiated while also shedding light on local perceptions. The following three extracts are illustrative. The first two are from participants with relatively high  $R_s$  of 0.659 and 0.704 who respectively chose stimulus 1 (COVID-19 as source) and stimulus 2 (unrest as source). The third is from a participant with a relatively low  $R_s$  of 0.227 who chose neither.

1. 新冠病毒有一個特性啦，就係佢反反覆覆嘅，即係有一輪爆發跟住又平靜一排第二輪爆發跟住又平靜一排第三輪爆發.....即係佢有一個特性就係反反覆覆啦，咁要來形容呢個社會運動嘅境況我覺得都係適合嘅。咁始終社會運動.....好似嘅就係好似之前經歷完嗰個區選之後就好似平靜左一排嘅，但係突然之間又推呢啲國安法呀，呢啲號礫緯嘞嘅嘢呀咁就有炒熱左成個社會

運動 個氣氛啦，咁其實都同新嘅冠狀病毒嗰個情況有啲相似嘅。即係佢起伏啊，一時平靜一時激烈咁樣囉。

COVID-19 has a unique trait, it keeps repeating, a round of breakout and then peace for a while and then another round, and then a third round... like it has the unique trait of repetitiveness, so I think it is quite suitable to use it to describe the social movement. The social movement...it's like it was quiet for a while after the district council elections, and then suddenly there's the national security law, and all that messy stuff that heated up the social movement, so it's actually quite similar to COVID-19, like it rises and falls, quietens and becomes intense again.

In Extract 1, the participant maps COVID-19's 'unique trait' of repetitiveness (反反覆覆) onto the social movement. The unpredictable cycles of outbreak followed by a brief respite is deemed as an apt metaphor for the correspondingly unpredictable cycles of controversial political events followed by brief quiet. Specific mention was made of the district council elections where the pro-democracy bloc won a landslide victory which briefly appeased protestors, and the passing of the controversial national security law which greatly angered them. It is interesting to note the systematic juxtaposition of the domains and their elements, which underpins the rationale for choosing stimulus 1 and illustrates the aforementioned theoretical point about aptness arising from homologous relationships between two domains.

2. 其實係社會運動之前嘅一波已經有令到好多大眾市民無論係零售業乜嘢都會關門呀，甚至有時候因為警方嘅一啲濫捕嘅行動或者係佢哋嘅無情嘅催淚彈咁樣令到好多廣場甚至生意上面都有下降。咁其實到到而家呢個時候新冠病毒啦，咁政府其實都採取唔到一啲好嘅措施啦，咁更加會令到我哋嘅數字，感染嘅數字急劇上升之餘呢，咁亦都會令到啲舖頭早啲門門啦，甚至都有關門嘅情況。咁我見每一間食肆都好似以前社會運動嘅，只不過而家係無形，以前係有形，咁叫有形呢，咁就以前我哋會有抗爭咁所以佢哋就會門門，但係依家就唔需要係抗爭，就係啲病到好似啲抗爭者咁，咁就令到令到

啲.....就會門門囉，係呀，令到我哋唔需要抗爭啲舖頭都會門門。所以我都覺得新冠病毒似社會運動多啲囉。

Actually, the first wave of the social movement has led to many people in retail businesses or whatever to shut down, and in fact sometimes because of the police's wrongful arrests or their ruthless tear gassing, many shopping malls and businesses declined. At this time of COVID-19, the government has failed to adopt sound measures. Infections have risen sharply all the more, and businesses have to close early or even shut down. Whenever I see a restaurant now it reminds me of the social movement, just that it is now less visible, but it was visible then. What do I mean by visible? In the past they close shop because of our resistance, but now there is no need for resistance. This virus is like the protesters that can cause...cause the shops to close. Yes, now we do not need to protest, and the shops will still close. So, I think COVID-19 is more like the unrest.

The participant in Extract 2 chooses the opposite metaphor of COVID-19 as target and the unrest as source. The elaboration begins by explaining substantive similarities between the two crises, in that both have severely affected businesses and the government has failed to handle both. In the second half, although less explicitly than Extract 1, we then observe a similar systematic juxtaposition of the two domains that focuses on how restaurants are compelled to “close shop”. During the unrest, many businesses often shut their doors earlier than usual to avoid being caught up with the protests, while during COVID-19 they were mandated by law to do so. The extract ends with a clear statement that the “virus is like the protestors”, and the specific cross-domain mapping of its effects on businesses from source to target.

Both extracts illustrate the versatile nature of the crises as reversible sources and targets. Furthermore, they showcase interestingly diverse cross-domain mappings that reveal Hong Kongers' different underexplored perceptions of the crises. Nevertheless, even as both participants spotlight different attributes, entities, and relations within the domains, the commonality of present theoretical interest is i) their focus on the structural similarity between the unrest and COVID-19, and ii) how this systematic attention to metaphor reflects the statistical alignment between their questionnaire evaluations of the

two crises. To emphasize the latter point, consider Extract 3 below from a participant with a low Rs of 0.227 who decided that neither metaphorical option was appropriate.

3. 咁我認為社會運動同埋新冠病毒雖然佢哋同樣會有似嘅地方, 即係政府對於社會運動嘅措施啦, 即係政府對於社會運動又好對於新冠肺炎呢個措施都有相似嘅地方, 但係我覺得佢哋成件事本身引發起嘅性質同埋後果都好不一樣嘅。我覺得佢哋似純粹係因為有共通點, 但係冇話邊一個係似。

I feel that although the social movement and COVID-19 are similar in some ways, for example the government's measures towards the movement, the way they handle the social movement is similar to the way they handle COVID-19. But I think the origins and effects of these two things are very different. I feel that there seems to be common points in both, but it doesn't mean that one is like the other.

The two crises are deemed to be “similar in some ways” like in how the government handles them. However, they are seen as “very different” at the deeper inferential level of their “origins and effects”, such that the participant is reluctant to map inferences from one to the other like in the previous two examples. The final sentence is particularly telling as it distinguishes “common points in both” domains from one domain being “like the other”. Common points appear to be referring to substantive similarities that are observable and directly comparable, while one domain being like the other requires that inferences from one domain (e.g. its origins and effects) could be structurally mapped to the other. This reflects the regression model showing the latter as the superior predictor of metaphor aptness. Bearing our socio-culturally situated perspective in mind, it is important to restate that the majority of participants (48 vs. 45) actually decided neither metaphor variant as appropriate. Unlike previous aptness studies which, as described earlier, tend to be based on manipulating designed metaphors and aspects of their similarity, the present findings remind us that the very act of using metaphors to depict real-life issues might be eschewed for broader contextual reasons even if theoretical conditions of structural similarity or substantive similarity seem to obtain. Relatedly, it is also interesting to observe from these extracts

how the (non)-choice of metaphor stimulus, and the underpinning constructs of structural and substantive similarity, are verbalized by participants. Future research could adopt a similar ‘situated’ approach to explore how theoretical constructs related to, and of metaphor itself, are experienced and articulated by laypersons.

### ***Relationship between perceptions of crises and source domain choice***

We have established that metaphor aptness is linked to perceiving an adequate level of structural similarity between the crises. The next question is whether there is systematicity underlying preferences for either crisis as the source domain. Relative source preference in a source-target reversible scenario is an underexplored issue. A sensible theoretical answer would be that it depends entirely on context. For example, most target domains depict the discourse topic at hand (Cameron et al., 2009), so the ‘preferred target’ would be whichever is more topical. In the present case, however, both the social unrest and COVID-19 are of immediate topical relevance to Hong Kongers. A plausible hypothesis in this case might then be that the perceived worse crisis would be preferred as the source. This is informed by the theory of negativity bias which claims that people tend to process negative information more than positive information (Taylor, 1991). The worse crisis should thus be more salient in participants’ minds and offer a more accessible or appealing source of inferences.

To examine this possibility, the aforementioned ‘raw difference scores’ for each participant were used to determine the perceived worse crisis. This was calculated by subtracting the mean score of unrest items from COVID-19 items for each component, as well as overall. A (higher) positive score implies that COVID-19 is seen as (increasingly) worse in terms of that component, a higher negative score implies unrest as worse, and zero implies both crises as equal. To recap, the six components are trust in the city’s governance, interpersonal relationships, the economy, mental health, physical health, and the future of Hong Kong. It is necessary to examine each component because participants may rate the crises differently along them. For example, one could rate the unrest as the overall worse crisis, but COVID-19 as worse for the economy.

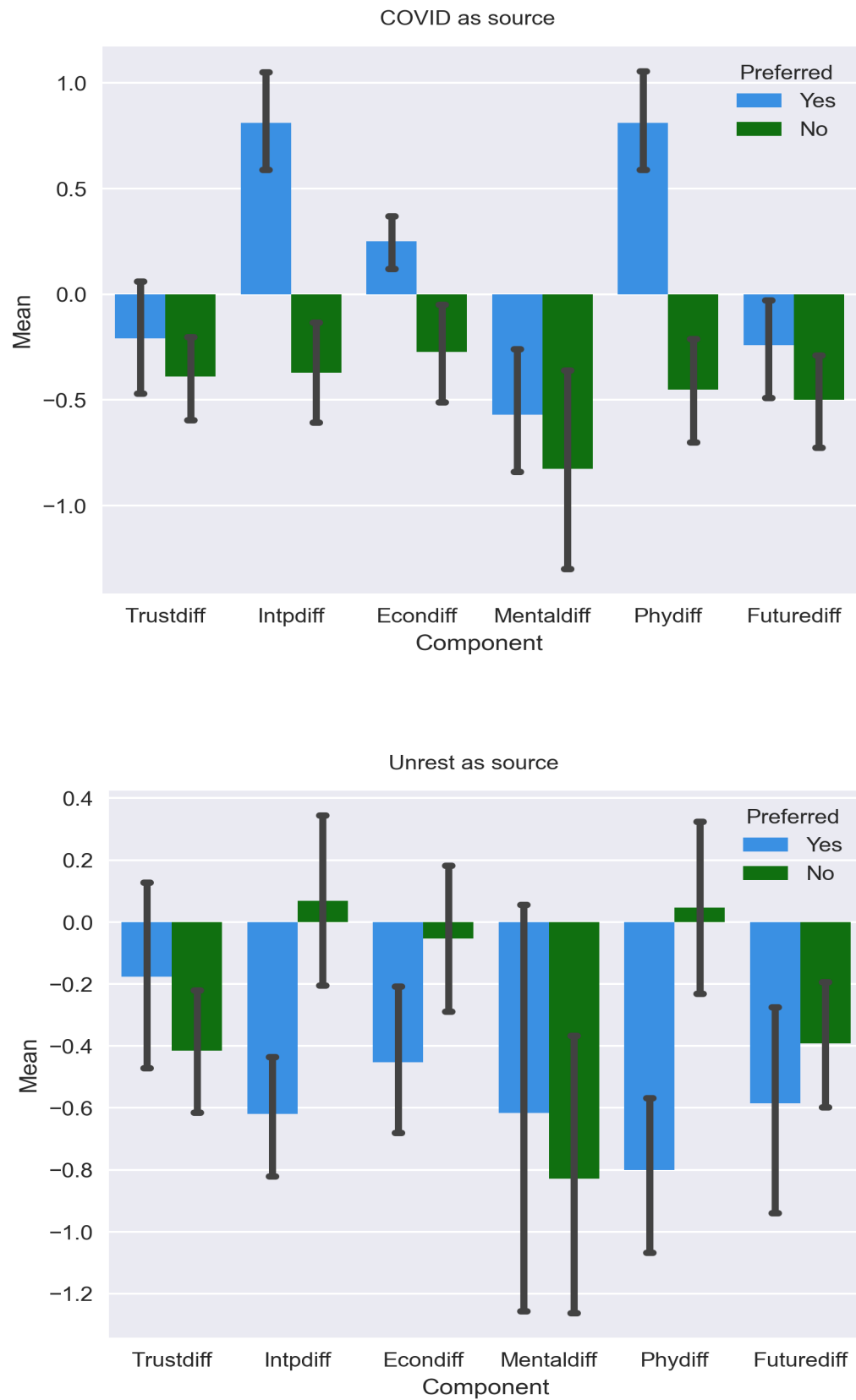
Two separate logistic regression models were then fitted to test if these perceptions could predict source domain preference. The first model has ‘COVID-19 as source’ as the binary outcome (1=COVID-19 chosen, 0=unrest/no metaphor chosen), while the second model has ‘unrest as source’ as the binary outcome (1=unrest chosen, 0=COVID-19/no metaphor chosen). Both models used the six raw difference scores as predictors. Results are shown in Table 4 (top half = COVID-19 as source model) with a good fit for both models.

Outcome	Predictors	Coefficient	p-value
COVID_as_source	Trustdiff	0.2308	0.7045
	Intpdiff	1.5341	0.0019
	Econdiff	2.1131	0.0034
	Mentaldiff	0.5795	0.1239
	Phydiff	1.7336	0.0022
	Futurediff	-1.0436	0.0840
<b>Model fit</b>			
Pseudo R-squared = 0.501 LLR p-value = 9.1647e-09			
Outcome	Predictors	Coefficient	p-value
Unrest_as_source	Trustdiff	0.7862	0.0408
	Intpdiff	-0.7355	0.0289
	Econdiff	-0.7990	0.0299
	Mentaldiff	0.2773	0.1342
	Phydiff	-0.6940	0.0196
	Futurediff	-0.4425	0.2885
<b>Model fit</b>			
Pseudo R-squared = 0.239 LLR p-value = 2.3e-4			

**Table 4** Predicting stimulus choice from perceptions of worse crisis

Additionally, two separate models were fitted with only the overall raw difference scores as predictor, as they are aggregates of and hence not independent from the other six predictors. The overall difference was not significant in either model ( $p=.191$ ,  $.664$  respectively). This implied lack of relationship between the perceived overall worse crisis and source preference appears to undermine our negative-bias informed hypothesis. It also poses questions to the general claim that political knowledge and personal understandings affect the perceived aptness of sources as framing devices (Burgers et al., 2016). However, separate analyses of each component reveal a far more nuanced picture. The statistical significance of each predictor/component turns out to be

quite consistent across both models. There are in fact three components significant in both models: interpersonal relationships (Intpdiff), economy (Econdiff), and physical health (Phydif). The direction of the coefficients suggests that participants who rated COVID-19 as worse for these components tended to prefer COVID-19 as source, and vice versa. The magnitude of coefficients further reveals the strength of these tendencies (see earlier analysis). Figure 5 is an alternative visualization showing the mean scores of each component by preferred source (error bars=95% CI). Recall that positive scores imply that COVID-19 is seen as worse, and vice-versa. As expected, only the three significant components (Intpdiff, Econdiff, Phydif) exhibit a contrast between the direction of scores and source preference.



**Figure 5** Mean difference scores by source preference



These results will now be illustrated with extracts from participants' open-ended elaboration. We observe how they focus on the significant components when explaining their source domain choices, and how these components supply metaphorical mappings to conceptualize the target crisis.

4. 我覺得新冠病毒我都唔知幾時會停, 好似不斷都有上升傳染個案咁樣, 即係你見唔到肺炎佢個終點咁樣咁我覺得都似一個社會運動咁樣嘅都係見唔到幾時即係政府幾時會處理好呢個問題。

I don't know when the coronavirus will stop, it's constantly spreading and there seems to always be new cases, it's like you cannot see the end point of the pneumonia. I think it's similar to the social movement, I can't see when the government can handle this problem well.

The participant in Extract 4 rated COVID-19 as worse for physical health, and preferred COVID-19 as source. The most salient aspect mentioned is the constant spread and increase in cases with no end in sight. According to the participant, the threat to physical health exemplifies the government's inability to handle problems, which is also applicable to and thus provides a source for the social unrest.

5. 我係覺得社會運動比起新冠病毒係更加困擾香港個原因係社會運動比起新冠病毒更加對於香港人與人之間嘅深層次矛盾, 咁用佢形容新冠病毒係唔係要誇大佢?

I think the social movement is disturbing Hong Kong more than COVID-19 because it is causing rifts among Hong Kong people at a deeper level, so is using it to describe COVID-19 a way to exaggerate it (COVID-19)?

The participant in Extract 5 on the other hand rated the social unrest as worse, and accordingly preferred the social unrest as source. In his elaboration, he focuses on interpersonal relationships. He maintains that the social unrest has created more rifts among Hong Kong people. Interestingly, he speculates that metaphorically depicting COVID-19 as the social unrest could therefore be a rhetorical strategy to exaggerate the effects of the former.

6. 香港嘅經濟會受影響好睇啲嘅外地嘅人會唔會嚟香港投資，佢哋如果唔過嚟投資嘅話，咁所有人會對香港呢個地方失去信心，成個社會嘅經濟會轉差，所以動搖緊呢個社會。因為社會係跟住呢個經濟，咁但係影響經濟嘅正正就係個社會運動囉。

The impact on Hong Kong's economy depends on whether foreigners want to invest here. If they don't, everyone will lose confidence in Hong Kong, and the whole society's economy will worsen and destabilize it. Because the society follows the economy, and it is precisely the social unrest that has impacted the economy.

Lastly, the participant in Extract 6 rated the unrest as worse, and again also preferred the unrest as source. The explanation appears to focus squarely on economic factors and regard them as most critical for Hong Kong society because "the society follows the economy". While the participant did not mention how this in turn maps onto COVID-19, he can be interpreted as constructing the unrest as a 'prototypical exemplar' (Glucksberg & McGlone, 1999) of economic trouble that can provide a suitable source domain perspective on any other crisis.

The remaining three components (mental health, the future of Hong Kong, and trust in the city's governance) are not significantly associated with source preference. While mental health (Mentaldiff) and the future of Hong Kong (Futurediff) are not significant in either model, trust in the city's governance (Trustdiff) is peculiar in that it predicts the unrest ( $p=.028$ ) but not COVID-19 ( $p=.637$ ) as preferred source. These results

suggest that participants' relative judgement of the crises along these components had little influence on their eventual source domain choice.

Comparing the two sets of results above, we observe an important qualitative difference between the significant (physical health, interpersonal relationships, economy) and non-significant components (mental health, the future of Hong Kong, and trust in the city's governance). The former group is arguably more 'experientially concrete' in the traditional cognitive linguistic sense as they depict i) bodily experiences related to both crises (e.g. pneumonia and other COVID-19 symptoms, physical altercations, effects of frequent tear-gassing), ii) day-to-day physical/emotional interactions with other people, and iii) 'bread and butter' economic issues that are fundamental to Hong Kong culture and society. On the other hand, the non-significant components depict more abstract notions like mental well-being, the speculative future of the city and confidence in the government. Returning to our negativity bias-informed hypothesis, the findings therefore suggest that negative experiences are more likely to be preferred as sources in a STR scenario, but only if the experiences provide an adequate inferential basis from which metaphorical inferences could be drawn and mapped. Therefore, although conceptual metaphor theory is generally incompatible with the notion of STR, it still manages to account for apparent constraints imposed on source domain choice, within socio-culturally situated circumstances that sanction the interchangeability of source and target.

## **Conclusion**

Revisiting the two research questions, this study found that i) perception of metaphor aptness is linked to how Hong Kongers separately evaluated the crises. Structural similarity, which emphasizes perceptions of homologous relationships between the unrest and COVID-19, predicted metaphor aptness far better than substantive similarity, which emphasizes a more holistic content-driven perception of the crises; ii) the more negatively perceived crisis tends to be preferred as the source domain, as predicted by the negativity bias, but only for the more experientially concrete components of physical health, interpersonal relationships, and the economy.

The first result informs theoretical discussion on metaphor emergence and interpretation. It is compatible with structure-based theories that emphasize perception of ‘syntactic’ relations between source and target elements, since structural similarity scores were more important to judge either metaphor as apt than substantive similarity scores. However, it is important to reiterate from the present socio-culturally situated perspective that most participants actually judged neither metaphor variant as apt. Extract 3 in particular reminds us that broader reasons tied to the real-life context of a metaphor can shape aptness perceptions even if the typically abstract theoretical conditions of structural similarity or substantive similarity imposed by researchers seem to obtain. It is also interesting to observe how the language in the illustrative extracts subtly reflect how scepticism towards metaphor is underpinned by the constructs of structural versus substantive similarity. How laypersons (un)consciously experience and verbalize metaphor theoretic constructs is a general area requiring further research. The second result illustrates the underexplored interaction between metaphor and general psychological principles like the negativity bias, and shows that aspects of conceptual metaphor theory can account for preferences or constraints on source domain choice in cases of STR despite their general incompatibility. Importantly, both results underline a key methodological point – that real-life events arising from specific socio-cultural circumstances present unique opportunities to address theoretical questions. The unfortunate ‘one-two punch’ of the social unrest and COVID-19 for Hong Kongers is exemplary in this regard. The present approach balances between preserving (quasi)experimental control where necessary, and respecting the various contextual forces that shape much of metaphor use and understanding in the social world (cf. Tay, 2020). Lastly, the study also serves a secondary purpose of revealing Hong Kongers’ first-hand experiences of the crises – not so much in terms of how they use metaphors to conceptualize them, but how their experiences lead to different interpretations of metaphors. In this way, the potential for metaphor research to shed light on public perceptions of crises is also exemplified.

There are several limitations to the study. Firstly, participants’ political stances, which could well predict or mediate their perceptions of metaphor aptness, could not be reliably determined. Secondly, the study focused almost exclusively on metaphor interpretation. Participants’ elaboration might offer rich data on metaphor creation but was not fully analyzed due to space limitations. Future work could analyze this and

other data sources like elicited metaphors and prominent (multimodal) discourse products like memes (Figure 1) and street art.

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## **Appendix**

你有多大程度同意以下句子？（1 分代表完全不同意此句子，7 分代表完全同意此句子）

How much do you agree with the following statements? (1=fully disagree, 7=fully agree)

### Trust in governance

1. 香港政府喺處理呢件事上可做嘅事有好多 The government can do much more to address the crisis



2. 香港政府喺呢件事上沒有聆聽市民聲音 The government has not listened to the people on the crisis
3. 事件令你現在不信任香港政府及其制度 The crisis has caused you to lose trust in the government and its policies
4. 事件有令你多咗留意時事 The crisis has increased your concern for current affairs
5. 事件係加深香港市民對香港政府嘅負面情緒嘅主因 The crisis is a key reason for Hong Kongers' increased resentment towards the government

#### Interpersonal relationships

6. 事件減少了你與朋友社交的機會 The crisis has reduced your social interactions with friends
7. 事件令你出門嘅次數減少 The crisis has caused you to spend less times outdoors
8. 事件強迫你改變你使用交通工具嘅習慣 The crisis has compelled you to change your public transportation habits
9. 由 2019 年 6 月到而家，你同屋企人嘅關係曾經/因為事件而變差 Since June 2019, your relationships with family members have declined/are declining because of the crisis
10. 由 2019 年 6 月到而家，你同朋友嘅關係曾經/因為事件而變差 Since June 2019, your relationships with friends have declined/are declining because of the crisis

#### Economy

11. 事件強迫你改變消費模式(例如完全依賴叫外賣、網上購物等) The crisis has compelled you to change your consumption habits (e.g. increased reliance on takeaways, online shopping)
12. 事件令你嘅購物慾減少 The crisis has reduced your desire for material consumption
13. 事件令香港投資者對香港失去信心 The crisis has caused investors to lose confidence in Hong Kong
14. 事件令你或屋企人嘅收入受到影響 The crisis has affected you/your family's income
15. 事件令香港嘅旅遊業受到影響 The crisis has affected Hong Kong's tourism industry

#### Mental health

16. 你喺向別人表達你對此事嘅睇法時會感到壓力 You feel mentally pressured when discussing your views on the crisis with others
17. 事件令你嘅精神狀態曾經/至今都受到影響（例如變得好敏感、好難瞓著/容易扎醒、容易暴躁或會無端端發火、好難集中精神、發啲同事件有關、不安嘅夢等） The crisis

has affected/is affecting your mental well-being (e.g. increased sensitivity, sleeplessness, loss of temper and concentration, having nightmares related to the crisis)

18. 想起事件令你曾經/至今都會出現因為不安而產生嘅生理反應（例如心跳加速、反胃、出汗、頭暈等）The crisis has caused/is causing anxiety-related symptoms (e.g. increased heartbeat, nausea, sweating, dizziness)
19. 想起事件使你曾經/至今都會感到情緒低落 Your mood declines whenever you thought/think about the crisis
20. 你覺得喺呢個社會入面生活你感受唔到安全感（例如覺得人身安全常受威脅、容易出現健康問題等）You do not feel personally safe living in this society during this crisis (e.g. threats to personal safety, health hazards)

### Physical health

21. 事件令你多咗留意自己嘅身體狀況 The crisis has increased your concern for your physical health
22. 事件令香港市民整體生理健康水平下降 The crisis has caused a general decline in health levels in Hong Kong
23. 經歷事件後，居住喺依家嘅香港極有可能令你嘅健康變差 It is likely that your physical health will decline after this crisis
24. 經歷事件後，香港已經唔係一個宜居環境 Hong Kong will no longer be an ideal liveable environment after this crisis
25. 傳統醫療體系會出賣香港市民，並不再本著「港人優先」的原則運作 The healthcare system no longer prioritizes Hong Kongers and the 'Hong Konger first' principle

### Future of Hong Kong

26. 呢個事件對香港社會都有負面嘅影響 This crisis has negative impact on Hong Kong society as a whole
27. 你對香港社會嘅未來發展感到憂慮 You are worried about the future of Hong Kong society
28. 你唔信任中央政府喺呢一件事上嘅說法或決定 You do not trust the central government's stance and decision on this crisis
29. 呢件事打亂咗你未來數年嘅計劃 This crisis has disrupted your plan for the next few years
30. 總括而言，你對香港政府有能力帶領香港走出這個困局持悲觀態度 On the whole, you are pessimistic about the government's ability to lead Hong Kong out of this crisis

